



**February 1998**

**Draft**  
**Waste Pits Remedial**  
**Action Project (WPRAP)**  
**Remedial Design Package**

**Volume 3 of 3**

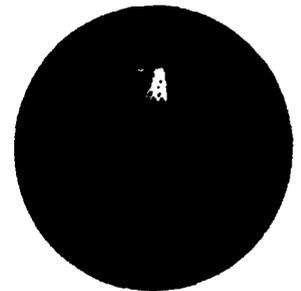
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**Draft**

**Waste Pits Remedial  
Action Project (WPRAP)  
Remedial Design Package**

**Volume 3 of 3**

*Submitted by:*



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**Waste Pit Remedial Action Project (WPRAP)  
Remedial Design Package Contents**

(Page 1 of 2)

Design Package	Design Document	Document Description
<b>Volume 1 of 3</b>		
Overview of Remedial Design		Summary of Remedial Design Package Contents
Plant Facilities Engineering Package	Description of Operation and Processes	Contains facility process and control descriptions for waste preparation, drying, blending, loadout, air emissions control, water management
	Design Criteria and Assumptions	Description of the criteria which effect the facility design including DOE orders, engineering standards and performance requirements
	Process Flow Diagrams (PFDs) w/Mass and Energy Balances	Contains process flow diagrams for the facility. Dryer process conditions are for the average waste profile.
	Site Plans	Plan view drawings of the overall facility layout
	General Arrangement Plans	Drawings of the facility equipment and building configuration with plan and elevation views
	Equipment Data Sheets / Specifications	Description of the process duty / performance requirements of the individual facility equipment items
	Utility Plans for Portable Structures	Utility routing drawings for the facility
	Point Source Emission Data	Estimate of air emissions from both point and fugitive sources

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**Waste Pit Remedial Action Project (WPRAP)  
Remedial Design Package Contents**

(Page 2 of 2)

<b>Design Package</b>	<b>Design Document</b>	<b>Document Description</b>
<b>Volume 2 of 3</b>		
	Excavation Plan	Description of the waste pit excavation activities
	Pre-Operational Schedule	Detailed schedule of activities through facility startup
<b>Volume 3 of 3</b>		
Site Preparation Package	Description of Site Preparation Activities	Presents the contents of the Site Preparation Package and their inter-relationships.
	Site Plan	Plan view drawings of the overall facility layout
	Grading Plan	Site grading plan drawing
	Associated Profiles and Details	Grading profile and detail drawings
	Specifications	Civil construction specifications
	Manufacturers' Fabrication Drawings of Portable Structures	General floor plan, skirting, and anchoring details for trailers
Project Pre-Operational	Pre-Operational Environmental Control Plan	Description of methods and materials to be used during construction to control erosion, dust and stormwater
	Operation and Maintenance Plan for Existing Facilities	Description of the inspection and maintenance activities to be performed prior to facility operation
	Pre-Operational Health and Safety Plan	Project specific health and safety plan to be used during construction and prior to facility operation



**DRAFT**

**Waste Pits Remedial Action Project  
(WPRAP)  
SITE PREPARATION PACKAGE**

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**PREPARED  
for  
Fluor Daniel Fernald, Inc.  
Fernald, Ohio**

**FDF Subcontract No. 98SC000001**

\*\*\*

**PREPARED  
by  
IT Corporation  
2790 Mosside Boulevard  
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**IT Project No. 773481**

\*\*\*

Revision No.:   B    
Issue Date: February 13, 1998

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## **Record of Issue/Revisions**

<b>Date</b>	<b>Rev. No.</b>	<b>Description of Revision</b>
01/09/98	A	Original Issue of Draft
02/13/98	B	Draft Issue for EPA Review

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B	Typical Anchoring and Skirting Systems

## 1.0 Introduction

Fluor Daniel Fernald, Inc. (FDF) has subcontracted IT Corporation (IT) to implement the Waste Pit Remedial Action Project (WPRAP) at Operable Unit 1 (OU1) located in Fernald, Ohio. This Site Preparation Package (SPP) has been prepared to define the activities required to prepare the site for the subsequent construction of the proposed remedial facilities.

### 1.1 Scope of Work

During 1996, FDF conducted many of the site improvements based on the Pre-Final Design performed by Parsons. These improvements included the following:

- Site demolition and clearing
- Site backfilling and grading
- Installation of storm sewers
- Construction of a high density polyethylene (HDPE) lined Storm Water Management (SWM) Pond
- Installation of a pumping station at the SWM Pond
- Installation of a force main from the SWM Pond to the biodenitrification surge lagoon (BSL)
- Installation of on-site rail improvements, retaining wall, rail loadout pad, and scale.

The work, which is presented in this SPP, consists of the following:

- Layout of the proposed OU1 remediation facilities
- Identification and relocation of existing utilities
- Site clearing
- Earthwork (except pit excavation)
- Roads and fencing
- Paving and surfacing
- Utilities
- Construction/installation of portable structures
- Laundry facility
- Respirator wash facility
- Subcontractors' control point trailers
- Analytical laboratory facility
- Protection of existing monitoring wells.

Measures to control erosion and suppress dust will be implemented as part of the site preparation activities. These measures will be installed and maintained as specified in the Pre-Operational Environmental Control Plan.

In the event that radiologically contaminated subsoils or debris are encountered during the site preparation activities, they will be handled in accordance with the Pre-Operational Health and Safety Plan.

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**1.2 Plan Organization**

The overall site facilities layout is discussed in Section 2.0 of this plan. Section 3.0 describes the earthwork activities including excavation, backfilling, and site grading. Section 4.0 discusses the various portable structures which are anticipated for the project. Section 5.0 describes the required utilities and routing. Section 6.0 discusses the management of hazardous materials and debris which may be generated by the site preparation and construction activities.

## 2.0 Site Facilities Layout

This section describes the various site facilities and features which will be constructed in order to perform the proposed on-site remedial activities. The locations of these facilities are described in the following sections and are presented in the Site Facilities Layout (Figure 2-1) and the Administrative Area Layout (Figure 2-2).

Prior to construction, the right-of-ways and locations of all structures will be staked in the field to verify their proposed location with respect to existing features (i.e., BSL, loadout pad and rail structure, existing utilities, catch basins, etc.). Any inconsistencies in these dimensions will be reported to FDF immediately for review and approval prior to commencing work.

The layout of the facilities was performed in a manner to maintain the integrity of the existing monitoring wells. If necessary, additional protection devices, such as pipe bullards or heavy-duty traffic covers, will be installed.

All structures that will be constructed at the project site will be in compliance with the applicable requirements of the Ohio Basic Building Code (OBBC) and the applicable U.S. Department of Energy (DOE) Orders. There are no anticipated areas of noncompliance.

### 2.1 Pre-Engineered Buildings

The larger structures which are proposed for this site will consist of pre-engineered, rigid-frame, steel structures. These structures include:

- Material Handling Building measuring approximately 360 feet long by 170 feet wide with an approximate eave height of 23 feet.
- Railcar Loadout Building measuring approximately 270 feet long by 120 feet wide with an approximate eave height of 22 feet.
- Railcar Preparation and Liner Storage Building measuring approximately 120 feet long by 60 feet wide with an approximate eave height of 22 feet.
- Dryer Unit Enclosure measuring approximately 150 feet long by 110 feet wide with an approximate eave height of 40 feet.
- Maintenance Building measuring 80 feet long by 40 feet wide with an approximate eave height of 20 feet.
- Warehouse measuring approximately 60 feet long by 40 feet wide with an approximate eave height of 20 feet.
- Laboratory (see Section 2.2 and Figure 2-3 for typical floor plan).

All structures will be designed in accordance with OBBC and the Metal Building Manufacturers Association (MBMA) Standards.

**2.2 Analytical Laboratory**

The laboratory and equipment will meet the project requirements. The laboratory will be designed to produce an efficient flow of samples into and analytical data out of the laboratory. Considerations will include the physical flow of samples, health and safety protection for laboratory analysts, and human ergonomics. A typical layout of this facility is presented in Figure 2-3.

The laboratory will be designed to keep those areas with the highest potential for contamination isolated to the smallest area possible and as far physically removed from the laboratory personnel as possible as well.

This facility will be divided into the following areas:

- Sample receipt/log-in
- Sample preparation (radiological, radiochemical, and chemical)
- Radiological counting
- Chemical instrumentation
- Data reduction/reporting.

These areas will not necessarily be separated by walls, but will be arranged to achieve the objectives noted above.

**2.3 Portable Structures**

Portable structures shall consist of prefabricated trailers and will be utilized for the following facilities:

- Superintendent's office trailer
- Laundry facility
- Respirator wash facility
- Changeout facility (existing facility)
- Break room
- Administrative office facility.

The design and construction of these facilities is further discussed in Section 4.0.

**2.4 Access Roads, Walkways, and Fencing**

The location of all access roads, walkways, and fencing is shown on Figure 2-1.

**2.4.1 Service Roads**

Service roads will be constructed as part of the site preparation activities in order to provide access for subsequent construction activities. These roads will be used exclusively to access the support zones. The first of these roads is a gravel road which will be constructed along the western and southern sides of the earth platform. This road will have a minimum width of 20 feet and will provide the major service connections for personnel access and deliveries to the laboratory, fuel oil storage tank, warehouse, lid and liner storage building, maintenance building, and wastewater treatment system (WTS). Truck turnaround areas are provided at the warehouse area and at the fuel

storage tank and maintenance building areas. All new service roads will consist of a compacted aggregate base course.

The second service road will involve use of the existing asphalt paved road along the southern and eastern boundaries of the waste pit area as well as Second Street. These roads will be used for deliveries of material, if necessary, to the truck wash facility and to remove containerized non-typical wastes and on-site disposal facility (OSDF) bound soils and D&D wastes.

**2.4.2 Haul Road**

Haul roads which will be used to transport wastes will include the existing roads within and around the pits as well as new roads from the waste excavation areas to the Material Handling Building. The waste excavation and waste processing areas will be connected by a single haul road (at least 15 feet wide) accessed through a truck wash facility to control the transport of dust and contamination from the excavation area. All trucks leaving the pit area will pass through this facility and travel along a new, asphalt-paved haul road. This road will terminate at the western side of the Material Handling Building, where a truck turnaround and parking area will be provided as shown on Figure 2-1.

All vehicular access roads will be designed in accordance with American Association of State Highway and Transportation Officials (AASHTO) requirements for appropriate vehicle sizes. Haul roads in the waste processing area will be paved with 6-inch curbs (minimum) along the sides to prevent accumulation of dust due to surface water runoff and to collect storm water from these roads. The haul roads will be sloped to direct storm water to collection sumps installed within the curbed area. Lift stations will be installed within the sumps to pump the collected storm water to the Clearwell. All facility structures will be located at least 10 feet away from any vehicular access road, to the maximum extent practical. If not, they will be provided with impact protection. The truck turnaround area and ramps will be constructed of reinforced concrete to maintain their integrity.

**2.4.3 Personnel Walkways**

Personnel walkways will be constructed to provide safe access for workers from the changeout facility to the waste pit area. These walkways will be surfaced.

A corridor or walkway will be provided for the transport and delivery of samples from the railcar loadout building to the laboratory.

**2.4.4 Fencing**

Fencing will be installed to control the movement of personnel and equipment. Fencing will consist of radiological (yellow) and safety (orange). Radiological fencing will be placed along the personnel walkways, haul roads, and truck turnaround area. Safety fencing will be placed between the haul road and personnel walkway.

**2.5 Additional Support Facilities**

Additional support facilities which will be required for the on-site remedial activities include the following:

- Truck wash and boot wash facilities
- Fuel storage tank and fueling station
- Dryer support facilities (air compressors/vessel, power module building, transformer, etc.).

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### 3.0 Site Grading and Excavation

In order to properly prepare the site for the construction of the proposed facilities, the following activities will be performed:

- Site clearing
- Excavation and backfilling
- Fine grading
- Storm drainage system installation.

The proposed site grading is presented in Figure 3-1. Specifications which address the activities are presented in Appendix A of this plan. Prior to the start of any earthwork activities, the erosion and sedimentation control measures which are specified in the Pre-Operational Environmental Control Plan will be implemented. Site access for equipment and personnel will follow the procedures outlined in the Pre-Operational Health and Safety Plan.

Radiological surveillance of site clearing, excavation, backfilling, and other site preparation and construction activities will be performed by FDF Radiological Control as determined by FDF Radiological Control in accordance with FDF radiological control procedures.

#### 3.1 Site Clearing

Site clearing will be performed to remove any vegetative matter or debris within the limits of work. The areas which will require clearing will be staked in the field prior to commencement of work. Clearing activities will not proceed until approval has been obtained from FDF. Clearing will be performed using conventional earthmoving equipment such as a bulldozer, front-end loader, and dump trucks. Debris from site clearing activities will be managed as discussed in Section 6.0 of this plan. Excess soils from clearing activities will be managed as discussed in Section 3.2 of this plan. Specification Section 02110, SITE CLEARING, which further describes these activities, is presented in Appendix A of this plan.

#### 3.2 Excavation and Backfilling

Excavation and backfilling operations will be required in order to regrade the site and to install the proposed utilities, building foundations, process equipment foundations, and access road construction. The excavation and backfill activities have been designed to achieve a balance in cut and fill volumes to the maximum extent practical. If additional fill is required, it will be obtained from a source approved by FDF. Any excess materials will be stockpiled.

Clean soils will be stockpiled immediately adjacent to the work area, near the Material Handling Building. A contaminated soil stockpile location will be designated in the waste pit area for any contaminated soils which could be encountered during site preparation and construction activities. It is not anticipated that any contaminated soils will be encountered during these pre-operational activities. Stockpiles will be managed with appropriate run-on/runoff and dust suppression controls. All stockpile locations will be specified by IT subject to approval by FDF.

All excavations and backfill activities will conform to the applicable Ohio Department of Transportation (ODOT) Standards and Occupational Safety and Health Administration (OSHA)

Regulations. Storm water management and erosion controls will be implemented in accordance with the Ohio Department of Natural Resources (ODNR) "Rainwater and Land Development, Ohio's Standards for Storm Water Management, Land Development, and Urban Stream Protection," Second Edition, 1996 (ODNR Rainwater and Land Development Guidance) and the FDF Fernald Environmental Management Project (FEMP) Storm Water Pollution Prevention Plan (SWPPP). All earthwork activities will be monitored using the procedures outlined in the Pre-Operational Health and Safety Plan. Applicable specification sections which describe these activities and are presented in Appendix A of this plan include the following:

- Specification Section 02200, EARTHWORK
- Specification Section 02222, EXCAVATION AND BACKFILL FOR UTILITIES AND APPURTENANCES
- Specification Section 02233, AGGREGATE BASE COURSE
- Specification Section 02300, BORING AND JACKING.

All earthwork will be performed using conventional earthmoving equipment such as a bulldozer, compactor, excavator, and dump trucks.

**3.3 Fine Grading**

Fine grading will be performed to divert storm water away from the proposed facilities and direct it to the existing storm water management systems. All grading will be performed using either a bulldozer or motor grader. All graded areas and areas beneath roads and building slabs will be proofrolled using a minimum of four passes by a compactor. Specification Section 02200, EARTHWORK, which further describes these activities, is presented in Appendix A of this plan.

**3.4 Site Drainage System**

The site facilities layout has been prepared so that none of the proposed structures are constructed over the existing catch basins and culverts; thereby, maintaining the integrity of the existing storm water management features. However, the inlet of the catch basin nearest to the existing SWM Pond will require capping to prevent contact storm water, collected within the haul road, from flowing to the SWM Pond. An additional catch basin will be installed and tied into the existing storm sewer to drain the area between the maintenance building, dryer enclosure, and haul road.

All roof runoff from the Material Handling Building and Railcar Loadout Building will be directed to the existing SWM Pond. A series of underground storm drains will be installed along the western and eastern sides of the buildings and will tie into the existing storm drainage system to the SWM Pond. The layout of these storm drains will be based on the roof slopes and downrain locations and the final configuration of the pre-engineered structures. Specification Section 02720, STORM DRAINAGE SYSTEM, which further describes installation of these drainage systems, is presented in Appendix A of this plan. Roof runoff from other WPRAP buildings and structures may be directed to the underground storm drains or to surface drainage features.

### 4.0 Portable Structures

All portable structures will be fabricated and installed in accordance with the applicable FDF requirements, DOE orders, and OBBC requirements. These requirements include, but are not limited to, the following:

- Fabrication
- Anchoring
- Skirting
- Identification and signage
- Access
- Utility requirements
- Siting (with respect to utilities and other features).

The following sections present a brief description and typical floor plan for each facility. Adequate space and facilities will be provided within these portable structures so that the proposed remedial activities may be successfully completed. Typical anchoring and skirting systems for these structures are presented in Appendix B of this plan. Utility requirements for each facility are presented in Section 5.0 of this plan.

#### 4.1 Superintendent's Office

The superintendent's office trailer will consist of several offices as shown in Figure 4-1.

#### 4.2 Respirator Wash Facility

The respirator wash facility will provide areas for respirator storage, cartridges, repairs, washing, and drying as shown in Figure 4-2.

#### 4.3 Laundry Facility

The laundry facility will provide areas for sorting, washing, drying, and storage as shown in Figure 4-3. Each dryer exhaust will have a high efficiency particulate air (HEPA) filter.

#### 4.4 Changeout Facility

The existing changeout facility will be relocated to the area shown on Figure 2-1. The changeout facility will provide areas for doffing of personal protective equipment (PPE) and personnel contamination monitoring as well as men's and women's locker rooms. A typical floor plan of a changeout facility is presented in Figure 4-4.

#### 4.5 Break Trailer

The break trailer will provide a control point area and tables, chairs, and a refrigerator for employee use. A typical floor plan of this facility is presented in Figure 4-5.

#### 4.6 Administrative Offices

Administrative offices will provide areas for offices, conference rooms, break areas, and restrooms. A typical floor plan of this facility is presented in Figure 4-6.

## 5.0 Utilities

The following utilities will be installed in support of the on-site remedial activities:

- Fire water
- Potable water
- Sanitary sewer
- Natural gas
- Electric.

IT is currently reviewing and determining the utility requirements based on personnel and facility needs. Therefore, the utility line sizes and routing presented are preliminary and will be finalized after this review. The Site Utility Plan is presented in Figure 5-1. The Administrative Area Utility Plan is presented in Figure 5-2. The specifications for the various utility systems are presented in Appendix A of this plan. These specifications include the following:

- Specification Section 02667, SITE WATER LINES
- Specification Section 02687, NATURAL GAS LINES
- Specification Section 02732, SITE SANITARY SYSTEMS.

### 5.1 Fire Water

In order to adequately protect the facility against fire, the existing fire line will be extended and hydrants will be installed at the location shown in Figure 5-1. The fire line will consist of an underground HDPE pipe. The fire line will originate at a tie-in point along Second Street and terminate south of portable structures located to the south of the dryer enclosure. Specification Section 02667, SITE WATER LINES, further describes the materials and installation of this system (Appendix A).

### 5.2 Potable Water Supply

The potable water supply line will consist of an underground HDPE piping. The tie-in locations for the system will be located along Second Street as shown in Figure 5-1. This line will run northward along the western side of the facility, then westward toward the WTS, and terminate at the truck wash and boot wash facilities. This system will ultimately service the following facilities:

- Laboratory
- Railcar loadout building
- Material handling building
- Changeout facility
- Maintenance building
- WTS
- Truck wash and boot wash facilities.

A separate tie-in will service the administrative building as shown in Figure 5-2.

Backflow preventors and flow meters with totalizers will be installed within this system in accordance with the project requirements. Additional information regarding the materials and installation is presented in Specification Section 02667, SITE WATER LINES (Appendix A).

**5.3 Sanitary Sewer**

The sanitary sewer lines will consist of a series of lift stations and both underground gravity and force mains. Piping will consist of polyvinyl chloride (PVC) and HDPE. Four separate sanitary sewer systems will be installed to perform the following:

- Collect sink water from the laboratory and transfer it to the BSL (Figure 5-1)
- Collect drain water from the maintenance building, laundry facility, respirator wash facility, and changeout facility sinks and showers and transfer it to the BSL (Figure 5-1)
- Collect drain water from the changeout facility toilets and transfer it to the plant sanitary sewer system (Figure 5-1)
- Collect drain water from the administrative office lavatories and transfer it to the plant sanitary sewer system (Figure 5-2).

Additional information regarding the materials, equipment, and installation of these systems is presented in Specification Section 02732, SITE SANITARY SYSTEMS (Appendix A).

**5.4 Natural Gas**

The natural gas line will consist of an underground HDPE pipe. This line will tie into the existing force main at the approximate location shown in Figure 5-1. This line will be routed along the western side of the site and terminate at the dryer enclosure. Additional information regarding the materials and installation of this system is presented in Specification Section 02687, NATURAL GAS LINES (Appendix A). This line will be valved and metered in accordance with the project requirements.

**5.5 Electrical**

The 13.2 kilovolt electrical power supply will originate at the location shown in Figure 5-1 and terminate at the transformer located adjacent to the power module building. From this point, the power will be distributed throughout the site. An additional tie-in point located north of the administrative area will service the office complex (Figure 5-2).

## 6.0 Hazardous Materials and Construction Debris Handling

The following presents controls and methods for handling construction debris and any hazardous materials which may be encountered or generated during the site preparation and construction activities. These controls and methods include:

- Fuel storage environmental controls
- Waste fuels, oils, and lubricants handling
- Paints, thinners, and solvents handling
- Construction waste and debris handling, storage, and disposal.

Debris and waste materials generated by and during the construction activities, within the radiological control area, will require radiological sampling/survey to determine the appropriate handling and disposal methods. Radiological sampling/survey will be performed by FDF Radiological Control as determined by FDF Radiological Control in accordance with radiological control procedures. A construction waste/debris handling and disposition matrix is presented in Table 6-1.

The final disposition of the wastes and debris encountered or generated during the site preparation and construction activities will be based, in part, on the waste acceptance criteria at various disposal facilities. These include, but are not limited to, the Commercial Disposal Facility (CDF), and off-site sanitary, residual, and hazardous waste landfill facilities.

### 6.1 Fuel Storage Environmental Controls

Refueling of equipment will be performed using a refueling truck or trailer. During the unloading of fuel, the following standard spill prevention practices will be implemented:

- The unloading vehicle will be properly grounded, braked, and/or wheel-chocked.
- Opening and closing of valves will take place only after transfer hoses are securely connected.
- Buckets and absorbent will be provided to collect miscellaneous spills which may occur during the removal of transfer hoses.
- Containers will be inspected prior to transfer.
- Container truck levels will be monitored during transfer.
- Transfer personnel will wear appropriate personal protective clothing and equipment.
- Fire extinguishers will be provided in sufficient numbers.

Other preventive measures include:

- Smoking will only be permitted in designated clean areas away from flammable material storage and contaminated areas.
- Operational areas and equipment will be inspected for evidence of leaks, spills, malfunctions, level of contents, and corrosion.
- FDF Radiological Control will perform radiological surveys on fuel delivery vehicles prior to their exiting a radiological control area.

### **6.2 Waste Fuels, Oils, and Lubricants**

Waste fuels, oils, and lubricants will be collected and stored in dedicated, approved safety containers. These containers will be maintained at a secure location and periodically inspected to assess their integrity. The area will be posted with Signs which read "No Smoking" and "Flammable Liquid." Prior to disposal, the container will be radiologically surveyed by FDF Radiological Control Technicians (RCT) and the contents will be sampled and analyzed by IT. If RCT survey and IT sampling verifies that the material is radiologically clean, it will be properly manifested and disposed of off site at an appropriate facility. If the material is deemed radiologically contaminated, it will be managed in dedicated on-site storage areas while awaiting final disposition.

### **6.3 Paints, Thinners, and Solvents**

Paints, thinners, and solvents will be collected and stored in dedicated, approved safety containers. These containers will be maintained at a secure location and periodically inspected to assess their integrity. The area will be posted with Signs which read "No Smoking" and "Flammable Liquid." Prior to disposal, the container will be radiologically surveyed by FDF RCTs and the contents will be sampled and analyzed by IT. If RCT survey and IT sampling verifies that the material is radiologically clean, it will be properly manifested and disposed of off site at an appropriate facility. If the material is deemed radiologically contaminated, it will be managed in dedicated on-site storage areas while awaiting final disposition.

### **6.4 Construction Debris**

Clean construction waste is considered waste which is brought onto the FEMP during the site preparation and construction activities which, if properly handled, can be surveyed and released as non-radioactive waste. These wastes include, but are not limited to, packaging of new materials, excess building materials, piping, insulation, formwork, and drywall. Prior to removing these materials from the site, they will be radiologically surveyed by FDF RCTs. If RCT surveys verify that the materials are radiologically clean, they will be removed from the site. If materials are deemed radiologically contaminated, they will be managed on site as radiologically contaminated materials.

In order to properly store construction debris and trash, lockable storage containers will be set up, in consultation with FDF RCTs, in an area where background levels are low enough to permit free release radiological surveys. A laydown area will also be established near the container for the purposes of staging wastes while awaiting survey. Prior to establishing this laydown area, FDF

RCTs will survey the area to verify that it is free of removable contamination to ensure that the staged materials do not become contaminated. Plastic tarps will be provided to cover the waste materials while awaiting survey. Waste materials will then be monitored by FDF RCTs and loaded into the container when it is determined that all release criteria are met. The FDF RCTs will then survey the exterior surface of all waste containers prior to releasing the container from the controlled area.

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Materials and equipment that have surfaces which are inaccessible to surveying such as pipes, motors, bulk materials, rubble, and chemicals will be evaluated for release by FDF RCTs. These materials will be accompanied with documentation to demonstrate that they were not exposed to radioactive materials.

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After release, all debris and trash will be disposed of off site at an appropriate disposal facility. Materials which are not releasable will be managed on site as directed by FDF. Trash will be surveyed and loaded on a frequent basis, as necessary, to prevent an excessive amount of trash piling up near the containers.

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**TABLES**

**Table 6-1  
Construction Waste/Debris Handling and Disposition Matrix**

<b>Waste Characterization</b>	<b>Types of Generated Waste</b>	
	<b>Solid Wastes</b>	<b>Liquid Wastes</b>
Non-radiological, Non-RCRA	IT is responsible for all aspects of the handling and disposal of this material.	IT is responsible for all aspects of the handling and disposal of this material.
Radiological, Non-RCRA	IT is responsible for the staging and packaging of this material in FDF provided containers. Proper disposal of these materials will be performed by FDF.	IT is responsible for the staging and packaging of this material in FDF provided containers. Proper disposal of these materials will be performed by FDF.
RCRA, Non-radiological	IT is responsible for all aspects of the handling and disposal of this material.	IT is responsible for all aspects of the handling and disposal of this material.
Mixed Waste	IT is responsible for the staging and packaging of this material in FDF provided containers. Proper disposal of these materials will be performed by FDF.	IT is responsible for the staging and packaging of this material in FDF provided containers. Proper disposal of these materials will be performed by FDF.

- Notes:
1. This table is limited to the waste and debris generated during the site preparation and construction activities.
  2. This table does not address the disposition of radiologically contaminated soils or clean soils.

DRAWING NUMBER 773481-B9

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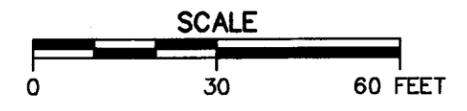
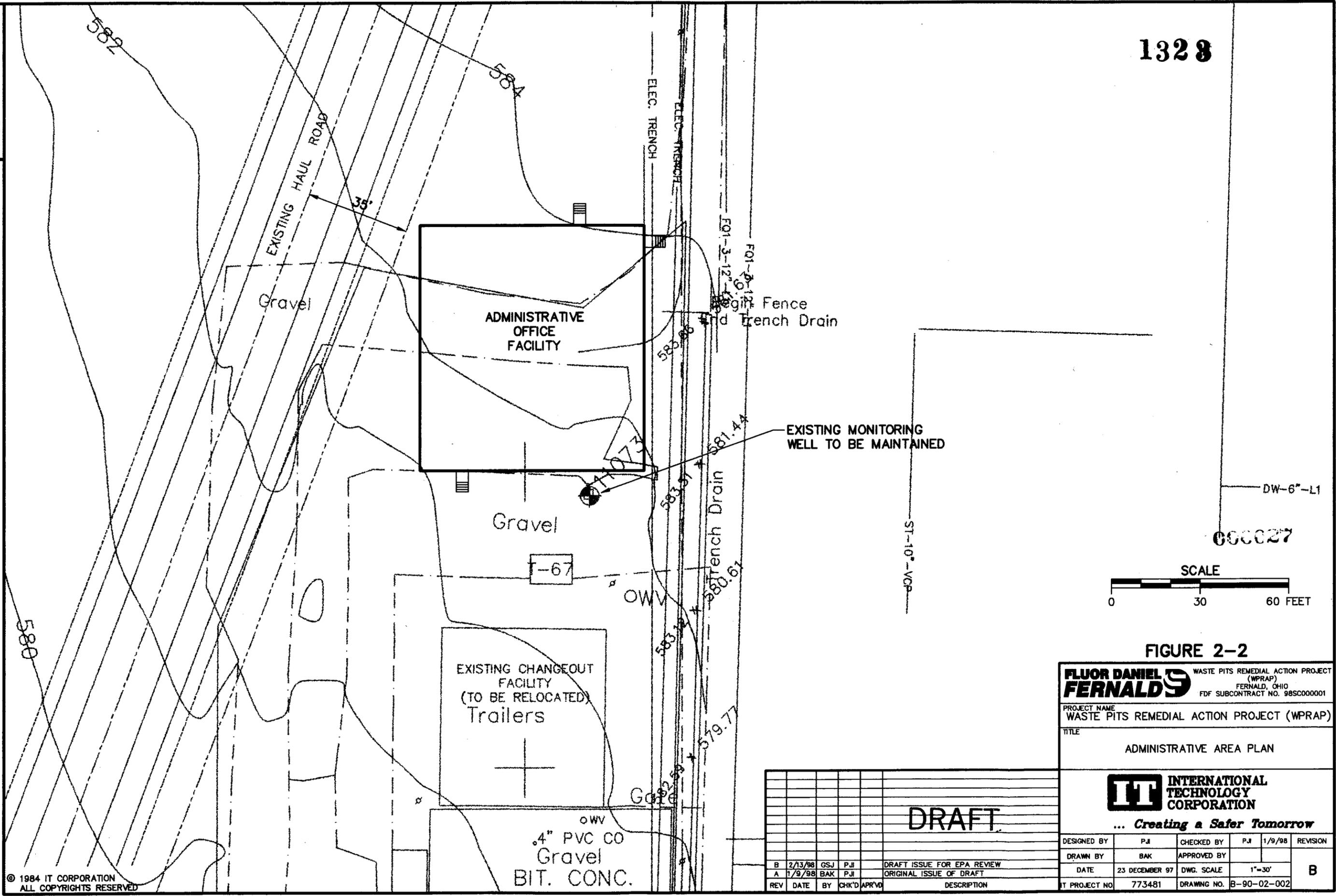


FIGURE 2-2

**FLUOR DANIEL FERNALDS** WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)  
FERNALD, OHIO  
FD SUBCONTRACT NO. 98SC000001

PROJECT NAME  
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE  
ADMINISTRATIVE AREA PLAN

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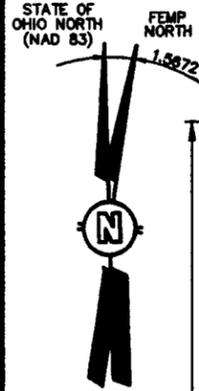
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A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	BAK	APPROVED BY			<b>B</b>
DATE	23 DECEMBER 97	DWG. SCALE	1"=30'		
PROJECT NO.	773481	DRAWING NO.	B-90-02-002		

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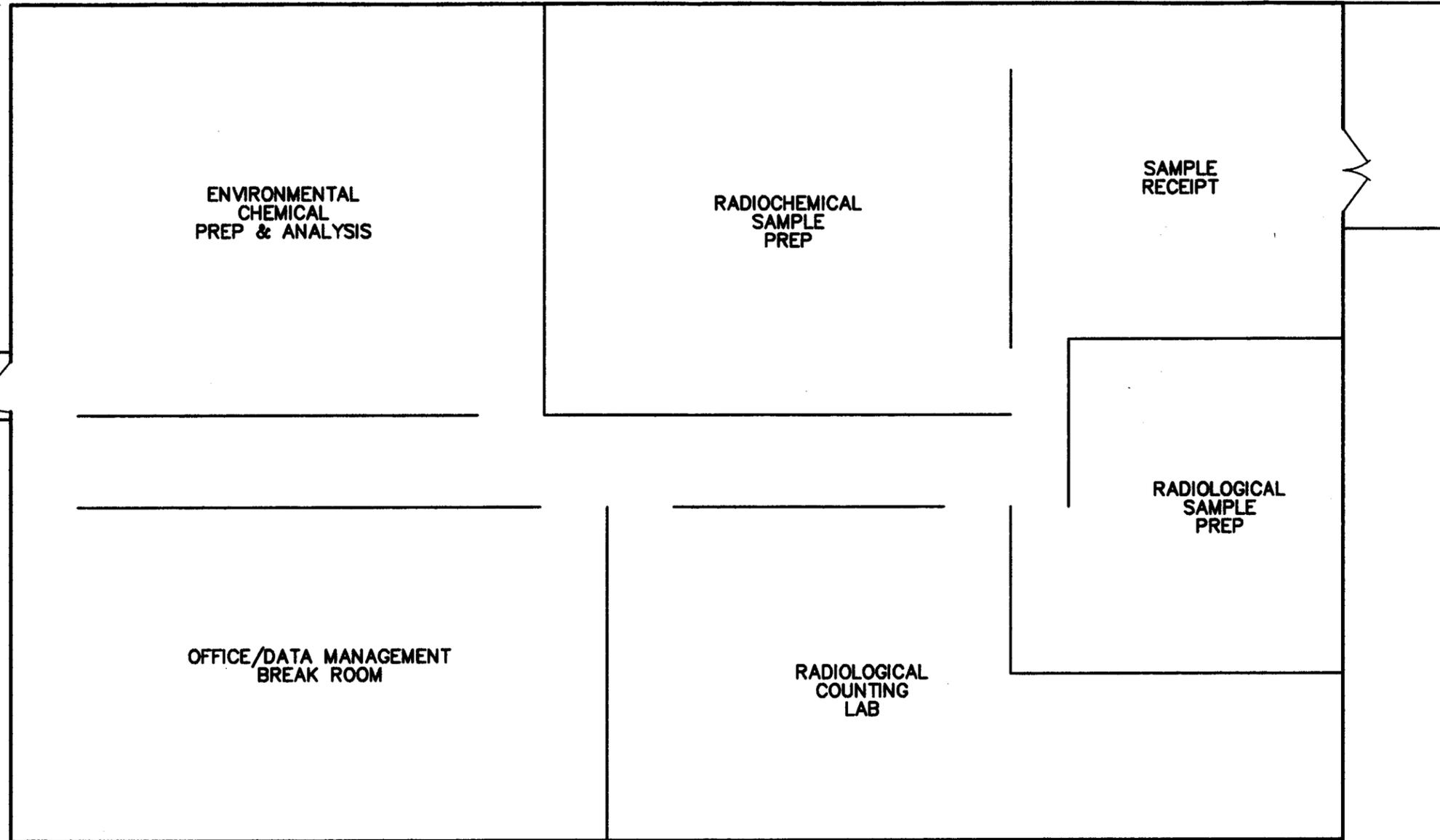
DRAWING NUMBER 773481-B7



80'-0"

1323

50'-0"



600028

FIGURE 2-3

**FLUOR DANIEL FERNALDS** WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)  
 FERNALD, OHIO  
 FDF SUBCONTRACT NO. 98SC000001

PROJECT NAME  
 WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE  
 TYPICAL FLOOR PLAN  
 SITE LABORATORY

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REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
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A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	BAK	APPROVED BY			
DATE	4 DECEMBER 97	DWG. SCALE	1/8"=1'-0"		<b>B</b>
T PROJECT NO.	773481	DRAWING NO.	B-90-02-001		

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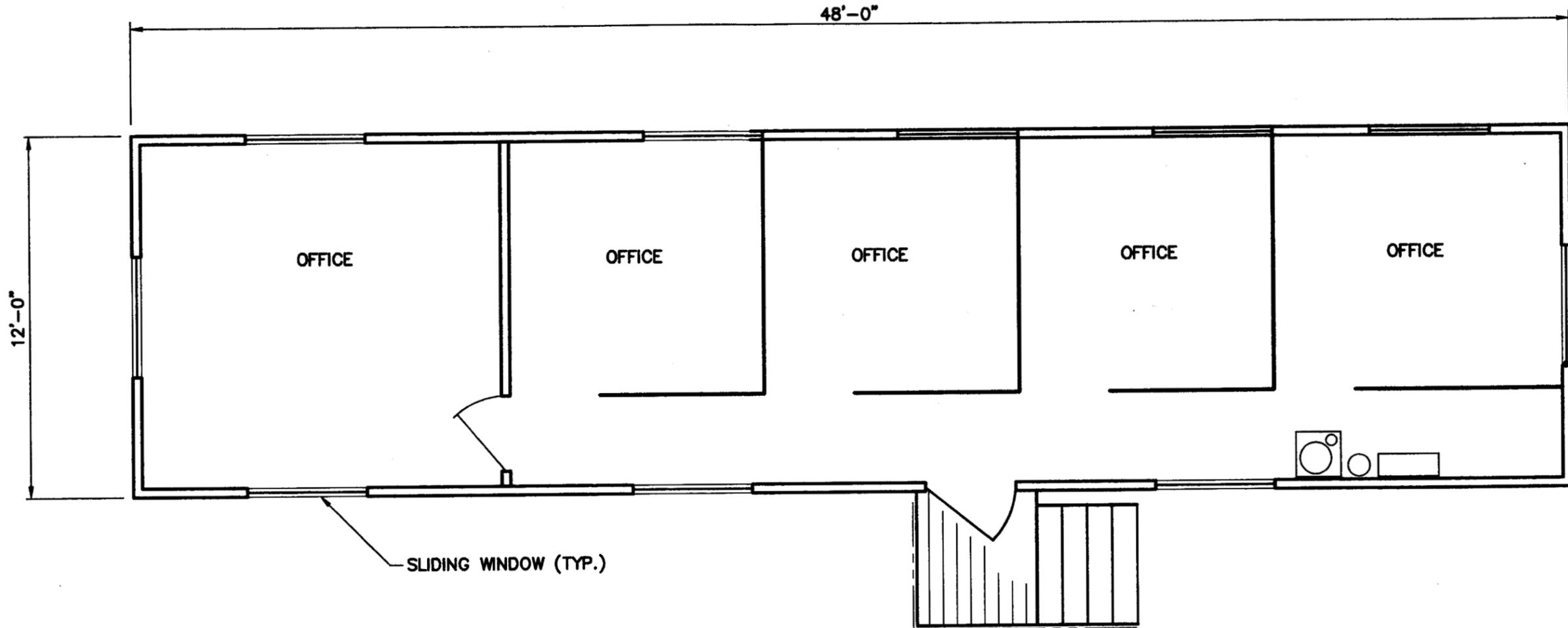


**FIGURES**

DRAWING NUMBER 773481-B3



1328



SLIDING WINDOW (TYP.)

090030

FIGURE 4-1

<b>FLUOR DANIEL FERNALDS</b>		WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)			
		FERNALD, OHIO			
		FDF SUBCONTRACT NO. 98SC000001			
PROJECT NAME WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)					
TITLE TYPICAL FLOOR PLAN SUPERINTENDENTS OFFICE					
 <b>INTERNATIONAL TECHNOLOGY CORPORATION</b> <i>... Creating a Safer Tomorrow</i>					
DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	BAK	APPROVED BY			
DATE	4 DECEMBER 97	DWG. SCALE	1/4"=1'-0"		<b>B</b>
IT PROJECT NO.	773481	DRAWING NO.	B-90-02-002		

DRAFT					
REV	DATE	BY	CHK'D	APPR'VD	DESCRIPTION
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

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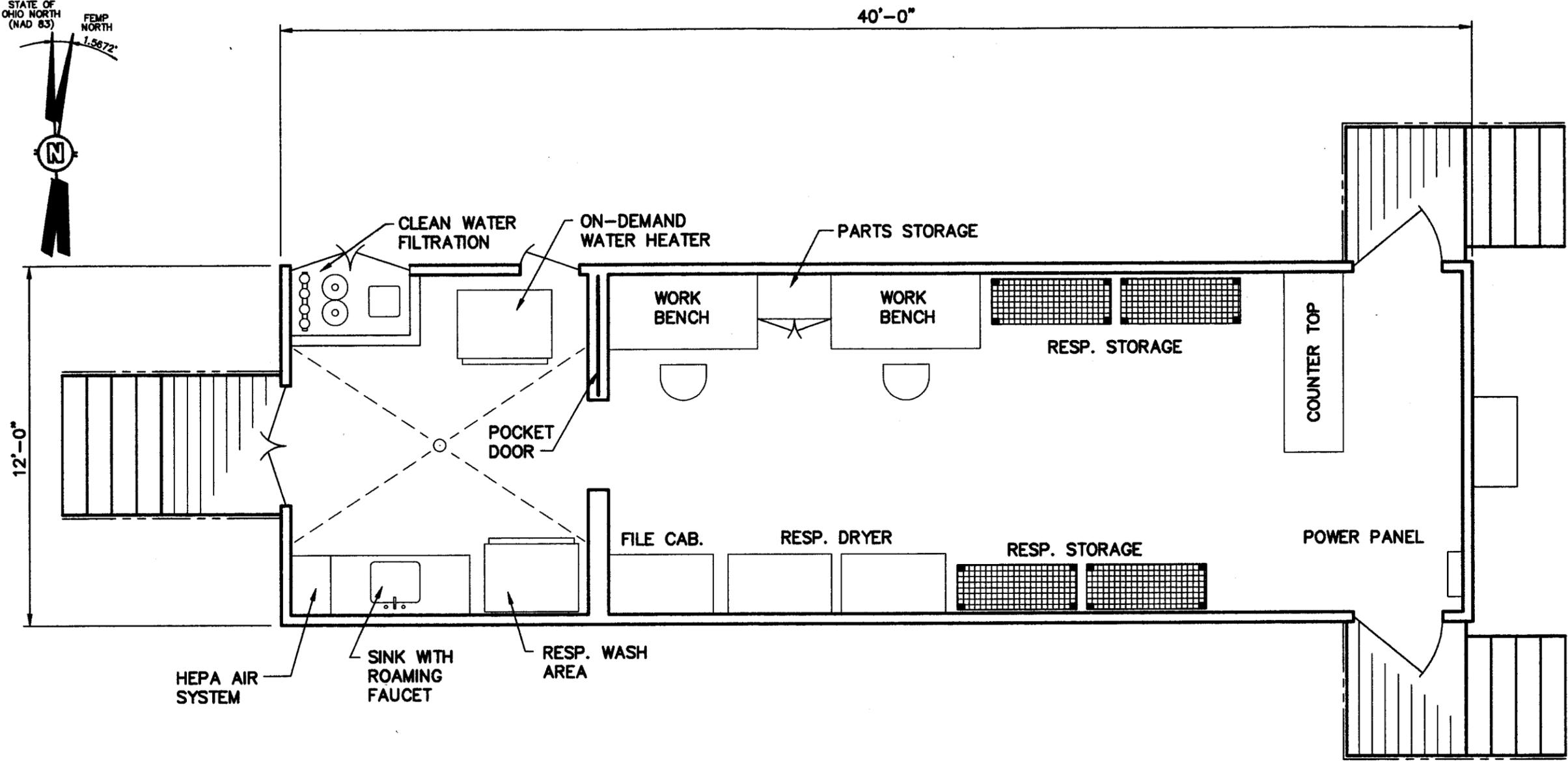
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DRAWING NUMBER 773481-B2



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000031

FIGURE 4-2

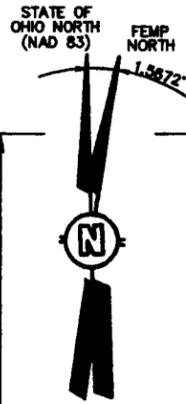
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		FERNALD, OHIO	
		FD SUBCONTRACT NO. 98SC000001	
PROJECT NAME WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)			
TITLE TYPICAL FLOOR PLAN RESPIRATOR WASH FACILITY			
<b>IT</b> INTERNATIONAL TECHNOLOGY CORPORATION ... Creating a Safer Tomorrow			
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DRAWN BY	GSJ	APPROVED BY	
DATE	11-25-97	DWG. SCALE	1/4"=1'-0"
T PROJECT NO.	773481	DRAWING NO.	B-90-02-003

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REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
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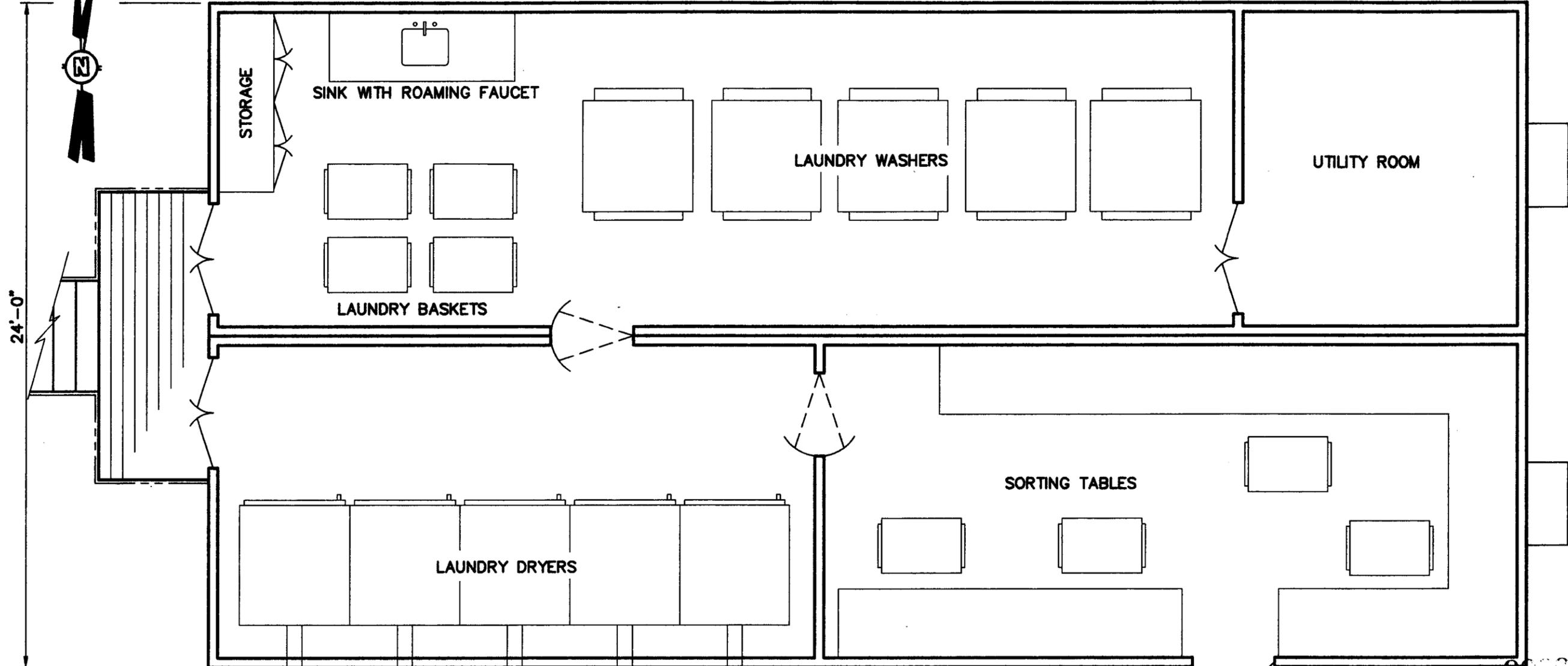
DRAWING NUMBER 773481-B1



24'-0"

48'-0"

1329



NOTE:  
DRYER EXHAUST SHALL BE  
HEPA FILTERED

FIGURE 4-3

**FLUOR DANIEL FERNALD** WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)  
FERNALD, OHIO  
FD SUBCONTRACT NO. 98SC000001

PROJECT NAME  
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE  
TYPICAL FLOOR PLAN  
LAUNDRY FACILITY

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DATE	11-25-97	DWG. SCALE	1/4"=1'-0"		<b>B</b>
PROJECT NO.	773481	DRAWING NO.	B-90-02-004		

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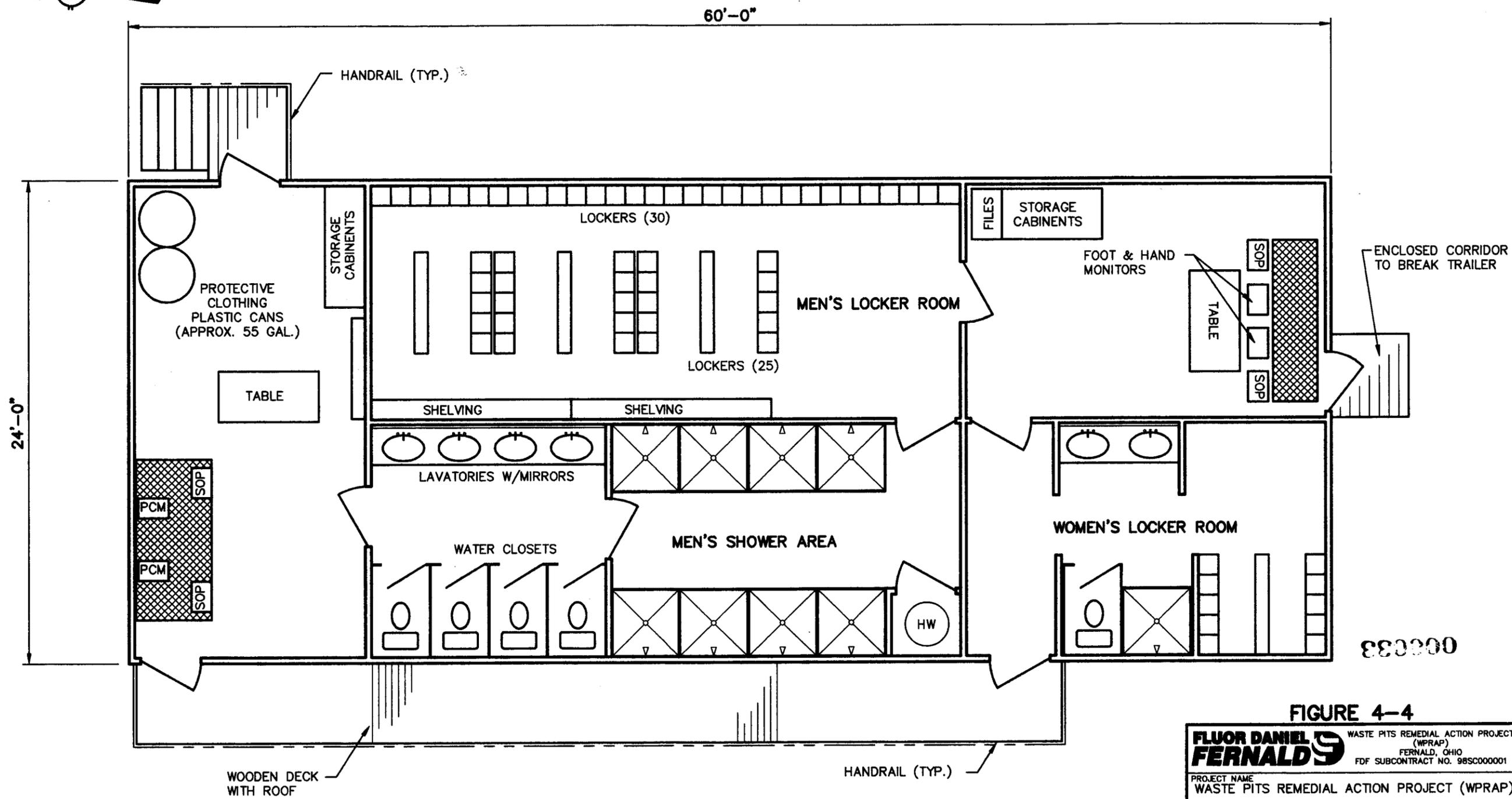
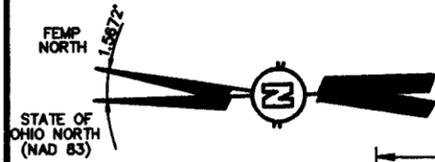
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DRAWING NUMBER 773481-B5

1323



880000

FIGURE 4-4

**FLUOR DANIEL FERNALDS** WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)  
 FERNALD, OHIO  
 FDF SUBCONTRACT NO. 98SC000001

PROJECT NAME  
 WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE  
 TYPICAL FLOOR PLAN  
 CHANGEOUT FACILITY

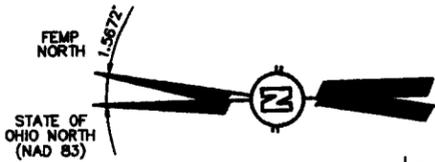
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DRAWN BY	BAK	APPROVED BY			
DATE	3 DECEMBER 97	DWG. SCALE	3/16"=1'-0"		B
PROJECT NO.	773481	DRAWING NO.	B-90-02-005		

<b>DRAFT</b>					
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A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

DRAWING NUMBER 773481-B4

1323



60'-0"

12'-0"

ENCLOSED CORRIDOR TO DECONTAMINATION FACILITY

HANDRAIL

TABLE

REF

BREAK AREA

SOP

SOP

FOOT & HAND MONITORS

TABLE

STORAGE CABINETS

FILES

SLIDING WINDOW (TYP.)

000034

FIGURE 4-5

<b>FLUOR DANIEL FERNALDS</b>		WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)	
		FERNALD, OHIO	
		PDF SUBCONTRACT NO. 98SC000001	
PROJECT NAME WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)			
TITLE TYPICAL FLOOR PLAN BREAK ROOM			
<b>IT</b> INTERNATIONAL TECHNOLOGY CORPORATION			
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DESIGNED BY	PJI	CHECKED BY	PJI 1/9/98
DRAWN BY	BAK	APPROVED BY	
DATE	4 DECEMBER 97	DWG. SCALE	1/4"=1'-0"
T PROJECT NO	773481	DRAWING NO.	B-90-02-006

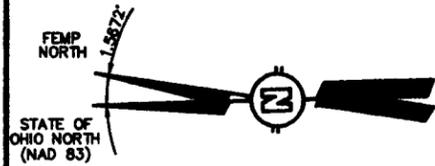
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B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
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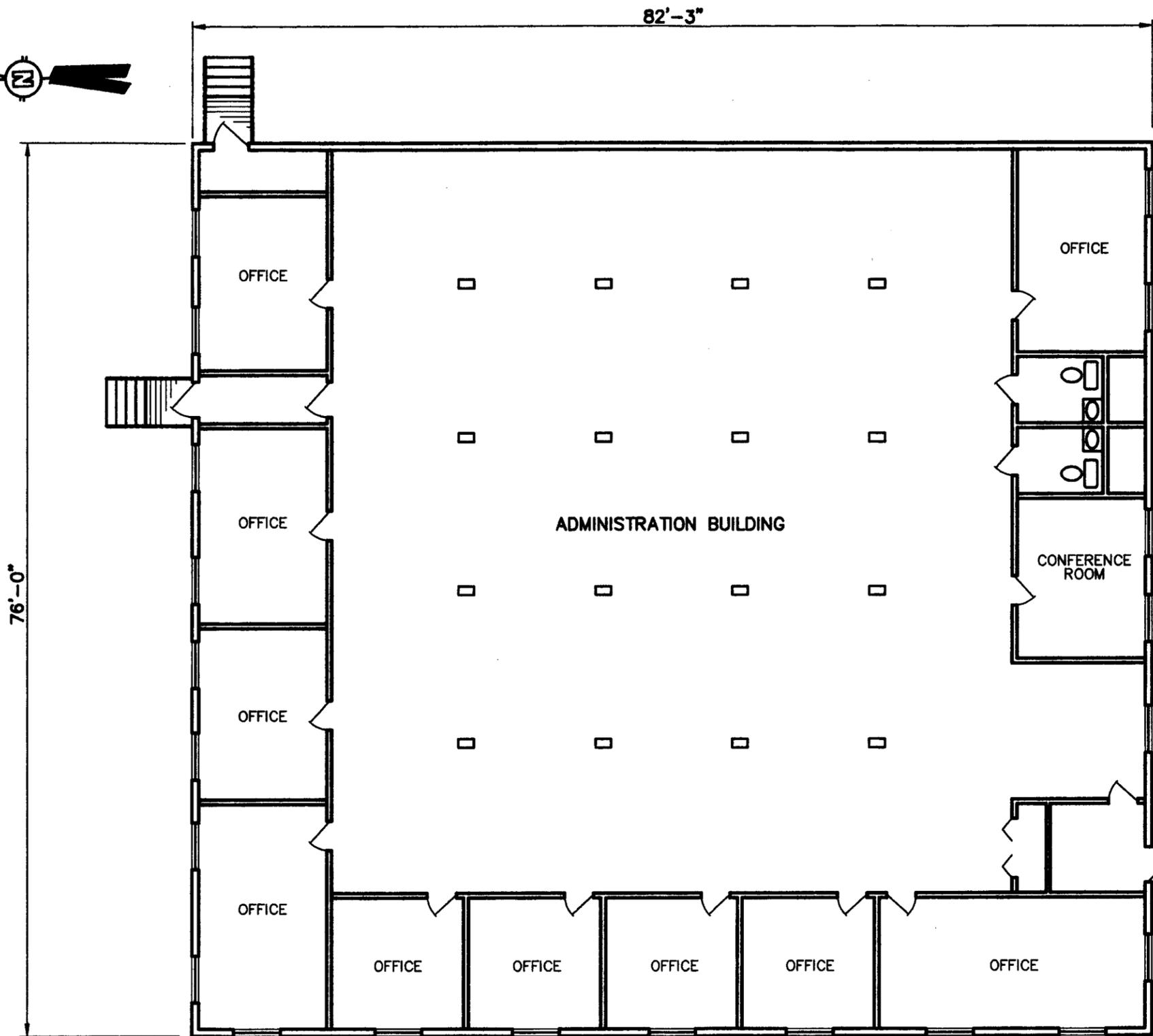
"Do Not Scale This Drawing"

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DRAWING NUMBER  
773481-B6



1328



000035

FIGURE 4-6

**FLUOR DANIEL FERNALD** WASTE PITS REMEDIAL ACTION PROJECT (WRAP)  
FERNALD, OHIO  
FDF SUBCONTRACT NO. 98SC000001

PROJECT NAME  
WASTE PITS REMEDIAL ACTION PROJECT (WRAP)

TITLE  
TYPICAL FLOOR PLAN  
ADMINISTRATION BUILDING

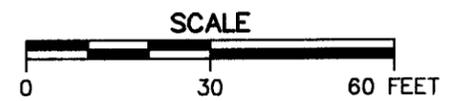
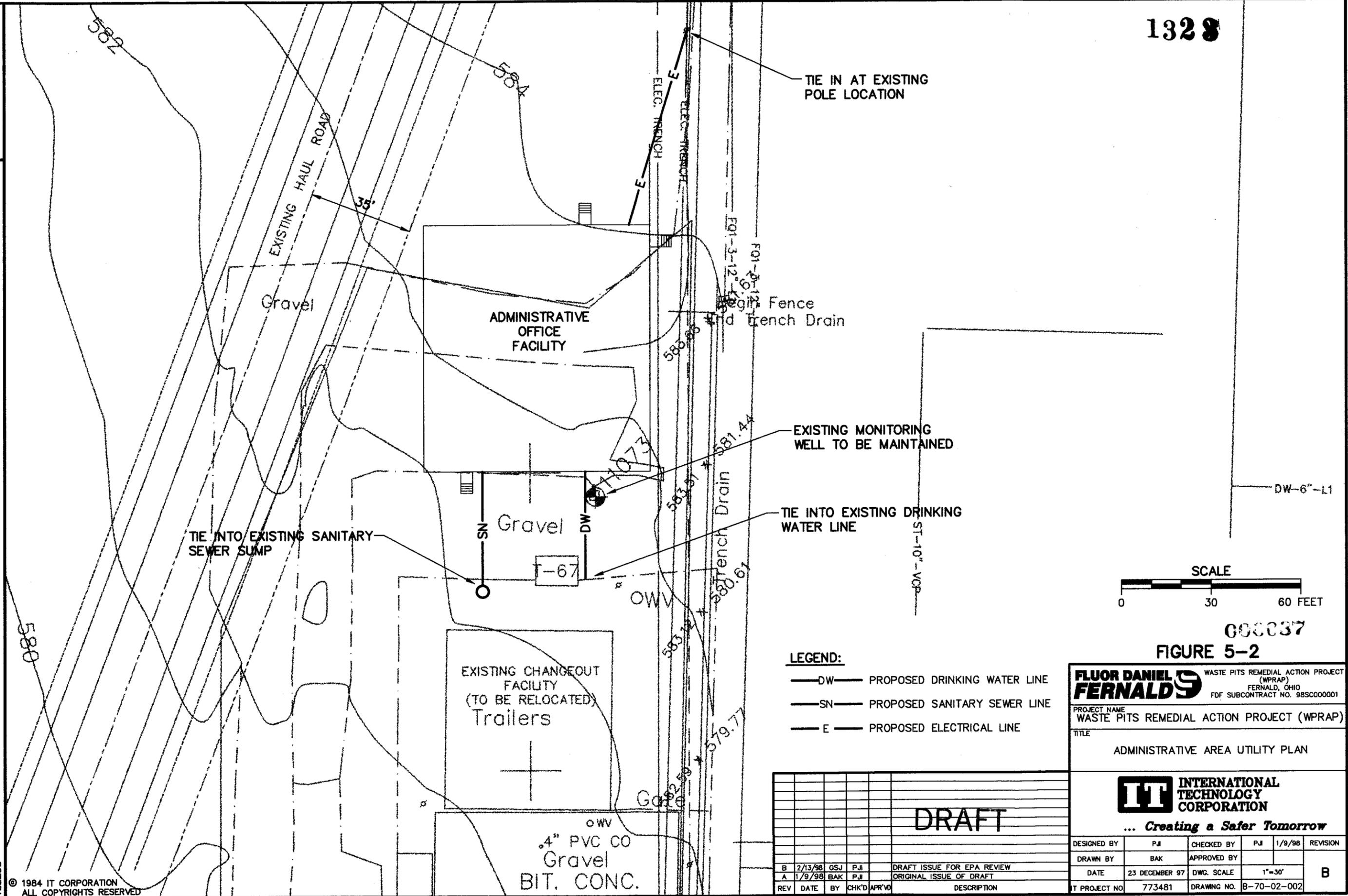
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DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	BAK	APPROVED BY			
DATE	3 DECEMBER 97	DWG. SCALE	3/32"=1'-0"		<b>B</b>
PROJECT NO.	773481	DRAWING NO.	B-90-02-007		

DRAFT					
REV	DATE	BY	CHK'D	APPROV'D	DESCRIPTION
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A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

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000037  
FIGURE 5-2

LEGEND:

- DW— PROPOSED DRINKING WATER LINE
- SN— PROPOSED SANITARY SEWER LINE
- E— PROPOSED ELECTRICAL LINE

<b>DRAFT</b>					
REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

<b>FLUOR DANIEL FERNALD</b> WASTE PITS REMEDIAL ACTION PROJECT (WRAP) FERNALD, OHIO FDF SUBCONTRACT NO. 98SC00001					
PROJECT NAME WASTE PITS REMEDIAL ACTION PROJECT (WRAP)					
TITLE ADMINISTRATIVE AREA UTILITY PLAN					
<b>INTERNATIONAL TECHNOLOGY CORPORATION</b> ... Creating a Safer Tomorrow					
DESIGNED BY	PJA	CHECKED BY	PJA	1/9/98	REVISION
DRAWN BY	BAK	APPROVED BY			
DATE	23 DECEMBER 97	DWG. SCALE	1"=30'		<b>B</b>
PROJECT NO	773481	DRAWING NO.	B-70-02-002		

**APPENDIX A**  
**SPECIFICATIONS**

**SECTION 02110**  
**SITE CLEARING**

**PART 1 - GENERAL**

**1.1 SCOPE**

This section addresses the requirements for removal and disposal of vegetative matter and debris, and the installation of silt fence within and around the construction areas.

**1.2 GENERAL REQUIREMENTS**

All vegetative cover and debris shall be removed to below grade as described herein. The Subcontractor shall provide and install the silt fence as shown on the drawings.

**1.3 REFERENCES**

- Ohio Department of Natural Resources (ODNR) Rainwater and Land Development Guidance
- FDF FEMP Storm Water Pollution Prevention Plan (SWPPP).

**1.4 DEFINITIONS**

**1.4.1 Clearing**

Clearing shall consist of the removal and the satisfactory disposal of such materials occurring in the areas to be cleared.

**1.4.2 Silt Fence**

A temporary sediment barrier consisting of a filter fabric stretched across and attached to supporting posts and entrenched.

**1.5 SUBMITTALS**

The item described in this subsection shall be submitted at the stated times in accordance with the submittals section of these specifications.

**1.5.1 Materials**

Submit the manufacturer's data and certification for the filter fabric.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

Provide all materials as required to accomplish the work shown and specified herein.

### 2.2 FILTER FABRIC

Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester, or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

<u>Physical Property</u>	<u>Test Method</u>	<u>Requirements</u>
Grab Tensile Strength (lbs)	ASTM D 4632	100
Grab Elongation (%)	ASTM D 4632	10
Flow Rate (gal/min/ft <sup>2</sup> )	ATM D 4491	20

Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0°F to 120°F. The silt fence shall be Nicolon/Mirafi Group 100X or approved equal.

### 2.3 POSTS

Posts for silt fences shall be either 2-inch by 2-inch diameter wood with a minimum length of 3 feet. Steel posts shall have projections for fastening wire to them.

## PART 3 - EXECUTION

### 3.1 CLEARING

Vegetation in areas to be cleared shall be cut off flush with or below the original ground surface. Clearing will only occur in these areas for which prior approval has been obtained from FDF.

### 3.2 DISPOSAL OF MATERIALS

Vegetation and debris from the clearing operations shall be stockpiled in the area designated by IT subject to review and approval by FDF.

### 3.3 PROTECTION

Locate, identify, and protect from damage all utilities that remain.

Protect trees, plant growth, and features designated to remain as final landscaping.

Protect survey benchmarks, monitoring wells, and existing structures from damage or displacement.

Construct temporary roads and maintain existing roadways at the construction site, including dust control.

### 3.4 INSTALLATION OF SILT FENCE

The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and securely sealed.

Posts shall be spaced a maximum of 8 feet apart at the barrier location and driven securely into the ground (minimum of 12 inches).

A trench shall be excavated approximately 6 inches wide and 6 inches deep along the line of posts and upslope from the barrier.

The filter fabric shall be stapled or wired directly to the posts and 8 to 12 inches of the fabric shall be extended into the trench. The fabric shall not extend more than 24 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.

The trench shall be backfilled and soil compacted over the filter fabric.

### 3.5 INSPECTION AND MAINTENANCE OF SILT FENCE

Silt fences and filter barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.

Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.

Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier.

**3.6 REMOVAL OF SILT FENCE**

The silt fence and posts shall be removed at the completion of construction or at the direction of FDF. Sediment deposits and trench disturbance in place after the silt fence has been removed shall be dressed to conform with the existing grade.

-- End of Section --

**SECTION 02200****EARTHWORK****PART 1 - GENERAL****1.1 SCOPE**

This section presents the specifications for the excavation, fill, and backfill required for the building foundations, storm drainage structures, grading, and preparation of subgrade for access roads and turnaround areas in proposed plant areas.

**1.2 GENERAL REQUIREMENTS**

The Subcontractor shall provide all equipment and materials and shall place the material for excavation, fill, and backfill as shown on the drawings. The Subcontractor shall also contract a third party laboratory to conduct all geotechnical testing.

**1.3 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The most current edition or revision shall apply in all cases.

- American Society for Testing and Materials (ASTM)
- Ohio Department of Transportation (ODOT) Construction and Material Specifications
- Ohio Department of Natural Resources (ODNR) Rainwater and Land Development Guidance
- American Association of State Highway and Transportation Officials (AASHTO)

**1.4 DEFINITIONS****1.4.1 Imported Material**

Material shall be obtained by the Subcontractor from off-site sources approved by FDF.

**1.4.2 Proofrolling**

Rolling the excavation or fill surface with a heavy, wheeled vehicle to detect soft or loose zones.

## **1.5 SUBMITTALS**

The items described in this section shall be submitted at the stated times in this specification.

### **1.5.1 Materials**

Certification, test results, source, and samples for all imported material shall be submitted.

### **1.5.2 Equipment**

Catalog and manufacturers' data sheets for excavation, scarifying, compaction, and moisture control equipment.

## **1.6 IMPORTED MATERIAL ACCEPTANCE**

### **1.6.1 Subcontractor Testing**

All tests necessary for the Subcontractor to locate an acceptable source of each imported material shall be made by the Subcontractor. Certification that each material conforms to the specification requirements, along with copies of the test results from a qualified commercial testing laboratory, shall be submitted to FDF for approval at least 7 days before the material is required for use or as specified. All material samples shall be furnished by the Subcontractor at the Subcontractor's sole expense. Samples shall be representative and be clearly marked to show the source of the material and the intended use on the project. Sampling of the material source shall be done by the Subcontractor in accordance with ASTM D 420. Notify FDF at least 24 hours prior to sampling. FDF may observe the sampling procedures. Acceptance of the material source shall be based on an inspection of the source and review of the test results by FDF. If the subject source is deemed unsuitable for fill by FDF, the Subcontractor shall have to identify alternate source(s) for the clean fill which are satisfactory to FDF. No imported materials shall be delivered to the site until the proposed source and materials tests have been accepted in writing by FDF.

## **1.7 QUALITY CONTROL**

### **1.7.1 General**

Establish and maintain quality control for earthwork operations to assure compliance with contract requirements.

## 1.7.2 Earthwork Quality Control Testing

The Subcontractor shall perform all quality control testing including: soil classification, moisture content, moisture-density control curves, and in-place density, as specified hereinafter. Minimum test frequency is specified in the following paragraphs; however, test frequency shall be as necessary to control the work and to demonstrate to the satisfaction of FDF that the specifications are being complied with. Tests performed shall be pursued in such a manner that the results are obtained and furnished to FDF within 24 hours. The following tests are required, as a minimum.

### 1.7.2.1 Soil Classification Tests

Soil classification for fill material shall be according to the Unified Soil Classification System (ASTM D 2487). Perform classification tests, including Atterberg limit (cohesive soil only, ASTM D 4318) and particle size analysis (ASTM D 422) tests, for each material type at a frequency of at least one per 2,000 cubic yards placed, or two per source, or more frequently, as determined by FDF if there is variation in the material or the material appears to depart from the specifications.

### 1.7.2.2 Moisture-Density Control Curves

Moisture-density control curves shall be established in accordance with ASTM D 698. At least two moisture-density control curves shall be prepared for each type of material from each source. The average of the two (or more) tests shall be controlling optimum moisture content and maximum density, subject to verification by FDF.

### 1.7.2.3 In-Place Density Tests

In -place density tests for compacted fill materials shall be made in accordance with ASTM D 2922 or ASTM D 1556. The frequency of in-place density testing shall be whichever of the following requires the greatest number of tests:

- Once each day of work of filling and backfilling
- Once every layer of fill
- Every 1,000 square feet under access roads and concrete.

### 1.7.2.4 In-Place Moisture Content Tests

In-place moisture content tests shall be taken to assure compliance with specification requirements for fill placement. Determination of moisture content shall be performed in accordance with ASTM D 2216 or ASTM D 3017 and at a minimum frequency as the in-place density test.

### 1.7.2.5 Increased Test Frequency

Test frequency may be directed to be increased for any of the following reasons:

- Where special compaction procedures are being used.
- Whenever the fill materials change substantially.
- Areas not meeting the specified density shall be retested at the Subcontractor's sole expense after corrective measures have been applied.

## 1.8 TOLERANCES

All material limits shall be constructed within a tolerance of plus or minus 0.1 foot vertically and 0.5 foot horizontally unless otherwise shown on the drawing. All grading shall be performed to maintain slopes and drainage as shown. No reverse slopes will be permitted.

## PART 2 - PRODUCTS

### 2.1 GENERAL

Provide all materials and equipment in suitable and adequate quantity as required to accomplish the work shown and specified herein.

### 2.2 GENERAL FILL

Material excavated and stockpiled within the work limits not designated for removal or treatment is suitable for general fill.

### 2.3 COMPACTED FILL OR BACKFILL

Fill and backfill material shall be satisfactory materials as specified in the excavation and backfill for utilities and pipelines section.

### 2.4 COMPACTION EQUIPMENT

#### 2.4.1 Acceptance

Compaction equipment shall be of suitable type and adequate to obtain the densities specified, and shall provide satisfactory breakdown of materials.

## **2.4.2 Operation and Maintenance**

Compaction equipment shall be operated in strict accordance with the manufacturer's instructions and recommendations. Equipment shall be maintained in such condition that it will deliver the manufacturer's rated compactive effort. If specified densities are not obtained, larger and/or different types of additional equipment shall be provided by the Subcontractor. Hand-operated equipment shall be capable of achieving the specified densities.

## **2.5 MOISTURE CONTROL EQUIPMENT**

Equipment for applying water shall be of a type and quality adequate for the work, shall not leak, and shall be equipped with a pressurized distribution system to assure uniform application. Equipment for mixing and drying out material shall consist of blades, discs, or other approved equipment.

# **PART 3 - EXECUTION**

## **3.1 FIELD CONDITIONS**

Before starting the project, the Subcontractor shall visit the site, examine all portions in detail, and become familiar with the project site. Should any portion or item not be as set forth by the contract documents, the Subcontractor shall immediately notify FDF in writing and request further direction or clarification.

## **3.2 PREPARATION**

The Subcontractor shall identify required lines, levels, contours, and datum. Identify location and elevation of existing utilities prior to construction or fabrication of materials.

Sediment and erosion control measures will be installed prior to all earthwork activities and maintained during construction.

## **3.3 EXCAVATION**

Excavation shall be done with extreme care to protect any monitoring wells, above- and below-grade utilities, and any other fence, structures, benchmarks, and other items which will remain. All of these items are to be identified, flagged, protected, and the appropriate permits obtained prior to initiating work. The Subcontractor shall notify FDF immediately if any damage occurs to existing utilities, structures, etc. as a result of work. Subcontractor shall replace, at the Subcontractor's own expense, items damaged as a result of work.

Soft areas of subgrade not capable of in-situ compaction will be identified by proofrolling and removed. Soft areas will be backfilled with general fill and compacted to density equal to or greater than requirements for subsequent backfill material. The Subcontractor shall notify FDF of unusual or unsuitable soil conditions when they are encountered.

Lumped subsoils, boulders, and rock up to 1/3 cubic yard measured by volume shall be removed. These areas of overexcavation shall be backfilled with general fill material and compacted to a density equal to or greater than the requirements for subsequent backfill material.

The Subcontractor shall verify that survey benchmark and intended elevations for the work are as indicated.

### **3.4 BACKFILL**

Fill shall be placed to the lines and grades shown on the drawings. The Subcontractor shall maintain an optimum moisture content (within plus or minus 3 percent) of the general fill materials to attain a required compaction density of 95 percent of the maximum dry density as determined by ASTM D 698.

Backfill shall be placed systematically as early as possible so as to allow maximum time for natural settlement to occur. No fill shall be placed in wet, frozen, or otherwise unsuitable conditions.

The Subcontractor shall employ a placement method so as not to damage or disturb existing foundation, utilities, or monitoring wells.

### **3.5 MATERIAL STOCKPILES**

All excess materials and unsuitable materials encountered during earthwork activities shall be stockpiled at a location designated by IT subject to review and approval by FDF. Various material (general fill, boulders, debris, etc.) will be segregated to the maximum extent practical.

-- End of Section --

**SECTION 02222****EXCAVATION AND BACKFILL FOR UTILITIES  
AND APPURTENANCES****PART 1 - GENERAL****1.1 SCOPE**

This section covers excavation and backfill required for the installation of utilities and pipelines including, but not limited to, potable water lines, fire water lines, natural gas lines, sanitary sewers, and storm sewers.

**1.2 GENERAL REQUIREMENTS**

The Subcontractor shall perform all trenching for utility systems and general excavation in accordance with the provisions in this section. Trenches and excavations shall be maintained in a safe and stable condition. Backfill shall be placed as soon as practical and in accordance with the provisions in this section.

**1.3 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The most current edition or revision shall apply in all cases.

- American Society for Testing and Materials (ASTM)
- Occupational Safety and Health Administration (OSHA) Regulations
- Ohio Department of Natural Resources (ODNR) Rainwater and Land Development Guidance

**1.4 DEFINITIONS****1.4.1 Percent Compaction**

The ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by ASTM D 698. Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by FDF.

## 1.5 SUBMITTALS

Copies of all laboratory and field test reports shall be submitted within 24 hours of the completion of the test and in accordance with the submittal section of these specifications.

## 1.6 IMPORTED MATERIAL ACCEPTANCE

The imported material shall be obtained from off-site sources approved by FDF.

## 1.7 QUALITY CONTROL

The Subcontractor shall perform the earthwork quality control testing as specified in the excavation, fill, and backfill section, except as required in this section.

# PART 2 - PRODUCTS

## 2.1 MATERIALS

### 2.1.1 Satisfactory Materials

Satisfactory materials may be cohesionless or cohesive. Excavated material shall be considered satisfactory, provided it is free of rocks 1½ inches or larger in any dimension, and placed as shown on the drawings or as directed by FDF.

### 2.1.2 Unsatisfactory Materials

Unsatisfactory material include, but are not limited to, those materials containing roots and other organic matter, trash, debris, frozen materials, and stones larger than 1½ inches and materials classified in ASTM D 2487 as PT, OH, and OL.

### 2.1.3 Cohesionless and Cohesive Materials\

Cohesionless materials shall include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM shall be identified as cohesionless only when the fines are nonplastic.

### 2.1.4 Sand

Sand for bedding utility lines and initial backfill material shall be well-graded sand and shall have the following gradation:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
No. 4	90 - 100
No. 50	7 - 40
No. 200	0 - 10

### 2.1.5 Granular Backfill

Granular backfill for bedding and around cast-in-place, culverts, and precast structures shall conform to AASHTO No. 57 and shall have the following gradation:

<u>Sieve No.</u>	<u>Percent Passing by Weight</u>
1½ inches	100
1 inch	95 - 100
½ inch	25 - 60
#4	0 - 10
#8	0 - 5

### 2.1.6 Plastic Marking Tape

Plastic marking tape shall be acid- and alkali-resistant polyethylene film 6 inches wide with minimum thickness of 0.004 inch. Tape shall have a minimum strength of 1,750 psi lengthwise and 1,500 psi crosswise. The tape shall be manufactured with integral wires, foil backing, or other means to enable detection by a metal detector when the tape is buried up to 3 feet deep. The tape shall be of a type specifically manufactured for marking and locating underground utilities. The metallic core of the tape shall be encased in a protective jacket or provided with other means to protect it from corrosion. Tape color shall be as specified in Table 1 and shall bear a continuous printed inscription describing the specific utility.

<b>Table 1 Tape Color</b>	
Red	Electric
Yellow	Gas, Oil, Dangerous Materials
Orange	Telephone, Telegraph, Television, Police, and Fire Communications
Blue	Waste Systems
Green	Sewer Systems

## PART 3 - EXECUTION

### 3.1 EXCAVATION

Excavation shall be performed to the lines and grades indicated. During excavation, satisfactory material for backfilling shall be stockpiled in an orderly manner at a distance from the banks of the trench equal to  $\frac{1}{2}$  the depth of the excavation, but in no instance closer than 2 feet. Excavated material not required or not satisfactory for backfill shall be managed as specified in the construction waste section.

#### 3.1.1 Trench Excavation

The trench shall be excavated as recommended by the manufacturer of the pipe to be installed. Trench walls below the top of the pipe shall be sloped, or made vertical, and of such width as recommended in the manufacturer's installation manual. Where no manufacturer's installation manual is available, trench walls shall be made vertical. The trench width below the top of pipe, except as shown on the drawing, shall not exceed 24 inches plus pipe outside diameter (O.D.) for pipes of less than 24 inches inside diameter (I.D.) and shall not exceed 36 inches plus pipe O.D. for sizes larger than 24 inches I.D. Where recommended trench widths are exceeded, redesign, stronger pipe, or special installation procedures shall be utilized by the Subcontractor. The cost of redesign, stronger pipe, or special installation procedures shall be borne by the Subcontractor.

#### 3.1.2 Excavation of Appurtenances

Excavation for manholes, catch basins, inlets, or similar structures shall be of sufficient size to leave at least 12 inches clear between the outer structure surfaces and the face of the excavation or support members. When concrete or masonry is to be placed in an excavated area, special care shall be taken not to disturb the bottom of the excavation. Excavation to

the final grade level shall not be made until just before the concrete or masonry is to be placed.

### **3.1.3 Stockpiles**

Stockpiles of satisfactory and unsatisfactory material shall be placed and graded as specified. Stockpiles shall be kept in a neat and well-drained condition, giving due consideration to drainage at all times. The ground surface at stockpile locations shall be cleared, grubbed, and sealed by rubber-tired equipment. Excavated satisfactory and unsatisfactory materials shall be separately stockpiled. Stockpiles of satisfactory materials shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. Stockpiles of satisfactory and unsatisfactory materials shall be placed in locations designated by IT subject to review and approval by FDF.

## **3.2 BACKFILLING AND COMPACTION**

Backfill material shall consist of satisfactory materials, granular backfill, or sand bedding material as required on the drawings. Backfill shall be placed in layers not exceeding 6 inches loose thickness for compaction by hand-operated machine compactors, and 8 inches loose thickness for other than hand-operated machines, unless specified. Each layer except bedding shall be compacted to at least 95 percent maximum dry density at minus 3 to plus 3 percent of the optimum moisture contents. The requirement for moisture content is for cohesive soil only.

### **3.2.1 Trench Backfill**

Trenches shall be backfilled to the grade shown. The trench shall be backfilled to at least 2 feet above the top of pipe prior to performing the required pressure tests. The joints and couplings shall be left uncovered during the pressure test. The trench shall not be backfilled until all specified tests are performed.

#### **3.2.1.1 Bedding and Initial Backfill**

Bedding shall be of the type and thickness shown on the drawings. Initial backfill material shall be placed and compacted with approved tampers to a height of at least 6 inches above the utility pipe or conduit. The backfill shall be brought up evenly on both sides of the pipe for the full length of the pipe. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe.

#### **3.2.2 Bedding for Appurtenances**

Bedding shall be granular backfill with thickness as shown on the drawings.

### **3.2.3 Backfill for Appurtenances**

After the manholes, catch basin, inlet, or similar structure has been constructed and the concrete has been allowed to cure for 7 days, backfill shall be placed in such a manner that the structure will not be damaged by the shock of falling earth. The backfill material shall be deposited and compacted as specified and shall be brought up evenly on all sides of the structure to prevent eccentric loading and excessive stress.

### **3.3 SPECIAL REQUIREMENTS**

Special requirements for both excavation and backfill relating to the specific utilities shall be in accordance with the provisions of this article and shall meet all federal, state, and local requirements.

#### **3.3.1 Force Mains**

Trenches shall be of a depth to provide a minimum of 42 inches cover to prevent frost penetration.

#### **3.3.2 Electrical Distribution System**

Direct burial cable and conduit or duct line shall have a minimum cover of 24 inches from the finished grade, unless otherwise indicated.

#### **3.3.3 Plastic Marking Tape**

Warning tapes shall be installed directly above the pipe for hazardous utilities at a depth of 18 inches below finished grade unless otherwise shown.

### **3.4 TESTING**

Geotechnical testing shall be the responsibility of the Subcontractor.

#### **3.4.1 Testing Facilities**

Tests shall be performed by an approved commercial testing laboratory.

#### **3.4.2 Field Density Tests**

Tests shall be performed in sufficient numbers to ensure that the specified density is being obtained. A minimum of one field density-moisture test per lift of backfill for every 200 linear feet of installation will be performed. Field in-place density will be determined in accordance with ASTM D 2922 or ASTM D 1556. Field in-place moisture content

(cohesive soil only) will be determined in accordance with ASTM D 3017 or ASTM D 2216. Trenches improperly compacted shall be reopened to the depth directed, then refilled and compacted to the density specified.

### 3.4.3 Displacement of Gravity Sewers

After other required tests have been performed and the trench backfill compacted, the pipe shall be inspected to determine whether significant displacement has occurred. This inspection shall be conducted in the presence of FDF. Pipe shall be inspected by shining a light or laser between manholes or manhole locations, or by the use of television cameras passed through the pipe. If, in the judgment of FDF, the interior of the pipe shows poor alignment or any other defects that would cause improper functions of the system, the defects shall be remedied.

-- End of Section --

**SECTION 02233****AGGREGATE BASE COURSE****PART 1 - GENERAL****1.1 SCOPE**

The work specified herein consists of the construction of an aggregate base course. The work shall be performed in accordance with this specification and shall conform to the lines, grades, notes, and typical sections shown on the drawings. Sources of all materials shall be selected well in advance of the time that materials will be required in the work.

**1.2 GENERAL REQUIREMENTS**

Not used.

**1.3 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The most current edition or revision of the standards referenced in the text of this section shall apply in all cases.

- American Society for Testing and Materials (ASTM)
- Ohio Department of Transportation (ODOT) Construction and Materials Specification
- Ohio Department of Natural Resources (ODNR) Rainwater and Land Development Guidance

**1.4 DEFINITIONS****1.4.1 Degree of Compaction**

Degree of compaction required is expressed as a percentage of the maximum dry density obtained by the test procedure presented in ASTM D 698, abbreviated hereinafter as percent laboratory maximum density.

**1.5 SUBMITTALS****1.5.1 Sampling and Testing Reports**

Subcontractor shall submit gradation curves for the proposed aggregate for FDF approval. Delivery tickets shall be provided for each load delivered to the site. In the case that crushed concrete is used for the road base, neither gradation curves nor delivery tickets will be required.

## **1.5.2 Waybills and Delivery Tickets**

Copies of waybills and delivery tickets during the progress of work. Certified waybills and delivery tickets for all materials actually used. A notification stating which type of coarse aggregate is to be used.

## **1.5.3 Products**

For geotextiles, submit manufacturer's certification of compliance and manufacturer's printed data.

## **1.6 WEATHER LIMITATIONS**

Base shall not be constructed when the atmospheric temperature is less than 35°F. Base shall not be constructed on subgrades that are frozen or contain frost. If the temperature falls below 35°F, completed areas shall be protected against any detrimental effects of freezing.

## **1.7 PLANT, EQUIPMENT, MACHINES, AND TOOLS**

Plant, equipment, machines, and tools used in the work shall be subject to approval and shall be maintained in satisfactory working condition at all times. Compacting equipment shall be able to demonstrate that the results are equivalent. The equipment shall be adequate and have the capability of producing the results specified.

## **1.8 STOCKPILING MATERIALS**

Materials, including approved material available from excavation and grading, shall be stockpiled in a manner and at locations designated by IT subject to review and approval by FDF. Before stockpiling of material, storage sites shall be cleared and sloped to drain. Materials obtained from different sources shall be stockpiled separately.

## **1.9 SAMPLING AND TESTING**

Sampling and testing shall be performed by an independent laboratory. Tests shall be performed in sufficient numbers at the locations and times directed to ensure that materials and compaction meet specified requirements. Copies of test results shall be furnished to FDF within 24 hours of completion of tests.

### **1.9.1 Test Results**

Results shall verify that materials comply with this specification. When a material source is changed, the new material will be tested for compliance. When deficiencies are found, the initial analysis shall be repeated and the material already placed shall be retested to determine the extent of unacceptable material. All in-place unacceptable material shall be replaced or modified as directed by FDF.

### **1.9.2 Sampling**

Aggregate samples for laboratory tests shall be taken in accordance with ASTM D 75.

### **1.9.3 Particle Size Analysis**

Before starting work, at least one sample of aggregate shall be tested in accordance with ASTM C 136 and ASTM C 117 and on sieves conforming to ASTM E 11. After the initial test, a minimum of one analysis shall be performed for each 2,000 tons of material placed.

### **1.9.4 Laboratory Density**

One of every 2,000 tons of aggregate shall be tested for moisture-density relationship. Tests shall be conducted in accordance with ASTM D 1557.

### **1.9.5 Wear Tests**

Wear tests shall be performed in accordance with ASTM C 131. A minimum of one test per aggregate source shall be run.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

#### **2.1.1 Aggregates**

Aggregate shall be obtained from an approved off-site source. Off-site aggregates shall consist of crushed stone, crushed gravel, angular sand, or other approved material. Off-site aggregates shall be durable and sound, free from lumps of clay, organic matter, objectionable coatings, and other foreign material. Material shall be supplied to meet these specifications and ODOT Specification 304 aggregate base.

#### **2.1.2 Gradation**

The off-site aggregates shall be well graded within the limits specified below when tested in accordance with ASTM C 137 and ASTM C 117 using samples obtained from the completed, compacted surfacing. The off-site aggregate shall conform to the requirements of Item 410.02, Traffic Compacted Surface, Type A gradation of the ODOT specifications.

## **PART 3 - EXECUTION**

### **3.1 GENERAL REQUIREMENTS**

When the base is constructed in more than one layer, the previously constructed layer shall be cleaned of loose and foreign matter by sweeping with power sweepers or power brooms, except that hand brooms may be used in areas where power cleaning is not practical. Adequate drainage shall be provided during the entire period of construction to prevent water from collecting or standing in the working area. Line and grade stakes shall be provided as necessary for control. Grade stakes shall be in lines parallel to the centerline of the area under construction and suitable spaced for string lining.

### **3.2 PREPARATION OF UNDERLYING COURSE**

Before constructing aggregate base course, the previously constructed underlying course shall be cleaned of foreign substances. Surface of underlying course shall meet the specified compaction and surface tolerances. Ruts or soft yielding spots that may appear in the underlying course, areas having inadequate compaction, and deviations of the surface from requirements specified shall be corrected. Stabilization may be accomplished by mixing base course material into the underlying course and compacting by approved methods. Properly compacted material will be considered as part of the underlying course and shall meet all requirements for the underlying course. Finished underlying course shall not be disturbed by traffic or other operations and shall be maintained in a satisfactory condition until base course is placed.

### **3.3 INSTALLATION**

#### **3.3.1 Mixing and Placing**

Materials shall be mixed by the stationary plant or road wet mix method and placed in such a manner as to obtain uniformity of the aggregate base course material and at a uniform optimum water content for compaction. The Subcontractor shall make such adjustments in mixing or placing procedures or in equipment to obtain the true grades, to minimize segregation and degradation, to reduce or accelerate loss or increase of water, and to ensure a satisfactory base course. Handling and placement of the aggregate base material shall be in accordance with this specification, ODOT Specification 304, and the contract drawings.

#### **3.3.2 Edges of Base Course**

Approved material shall be placed along edges of aggregate base course in such quantities as will compact to thickness of the course being constructed, or to the thickness of each layer in a multiple layer course, allowing in each operation at least a 1-foot width of the shoulder to be rolled and compacted simultaneously with rolling and compacting of each layer of base course.

### 3.3.3 Compaction

Each layer of aggregate base course shall be compacted to 95 percent of the maximum dry density. Rolling shall begin at the outside edge of the surface and proceed to the center, overlapping on successive trips at least one-half the width of the roller. Alternate trips of the roller shall be slightly different lengths. Speed of the roller shall be such that displacement of the aggregate does not occur. Areas inaccessible to the rollers shall be compacted with mechanical tampers, and shall be shaped and finished by hand methods.

### 3.3.4 Layer Thickness

Compacted thickness of the aggregate course shall be as indicated on the contract drawings. No layer shall be in excess of 6 inches nor less than 3 inches in compacted thickness.

### 3.3.5 Proofrolling

Proofrolling of the areas indicated shall be in addition to the compaction specified and shall consist of the application of five coverages with a heavy vibratory steel drum roller. In areas designated, proofrolling shall be applied to the top lift or layer on which base course is laid and to each layer of base course. Water content of the top lift or layer on which base course is laid shall be maintained at optimum percentage directed from start of compaction to completion of proofrolling of that layer. Water content of each layer of the base course shall be maintained at the optimum percentage directed from start of compaction to completion of proofrolling. Materials in base course or underlying materials that produce unsatisfactory results by rolling shall be removed and replaced with satisfactory materials and recompacted.

### 3.3.6 Finishing

The surface of the top layer shall be finished to grade and cross section shown. Finished surface shall be of uniform texture. Light blading during compaction may be necessary for the finished surface to conform to the lines, grades, and cross sections. Should the surface for any reason become rough, corrugated, uneven in texture, or traffic marked prior to completion, such unsatisfactory portion shall be scarified, reworked, recompacted, or replaced as directed.

#### 3.3.6.1 Smoothness

Surface of each layer shall show no deviations that will result in ponding of water. Areas that exhibit ponding shall be corrected by removing material and replacing with new material, or by reworking existing material and compacting, as directed.

#### 3.3.6.2 Thickness Control

Compacted thickness of the base course shall be within ½ inch of the thickness indicated. Where the measured thickness is more than ½ inch deficient, such areas shall be corrected

by scarifying, adding new material or proper gradation, reblading, and recompacting as directed. Where the measured thickness is more than ½ inch thicker than indicated, the course shall be considered as conforming to the specified thickness requirements. Average job thickness shall be the average of all thickness measurements taken for the job, but shall be within ½ inch of the thickness indicated.

### **3.4 FIELD QUALITY CONTROL**

The field quality control tests will be performed by an independent testing laboratory contracted with the Subcontractor.

#### **3.4.1 Field Density**

Field in-place density shall be determined in accordance with ASTM D 2922 or ASTM D 1556. At least one field density test shall be performed for each 250 square yards of each layer of base material.

#### **3.4.2 Thickness**

Thickness of the base course shall be measured at intervals in such a manner as to ensure one measurement for each 500 square yards of base course. Measurements shall be made in 3-inch diameter test holes penetrating the base course.

### **3.5 TRAFFIC**

Completed portions of the area may be opened to traffic after compaction testing and thickness measurements are completed and the roadway has been accepted by FDF.

### **3.6 MAINTENANCE**

The aggregate base course shall be maintained in a satisfactory condition for the duration of the contract. Maintenance shall include immediate repairs to any defects and shall be repeated as often as necessary to keep the area intact.

### **3.7 DISPOSAL OF UNSATISFACTORY MATERIALS**

Removed in-place materials that are unsuitable for the base course material that is removed for the required correction of defective areas, and waste material and debris, shall be disposed of as directed by FDF.

-- End of Section --

**SECTION 02300****BORING AND JACKING****PART 1 - GENERAL****1.1 SCOPE**

This section presents the specifications for boring and jacking to be performed during the installation for various utilities at the site.

**1.2 GENERAL REQUIREMENTS**

The Subcontractor shall provide all equipment, materials, and labor required to perform the work covered by this specification.

The Subcontractor shall coordinate and schedule boring and jacking operations concurrently with the installation of utilities.

**1.3 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by designation only. The most current edition or revision shall apply in all cases.

- American Society for Testing and Materials (ASTM)
- Occupational Safety and Health Administration (OSHA) Regulations
- Ohio Department of Natural Resources (ODNR) Rainwater and Land Development Guidance

**1.4 DEFINITIONS**

Not used.

**1.5 SUBMITTALS**

Not used.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

Steel casing pipe shall have diameter sufficient to accommodate pipes as specified on the construction drawings. Steel casing pipe shall be spiral or straight seam welded steel pipe conforming to ASTM A 139, Grade B, with a minimum wall thickness of 0.312 inch.

## PART 3 - EXECUTION

### 3.1 FIELD CONDITIONS

Before excavation begins, the Subcontractor shall provide erosion and sediment control to minimize erosion and the transport of sediment beyond the limits of the Subcontractor's work area.

The Subcontractor shall locate underground utilities based on information provided by the Facilities Manager. The Subcontractor shall be aware that utilities may exist which are not shown on the construction drawings. The Subcontractor shall verify location of all utilities before construction.

### 3.2 ERECTION/INSTALLATION/APPLICATION

Excavate boring and receiving pits to the width, length, and depth necessary for boring and jacking operations. Pits shall be located a minimum of 2 feet beyond toe of slopes, and a minimum of 3 feet beyond far bank of ditches or swales. Materials excavated from pits shall be stockpiled in areas designated by IT subject to review and approval by FDF, and in accordance with OSHA 29 CFR 1926, Subpart P, Excavations. Excavated materials or equipment shall not be placed on pavement or shoulders of roadway.

Boring and jacking operations shall begin immediately after excavation of the pits has been completed. Bored installations shall be a bored-hole diameter essentially the same as the outside diameter of the casing pipe to be installed. Casing pipe shall be jacked into boring as soon as possible after boring is made. Lengths of casing pipe as long as practical shall be used. Joints between sections of casing pipe shall be welded as recommended for joining the particular type of pipe.

Care shall be taken to ensure that casing pipe installed by boring and jacking is at the proper alignment and grade. Boring, jacking, or driving casing pipe under existing railway shall be accomplished without jetting, sluicing, or wetboring.

After casing pipe is installed, the carrier pipes shall be installed in such a manner as to protect coating, lining, and joint integrity. Each carrier pipe shall be placed in proper horizontal and vertical alignment using wooden blocking/wedges or prefabricated pipe collars spaced radially around pipe and secured firmly in place. Blocking or collars shall be installed around the pipes such that joints do not touch. Spacing of blocking or collars shall be no greater than 10 feet on center longitudinally in casing pipe.

The Subcontractor shall promptly backfill excavated pits as directed by FDF. Backfill materials shall be placed in 6-inch layers and tamped. Backfilling of pits shall be brought to the lines and grade existing before excavation in accordance with Section 02222. Excavated material not used as backfill for pits shall be disposed of in areas designated by FDF.

### **3.3 PROTECTION**

Protect excavation by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave-in of loose soil into excavation. Protection shall be in accordance with applicable OSHA regulations.

### **3.4 CLEANING**

The Subcontractor shall leave the site in a condition suitable for final grading, surfacing, or stabilization.

-- End of Section --

**SECTION 02667****SITE WATER LINES****PART 1 - GENERAL****1.1 SCOPE**

This section covers the installation of the fire water and potable water service lines as well as the associated fittings, valves, valve boxes, and fire hydrants.

**1.2 GENERAL REQUIREMENTS**

The Subcontractor shall install the fire and potable water lines to the lines and grades shown on the drawings. All excavations shall be maintained in a safe and stable condition. Backfill shall be placed as soon as practical.

**1.3 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The most recent edition or revision shall apply.

- American Water Works Association (AWWA)
- American Society for Testing and Materials (ASTM)
- American Concrete Institute (ACI)
- Underwriters Laboratory (UL)
- National Fire Protection Association (NFPA)

**1.4 DEFINITIONS**

Not used.

**1.5 QUALITY CONTROL****1.5.1 Piping and Fittings**

Piping and fittings shall be marked with the manufacturer's name and rating.

### 1.5.2 As-Built Locations

The Subcontractor shall provide a drawing showing the as-built location of all pipe routings, PIVs, fire hydrants, bends, and top of pipe elevations.

## PART 2 - PRODUCTS

### 2.1 PIPE

#### 2.1.1 Ductile Iron Pipe and Fittings

Ductile iron pipe shall be Class 55, cement-lined for wet tap, either a dual compression seal tapping sleeve or mechanical joint tapping sleeve. A mechanical joint tapping sleeve shall be used for dry taps.

Joints shall conform to AWWA C 111 and shall be push-on type with rubber gasket. Fittings shall be ductile iron, standard thickness.

#### 2.1.2 High Density Polyethylene (HDPE) Pipe

HDPE pipe shall conform to AWWA C 906 (PE 3408), Series 1000, as manufactured by Philips Driscopipe, Inc. or equal. Fire water lines shall be SDR 9 and potable water lines shall be SDR 17.

Fittings shall conform to AWWA C 906. Joints shall be butt fusion welded and flanged gasket joints (1/8-inch thick Garlock, nitrile) at interfaces connections with ductile iron pipe, water hydrants, and valves.

#### 2.1.3 Carbon Steel

Carbon steel pipe shall be seamless, ASTM A 53, Grade B, standard weight.

#### 2.1.4 Copper Tubing

Copper tubing shall conform to ASTM B 88, Rev. a, Type K, annealed and is limited to use for water service lines less than 2½ inches in diameter.

## **2.2 VALVES**

### **2.2.1 Gate Valves**

Gate valves shall be AWWA C 500, iron body, bronze trim, nonrising stem with square nut, single wedge, Class 125, flanged ends, control rod, post indicator, or extension box and valve key.

### **2.2.2 Post Indicating Valves (PIV)**

PIVs shall be UL listed and FM approved. For line sizes, 4 inches to 14 inches, PIVs shall be AWWA C 500 gate valves, flanged ends, Class 150, post assembly shall show open and shut, handcrank operator aboveground, nonrising stem, and break-flange to separate the top works without removing the valve from the line.

### **2.2.3 Hydrants**

Hydrants shall be AWWA C 502, UL 246, dry barrel type, inside dimension of 7 inches minimum, with minimum 5¼ inches diameter valve seat opening; 6-inch flanged joint inlet connection with accessories, gland bolts, and gaskets to match pipe. Hydrant extensions shall be fabricated in multiples of 6 inches with rod and coupling to increase barrel length. Hose and streamer connection shall match sizes with FDF standard, two hose nozzles, one pumper nozzle. Hydrant finishes shall be primer and two coats of enamel. Color to be orange body with green cap and top.

### **2.2.4 Meters**

Meters shall be of the displacement type conforming to AWWA C 700 or turbine type conforming to AWWA C 701. Registers may be round or straight reading type. Connection to the water line shall be as required for the particular installation. All meters used for the same system shall be of one type and manufacturer.

## **2.3 ACCESSORIES**

### **2.3.1 Corporation Stops**

Corporation stops shall have standard corporation stop thread conforming to AWWA C 800 on the inlet end, with flanged joints, compression pattern flared tube couplings, or wiped joints for connections to goosenecks.

### 2.3.2 Goosenecks

Copper tubing for gooseneck connections shall conform to the applicable requirements of ASTM B 88, Rev. a., Type K, annealed. Length of cable requirement connections be in accordance with standard practice.

### 2.3.3 Service Stops

Service stops shall be water-works inverted-ground-key type, oval or round flow way, tee handle, without drain. Pipe connections shall be suitable for the type of service pipe used. All parts shall be of bronze with female iron-pipe-size connections or compression-pattern flared tube couplings, and shall be designed for a hydrostatic test pressure not less than 200 psi.

### 2.3.4 Tapping Sleeves

Tapping sleeves of the sizes indicated for connection to existing main shall be the cast gray, ductile, or malleable-iron, split-sleeve type with flanged or grooved outlet, and with bolts, follower rings, and gaskets on each end of the sleeve. Construction shall be suitable for a maximum working pressure of 150 psi. Bolts shall have square heads and hexagonal nuts. Longitudinal gaskets and mechanical joints with gaskets shall be as recommended by the manufacturer of the sleeve. When using grooved mechanical tee, it shall consist of an upper housing with full coating collar for rigid positioning which engages a machine-cut hole in pipe, encasing an elastomeric gasket which conforms to the pipe outside diameter around the hold and a lower housing with positioning lugs, secured together during assembly by nuts and bolts as specified, pretorqued to 50 foot-pound.

### 2.3.5 Valve Boxes

Valves boxes shall be cast iron or concrete, except that concrete boxes may be installed only in locations not subjected to vehicular traffic. Cast-iron boxes shall be extension type with slide-type adjustment and with flared base. The minimum thickness of metal shall be 3/16 inch. Concrete boxes shall be the standard product of a manufacturer of precast concrete equipment. The word "WATER" shall be cast in the cover. The boxes shall be of such length as will be adapted, without full extension, to the depth of cover required over the pipe at the valve location.

### 2.3.6 Valve and Meter Pits

Valve pits shall be constructed at locations indicated or as required above and in accordance with the details shown. Concrete shall conform to ACI 318 and have a minimum compressive strength of 4,000 psi.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

The Subcontractor shall lay out all utilities and facilities and establish two permanent benchmarks on site, referenced to established control points. The locations of utilities and facilities, with horizontal and vertical data, on project record documents shall be recorded.

The Subcontractor shall verify that service connection and water main size, location, and invert are as indicated and verify interface connections between HDPE flanges and ductile iron pipe/valves.

For dry tap, the Subcontractor shall determine extent of outage required to isolate the main and notify all affected facility owners of the expected outage, and make preparations to provide alternate water service to critical activities, as required.

### 3.2 ERECTION/INSTALLATION/APPLICATION

#### 3.2.1 Bedding

The Subcontractor shall excavate the pipe trench in accordance with Section 02222 and AWWA C 600 for work of this section. Excavations shall be hand-trimmed for accurate placement of pipe to elevations indicated.

Bedding material shall be placed along the trench bottom; in one continuous layer not exceeding 6 inches in compacted depth and compacted per Section 02222.

Bedding around the sides and to top of pipe shall be tamped in place and compacted per Section 02222, while maintaining optimum moisture content of the bedding material to attain the required compaction density.

#### 3.2.2 Pipe Installation

Install pipe to indicated elevation to within tolerance of  $\frac{5}{8}$  inch. Make a wet tap into existing water line, or shut off water supply to the subject line and install cutting-in sleeve and tapped tee (dry tap). If a dry tap is performed, flush and pressure test the new fire main before restoring service.

Install ductile iron piping and fittings in accordance with AWWA C 600. Route pipe in a straight line. Install pipe to allow for expansion and contraction without stressing pipe or joints. Install access fittings to permit disinfection of water system and pressure testing. Form and place concrete for thrust blocks at each elbow or change of direction of pipe main.

Establish elevations of buried piping to ensure not less than 42 inches of cover.

Backfill trench in accordance with Section 02222.

Install HDPE piping in accordance with AWWA C 906. Install magnetic trace wire continuously over pipe.

### **3.2.3 Valve Installation**

Set valves and/or post indicator on solid bearing. Center and plumb box over valve, if required.

### **3.3 PRESSURE TESTING**

The new fire protection pipe shall be hydrostatically tested in accordance with NFPA 24 and the new potable water supply line shall be tested in accordance with AWWA C 600 prior to tie-in. Testing shall be performed as follows:

- This test shall be run to not less than 200 psi for fire protection systems and 100 psi for potable water supply piping for 2 hours.
- The amount of leakage in piping shall be measured at the specified test pressure by pumping from a calibrated container. The amount of leakage at the joints shall not exceed 2 quarts per hour per 100 joints irrespective of pipe diameter.
- The amount of allowable leakage shall be permitted to increase by 1 fluid ounce per inch valve diameter per hour for each metal seated valve isolating the test sections. If fire hydrants are to be tested with the main valve open, so that the hydrants are under pressure, an additional 5 ounces per minute leakage will be permitted for each hydrant.
- Test shall be made by the Subcontractor in the presence of the authority having jurisdiction or the representative of the owner. NFPA 24 Contractor's Material and Test Certificate for Private Fire Service Main shall be completed.
- Additives, corrosive chemicals such as sodium silicate, brine, or other chemicals shall not be used for stopping leaks or while hydrostatically testing system.

### **3.4 DISINFECTION**

Before acceptance of potable water operation, each unit of completed waterline shall be disinfected as specified herein. After pressure tests have been made, the unit to be disinfected shall be thoroughly flushed with water until all entrained dirt and mud have been removed before introducing the chlorinating material. The chlorinating material shall be

either liquid chlorine, calcium hypochlorite, or sodium hypochlorite. The chlorinating material shall provide a dosage of not less than 50 ppm and shall be introduced into the water lines in a approved manner. In no case will the agent be introduced into the line in a dry solid state. The treated water shall be retained in the pipe long enough to destroy all nonspore-forming bacteria. Except where a shorter period is approved, the retention time shall be at least 24 hours and shall produce not less than 25 ppm of free chlorine residual throughout the line at the end of the retention period. All valves on the lines being disinfected shall be opened and closed several times during the contact period. The line shall then be flushed with clean water until the residual chlorine is reduced to less than 1.0 ppm. During the flushing period, each fire hydrant on the line shall be opened and closed several times. From several points in the unit, samples of water will be taken in proper sterilized containers for bacterial examination. The disinfection shall be repeated until tests indicate the absence of pollution for at least 2 full days. The unit will not be accepted until satisfactory bacteriological results have been obtained.

-- End of Section --

**SECTION 02687****NATURAL GAS LINES****PART 1 - GENERAL****1.1 SCOPE**

This section includes the installation of the natural gas force main as well as the associated valves and fittings.

**1.2 GENERAL REQUIREMENTS**

The Subcontractor shall install the natural gas lines at the lines and grades shown on the drawings. All excavations shall be maintained in a safe and stable condition. Backfill shall be placed as soon as practical.

**1.3 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The most recent edition or revision shall apply.

- American National Standards Institute (ANSI)
- American Society for Testing and Materials (ASTM)

**1.4 DEFINITIONS**

Not used.

**1.5 QUALITY CONTROL****1.5.1 Piping and Fittings**

Piping and fittings shall be marked with the manufacturer's name and rating.

**1.5.2 As-Built Locations**

The Subcontractor shall provide a drawing showing the as-built location of all pipe routings, valves, bends, and top of pipe elevations.

## PART 2 - PRODUCTS

### 2.1 PIPE

Piping shall be high density polyethylene (HDPE) pipe (PE 3408), Series 1000, as manufactured by Philips Driscopipe, Inc. or equal. Gas lines shall be SDR 17.

Fittings shall be of the same manufacture and material as the pipe. Joints shall be butt fusion welded and flanged backup rings. Backup rings shall be ANSI Class 150. Gasket shall be 1/8-inch thick Garlock (nitrile).

### 2.2 VALVES

#### 2.2.1 Gate Valves

Gate valves shall be ANSI Class 150, RF flanged carbon steel.

#### 2.2.2 Check Valves

Check valves shall be ANSI Class 150, RF flanged carbon steel.

#### 2.2.3 Ball Valves

Ball valves shall be ANSI Class 150, RF flanged carbon steel.

### 2.3 VALVE BOXES

Valve boxes shall be cast iron telescoping type with marked cover.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

The Subcontractor shall lay out all utilities and facilities and establish two permanent benchmarks on site, referenced to established control points. The locations of two utilities and facilities, with horizontal and vertical data, on project record documents shall be recorded.

The Subcontractor shall verify that service connection and main size, location, and invert are as shown on the drawings.

### 3.2 BEDDING

The Subcontractor shall excavate the pipe trench in accordance with Section 02222. Excavations shall be hand trimmed for accurate placement of pipe to elevations indicated.

Bedding material shall be placed along the trench bottom in one continuous layer not exceeding 6 inches in compacted depth and compacted per Section 02222.

Bedding around the sides and top of pipe shall be tamped in place and compacted per Section 02222 while maintaining moisture content of the bedding material to attain the required compaction density.

### 3.3 INSTALLATION

Install piping to the indicated elevation on the drawings. Install piping to allow for expansion and contraction without stressing pipe of joints. Establish elevations of buried piping to ensure not less than 42 inches of cover. Backfill trench in accordance with Section 02222.

Center and plumb valve box over valve. Set box cover flush with finished ground surface. Prevent shock or stress from being transmitted through valve box to valve.

### 3.4 AIR TESTING

Air testing shall be performed in accordance with the local gas company requirements.

-- End of Section --

**SECTION 02720****STORM DRAINAGE SYSTEM****PART 1 - GENERAL****1.1 SCOPE**

This section includes corrugated polyethylene pipe culvert and accessories, geotextile, and riprap outfalls for the installation of the storm drainage system.

**1.2 GENERAL REQUIREMENTS**

The Subcontractor shall install the storm drainage system, including corrugated culvert pipe, to the lines and grades shown. Excavations shall be maintained in a safe and stable condition. Backfill shall be placed as soon as practical.

**1.3 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The most recent edition or revision shall apply in all cases.

- American Association of State Highway and Transportation Officials (AASHTO)
- American Society for Testing and Materials (ASTM)
- Occupational Safety and Health Administration (OSHA) Regulations
- Ohio Department of Transportation (ODOT) Construction and Materials Specifications
- ODOT Standard Construction Drawings
- Ohio Department of Natural Resources (ODNR) Rainwater and Land Development Guidance
- FDF FEMP Storm Water Pollution Prevention Plan (SWPPP)

**1.4 DEFINITIONS**

Not used.

**1.5 QUALITY CONTROL**

After the Subcontractor has performed the inspections, and prior to testing and backfill, the Subcontractor shall notify FDF. The inspection shall include the following:

- Checking for proper alignment and location of all catch basins and ditches.
- Verifying that the stone apron is free of debris, dirt, sand, silt, or other foreign matter.

## PART 2 - PRODUCTS

### 2.1 NONWOVEN GEOTEXTILE

Nonwoven geotextile shall be similar to Trevira No. 1125 as per the following:

Minimum Physical Properties (Minimum Average Roll Values)			
Property	Test Method	Units	Material
Unit Weight	ASTM D 3776	oz./yd <sup>2</sup>	7.1
Grab Tensile	ASTM D 4632	lbs.	210
Grab Elongation	ASTM D 4632	percent	60
Mullen Burst	ASTM D 3786	psi	360
Puncture	ASTM D 4833	lbs.	95
Trapezoid Tear	ASTM D 4533	lbs.	75
Apparent Opening Size	ASTM D 4751	US Sieve Number	70
Permissivity	ASTM D 4491	gal/min/ft <sup>2</sup> / sec <sup>-1</sup>	110 1.47
Permeability	ASTM D 4491	cm/sec	0.35
Thickness	ASTM D 1777	mils	95

### 2.2 CATCH BASIN

Reinforced precast concrete catch basins shall be ODOT approved and shall be as specified in accordance with ASTM C 478 with gaskets in accordance with ASTM C 923.

### 2.3 INLETS

Castings for catch basins and inlets shall be heavy duty, ductile iron conforming with ASTM A 536 on confirming with cast iron ASTM A 48, Class 30B construction, machined flat bearing surface, removable lid, lid design.

## **2.4 CORRUGATED HDPE CULVERTS**

Smooth interior, corrugated high density polyethylene pipe and fittings shall be made of polyethylene compounds that meet or exceed the requirements of Type III, Category 4 or 5, Grade P33 or P34, Class C per ASTM D 1248 and ASTM F 405.

## **2.5 RIPRAP**

Riprap shall meet the requirements of ODOT 601.04.

# **PART 3 - EXECUTION**

## **3.1 CULVERTS**

Excavation and backfilling for culverts shall be performed in accordance with Section 02222.

The pipe and fittings shall be free of foreign inclusions and visible defects. The ends of the pipe shall be cut squarely and cleanly so as not to adversely affect joining. Pipe shall be flush with headwalls. All pipe shall be laid as shown on the drawings.

Joints and fittings for HDPE pipe shall be made with split couplings, corrugated to engage the pipe corrugations, and shall engage a minimum of four corrugations, two on each side of the pipe joint. A neoprene gasket shall be utilized with the coupling to provide a soil-tight joint. Installation shall be in accordance with ASTM D 2321 or as specified by FDF.

## **3.2 PLACEMENT OF GEOTEXTILE AND OUTFALL PROTECTION**

The geotextile for the outfall protection shall be placed in accordance with the manufacturer's recommendation. The Subcontractor shall place the riprap as shown on the drawings. Compaction will not be required for riprap placed in the outfall protection.

## **3.3 CATCH BASIN INSTALLATION**

### **3.3.1 Manhole and Inlet Sections**

Manhole and inlet sections shall be placed plumb and level, trimmed to correct elevations, and shall be anchored to base pad.

### **3.3.2 Fitting Pipe**

Cut and fit pipe conduit. Pack the void around the pipe with mortar or use rubber gaskets as indicated on the drawings. Grout shall be nonshrink type and trowel finished on both sides of the structure.

### **3.3.3 Seal Base**

Grout base of shaft sections to achieve slope to existing piping. Surfaces shall be trowel smooth. Contour as required.

### **3.3.4 Covers and Frames**

Set frames and covers level without tipping to correct elevations. Finish and level using Portland cement grout.

-- End of Section --

**SECTION 02732****SITE SANITARY SYSTEMS****PART 1 - GENERAL****1.1 SCOPE**

This section covers the installation of the various sanitary sewer systems including gravity drain pipe, lift station, force main, valves, and fittings.

**1.2 GENERAL REQUIREMENTS**

The Subcontractor shall install the sanitary sewer systems to the lines and grades shown on the drawings. All excavations shall be maintained in a safe and stable condition. Backfill shall be placed as soon as practical.

**1.3 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The most recent edition or revision shall apply.

- American Society for Testing and Materials (ASTM)
- American Water Works Association (AWWA)
- National Electrical Manufacturers Association (NEMA)

**1.4 DEFINITIONS**

Not used.

**1.5 QUALITY CONTROL****1.5.1 Piping, Fittings, and Lift Stations**

Piping, fittings, and lift stations shall be marked with the manufacturer's name, rating, and model number.

**1.5.2 As-Built Locations**

The Subcontractor shall provide a drawing showing the as-built location of all pipe routings, bends, and lift stations.

## PART 2 - PRODUCTS

### 2.1 PIPE

#### 2.1.1 Polyvinyl Chloride (PVC) Pipe

Gravity pipe and fittings shall be PVC conforming to ASTM D 3034, Bell and Spigot style solvent sealed joint end.

#### 2.1.2 High Density Polyethylene (HDPE) Pipe

HDPE pipe shall conform to AWWA C 906 (PE 3408), Series 1000, as manufactured by Philips Driscopipe, Inc. or equal. Force main piping shall be SDR 17.

Fittings shall conform to AWWA C 906. Joints shall be butt fusion welded and flanged gasket joints (1/8-inch thick Garlock, nitrile) at interface connection with valves and lift stations.

#### 2.1.3 Carbon Steel

Carbon steel pipe shall be seamless, ASTM A 53, Grade B, Schedule 40, welded.

### 2.2 LIFT STATIONS

Lift stations shall be as manufactured by ABS Pumps Inc., or equal and shall include a sump, discharge piping, valves, pump, and controls.

### 2.3 INSULATION

Insulation shall be cellular glass, with a minimum thickness of 1½ inches and a maximum "k" value of 0.345 (BTu-in) / (h-ft<sup>2</sup>-°F) at °F. Insulation shall be secured with ½ inches stainless steel bands on 12-inch centers.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

The Subcontractor shall provide field survey services to lay out all utilities and facilities and establish two permanent benchmarks on site, referenced to established control points. The Subcontractor shall record locations of utilities and facilities, with horizontal and vertical data, on project record documents.

The Subcontractor shall verify that service connection and water main size, location, and invert are as indicated; and verify interface connections between HDPE flanges and ductile iron pipe/valves.

### 3.2 BEDDING

The Subcontractor shall excavate the pipe trench in accordance with Section 02222. Excavations shall be hand trimmed for accurate placement of pipe to elevations indicated.

Bedding material shall be placed along the trench bottom in one continuous layer not exceeding 6 inches in compacted depth and compacted per Section 02222.

Bedding around the sides and top of pipe shall be tamped in place and compacted per Section 02222 while maintaining moisture content of the bedding material to attain the required compaction density.

### 3.3 PIPE INSTALLATION

Install pipe to the elevations and grades shown on the drawings. Establish elevation on the force main to ensure not less than 42 inches of cover. Backfill trench in accordance with Section 02222.

### 3.4 ABOVEGROUND PIPING

The above-grade portion of the force main at the Bionitrification Surge Lagoon shall be insulated as follows:

- Insulation shall be cellular glass, with a minimum thickness of 1½ inches and a maximum "k" value of 0.345 (BTu-in) / (h-ft<sup>2</sup>-°F) at 75°F. Insulation shall be secured with ½ inches stainless steel bands on 12-inch centers.
- Aboveground jacketing shall be 0.02-inch thick embossed aluminum. Jacketing shall be installed with Number 8, ½-inch stainless steel screws on 3-inch centers.
- Underground jacketing shall be a wrapping totaling 40 mils thick of polymer modified bituminous compound with a 4-mil high-density cross laminate polyethylene top film and release paper backing.
- All seams shall be lapped against the weather. Insulation shall be finished at supports, protrusions, and interruptions. At pipe supports, only enough insulation shall be removed to provide a snug fit.

**3.5 LIFT STATIONS**

Set lift stations in accordance with the manufacturer's recommendations.

**3.6 PRESSURE TESTING**

The new force main shall be tested in accordance with AWWA C 600 prior to tie-in.

-- End of Section --



**APPENDIX B**  
**TYPICAL ANCHORING AND SKIRTING SYSTEMS**

X-MEMBER  
(ANGLE & ROD OR  
3" C-CHANNEL BASEMENT TYPE)

8 x 8 x 16  
CONC. BLOCK

.035 x 1 1/4" GALV.  
STEEL STRAP OVER ROOF

GRADE

GROUND ANCHOR  
INSTALLED

5/8" x 42"

WILLIAMS  
SCOTSMAN<sup>®</sup>  
Mobile Offices And More.

WILLIAMS SCOTSMAN, INC.  
10169 Windisch Road  
West Chester, OH 45069

Sally Alsfelder  
Customer Service  
Sales Representative

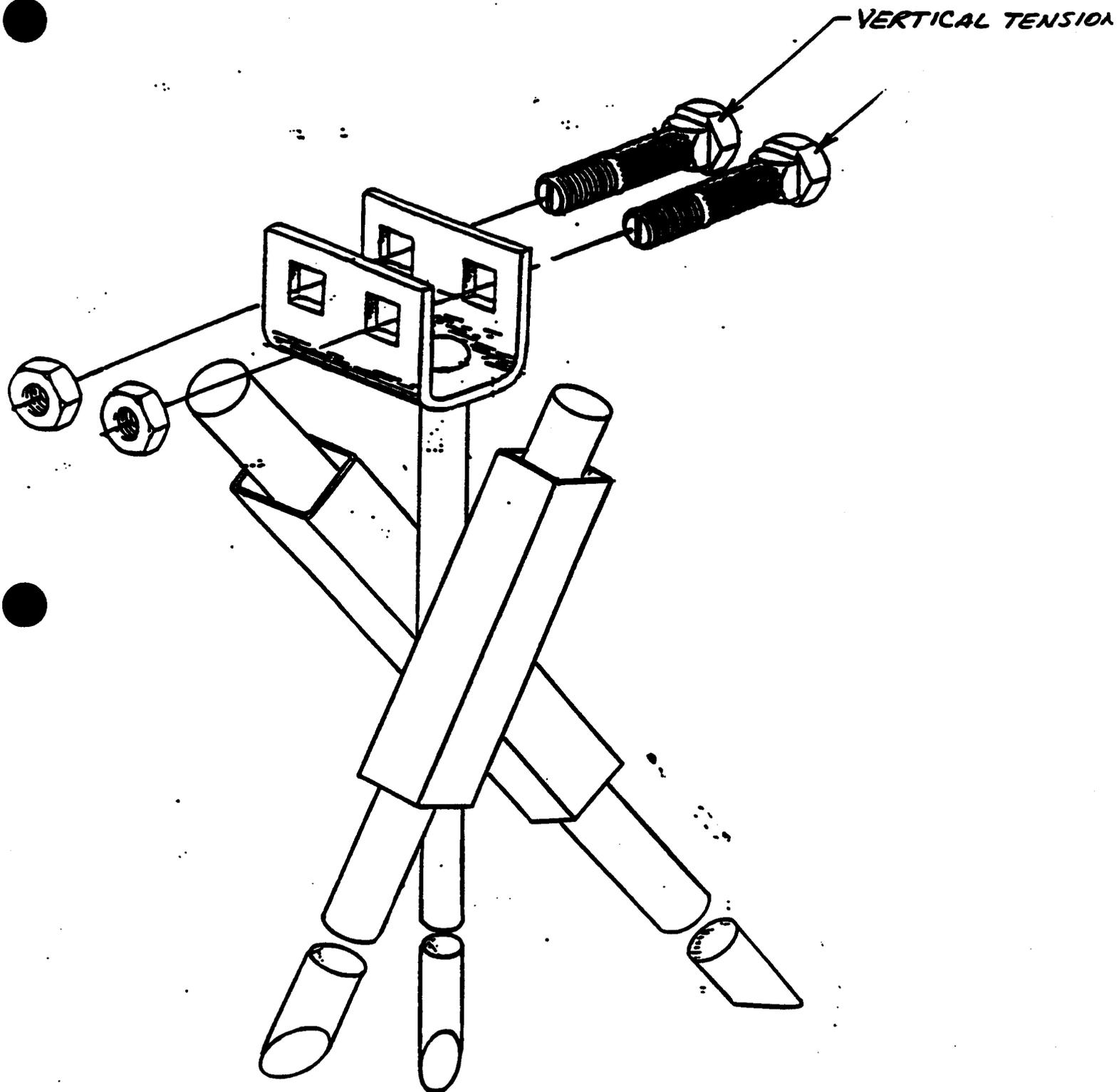
800-782-1500 513-777-5200 FAX: 513-777-9974

000084

PIER DETAIL

FOUNDATION DETAIL

1323



## INSTALLATION DETAILS

Careful attention to a few basic details will insure that your Vinyl Skirting will provide a beautiful, easily installed, completely accessible exterior with a minimum of maintenance. Vinyl Skirting is easily installed over any terrain, requires no special tools and never needs painting. Following these basic installation techniques will assure that our skirting will contribute to the beauty of your home's exterior.

## TOOLS YOU WILL NEED

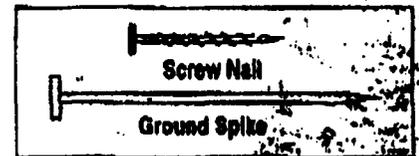
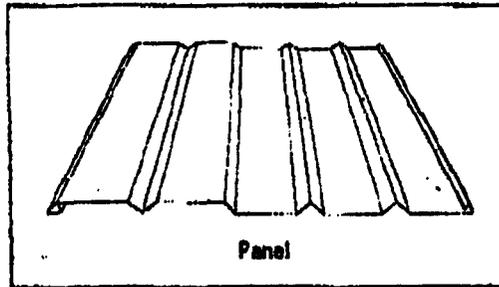
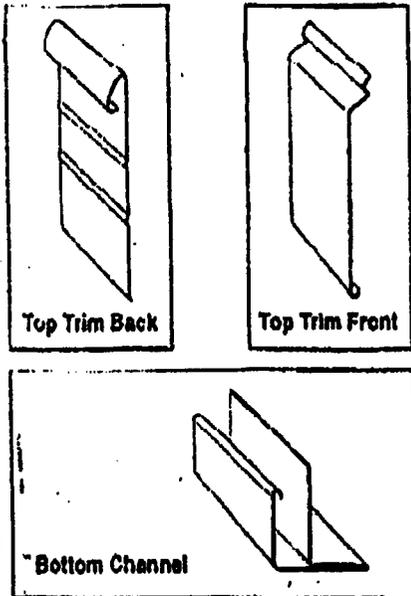
Hammer • Screwdriver • Snips • Plumb Bob or Level • Tape Measure  
Power Saw with File • Tooth Blade • Notching Tool • Chalk Line • Utility Knife

## IMPORTANT

1. Use either a power saw with a fine tooth blade mounted with reverse rotation, or aviation snips to cut skirting components.

2. To allow for normal expansion and contraction, fasten the Top Trim Back in the center of the nailing slots. Fasten positively to the surface of the unit at every slotted hole, leaving  $\frac{1}{2}$ " between lengths. Do not butt the ends. Overlap Top Trim Front approximately 1" at joints. Allow  $\frac{1}{2}$ " between pieces of the Bottom Channel when installing.

3. Do not drive the nails too tightly. The screwtype nails provided offer excellent holding power, but if driven too tightly, the vinyl can, under normal expansion and contraction, become distorted. These special nails should be driven in the middle of the nailing slot just short of touching the Top Trim Back. Nail to achieve  $\frac{1}{2}$ " penetration into a solid wood substance. Nail to allow part to expand and contract during the normal change in ambient temperature. **DO NOT NAIL TIGHT.** Allow  $\frac{1}{4}$ " gap between nail head and part.



## Step 1...

### Laying the Bottom Channel

A level or plumb line should be used to establish the location of the Bottom Channel. The taller backside of the Bottom Channel should be located directly beneath the outside bottom edge of the home, where the Top Trim Back will be attached (figure 1). To prevent grass from growing around the base of the skirting and provide a non-shifting base for the ground spikes, 9" asphalt roof starter should be installed around the home. The roof starter also reduces the possibility of the vinyl skirting panels from being damaged from the use of a powered string trimmer "Weed-Eater" type trim units will damage the skirting and is not covered by the warranty.

Attach the Bottom Channel directly to the ground through the prepunched holes (figure 2). Spikes required every 24 inches ... extra holes provided for convenience. Another spike or a drift punch may be used to drive spikes in completely. To allow for expansion, leave a  $\frac{1}{2}$ " gap between each section of the Bottom Channel. To form clean, attractive corners, the Bottom Channel can be notched with snips (figure 3) and then bent to the desired angle. (Attached to the ground as shown in figure 4).

**NOTE:** In high wind areas; where ground below the unit is spongy; or where ground is loose from recent excavation and has not yet settled, it is advisable to fasten Bottom Channel to treated wooden stakes. For installation on concrete, use  $\frac{3}{4}$ " masonry nail instead of ground spike. "Liquid Nail" cement or other similar methods of setting a fastener directly to concrete can also be used.



Figure 1



Figure 2

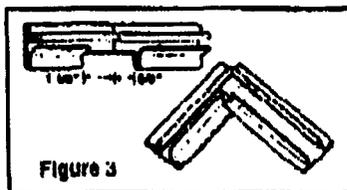


Figure 3



Figure 4

8601

000086

(OVER)

### Mounting Top Trim Back

First determine where the Top Trim Back will mount on the lower part of the home. The bottom edge of the Top Trim Back can extend below the bottom edge of the home if there is a solid support for nailing and a solid bearing for the Top Trim Front against the side of the home. It is helpful to mark a line around the bottom of the home with a chalk line or other method to assure a straight line where the Top Trim Back is to be installed.

The Top Trim Back is installed by driving the screw nails in the middle of every slot (Figure 5). **DO NOT NAIL TIGHTLY!** (See nailing instructions on front page.) Do not cut Top Trim at the corners. Gently bend over a sharp edge of a cutting table or a similar surface to form a corner (Figure 6).

If the installation is made in extremely cold weather, the vinyl should be warmed to room temperature before bending. Warming will avoid the likelihood of cracking.

### Step 3...

#### Cutting Top Trim Back

The Top Trim Back is constructed with two parallel ridges at intervals below the nailing slots (Figure 7). These ridges may be used to measure the distance from the ground to the lower ridge. In cold weather, measure to the top ridge. If the ground is level, several panels may be cut at one time using a hand power saw. Remember, if a power saw is to be used, mount a fine-toothed blade in reverse position (Figure 8).

#### LOCKING THE PANELS

A snap lock tool is used to punch locking tabs on the outside bottom edge of each panel (Figure 9). When the panel is installed, it becomes locked in the Bottom Channel. This feature assures retention of the panel in the Bottom Channel.

**NOTE:** When installing in a high wind area, punch locking tabs at the top of the panel for added locking strength.

Self-aligning panels easily snap and slide into place (Figure 10). Be certain that each panel positively interlocks with the panel adjoining it. (Above 36" panel height, a framing support system should be considered.)

#### INSTALLING PANELS

Panel can be installed by setting into the Bottom Channel and leaning against the Top Trim Back. Lock the next panel as shown by Figure 10. Panels should not be cut but bent around corners as shown in Figure 11.

#### FITTING PANELS AROUND SERVICE CONNECTIONS

Cutting and fitting to virtually any shape or radius is easily done with Vinyl Skirting. Using aviation snips, cut the panel to fit around the connection. Cut the panel from the side - not from the top or bottom. Keep snip points open as if cutting cloth to avoid cracking panels.

### Step 4...

#### Installing the Top Trim Front

The Top Trim Front installs easily by snapping the top edge of its spring lock into the Top Trim Back. Be sure to push the Top Trim Front all the way into the Top Trim Back until it "Snaps" into place.

Each of the 15 pieces of the Top Trim Front are notched 2" on one end (Figure 12) to permit overlapping. Overlap ends of adjoining trim front approximately 1". Four of the pieces are factory-notched for forming corners.

#### CUTTING ADDITIONAL CORNERS

If inside corners are needed, trim strips can be easily cut with aviation snips to form attractive corner joints by cutting a 45° mitre on adjacent ends and butting. If extra outside corners are required (for porches or addition rooms), notch the trim strips as shown (Figure 13), bend around the corner and snap into place. Allow at least 3" of trim strip on each side of the corner.

#### EASY ACCESS

Access can be gained at virtually any point by simply lifting the Top Trim Front and sliding out the desired number of panels. Accessibility to the area under the unit is available whenever desired.

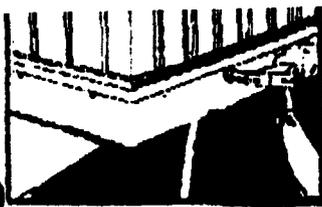


Figure 5



Figure 6



Figure 7



Figure 8



Figure 9



Figure 10



Figure 11

#### CAUTION

Proper installation of Mobile Home Skirting requires that the Top Back be nailed loosely so the panel will slide freely in the nail slots. This can be accomplished by leaving the nail head 1/16" to 1/8" from the face of the panel.

The nail must penetrate a solid nailable surface by 3/4. The aluminum nails supplied with product are 1-1/2" in length.

Do not place outdoor cookers near the vinyl skirting because the heat will distort the panels. Any heat source must be kept away from the panels or damage may occur.

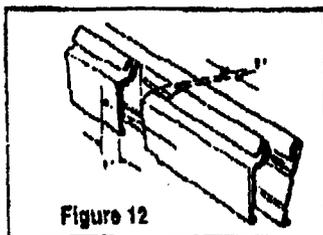


Figure 12

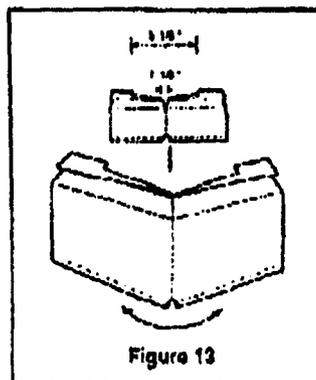
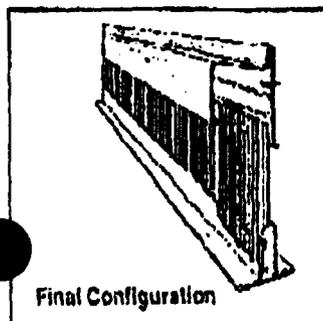


Figure 13



Final Configuration



**DRAFT****Waste Pits Remedial Action Project  
(WPRAP)  
PRE-OPERATIONAL ENVIRONMENTAL CONTROL PLAN**

\*\*\*

**PREPARED  
for  
Fluor Daniel Fernald, Inc.  
Fernald, Ohio****FDF Subcontract No. 98SC000001**

\*\*\*

**PREPARED  
by  
IT Corporation  
2790 Mosside Boulevard  
Monroeville, PA 15146-2790****IT Project No. 773481**

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**Revision No.:   B    
Issue Date: February 13, 1998****000088**

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01/09/98	A	Original Issue of Draft
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## 1.0 Introduction

### 1.1 Project Background

IT Corporation (IT) has been contracted by Fluor Daniel Fernald, Inc. (FDF) to remediate certain disposal areas at the former Fernald Feed Materials Production Center Plant, Fernald, Ohio. These disposal areas include: Waste Pit Nos. 1 through 6, the Burn Pit, the Clearwell, and the Operable Unit 1 (OU1) Contaminated Soil Stockpile. The facility was formerly operated for and by the U.S. Government to process and produce high purity uranium metal and thorium products for the U.S. Department of Energy (DOE) and predecessor agencies. The facility operated from 1952 until 1989, when production was discontinued. Since that time, the facility has been officially closed and is in the process of environmental restoration.

### 1.2 Site Description

The former feed materials site comprises an area of 1,050 acres. An overall site facility map is provided in Figure 1-1. The waste pits that are to be remediated under this scope of work (Waste Pit Nos. 1 through 6, the Burn Pit, and Clearwell area) are located to the northwest of the former main manufacturing/processing areas. A detail of the topography, drainage patterns, and current storm water management facilities of this area are provided in Figure 1-2. As noted, the relief of the site is generally flat, with moderate grading and contouring to facilitate drainage from clean areas and containment within waste disposal areas. Since the site has generally been previously developed for industrial use, most vegetation has been removed or is limited, so the clearing and grubbing effort to locate and construct the necessary facilities is not anticipated to be a major effort for these activities, or result in a major disturbance that could produce excessive erosion.

### 1.3 Scope of Work

Prior to active disturbance and removal of the waste materials, the site must be prepared and support and processing facilities must be constructed to manage the excavation and processing of the waste contained in the former pits. A requirement of developing and implementing the construction plans is the development of this Pre-Operational Environmental Control Plan. The purpose of this plan is to detail the engineering control measures and procedures that will be used to control erosion, suppress dust, and collect/manage storm water during site preparation and the construction of these facilities. This plan applies to pre-operational activities only. For the maintenance of the existing pit facilities and in the advent of encountering contaminated materials during the normal course of the site preparation activities, the existing FDF site procedures referenced in the Pre-Operational Health and Safety Plan will be followed. An Operational Environmental Control Plan which will address the environmental control measures to be implemented during the operational phase of the project will be developed for review and approval by the U.S. EPA and the Ohio EPA. The Operational Environmental Control Plan will be issued in the Remedial Action Document Package.

The proposed site preparation and construction activities will include:

- Installation of sedimentation and erosion control devices
- Clearing and grubbing, as required

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- Grading the site as necessary to install facilities and equipment 1
- Installation of portable structures including a changeout facility, breakroom, respirator wash facility, laundry facility, supervisor trailer, and administrative offices 2 3 4 5
- Installation of an on-site analytical laboratory 6 7
- Construction of building and process equipment foundations and floor slabs 8 9
- Erection of process facilities and structures associated with material handling, railcar loadout, and drying operations 10 11 12
- Erecting temporary/permanent barriers and fencing, as required 13 14
- Erection of equipment storage and maintenance areas 15 16
- Construction/improvement as necessary of service roads, haul roads, and personnel walkways 17 18 19
- Installation of additional catch basins and storm drains. 20 21

Figure 1-3 denotes the planned layout of facilities and structures to be installed under this plan. The control of erosion, suppression of dust, and management of storm water under this plan is limited to the construction areas noted in Figure 1-3, and those areas that may be peripherally impacted by the site preparation and construction activities. This plan does not include the areas of the site outside this scope of work and is intended to compliment and comply with the existing FDF Storm Water Pollution Prevention Plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) permits for water management, treatment, and storm water discharge at the facility. 22 23 24 25 26 27 28 29

The management of debris and other hazardous materials resulting from the site preparation and construction activities is presented in Section 6.0 of the Site Preparation Package. 30 31

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## 2.0 Plan Objectives

### 2.1 Erosion Control

The objectives for erosion control under this plan are:

- Design all erosion controls described in this plan in accordance with the Ohio Department of Natural Resources (ODNR) "Rainwater and Land Development, Ohio's Standards for Storm Water Management, Land Development, and Urban Stream Protection," Second Edition, 1996 (ODNR Rainwater and Land Development Guidance). 1
- Develop methods for erosion control consistent with the SWPPP. 2
- Describe erosion control procedures and measures that will be implemented during site preparation and the construction phase. 3
- Provide an evaluation of the site's existing and proposed hydrologic features, including topography, soil conditions, and surface water hydrology. 4
- Evaluate the impact proposed hydrologic alterations will have on erosion control and sedimentation. 5
- Present proposed hydrologic alterations in connection with site preparation and construction activities and describe how and when they will be implemented. 6
- Describe how temporary erosion and sediment control measures will minimize erosion and prevent sediment pollution and the potential effectiveness of control measures. 7
- Provide a description of how temporary control features will be constructed and how they will be integrated with existing/permanent erosion and sediment control measures and features. 8
- Specify appropriate maintenance and inspection requirements for temporary and permanent features. 9
- Provide adequate flexibility in the plan to allow for field conditions and as-built modifications that may be required at a later date. 10

Excessive erosion conditions are not anticipated to result from the planned site preparation and construction activities. 11

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## 2.2 Dust Control

The objectives for dust control under this plan are:

- To develop and describe the active dust control and mitigation measures that will be implemented during site preparation and construction.
- Provide descriptions of and discuss engineering procedures that will be followed to minimize evaluation of dust.
- Provide descriptions and availability of any dust control equipment to be provided at the site.
- Describe monitoring methods that will be used for evaluating levels of ambient dust.
- Indicate any particular sequencing of site preparation and construction activities that will be critical to minimizing dust evolution.
- Discuss the impact the local/seasonal climate will have on dust control.

The current standard for dust is no visible evolution of dust shall result for any activity. If any dust evolution occurs during any activity, it must be controlled.

## 2.3 Storm Water Management

The objectives for storm water management under this plan are:

- Develop descriptions and discuss storm water management procedures that will be implemented during the site preparation and construction phase that are consistent with the existing SWPPP and facility NPDES permit.
- Design storm water management structures and site features to be constructed under this plan in accordance with the ODNR Rainwater and Land Development Guidance.
- Provide an evaluation of the site's existing and proposed hydrologic features, including topography, soil conditions, and surface water hydrology that will impact storm water management and treatment.
- Evaluate the impact proposed hydrologic alterations will have on storm water quality and how this may impact treatment requirements.
- Present the sequencing of proposed hydrologic alterations in connection with site preparation and construction activities and describe how storm water management will be impacted.
- Describe how temporary erosion and sediment control measures will influence storm water quality and prevent sediment pollution.

- Provide a discussion as to how storm water management/pollution control measures will integrate under the existing SWPPP and facility NPDES permit for management of storm water. 1  
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- Provide a discussion of pertinent regulatory criteria for storm water management at the facility. 5  
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- Provide a description of how temporary control features will be constructed and how they will be integrated with existing/permanent erosion and sediment control measures and features. 8  
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- Specify appropriate maintenance and inspection requirements for storm water management structures, facilities, and features. 12  
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- Provide adequate flexibility in the plan to allow for field conditions and as-built modifications that may be required at a later date. 15  
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- Provide an analysis of historical climatological data relative to the facility. 18  
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- Provide calculations or modeling to demonstrate the adequacy of storm water management systems to accommodate rainfall events. 20  
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### 3.0 Site Conditions

#### 3.1 Climate and Weather Data

The Fernald site is located in southwestern Ohio approximately 25 to 30 miles north of the Kentucky border. The climate is somewhat tempered due to its southern location and situation in the Ohio River Valley. The site is located in U.S. Department of Agriculture Zone 6, meaning average minimum winter temperatures range down to between -10EF and 0EF and accumulations of snow are normal during the winter months. Summer temperatures range from generally seasonable to hot and somewhat humid due to the proximity to the Ohio River and periodic frequency of summer precipitation. Cooling tower engineering design data provided by the Marley Cooling Tower Company for the Cincinnati, Ohio area indicates on 10 percent (%) of the days annually, the dry bulb temperature will exceed 85EF, will exceed 88EF 5% of the days, will exceed 89EF 2.5% of the days, and exceed 92EF 1% of the days. The wet bulb temperature will exceed 75EF on 10% of the days annually, 77EF 5% of the days, 78EF 2.5% of the days, and 79EF 1% of the days. The region has seen both flood and drought conditions over the past few years during the spring and summer. These types of temperatures and frequency of precipitation invariably will lead to the need to effectively control dust, prevent erosion, and manage storm water.

The U.S. Department of Agriculture reports in their Technical Paper No. 40, titled "Rainfall Frequency Atlas of the United States," that the 25-year, 24-hour duration storm intensity would produce approximately 4.8 inches of precipitation on the region. Although greater intensity storm events are certainly possible, for the purposes of design, this has been accepted as the reasonable design criteria to be used for the sizing of water treatment, storm water management equipment, and erosion control structures.

#### 3.2 Current Site Layout and Significant Hydrologic Features

The current site layout is shown in Figure 3-1, which also shows the existing storm water management structures and associated watersheds. These features will remain in place and be used to receive storm water from the new drainage control structures and storm water conduits once this phase of construction is completed. The existing storm water management structures are noted in Figure 3-1 and include:

- A drainage swale along the northern portion of the site (south of the existing access road), which drains to the K-65 Runoff Basin (adjacent to the Clearwell).
- A series of swales along the southwestern, southern, and southeastern boundary of the site which drain through the plant site to Paddys Run.
- A series of catch basins constructed within the limits of the compacted earth fill which drain to the lined Storm Water Management (SWM) Pond located in the northeastern portion of the site.

The features described in the last two bullet items above were added or modified, during 1996 and 1997, as part of the construction of site improvements and the rail line in anticipation of the remediation of the waste pits. These features and modifications were designed in accordance with

the ODNR Rainwater and Land Development Guidance and will continue to meet these standards after the completion of this phase of construction.

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**3.3 Summary of Runoff Estimates**

During and after implementation of proposed alterations (but prior to operation and excavation in the pits), site hydrologic features will be altered to appropriately manage storm water and control erosion. As shown in Figures 3-1 and 3-2, the construction of buildings and facilities, improvements in access roads, installation of utilities, and drainage structures will result in some changes in surface water drainage compared to the current situation. Currently, all precipitation incident to the area, that does not seep into the subsurface, flows overland until intercepted by storm water control structures. Under postconstruction operation, much of this precipitation will be intercepted and diverted. In addition to collection from roof drains and downspouts, improvements in surface conditions, such as stabilized/engineered roadways/haul roads and restored vegetation, will further reduce the potential erosion/sediment loading to storm water over current conditions. Thus, a substantial improvement in overall drainage quality is expected upon completion of the site preparation and construction activities.

Surface water runoff calculations were performed using runoff coefficients and depths estimates established by the TR-55 Method. Figure 3-1 presents the site base map denoting the general direction of flow and location of catch basins under current conditions. Figure 3-2 presents the same data for postconstruction conditions. The volume of runoff to each watershed area is noted on these figures. The volume is based on the rainfall received from the 25-year, 24-hour storm. The results of the modeling are summarized for pre- and postconstruction conditions in Table 3-1 and Table 3-2, respectively.

## **4.0 Erosion Control During Construction**

### **4.1 Use and Location of Silt Fences**

The site will be graded and additional storm drains will be installed as shown in Figure 4-1. Silt fences will be installed to protect storm water and stream quality and prevent excessive erosion. The location of silt fences are noted on Figure 4-1. In accordance with the ODNR Rainwater and Land Development Guidance, hay or straw bales will not be used for temporary erosion control. The area of construction will be totally contained on the downgradient side either by the installation of silt fences or other site features. In addition, catch basins in the area will be surrounded by silt fence fabric during construction. Storm water sediment control/loading is essential at the site to assure protection of identified populations of endangered/sediment-sensitive species downstream of the facility's NPDES permitted storm water outfall.

Silt fence fabric will conform to the appropriate American Society for Testing and Materials (ASTM) specification as noted in the Site Clearing Specification provided in the Site Preparation Package to be submitted as part of this project. Silt fence will be installed/secured in place in accordance with the standard engineering practice noted in the plan.

### **4.2 Use of Vegetation and Planting**

Although there will be a minimal amount of initial clearing and grubbing, there currently remains some open areas from the previous construction of the on-site rail improvements and storm water management structures. Within 90 days of the completion of these activities, open areas which are not used for roads, parking, laydown/storage, or other purposes will be vegetated using a native mix of grasses and/or wild flowers, in accordance with the ODNR Rainwater and Land Development Guidance.

### **4.3 Disposal of Erosion Control Structures**

Upon completion of construction activities, temporary erosion control structures such as silt fencing will be removed where no longer needed. These materials will be managed and disposed of appropriate to its characterization.

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**5.0 Dust Control**

**5.1 Use of Water Sprays**

During the site preparation and construction phase, a standard construction water truck with minimum 3,500-gallon capacity will be maintained on site for the application of dust control water spray. The water truck will not enter the contaminated exclusion zone in the pit area during the construction phase. Water will be applied to access roads, open work areas, and excavations in progress as necessary to control dust. Water will be applied judiciously to avoid runoff, ponding, or the generation of mud. The application of water will be dependent on the ambient conditions, being more frequent during warm weather and under breezy conditions when dryout would occur more rapidly. The water truck will be filled with clean water from the nearest fire hydrant. Some limited construction will be required at the perimeter of Waste Pit No. 2 which may involve working in the vicinity of the contaminated zone. This construction will include the installation of the truck wash facility, access road, potable water line, collection sump, and culverts. Dust control water spraying in these areas would be performed remotely using fire hose and a wide dispersion nozzle. Site preparation and construction performed during the winter season will require extra care to control dust, so as not to create a freezing or ice hazard in work areas, in hydrants, or in the water truck.

**5.2 Use of Temporary Covers/Barriers**

Excavation and grading to install footings and foundations will be the major dust generating activities during the site preparation and construction phase. During these activities, excavated (clean) soil may be removed and stockpiled for use in other areas as fill. Clean fill, sand, and other materials may be imported and/or stockpiled for the construction of roads and foundations. Stockpiled materials may tend to produce dust. As such, stockpiled materials will be periodically wetted down with clean water. Plastic sheeting in lieu of water spray may be used where appropriate to cover portions of excavations or prepared subgrades to prevent evolving dust.

**5.3 Other Control to Manage/Minimize Dust**

Coarse aggregate, geofabrics, reinforced concrete, and/or asphalt will be used where appropriate to improve and stabilize roadways and haul roads and also to minimize evolving dust from these areas.

A speed limit of 5 miles per hour will be enforced for heavy equipment and vehicles traveling within the construction area to minimize the potential for evolving dust.

**5.4 Dust Monitoring Methods**

Monitoring for dust will be performed visually. It will be the responsibility of each IT worker to observe his work area for the potential and for the actual generation of dust. This will be reported to the supervisor, foreman, or group leader in the work area who will arrange for immediate wetting of the area or implementation of other measures to eliminate the dust. If necessary, the work area will be minimized or work stopped until the dust can be controlled.

On-site personnel will work cooperatively with FDF personnel to identify and correct dust nuisance hazards. Dust control measures will be implemented, as necessary, to mitigate the dusting condition.

## 6.0 Storm Water Management

### 6.1 Existing Storm Water Management Structures

Presently, the majority of storm water which falls within the limits of the proposed work area is collected by a series of catch basins. These catch basins collect and transfer storm water, via a series of underground culverts, to the lined SWM Pond located in the northeast portion of the site. This water is then pumped to the bionitrification surge lagoon (BSL) prior to treatment by the Advanced Wastewater Treatment (AWWT) Facility. During heavy storm events, runoff collected in this pond overflows through a series of retention ponds and ultimately discharges to Paddys Run.

Storm water which falls within the northwest corner of the proposed limits of the construction activities drains to an existing drainage swale along the existing waste pit access road. This swale drains to the existing K-65 Runoff Basin (Figure 1-2). Water collected in the K-65 Runoff Basin is pumped to the BSL for subsequent treatment prior to discharge to Paddys Run.

Storm water which falls on the outer slopes of the earth fill (adjacent to the BSL), and within the access ramp and laboratory areas, drains to an existing swale along Second Street. The water collected in these swales eventually discharges to Paddys Run.

### 6.2 Postconstruction Storm Water Management

Management of storm water in the areas surrounding the building after construction is discussed in Section 2.8 of the "Description of the Operation and Processes" portion of the Plant Facilities Engineering Plan.

### 6.3 Removal/Management of Construction Water Within Excavations

During construction, excavations for foundations may fill with water from rain events. IT will make every effort to minimize the potential for water to accumulate in open excavations. Preventive measures include:

- Grading and sloping so surface water drains away from the excavation
- Limiting the amount of open area exposed and the time
- Scheduling concrete pours to coincide with the progress/completion of excavation
- Scheduling work progress to accommodate weather to the extent possible (e.g., avoid digging if it can be postponed until more favorable weather is anticipated)
- Covering an open excavation area with plastic sheeting.

Any water collected in foundation excavations will be discharged directly to the SWM Pond.

**6.4 Treatment, Analysis, and Disposal of Storm Water and Sediment**

No pretreatment of storm water or construction water is anticipated during the construction phase. Water outside the pit area is not expected to be contaminated and will continue to be managed using the current operating practices. Storm water from the construction area will flow through a series of swales and catch basins to the SWM Pond or to Paddys Run. Water collected in the SWM Pond will be pumped to the BSL for subsequent treatment by the AWWT as a precaution. As an option, the SWM Pond water may be sampled and analyzed per the protocols presented in the SWPPP. If the analytical results indicate that the water meets the required criteria, it will be discharged to Paddys Run. If not, it will be pumped to the BSL.

Accumulations of sediments in storm water conveyances and around erosion control structures will be removed and evaluated for disposal or reuse as fill material around the site.

**6.5 Storm Water Management Contingencies**

Storm water management during construction is expected to be fairly routine. Possible events that require contingency planning include:

- Failure of silt fencing
- Catastrophic rainfall (near probable maximum precipitation event)
- Storm drain blockage/backup.

**6.5.1 Failure of Silt Fencing**

Periodic inspection of silt fencing will be performed during site preparation and construction activities. IT will maintain a supply of additional silt fencing material on site to facilitate the repair of existing fencing or to be used to provide additional erosion control. Should large quantities of silt accumulate at the base of fencing, it will be removed as appropriate to avoid silt inundation or overriding of the fence. Should a large movement of silt such as a slide occur that damages the fence, the excess material will be removed on both sides of the fence and additional control measures or regrading will be implemented to avoid reoccurring failure.

**6.5.2 Catastrophic Rainfall**

A 6-hour probable maximum precipitation event for the region is 26 inches. In the event of a catastrophic rainfall event, water would continue to be managed as currently designed. During a catastrophic rainfall, noncontact storm water would enter the SWM Pond, or enter Paddys Run through one of the clean area drainage swales. In the event that the SWM Pond does not have enough available capacity to contain all the storm water, an uncontrolled overflow would occur. Notification will be provided to FDF in the event of an uncontrolled overflow.

Engineering controls in the construction area are expected to be adequate to prevent excessive erosion even during a catastrophic rain event. Runoff through the construction area would be expected to consist largely of overland sheet flow, rather than channelized flow, minimizing the potentially erosive nature of large storm events. During such an event, storm drains may back up and standing water may result in some areas. Open excavations may fill up, which would be dewatered as necessary after the rain event. To the extent practical and necessary, open excavations

and exposed materials that would add to sedimentation concerns would be covered. The weather forecast will be monitored to anticipate and prepare for minor and unusual inclement weather.

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**6.5.3 Storm Drain Blockage/Backup**

In the event of a storm drain blockage, an evaluation will be made as to the cause. If the drain becomes plugged due to excessive sediment, on-site personnel will re-evaluate the placement of sediment control structures and make appropriate corrective measures. Should a backup occur, temporary pumps will be installed to remove excess water. Water removed by pumping will be transferred to the SWM Pond.

## **7.0 Maintenance and Inspection**

### **7.1 Maintenance of Erosion Control and Storm Water Management Features**

Preventive maintenance activities will occur concurrently with the routine inspections. Corrective maintenance or repair activities will be conducted whenever damage or disturbance is discovered. All maintenance and inspections will be performed in accordance with the SWPPP.

The maintenance program will be carried out for the entire project area. Visual inspection of all temporary and permanent erosion control measures will be conducted on a routine basis or after major storm events.

Corrective measures are required if inspections reveal excessive siltation in storm water conveyances, catch basins, or along silt fences. Also, maintenance of eroded areas may require the removal of loose soil, replacement with clean soil, and regrading and/or reseeding to the original condition. Silt accumulated in erosion control structures will be removed. Silt fences will be inspected and any damaged silt fence will be repaired and replaced, if needed.

Runoff swales, storm drain conduits, and catch basins are expected to require little maintenance. However, objects entering them or heavy accumulations of silt will be removed when inspection indicates a problem or flowthrough is reduced or a backup occurs. Figure 7-1 provides the Record of Inspection Form for Erosion Control and Storm Water Management.

Traffic will be directed away from the structural erosion control measures. Where traffic must cross a structural control measure, a crossing will be constructed and dismantled when no longer needed.

### **7.2 Inspection Schedule**

The inspection activities will be conducted routinely after each storm event as well as on a weekly basis and after each storm event during the earthmoving activities until acceptance after construction is complete.



**TABLES**

**Table 3-1**  
**Estimated Runoff for Preconstruction Conditions**

<b>Drainage Location</b>	<b>Area (square feet)</b>	<b>Curve Number (CN)</b>	<b>Runoff Depth<sup>(1)</sup> (inches)</b>	<b>Total Runoff<sup>(1)</sup> (gallons)</b>
Paddy's Run	100,490	80	2.72	170,370
K-65 Storm Water Basin	71,320	80	2.72	120,920
Storm Water Management Pond	321,230	80	2.72	544,630

Note: <sup>(1)</sup> Values are based on a 25-year, 24-hour storm event equal to 4.8 inches.

000107

**Table 3-2**  
**Estimated Runoff for Postconstruction Conditions**

<b>Drainage Location</b>	<b>Area (square feet)</b>	<b>Weighted Curve Number (CN)</b>	<b>Average Runoff Depth<sup>(1)</sup> (inches)</b>	<b>Total Runoff<sup>(1)</sup> (gallons)</b>
Paddy's Run	106,400	81	2.83	187,690
K-65 Storm Water Basin	63,160	80	2.72	107,090
Storm Water Management Pond	277,130	88	3.51	606,330
Clearwell <sup>(2)</sup>	46,350	98	4.56	131,750

Note: <sup>(1)</sup> Values are based on a 25-year, 24-hour storm event equal to 4.8 inches.

<sup>(2)</sup> Storm water is directed to the Clearwell during the operational phase.

000108



**FIGURES**

**000109**

**EROSION CONTROL AND STORM WATER MANAGEMENT  
INSPECTION RECORD**

Inspector's Signature:		Badge #:	Date:	
Supervisor's Signature:		Badge #:	Date:	
Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions to be Completed
1	Condition of Silt Fencing • Accumulation of Sediment • Displacement of Fabric			
2	Condition of Catch Basins • Clear of Debris Over Inlet • Normal Water Level • Accumulation of Silt/Sediment			
3	Condition of Drainage Swales/Ditches • Erosion or Scouring • Accumulation of Debris or Sediment			
4	Condition of Roof Drains/Downspouts			
5	Condition of Storm Water Management Pond • Level • Sediment • Color			
6	Condition of Roadways			
7	Condition of Construction Water Management Systems • Dewatering Pumps • Temporary Tanks			
8	Condition of Open Excavations • Exposed Area Minimized • Erosion Controls In Place • Covered Where Necessary			

Comments: \_\_\_\_\_

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Environmental Compliance:	Date:
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Reference: FDF Storm Water Pollution Prevention Plan.

**FIGURE 7-1**

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**O&M Plan for  
Existing Facilities**

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**DRAFT**

**Waste Pits Remedial Action Project  
(WPRAP)  
OPERATION AND MAINTENANCE PLAN  
FOR EXISTING FACILITIES**

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**PREPARED  
for  
Fluor Daniel Fernald, Inc.  
Fernald, Ohio**

**FDF Subcontract No. 98SC000001**

\*\*\*

**PREPARED  
by  
IT Corporation  
2790 Mossie Boulevard  
Monroeville, PA 15146-2790**

**IT Project No. 773481**

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**000117**

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A	Fluor Daniel Fernald, Inc. Procedure EW-1015, Inspection of Hazardous Waste Management Units
B	S&WP Division Procedure 43-C-601, Inspection/Operation of Surface Impoundments
C	S&WP Division Procedure 43-C-412, Management of Water Cover for Waste Pit No. 6
D	S&WP Division Procedure 43-C-340, K-65 Area Operator Round Sheet, Page 12 of 13.
E	IT Corporation Procedure PR028, Government Property Procedures

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**1.0 Purpose**

This Operation and Maintenance Plan describes the responsibilities of IT Corporation (IT) for the continued inspection, operation, and maintenance of existing facilities as shown in Figure 1-1, including the storm water management system, roads (not including haul road) and fences, changeout facility, and the waste pits to be remedied under the Waste Pits Remedial Action Project (WPRAP) at the U.S. Department of Energy's (DOE) Fernald Environmental Management Project (FEMP). This plan will go into effect upon authorization by Fluor Daniel Fernald, Inc. (FDF) following Authorization to Mobilize. Management of storm water system, roadways, fences, and changeout facilities within the IT work area will continue under this plan throughout the duration of the project. Management of Waste Pit Nos. 4, 5, 6, and the Clearwell will continue under this plan until such time as excavation activities begin for the respective pit. Pit activities will be performed under the excavation plan during the remediation of these pits.

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**2.0 Scope**

This plan applies to the ongoing periodic inspection of the Waste Pit No. 4 and Waste Pit No. 5 Hazardous Waste Management Units (HWMU), the Clearwell, the management of the water cover on Waste Pit No. 5 and Waste Pit No. 6, storm water management from IT's process facility location, maintenance of the roads (not including the haul road) and fences within IT's work area, and housekeeping at the changeout facility.

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**3.0 References**

This section identifies the applicable portions of existing site plans and procedures which will be referenced as part of this plan.

**3.1 Fluor Daniel Fernald, Inc. Procedure EW-1015 Sections**

- 1.0 - Purpose
- 2.0 - Scope
- 3.0 - References
- 4.1 - Inspection Supervisors  
**Note: The IT Construction Manager will serve as the Inspection Supervisor and forward Inspection Logs to the FDF Project Director for processing within FDF.**
- 4.3 - HWMU Inspectors
- 5.0 - General
- 6.0 - Prerequisites
- 7.1 (2) - Providing Inspection Documents (Inspection Supervisor)
- 7.2 - Completing and Routing the Applicable HWMU Inspection Log (Inspection Supervisor and HWMU Inspector)
- 7.7 - Inspecting Surface Impoundments
- 7.9 - Inspecting Landfills
- 8.0 - Records
- 9.0 - Drivers
- 10.0 - Definitions
- Table 1 - HWMU Identification

**3.2 S&WP Division Procedure 43-C-601, Revision 1 dated October 10, 1997 Sections**

- 1.0 - Purpose
- 2.0 - Scope

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- 3.0 - Applicable Documents 1
- 4.0 - Definitions 2
- 5.2 - Responsibilities (Supervisor) 3
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- 5.3 - Responsibilities (Operators) 5
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- 8.0 - Procedure 8
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- 8.2 - Pit No. 3 Clearwell Operation 10

**3.3 S&WP Division Procedure 43-C-412, Revision 1 dated October 10, 1997**

**Note: The IT Construction Manager will serve as the Inspection Supervisor and forward logs to the FDF Project Director for processing within FDF.**

**3.4 Fluor Daniel Fernald, Inc. Storm Water Pollution Prevention Plan, Fernald Environmental Management Project, RM-0039**

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**4.0 Procedure**

**4.1 Waste Pit No. 4**

**4.1.1 Inspection**

As identified in Table 1 of FDF Procedure EW-1015 , provided as Appendix A to this plan, IT shall perform monthly inspections of Waste Pit No. 4. Observations from each inspection shall be recorded in a Waste Pit No. 4 Inspection Record, appearing as Figure 4-1. The inspection record shall identify actions taken to correct unacceptable items found during the inspection and/or provide a plan for undertaking such corrective actions. Completed inspection records will be turned in to the IT Quality Assurance Manager for distribution and filing at the end of the work shift during which the inspection was performed.

**4.1.2 Maintenance**

IT shall undertake maintenance (e.g., repair tears in the cover panels, replace missing postings, repair openings in the seams, etc.) as needed to rectify any unacceptable findings from the inspection. Any items deemed unacceptable during the inspection which pose an imminent hazard, or where a hazard has already occurred shall be immediately corrected by IT. IT shall make efforts to correct any other deficiencies within five working days of the inspection. Repairs to the membrane shall utilize manufacturer's recommended procedures for the original, or equivalent, materials.

**4.1.3 Records**

A copy of each Inspection Log shall be maintained by the IT Quality Assurance Manager in the IT project files. The original will be transmitted by the IT Quality Assurance Manager to the FDF Project Director or his designee within five working days of the inspection.

**4.2 Waste Pit No. 5**

**4.2.1 Inspection**

As identified in Table 1 of FDF Procedure EW-1015, provided as Appendix A to this plan, IT shall perform monthly and daily inspections of Waste Pit No. 5. Observations from each inspection shall be recorded in a Waste Pit No. 5 Inspection Record, appearing as Figure 4-2 (monthly inspections), and in a Surface Impoundment Daily Freeboard Inspection Log, appearing as Figure 4-3 (daily inspections). The inspection record shall identify actions taken to correct unacceptable items found during the inspection and/or provide a plan for undertaking such corrective actions. Completed logs will be turned in to the IT Quality Assurance Manager for distribution and filing at the end of the work shift during which the inspection was performed.

**4.2.2 Maintenance**

IT shall undertake maintenance (e.g., sufficiency of freeboard, repair the dike/liner, replace missing postings, correct the cause of sudden drops in the level of contents, etc.) as needed to rectify any unacceptable findings from the inspection. Any items deemed unacceptable during the inspection which pose an imminent hazard, or where a hazard has already occurred shall be immediately corrected by IT. IT shall make efforts to correct any other deficiencies within five working days of the inspection.

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In order to maintain the water cover, water resulting from the excavation of the waste pits, water collected in the Storm Water Management (SWM) Pond, or FEMP fire water may be pumped to Waste Pit No. 5. The addition of these waters to Waste Pit No. 5 constitutes a request to the Ohio EPA in accordance with the 1988 Consent Decree. This request is discussed in detail in Section 2.8 of the "Description of the Operation and Processes" presented in the Plant Facilities Engineering Package.

**4.2.3 Records**

A copy of each Inspection Log shall be maintained by the IT Quality Assurance Manager in the IT project files. The original will be transmitted by the IT Quality Assurance Manager to the FDF Project Director or his designee within five working days of the inspection.

**4.2.4 Operations**

As identified in Section 8.1 of S&WP Division Procedure 43-C-601, attached to this plan as Appendix B, IT shall inspect Waste Pit No. 5 twice each shift (approximately every four [4] hours) and perform operations to control freeboard as necessary. IT shall record the performance in a Waste Pits Area Shift Inspection Log, appearing as Figure 4-4. IT shall perform operations in accordance with Section 8.2 of Appendix B.

**4.3 Waste Pit No. 6**

**4.3.1 Inspection**

As identified in Section 8.3 of S&WP Division Procedure 43-C-412, attached to this plan as Appendix C, IT shall perform weekly inspections of Waste Pit No. 6. IT shall record the observations from each inspection in a Daily/Weekly Inspection Checklist, appearing as Figure 4-5. The Inspection Log shall record actions taken to correct unacceptable items found during the inspection, and/or provide a plan for undertaking such actions. Completed Inspection Logs will be turned in to the IT Quality Assurance Manager for distribution and filing at the end of the work shift during which the inspection was performed.

**4.3.2 Maintenance**

IT shall undertake maintenance (e.g., sufficiency of freeboard, repair the dike/liner, replace missing postings, correct the cause of sudden drops in level of contents, etc.) as needed to rectify any unacceptable findings from the inspection. Any items deemed unacceptable during the inspection which pose an imminent hazard, or where a hazard has already occurred shall be immediately corrected by IT. IT shall make efforts to correct any other deficiencies within five working days of the inspection.

In order to maintain the water cover, water collected in the SWM Pond or FEMP fire water may be pumped to Waste Pit No. 6. The addition of these waters to Waste Pit No. 6 constitutes a request to the Ohio EPA in accordance with the 1988 Consent Decree. This request is discussed in detail in Section 2.8 of the "Description of the Operation and Processes" presented in the Plant Facilities Engineering Package.

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**4.3.3 Records**

Records required by the State and Federal Governments shall be maintained in the project files by IT and the necessary number of copies transmitted to the FDF Project Director or his designee.

**4.3.4 Operations**

As identified in S&WP Division Procedure 43-C-412, attached to this plan as Appendix C, IT shall perform operations at Waste Pit No. 6 twice each shift (approximately every four [4] hours). As required, water may be added to or removed from Waste Pit No. 6 to manage the water cover. When pumping, a sample of the effluent water will be obtained for analysis. IT shall record the analytical results and operating information on a Waste Pits Area Shift Inspection Log (Figure 4-4). The Inspection Log shall record actions taken to correct unacceptable items found during the inspection and/or provide a plan for undertaking such actions.

**4.4 Clearwell**

**4.4.1 Inspection**

As identified in Section 8.2 of S&WP Division Procedure 43-C-601, attached to this plan as Appendix B, IT will measure freeboard in the Clearwell twice each shift (approximately every four [4] hours). Observations will be recorded in a Waste Pits Area Shift Inspection Log (Figure 4-4). IT will perform a general area inspection on a weekly basis and record observations on a Daily/Weekly Inspection Checklist (Figure 4-5). The Inspection Log shall identify actions to be taken to correct unacceptable items found during the inspection and/or provide a plan for undertaking such corrective actions. Completed Inspection Logs will be turned in to the IT Quality Assurance Manager for distribution and filing at the end of the work shift during which the inspection was performed.

**4.4.2 Maintenance**

IT shall undertake maintenance (e.g., sufficiency of freeboard, replace missing postings, correct the cause of buildup of sediments, etc.) as needed to rectify any unacceptable findings from the inspection.

**4.4.3 Records**

A copy of each log shall be maintained by the IT Quality Assurance Manager in the IT project files. The original will be transmitted by the IT Quality Assurance Manager to the FDF Project Director or his designee within five working days of the inspection.

**4.4.4 Operations**

As identified in Section 8.2 of S&WP Division Procedure 43-C-601, attached to this plan as Appendix B, IT shall perform operations to control freeboard as necessary. IT shall record the performance in a Waste Pits Area Shift Inspection Log (Figure 4-4). IT shall perform operations in accordance with Section 8.2 of Appendix B.

**4.5 Storm Water Management System**

**4.5.1 Inspection**

IT shall perform daily inspections of the SWM Pond and two retention basins (also referred to as SWM Ponds) provided for the collection of rain water from IT's process facility location, as shown on Figure 1-1. The frequency of inspection will be increased to once per shift during storm events as defined by the FDF Storm Water Pollution Prevention Plan (SWPPP). Observations from each inspection shall include the general condition of the area, the condition of the liner, the diked areas of the ponds, and evidence of sediment accumulation. Observations shall be recorded in a Daily/Weekly Inspection Checklist, provided as Figure 4-5 to this plan. The checklist shall identify actions taken to correct unacceptable items found during the inspection and/or provide a plan for undertaking such corrective actions. Completed checklists will be turned in to the IT Quality Assurance Manager for distribution and filing at the end of the work shift during which the inspection was performed.

**4.5.2 Maintenance**

IT shall undertake maintenance (e.g., repair the dike/liner, remove accumulated sediment, etc.) as needed to rectify any unacceptable findings from the inspection. IT will maintain the integrity of the liner, diked areas of the ponds, and drainage paths to the ponds and repair any damage/deterioration in a timely manner.

**4.5.3 Records**

A copy of each checklist shall be maintained by the IT Quality Assurance Manager in the IT project files. The original will be transmitted by the IT Quality Assurance Manager to the FDF Project Director or his designee within five working days of the inspection.

**4.6 Roads and Fences**

**4.6.1 Inspection**

IT shall perform weekly inspections of the roads (not including the haul road) and fences within IT's work area as shown on Figure 1-1. Particular attention will be paid to safety-related items, e.g., radiation control boundaries, signs, postings, etc. Observations from each inspection of the roadways shall include evidence of erosion on or along the sides of the roads, buildup of ice or snow creating potentially hazardous conditions, water ponding on the roadways, and the general condition of the area. Observations from each inspection of the fencing shall include the condition of the fenceposts, fabric, and gates; that locks are in place and locked (if necessary); and that required signs are present and not damaged. Observations shall be recorded on a Daily/Weekly Inspection Checklist provided as Figure 4-5 to this plan. The checklist shall identify actions taken to correct unacceptable items found during the inspection and/or provide a plan for undertaking such corrective actions. Completed checklists will be turned in to the IT Quality Assurance Manager for distribution and filing at the end of the work shift during which the inspection was performed.

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**4.6.2 Maintenance**

IT shall undertake maintenance (e.g., eliminate erosion or water ponding on the roads, repair damage to fence posts or fabric, etc.) as needed to rectify any unacceptable findings from the inspection. IT will maintain the integrity of the roadways and fencing and repair any damage/deterioration in a timely manner.

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**4.6.3 Records**

A copy of each checklist shall be maintained by the IT Quality Assurance Manager in the IT project files. The original will be transmitted by the IT Quality Assurance Manager to the FDF Project Director or his designee within five working days of the inspection.

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**4.7 Changeout Facility**

IT will be responsible for housekeeping services at the changeout facility. Housekeeping services will include general janitorial services, providing an adequate supply of soap and fresh towels for the showers, and the laundering of used towels. Janitorial services will be performed on a daily basis. The supplies of towels and soap for the showers will be checked once a shift and the supplies replenished as necessary.

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## **5.0 Government Furnished Property**

Certain government-owned properties are being furnished to IT for operation and maintenance under this plan. These government-owned properties include existing improvements within the IT work area (e.g., change trailer). These government-owned properties will be managed in accordance with IT Procedure PR028, Government Property Procedures, attached as Appendix E to this plan.

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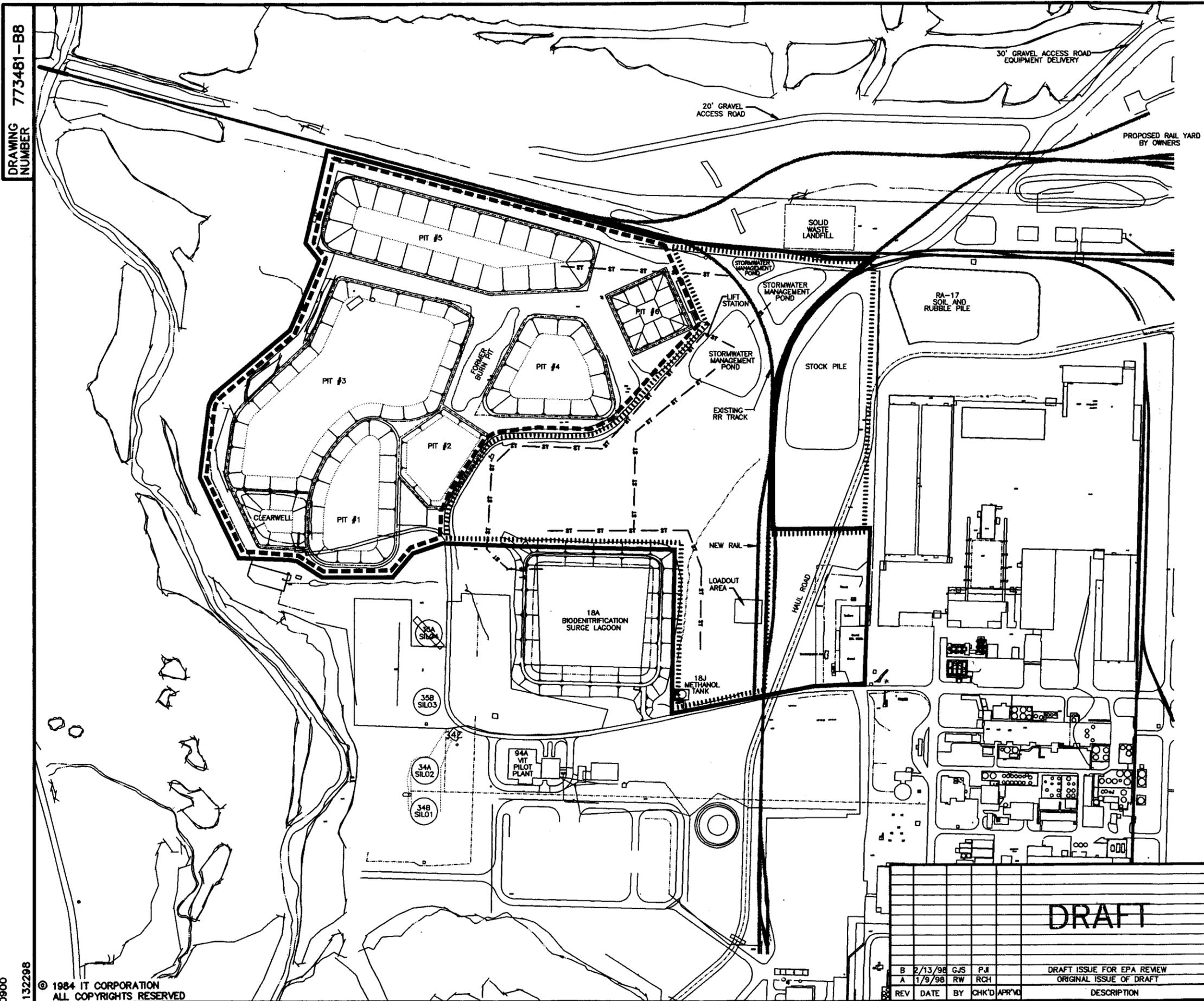
**000131**



**FIGURES**

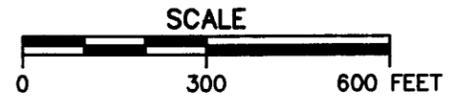
DRAWING NUMBER 773481-B8

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- LEGEND:**
- EXISTING RAIL
  - NEW RAIL
  - FIRE WATER
  - STORM DRAIN
  - FORCE DRAIN
  - ..... PROCESS FACILITY LOCATION
  - WASTE PIT AREA
  - IT WORK AREA

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**FLUOR DANIEL FERNALD** WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)  
 FERNALD, OHIO  
 FDF SUBCONTRACT NO. 98SC00001

PROJECT NAME  
 WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE  
 FIGURE 1-1  
 WORK AREA PLAN

**IT** INTERNATIONAL TECHNOLOGY CORPORATION  
 ... Creating a Safer Tomorrow

DRAFT

REV	DATE	BY	CHK'D	APPROV'D	DESCRIPTION
B	2/13/98	GJS	PJ		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	RW	RCH		ORIGINAL ISSUE OF DRAFT

DESIGNED BY	RCH	CHECKED BY	PJ	1/9/98	REVISION
DRAWN BY	RW	APPROVED BY			
DATE	12 DEC 97	DWG. SCALE	1'=300'		B
T PROJECT NO.	773481	DRAWING NO.	773481-B8		

**HWMU 27, WASTE PIT NO. 4 - MONTHLY INSPECTION RECORD**

Inspector's Signature:		Badge #:	Date:	
Supervisor's Signature:		Badge #:	Date:	
Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions to be Completed
1	Signs: -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact			
2	Boundary Markers (e.g., chains, rope)			
3	Condition of Soil at Edge of Flexible Membrane Liner (FML) (soil erosion should not expose FML below grade)			
4	Condition of Anchor Trenches (FML should be securely anchored in trench)			
5	Condition of Field Seams (tears)			
6	Condition of Factory Seams (tears)			
7	Condition of FML Panels (holes)			
8	Condition of Hold-Down Pillows (secure)			
9	Walk Over Monthly Inspection			

Comments: \_\_\_\_\_  
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Environmental Compliance:	Date:
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**HWMU 42, WASTE PIT NO. 5 - MONTHLY INSPECTION RECORD**

Surface  
Impoundment

Inspector's Signature:		Badge #:	Date:	
Supervisor's Signature:		Badge #:	Date:	
Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions to be Completed
1	Signs: -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact			
2	Boundary Markers (e.g., chains, rope)			
3	Unit Condition (Dike/Liner)			
4	Bottom Material Exposed			
5	Area Condition			
6	Safety Equipment			
7	Visual Evidence of Material Release			
8	Estimated Freeboard Level	Feet: _____ Inches: _____		
9	Secondary Containment Condition			
10	Emergency and Spill Response Equipment			

Comments: \_\_\_\_\_  
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Environmental Compliance:	Date:
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**HWMU SURFACE IMPOUNDMENT DAILY FREEBOARD INSPECTION LOG**

<b>Inspector's Signature:</b>		<b>Badge #:</b>			<b>Date:</b>	
<b>Supervisor's Signature:</b>		<b>Badge #:</b>			<b>Date:</b>	
<b>HWMU No.</b>	<b>HWMU Location</b>	<b>Time</b>	<b>Freeboard Level (Feet/Inches)</b>	<b>Acceptable</b>	<b>Unacceptable</b>	<b>Observations/Corrective Actions to be Completed</b>
42	Waste Pit #5					

**Comments:** \_\_\_\_\_  
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<b>Environmental Compliance:</b>	<b>Date:</b>
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### WASTE PITS AREA - SHIFT INSPECTION LOG

Date: \_\_\_\_\_  
Day: \_\_\_\_\_

Time	Waste Pit # 5					Waste Pit #6 <sup>2</sup>					Clearwell											
	Freeboard	Decant		Time <sup>1</sup>		Clearwell Composite <sup>1</sup> Sample No.	Freeboard	Operation	Pit #6 Sample No.	Analytical Results				Freeboard	Pumping		Time <sup>1</sup>		Clearwell Composite <sup>2</sup> Sample No.			
		Y	N	Start	Stop					U	pH	F	TSS		Y	N	Start	Stop				
10:00 p.m.																						
2:00 a.m.																						
Comments																						
6:00 a.m.																						
10:00 a.m.																						
Comments																						
2:00 p.m.																						
6:00 p.m.																						
Comments																						
					<b>Operator</b>					<b>Badge No.</b>					<b>Supervisor</b>				<b>Badge No.</b>			
Shift 1 - 10:00 p.m. - 6:30 a.m.																						
Shift 2 - 6:00 a.m. - 2:30 p.m.																						
Shift 3 - 2:00 p.m. - 10:30 p.m.																						

FIGURE 4-4

<sup>1</sup>Complete only during decant/pumping operations  
<sup>2</sup>Complete during periods of adding/removing water

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**WPRAP AREA  
DAILY/WEEKLY  
INSPECTION CHECKLIST**

Inspector Name:		Badge Number:		Date:
Supervisor Name:		Badge Number:		Date:
Area	Inspection Item	Status		Comments
		Acceptable	Unacceptable	
<b>COMPLETE WEEKLY</b>				
Pit 3 Clearwell	Level			
	Area Neat			
Pit 6	Area Neat			
	Pump & Hoses Secure			
	Surface Level Exposed ____%			
	Barricades in Place			
	Liner Condition			
	Condition of Patches			
Roadways	Erosion			
	Ice/Snow Buildup			
	Ponded Water			
	General Condition			
Fencing	Condition of Posts/Fabric			
	Condition of Gates			
	Condition of Locks			
	Signs Legible: Damaged:			
<b>COMPLETE DAILY</b>				
Stormwater Management Pond	Area Neat			
	Condition of Liner			
	Condition of Dike			
	Sedimentation			

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Comments:

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FIGURE 4-5

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**APPENDIX A**

**FLUOR DANIEL FERNALD, INC. PROCEDURE EW-1015,  
INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS**

# INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)

**EW-1015**

**Effective Date: 05-24-97**

---

Originator (Subject Expert): \_\_\_\_\_

B. Huffman

Date

Checker Concurrence: \_\_\_\_\_

M. Harper

Date

---

Approved By: \_\_\_\_\_

T. Walsh, EW FAM

Date

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT**

**Fluor Daniel Fernald, Inc.**  
P. O. Box 538704  
Cincinnati, Ohio 45253-8704

**000140**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
	<b>Effective Date: 05/24/97</b>	<b>Revision No. 0</b>
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ISSUE AND REVISION SUMMARY**

Revision	Date	Description
0	05-30-97	New document to convert 20-C-616 into a site procedure per Request No. WR-0396; initiated by B. Huffman. This document replaces 20-C-616, dated 07-05-96, Rev. 1.

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## 1.0 **PURPOSE**

This procedure provides the inspection requirements and responsibilities for Hazardous Waste Management Units (HWMUs), mobile lockers storing hazardous/recyclable waste and materials, and special projects that require temporary hazardous waste storage at the Fernald Environmental Management Project (FEMP).

## 2.0 **SCOPE**

This procedure applies to all personnel involved in the inspection of active and inactive HWMUs and related components.

## 3.0 **REFERENCES**

- 3.1 20-C-606, Hazardous Material Spill Clean-up
- 3.2 20-C-600, Overpacking Defective Containers
- 3.3 EP-0004, Spill Incident Reporting and Clean-up
- 3.4 EW-0015, FEMP RCRA Operating Record

## 4.0 **RESPONSIBILITIES**

### 4.1 Inspection Supervisors

- Maintains a current copy of safety equipment from Attachment G-I of the RCRA Contingency Plan at those HWMUs that actively store RCRA containers (to be accessible to HWMU Inspectors).
- Maintains a centralized current copy of Attachment G-I safety equipment for all HWMUs that do not store RCRA containers (accessible to HWMU Inspectors).

**NOTE: Current controlled copies of any portion of Attachment G-1 of the RCRA Contingency Plan may be obtained from Environmental Compliance (EC).**

- Coordinates with the HWMU Facility Owner to initiate corrective actions.
- Ensures that any listed corrective actions are resolved and/or listed on ensuing Inspection Logs.
- Verifies that the inspections are performed at required frequencies.
- Reviews the HWMU Inspection Logs for completeness to ensure the appropriate signatures, dates, and times are recorded and all item descriptions are checked acceptable, unacceptable, or N/A.

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- Obtains original Inspection Logs from HWMU Inspectors immediately following inspections.
- Ensures that the Operators wear the appropriate respiratory protection and/or additional personal protective equipment (PPE) specified by the work permit for the task being performed.
- Verifies that personnel assigned to HWMU Inspections have documented, current training to this procedure and are qualified to do the work.
- Provides and documents on-the-job training for HWMU Inspectors to ensure familiarity with inspection process.
- Documents all actions taken, including information regarding any spills or leaking containers noted during the inspection period.
- Forwards Inspection Logs to the Centralized Inspection Group.

4.2 HWMU Facility Owners

- Ensures their HWMU is maintained in compliance with applicable RCRA criteria (as listed on the Inspection Log) by reviewing and signing the Inspection Log.
- Provides Inspection Supervisors with responses or planned corrective actions for any non-compliant items noted on the inspection.

4.3 HWMU Inspectors

- Inspects the HWMU in accordance with this procedure and records all observations on the HWMU Inspection Log.
- Provides completed Inspection Logs to the Inspection Supervisors for corrective action and further processing.
- Notifies Inspection Supervisor of non-compliant items found during inspection.

4.4 Centralized Inspection Group

- Collects HWMU Inspection Logs from Inspection Supervisors and tracks the receipt of logs, non-compliant items, and appropriate corrective actions taken.
- Reviews the HWMU Inspection Logs for completeness to ensure the appropriate signatures, dates, and times are recorded and all item descriptions are checked acceptable, unacceptable, or N/A.
- Contacts Inspection Supervisors in the case of incomplete or missing Inspection Logs.

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- Forwards completed inspections to EC for review.

#### 4.5 Environmental Compliance (EC)

- Reviews the HWMU Inspection Logs for completeness to ensure the appropriate signatures, dates, and times are recorded and all item descriptions are checked acceptable, unacceptable, or N/A.
- Ensures unacceptable checked items are addressed in the "Comments" section on the HWMU Inspection Log along with any corrective actions as either verified or documented.
- Signs and dates the bottom of the HWMU Inspection Log denoting receipt and transfer to the FEMP RCRA Operating Record.
- Contacts the Centralized Inspection Group for incomplete or missing HWMU Inspection Logs.
- Conducts surveillance at the HWMUs to verify compliance.
- Provides quarterly status reports for management review.

- 4.6 Training Records - Provides EC and Centralized Inspection Group with lists of trained, qualified HWMU Inspectors within two working days of each training class.

#### 5.0 GENERAL

- 5.1 Warnings and Cautions shall precede the Section, Sub-Section, Item, step, or sub-step to which they apply.

#### 6.0 PREREQUISITES

##### **SAFETY AND HEALTH REQUIREMENTS**

- 6.1 Safety glasses shall be worn unless other eye protection is specified by Industrial Hygiene and/or Radiological Control on applicable permits (such as cover goggles, face shields, or respirators).
- 6.2 Cover gaggles/face shields, neoprene rubber gloves, and a rubber apron shall be worn when handling caustic, acids, or any other chemical which could cause immediate skin damage upon contact.
- 6.3 PPE specified by the work permit or posted signs shall be worn.
- 6.4 Leather-palm gloves shall be worn when handling drums, operating equipment, and when handling rough/sharp-edges.

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- 6.5 A Confined Space Entry Permit is required for entry into any confined space such as a tank or sump.
- 6.6 Personal safety equipment (listed in the RCRA Contingency Plan) and the required emergency response equipment (listed in Attachment G-1 of the RCRA Contingency Plan) shall be operational and readily available for HWMUs/facilities in use.
- 6.7 Required Safety equipment (as noted in Attachment G-1 of the RCRA Contingency Plan) shall be inspected for availability and good working condition.
- 6.8 A communications device, such as a telephone or hand-held two-way radio, capable of summoning emergency assistance shall be immediately available to persons conducting work/inspections in or around HWMUs. (Device must be operationally tested prior to entering the HWMU.)
- 6.9 Any release of hazardous waste shall be reported immediately per procedure 20-C-606, "Hazardous Material Spill Clean-Up."
- 6.10 Employees shall review and be familiar with the hazards (e.g., chemical physical, biological, and radioactive) that may be encountered at the HWMUs they are inspecting.
- 6.11 Any circumstance that could have resulted in an intake of radioactive materials by inhalation, ingestion, or absorption shall immediately be reported to an area Supervisor. The Supervisor shall immediately report the circumstance of possible radioactive materials intake to Safety and Health (S&H) Radiological Control Department for evaluation. When the suspect isotope is uranium, the involved personnel shall report to the Urine Sampling Station at the end of their shift to complete an Incident Investigation Report (ICR) (Form No. FS-F-1458), and submit an incident urine sample. The involved personnel shall 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 something other than uranium, the involved personnel shall report to the Dosimetry Section of the Radiological Control Department for further determination of actions. Employees are responsible for complying with additional requirements as specified by the Radiological Control Department.
- 6.12 Any situation which could have resulted in the inhalation, ingestion, or absorption of a hazardous material shall immediately be reported to an area Supervisor or to the Assistant Emergency Duty Officer (AEDO), who will immediately report the circumstances to Medical and Industrial Hygiene. The involved personnel shall be directed by the Supervisor or AEDO as to when and where to report for medical evaluation, completion of an Incident Investigation Report (IIR) (Form No. FS-F-1458), and submitting bioassay samples (e.g., blood, urine). Employees are responsible for complying with any additional requirements as specified by S&H.

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## 7.0 **PROCEDURE**

### 7.1 PROVIDING INSPECTION DOCUMENTS

#### **Training Records**

1. Provide Centralized Inspection Group with a list of trained, qualified HWMU Inspectors within two working days of each training class.

#### **Inspection Supervisor**

2. Prior to inspection, provide the HWMU Inspector with the following:
  - A. Inspection Log
  - B. Copy of (or access to) Appendix G-1 safety equipment lists
  - C. A list of (or access to) unresolved corrective actions
  - D. A list of (or access to) approved/trained HWMU Inspectors

### 7.2 **COMPLETING AND ROUTING THE APPLICABLE HAZARDOUS WASTE MANAGEMENT UNIT (HWMU) INSPECTION LOG**

#### **HWMU Inspector**

1. Enter name in the top portion of the Inspection Log  
(See Attachments A through FF):

**NOTE: The Inspection Supervisor shall determine if it is necessary to physically enter the HWMU in order to conduct the inspection.**

2. Conduct inspection in accordance with requirements for the type of HWMU as contained in Table 1. "HWMU Identification."

**NOTE: The specific inspection requirements for each particular type of HWMU are contained in Sections 7.3 through 7.9.**

3. Enter a check mark or an N/A (with explanation) in the "Acceptable" or "Unacceptable," as applicable, for each item number.
4. Enter a brief description of the observation and corrective action taken in the appropriate column of the Inspection Log, if an item is checked "Unacceptable".

**NOTE: The "Comments" Section shall be used if additional space is required.**

5. For items deemed unacceptable that pose an imminent hazard, or where a hazard has already occurred, do the following:

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- A. Enter a brief description of the observation and corrective action taken in the appropriate column of the Inspection Log.
- B. Report the items to the Inspection Supervisor.

#### **Inspection Supervisor**

- C. Contact the Assistant Emergency Duty Officer (AEDO) and the HWMU Facility Owner.

#### **Inspection Supervisor, AEDO, and HWMU Facility Owner**

- D. Immediately correct the hazard.

#### **HWMU Inspector**

6. For discrepancies that can be easily corrected (for example, fallen chains), do the following:
  - A. Fix discrepancy.
  - B. Note the discrepancy as corrected in the Comments section of the Inspection Log.
7. Check that the following HWMU signs are in place, are readable from 25 feet away, and are in sufficient quantities to be seen from any approach to the HWMU, as required on the individual Inspection Logs:
  - A. DANGER Authorized Personnel Only
  - B. No Smoking, Matches, or Open Flame
  - C. PCB Warning signs (and labeled containers) at PCB storage locations
  - D. Asbestos Warning signs (and labeled containers) marked with the words **"DANGER ASBESTOS CONTAINING MATERIAL"** for Material Type 028.
8. Record any changes to the configuration of the HWMU or change(s) in type or location of safety equipment (as listed in Attachment G-1 of the RCRA Contingency Plan) at the HWMU in the "Comments" Section of the applicable Inspection Log.
9. Ensure the HWMU boundary marker (yellow chain, yellow/magenta rope, yellow paint line, or fencing) is intact and in position.
10. Inspect the area in/around the HWMU for debris and/or trash.
11. Check that safety equipment, as identified in Attachment G-1 of the RCRA Contingency Plan is available, appears to be functional, and has unobstructed access.

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12. List any items requiring corrective action or unacceptable items reported on prior inspections that have been corrected.
13. After inspection is complete, sign, date, and enter badge number on the Inspection Log.
14. Forward the Inspection Log to the HWMU Facility Owner. (Point out any potential corrective actions needed.)

#### **HWMU Facility Owner**

15. Review HWMU condition from the completed inspection log and provide information in the comments section (and/or by attachment) for any corrective actions needed or completed.

**NOTE: Conditions which warrant corrective action may be verified through EC. The Inspection Supervisor can assist in coordinating/initiating corrective actions.**

16. Sign and date the completed inspection.
17. Return Inspection Log to HWMU Inspector.

#### **HWMU Inspector**

18. Deliver the completed Inspection Logs to Inspection Supervisor by the end of each shift. Point out any required corrective actions.

#### **Inspection Supervisor**

19. Coordinate with the HWMU Facility Owner to initiate corrective actions, if necessary. Ensure that any previously listed corrective actions are being resolved and recorded on future Inspection Logs.
20. Forward completed Inspection Logs to Centralized Inspection Group for tracking and review.

#### **Centralized Inspection Group**

21. Review Inspection Logs for completeness. Return any incomplete inspections to Inspection Supervisor for correction.
22. Track logs to verify receipt. Contact Inspection Supervisor if an inspection has not been received.
23. Maintain a logbook of non-compliant items and corrective actions until completion (when it will be documented on the subsequent Inspection Log).

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24. Retain a backup file copy and forward the original Inspection Log to EC.

**NOTE: A copy of the original Inspection Log is acceptable for placement in the FEMP RCRA Operating Record if the original is unobtainable.**

#### **Environmental Compliance (EC)**

25. Review the HWMU Inspection Logs for accuracy and to verify training of HWMU inspection personnel.

26. Return any incomplete inspections to Inspection Supervisor for correction.

27. Sign and date the bottom of the completed HWMU Inspection Log denoting that the inspection was received and forwarded to the RCRA Operating Record.

28. File the Inspection Log(s) in the FEMP RCRA Operating Record per EW-0015.

### 7.3 INSPECTING CONTAINER STORAGE AREAS FOR ACTIVE AND INACTIVE HWMUs

#### **HWMU Inspector**

1. Inspect the building/pad condition using the following criteria:

A. Check the structural integrity of the pad surface and curbing for cracks and structural failure which would be of a significant nature as to allow a material release to reach the environment.

B. Check around the pad for erosion problems and dead vegetation.

C. Check around the pad for signs of a release (such as a pool of liquid or stains).

D. Check the condition of the ramps.

E. Check the building structures for holes in the roof or walls which could allow precipitation to enter the HWMU.

F. Record any discrepancies on the Inspection Log.

G. Report any discrepancies to the Inspection Supervisor.

2. Inspect Secondary Containment Systems of Active and Inactive Container Storage Area HWMUs as follows:

**NOTE: It is not required that HWMUs with secondary containment that have had hazardous waste removed be pumped out within 24 hours. Corrective action only has to take place if the liquid does not appear to be water (such as oil sheen).**

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- A. Verify the Containment System is sealed and sufficiently impervious to contain spills, leaks, or accumulated precipitation.
- B. Check for visible unsealed gaps, holes, cracks, or breaks in the floor, curbs, or dikes of the containment system.
- C. Check the drainage features (including sumps, drains, and troughs) for standing or pooled liquids.

**NOTE: Standing liquids in HWMUs actively storing waste shall be removed within 24 hours. Inspection Supervisor shall contact the HWMU Facility Owner to arrange for pumping and removal of the liquid.**

- D. Check for visible signs of spills (such as liquids, or solid material on the floor and/or stains).
- E. Look for pooled liquids, clogged drains, and/or erosion after a storm.
- F. Record any discrepancies on the Inspection Log.
- G. Report any discrepancies to the Inspection Supervisor.

**7.4 INSPECTING CONTAINERS WITHIN ACTIVE CONTAINER STORAGE AREA HWMUs**

**NOTE: Containers that are under evaluation for RCRA determination are subject to a daily outdoor/uncovered inspection or a weekly indoor/covered inspection.**

**HWMU Inspector**

1. Check that pallets are stacked securely.
2. Check that pallets are stored far enough from the containment edge to prevent waste escaping if a leak occurs in a container.
3. Check for containers that are leaking waste, corroded, bulging and/or damaged.
  - A. If a container is damaged, do the following:
    - (1) Classify the container per "Container Inspection Categories" (See Attachment GG).
    - (2) Immediately report containers with Type I characteristics to the Inspection Supervisor and AEDO.
    - (3) Document Type I, II, and III containers on the Inspection Log.

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**NOTE: Hazardous waste markings (labels) on newly generated containers of hazardous waste will only contain the address, EPA Waste ID Codes, and accumulation start date until time of shipment when the remainder of the label will be completed. Backlog containers already in storage will not need the proper shipping name removed until shipment offsite (at that time, label may need to be changed in regards to new HM181 regulations); however, markings (labels) may be changed as time permits.**

4. Check that containers known to contain hazardous waste have a hazardous waste marking (label) affixed with legible "accumulation start date" entered.
5. Check that aisle spacing of at least 24 inches is maintained between rows of containers within storage bays, next to curbs, and between safe mass groupings of RCRA enriched materials.
6. Check the height of stacked drums per "Pallet Drum Capacity and Stacking Limits" (See Table 2).
7. Record any discrepancies on the Inspection Log.
8. Report any discrepancies to the Inspection Supervisor.
9. Inspect the Unit Reactivity Group Codes (RGCs) as follows:
  - A. Check that all "Active Container Storage" areas have material RGCs clearly posted at the boundary (such as end of rows, bays, or on building entrances) of each separate material RGC area.
  - B. Inspect the Unit RGCs per the following criteria:
    - (1) Check that containers are marked with a RGC.
10. Record any discrepancies on the Inspection Log.
11. Report any discrepancies to the Inspection Supervisor.

**NOTE: Refer to Attachment HH for the "Hazardous Waste Storage Compatibility Chart."**

- (2) Check for the separation of incompatible material.
- (3) Ensure that containers of incompatible material are separated by distance or by a physical barrier such as a dike, berm, or wall.
- (4) For containers that have an RGC or K "Ignitable," the stacking should be in accordance with "NFPA 30" (See Table 3).

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## 7.5 INSPECTING EQUIPMENT

### HWMU Inspector

1. Inspect the condition of operation equipment in active container storage areas (RCRA Warehouse) per the applicable "FEMP RCRA Warehouse, Building \_\_\_\_\_ Operation Equipment Log" (See Attachment DD).
2. Record any discrepancies on the Inspection Log.
3. Report any discrepancies to the Inspection Supervisor.

## 7.6 INSPECTING ACTIVE ABOVE GROUND RCRA STORAGE TANKS

### HWMU Inspector

1. Check that tank and auxiliary equipment (stand-pipes, fill pipes, vents, valves, or transfer pumps) are isolated, closed, or locked out.
2. Check that lids/manways are locked or have a tamper-proof seal installed.
3. Check the tank structure and all associated piping for deterioration (e.g., corrosion/erosion, leaking fixtures/seams) that could affect tank integrity.
4. Check the secondary containment per step 2 of Section 7.3.
5. Check in and around the unit for erosion, dead vegetation, and signs of material release.
6. Check the condition of overfill/spill control equipment.
7. Check for the presence of monitoring equipment (such as contact level indicator or high level alarm).
8. If no monitoring equipment is installed, a lock-and-tag system should be in use to prevent inadvertent overfilling.

**NOTE: If tank has undergone closure and is now empty, all of the above criteria would be recorded as "not applicable" (n/a), with the exception of steps 4 and 5 of Section 7.6.**

9. Check that the words "Hazardous Waste" have been stenciled on the tanks or a hazardous waste label has been attached.
10. Record any discrepancies on the Inspection Log.
11. Report any discrepancies to the Inspection Supervisor.

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7.7 INSPECTING SURFACE IMPOUNDMENTS

**HWMU Inspector**

**NOTE: Surface impoundments and landfills shall also be inspected after storms have occurred.**

1. Check that the containment dike/berm will prevent water run-off and run-on during rainfall events.

**NOTE: For example, the top of the dike is above the surrounding ground so that rainfall cannot overtop the dike.**

2. Check around the dike/berm for dead vegetation, which could lead to erosion.
3. Check the dike/berm for cracks, holes, breaks, and slumped areas.
4. Check for erosion.
5. Check the impoundment freeboard daily (and during HWMU inspections) as follows:

**NOTE: A separate daily freeboard inspection is not required on the day the HWMU inspection is conducted.**

- A. Locate the freeboard indicator.
  - B. Check the indicator to determine the freeboard level.
  - C. Record the level on the "HWMU Surface Impoundment Daily Freeboard Inspection Log" (See Attachment CC).
  - D. Inspect Waste Pit #5 for low water level to ensure that the impoundments bottom material is not exposed. If an exposed area exists, contact supervisor to restore water coverage.
  - E. Document freeboard level on Inspection Log and report free board level to Inspection Supervisor.
6. Check the sides of the berm, dike, and containment basin for damage and deterioration.
  7. Check the visible section of liners (if installed) for rips, tears, and seam separation.
  8. Record any discrepancies on the Inspection Log and provide additional information in the "Comment" Section of the Inspection Log as needed.

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9. Report any discrepancies to the Inspection Supervisor.

#### 7.8 INSPECTING PROCESS UNITS

##### **HWMU Inspector**

1. Check for visible signs of release (such as residues or dead vegetation).
2. Check for damage such as broken piping and dented tanks.
3. Check for open unit components (such as doors, lids, or ports), which could effect the integrity of the unit or lead to a potential material release.
4. If the unit has an associated tank or tanks, perform Section 7.5.
5. Record any discrepancies on the Inspection Log.
6. Report any discrepancies to the Inspection Supervisor.

#### 7.9 INSPECTING LANDFILLS

##### **HWMU Inspector**

1. Check the dikes and trenches (run-on, run-off controls) around the unit for deterioration and/or erosion.
2. Check that wind dispersal control systems such as rubber panels and hold down pillows (if present) are correctly functioning.
3. Inspect the flexible membrane liner for rips, tears, and seam separation.
4. Check the overtopping control systems for deterioration/damage (such as broken pipes or damaged dikes).
5. Record any discrepancies on the Inspection Log.
6. Report any discrepancies to the Inspection Supervisor.

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## 7.10 INSPECTING SUMPS

### HWMU Inspector

1. Check the drainage features for standing liquid.
2. Check inside the sump for foreign objects.
3. Check around the sump and the sump wells for cracks, holes, gaps, and structural defects.
4. Check outside the sump perimeter for erosion.
5. Check around the sump for dead vegetation, stains, and other signs of a release.

**NOTE: In some cases the sump will not pump dry. They almost always have some standing liquid.**

6. If the sump is being used as a containment, then check for standing liquid.

**NOTE: Notification shall be made to the HWMU Facility Owner and Inspection Supervisor in addition to the entry on the appropriate Inspection Log.**

7. If standing liquid is found, do the following:
  - A. Immediately notify the Inspection Supervisor.
  - B. Notify the HWMU Facility Owner.
8. Record any discrepancies on the Inspection Log.
9. Report any discrepancies to the Inspection Supervisor.

## 7.11 INSPECTING HAZARDOUS WASTE STORAGE LOCKERS

### HWMU Inspector

1. Check containers to ensure they are stacked securely.
2. Check the condition of containers for leaking waste, corrosion, bulges, and/or damage.
  - A. If a container is damaged, do the following:
    - (1) Classify the container per "Container Inspection Categories" (See Attachment GG).

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- (2) Immediately report containers with Type I characteristics to the Inspection Supervisor and AEDO.
  - (3) Overpack the container per Procedure 20-C-600, Overpacking Defective Containers.
  - (4) Document all Type I, II, and III containers on the Inspection Log.
3. Check for visible signs of spills (such as liquids, solid material, or stains on the floor or in the sub-floor containment).
  4. Check for the separation of incompatible material. (Refer to Attachment HH for the "Hazardous Waste Storage Compatibility Chart").

**NOTE: Containers stored in the Hazardous Waste Storage Locker should be marked/labeled as to contents.**

5. Record any discrepancies on the Inspection Log.
6. Report any discrepancies to the Inspection Supervisor.

#### 7.12 INSPECTING SPECIAL PROJECTS UTILIZING TEMPORARY RCRA STORAGE

**NOTE: Inspections of special projects are only required if RCRA material is present.**

##### **HWMU Inspector**

1. Determine whether the special project utilizes temporary RCRA storage.
2. Do one of the following:
  - A. If the project contains a hazardous waste processing unit, inspect the unit per the criteria in Section 7.8, using an FS-F-4890, Special Project Hazardous Tank/Container/Tanker Truck Inspection (Attachment FF).

##### **OR**

- B. If the project contains a hazardous waste container storage area, inspect the area per the criteria in Section 7.3 and 7.4. using an FS-F-4890.

##### **OR**

- C. If the project is staging a tanker truck and trailer holding hazardous waste, do the following, using an FS-F-4890:

- (1) Check the integrity of the tanker for corrosion, dents, holes, or leaks.

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- (2) Ensure that the tanker is labeled with a hazardous waste marking or placarding that identifies the contents.
- (3) Verify that lids and manways are closed when not adding or removing waste.
- (4) Check for accessibility to spill control equipment.
- (5) Record any non-compliant items on the Inspection Log.
- (6) Report any non-compliant items to the Inspection Supervisor.

## 8.0 **RECORDS**

The following documents will be generated as records as a result of this procedure and will be managed according to RM-0022, FEMP Records Management Program Records Management Users Manual and EW-0015, FEMP RCRA Operating Record:

Hazardous Waste Management Unit (HWMU) Inspection Logs

## 9.0 **DRIVERS**

- 9.1 DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities
- 9.2 40 CFR 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
- 9.4 40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distributing in Commerce, and use Prohibitions
- 9.5 OAC 3745-65, Hazardous Waste Facility Interim Standards
- 9.6 Stipulated Amendment to the Consent Decree (Signed/Dated January 22, 1993)
- 9.7 FEMP Part B Permit Application

## 10.0 **DEFINITIONS**

- 10.1 Active Container Storage Areas - Units authorized to store RCRA hazardous wastes.
- 10.2 Bulge - A swollen area, convex distortion, or outward bend.
- 10.3 Corrosive - Aqueous wastes with a pH  $\leq 2$  or  $\geq 12.5$ .
- 10.4 Dent - A crease, depression, or hollow made by a blow or pressure, or a concave distortion.

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- 10.5 **Freeboard** - The vertical distance between the top of a tank or surface impoundment dike and the surface of the waste contained therein.
- 10.6 **Hazardous Waste** - A waste material listed in 40 CFR 261 or a material that exhibits the characteristic of ignitability, corrosivity, reactivity, or TCLP toxicity.
- 10.7 **Hazardous Waste Management Unit (HWMU)** - An identifiable area where hazardous waste is or has been treated, stored (more than 90 days), disposed of, or systematically released into the environment.
- 10.8 **Hazardous Waste Storage Facility** - Any unit/area where hazardous waste is stored.
- 10.9 **Hole** - An opening that penetrates the container, including breach, gouge, puncture, or leak.
- 10.10 **HWMU Inspectors** - Personnel who have successfully completed the training requirements to inspect HWMUs.
- 10.11 **Ignitable** - Liquid or non-liquid wastes capable of combustion due to heat (flash point less than 140°F), friction, absorption of moisture, or spontaneous chemical changes.
- 10.12 **Inactive Container Storage Areas** - Units that do not presently store hazardous waste but have been previously identified as HWMUs.
- 10.13 **Landfill** - A disposal facility or part of a facility where hazardous waste is placed in or on land.
- 10.14 **Mixed Waste** - Waste containing both radioactive and hazardous components as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act (RCRA), respectively.
- 10.15 **Process Unit** - Equipment that was used during the production years (and no longer active) and meets the definition of HWMU.
- 10.16 **Reactive** - Wastes that respond violently when contacting another substance, forming potentially explosive mixtures or generating toxic gases with water, generating toxic gases (cyanide or sulfide) at pH between 2 and 12.5, or detonating or exploding at standard temperature and pressure or when heated under confinement.
- 10.17 **Resource Conservation and Recovery Act (RCRA)** - The Congressional Act that established safe, environmentally acceptable, strict "cradle to grave" management control and practices for specific hazardous wastes.
- 10.18 **Spill** - Any unplanned event that permits the entry of hazardous waste into the ground water, or air.
- 10.19 **Storm** - A significant weather event.

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- 10.20 Surface Impoundment - A topographic depression, man-made excavation, or diked area formed primarily of earthen materials designed to hold liquid hazardous waste or wastes containing free liquids.
- 10.21 Toxicity Characteristic Leaching Procedure (TCLP) - An analytical process to determine the type and concentration of hazardous contaminants in waste material.

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**TABLE 1 - HWMU IDENTIFICATION**  
(Sheet 1 of 2)

**HWMU IDENTIFICATION**

HWMU NO.	UNIT	TYPE OF HWMU	SOP SECT.	FREQ OF INSP.
1	Fire Training Facility	Landfill	7.8	Annual
2	DELETED			
3	DELETED			
4	Drum Storage Area Near Loading Dock (Lab Bldg)	Inactive Container Storage	7.3.1 and 7.3.2	Quarterly
5	Drum Storage Area South of W-26 (Lab Bldg)	Inactive Container Storage	7.3.1 and 7.3.2	Quarterly
6	DELETED			
7	DELETED			
8	DELETED			
9	DELETED			
10	NAR System Components	Process Unit (With Tanks)	7.7	Weekly
11	Tank Farm Sump	Surface Impoundment	7.6	Annual
12	DELETED			
13	DELETED			
14	Box Furnace	Process Unit	7.7	Weekly
15	Oxidation Furnace No. 1	Process Unit	7.7	Monthly
16	DELETED			
17	Plant 8 East Drum Storage Pad	Inactive Container Storage	7.3.1 and 7.3.2	Quarterly
18	Plant 8 West Drum Storage Pad	Active Container Storage	7.3	Quarterly
19	CP Storage Warehouse (Bldg 56)	Active Container Storage	7.3	Weekly
20	Plant 1 Pad	Active Container Storage	7.3	Weekly
21	DELETED			
22	Abandoned Sump West of Pilot Plant	Sump	7.9	Annual
23	DELETED			
24	DELETED			
25	Plant 1 Storage Bldg (Bldg 67)	Inactive Container Storage	7.3.1 and 7.3.2	Annual

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**TABLE 1 - HWMU IDENTIFICATION (cont.)**  
(Sheet 2 of 2)

HWMU NO.	UNIT	TYPE OF HWMU	SOP SECT.	FREQ OF INSP
26	DELETED			
27	Waste Pit No. 4	Landfill	7.8	Monthly
28	Trane Thermal Liquid Incinerator	Process Unit (with Tanks)	7.7	Weekly
29	Plant 8 Warehouse (Bldg 80)	Active Container Storage	7.3	Weekly
30	DELETED			
31	DELETED			
32	DELETED			
33	DELETED			
34	KC2 Warehouse (Bldg 63)	Active Container Storage	7.3	Weekly
35	Plant 9 Warehouse (Bldg 81)	Active Container Storage	7.3	Weekly
36	Storage Pad North of Plant 6	Active Container Storage	7.3.1 and 7.3.2	Quarterly
37	Plant 6 Warehouse (Bldg 79)	Active Container Storage	7.3	Weekly
38	DELETED			
39	DELETED			
40	DELETED			
41	Sludge Drying Beds	Surface Impoundment	7.6	Monthly
42	Waste Pit No. 5 Waste Pit No. 5 Freeboard	Surface Impoundment	7.6	Monthly Daily
43	DELETED			
44	DELETED			
45	DELETED			
46	UNH Tanks (NFS Storage Area)	RCRA Storage Tank	7.5	Annual
47	UNH Tanks (North of Plant 2)	RCRA Storage Tank	7.5	Annual
48	UNH Tanks (SE of Plant 2)	RCRA Storage Tank	7.5	Annual
49	UNH Tanks (Digestion Area, 2 Locations)	RCRA Storage Tank	7.5	Annual
50	UNH Tanks (Raffinate Bldg, 2 Locations)	RCRA Storage Tank	7.5	Annual
51	DELETED			
52	DELETED			
53	DELETED			
54	Thorium Nitrate Tank T2	RCRA Storage Tank	7.5	Annual

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**TABLE 2 - PALLET DRUM CAPACITY & STACKING LIMITS**

CONTAINER	DRUM/PALLET	MAXIMUM INDOOR STACKING HEIGHT	MAXIMUM OUTDOOR STACKING HEIGHT
85-Gallon Overpack	3	3 Pallets	3 Pallets
55-Gallon Drum	4	4 Pallets	3 Pallets
30-Gallon Drum	4	4 Pallets	3 Pallets
10-Gallon Pail	9	7 Pallets	3 Pallets
5-Gallon Pail	16	7 Pallets	3 Pallets
110-Gallon Overpack	2	1 Pallet on Top Pallet of Stack	3 Pallets
White Metal Boxes	N/A	3 High	3 High

**NOTE 1:** If the container has a RGC of K "Ignitable" the stacking of containers should be in accordance with NFPA 30. Refer to the MEF for the flashpoint to determine the class (i.e. <73°F - Class I-A flammable) (See Table 3).

**NOTE 2:** Stacking four (4) high may also consist of any of the following:

- Three pallets of 55-gallon drums with either one pallet of 85-gallon drums or one (1) pallet of 110-gallon drums on top.
- Two pallets of 55-gallon drums with two pallets of 85-gallon drums on top.

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**Table 3 - NFPA 30**

EPA RCRA Definitions		NFPA 30 Definitions	
<p><b>S</b></p> <p>RCRA Ignitable Liquid (D001)</p> <p><b>A</b></p> <p><b>M</b></p> <p><b>P</b></p>	<p>Flash Point &lt;140°F</p>	NFPA Class I-A Flammable Liquid	Flash Point <73°F Boiling Point <100°F
		NFPA Class I-B Flammable Liquid	Flash Point <73°F Boiling Point ≥100°F
		NFPA Class I-C Flammable Liquid	Flash Point ≥73°F and <100°F
		NFPA Class II Combustible Liquid	Flash Point ≥100°F and <140°F
		NFPA Class III-A Combustible Liquid	Flash Point ≥140°F and <200°F
		NFPA Class III-B Combustible Liquid	Flash Point ≥200°F

**Indoor Unprotected Storage of Liquids in Containers**

Class	Max. Pile Height (ft)	Container Storage	
		Max. Quant. per Pile (gal)	Max. Total Quant. (gal)*
IA	5	660	660
IB	5	1,375	1,375
IC	5	2,750	2,750
II	10	8,250	8,250
IIIA	15	27,500	27,500
IIIB	15	55,000	55,000

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**ATTACHMENT A - HWMU 1, FIRE TRAINING FACILITY**

Landfill

<b>Inspector's Signature:</b>		<b>Badge #:</b>	<b>Date:</b>	
<b>HWMU Facility Owner's Signature:</b>		<b>Badge #:</b>	<b>Date:</b>	
<b>Item No.</b>	<b>Description</b>	<b>Acceptable</b>	<b>Unacceptable</b>	<b>Observations/Corrective Actions To Be Completed</b>
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact			
2	<b>Boundary Markers (e.g., chain, rope)</b>			
3	<b>Area Condition</b>			

Comments: \_\_\_\_\_  
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<b>Environmental Compliance:</b>	<b>Date:</b>
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**ATTACHMENT B - HWMU 4, DRUM STORAGE AREA NEAR LOADING DOCK (LAB BLDG)**

Inactive  
Container Storage

<b>Inspector's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact			
2	<b>Boundary Markers (e.g., chain, rope)</b>			
3	<b>Area Condition</b>			

**Comments:** \_\_\_\_\_  
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<b>Environmental Compliance:</b>	<b>Date:</b>
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT C - HWMU 5, DRUM STORAGE AREA SOUTH OF W-26 (LAB BLDG)**

**Inactive Container Storage**

<b>Inspector's Signature:</b>		<b>Badge #:</b>	<b>Date:</b>	
<b>HWMU Facility Owner's Signature:</b>		<b>Badge #:</b>	<b>Date:</b>	
<b>Item No.</b>	<b>Item Description</b>	<b>Acceptable</b>	<b>Unacceptable</b>	<b>Observations/Corrective Actions To Be Completed</b>
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact			
2	<b>Boundary Markers (e.g., chain, rope)</b>			
3	<b>Area Condition</b>			

**Comments:** \_\_\_\_\_

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<b>Environmental Compliance:</b>	<b>D</b>
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**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT D - HWMU 10, NAR SYSTEM COMPONENTS**  
(Sheet 1 of 2)

**Process Unit  
With Tanks**

<b>Inspector's Signature:</b> <b>S</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Sign:</b>	<b>Badge #:</b>	<b>Date:</b>

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Tank Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior To Entry Contact	<b>A</b>		
2	<b>Surrounding Area &amp; Unit Integrity</b>			
3	<b>Condition Of Secondary Containment</b>			
4	<b>Safety Equipment</b>			
5	<b>Liquor Coolers E3E-210, E3E-211 &amp; F3E-220</b> <b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking Or Open Flame -Emergency & Prior to Entry Contact	<b>M</b>		
6	<b>Corrosion Or Release Of Waste</b>			
7	<b>Surrounding Area &amp; Unit Integrity</b>			
8	<b>Weir Box F3E-207, 213, 215, &amp; 218:</b> <b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking Or Open Flame -Emergency Contact		<b>P</b>	
9	<b>Corrosion Or Release Of Waste</b>			
10	<b>Surrounding Area &amp; Unit Integrity</b>			
11	<b>Spill Response Equipment</b>			

**Comments:** \_\_\_\_\_  
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<b>Environmental Compliance:</b>	<b>Date:</b>
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**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT D - HWMU 10, NAR SYSTEM COMPONENTS**  
(Sheet 2 of 2)

**Process Unit  
With Tanks**

**S**

<b>Inspector's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
12	Denitration Pot G3E-207: <b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency Contract	<b>A</b>		
13	Overfill/Spill Control Equipment			
14	Monitoring Equipment In Place (Content Level)			
15	Surrounding Area & Unit Integrity	<b>M</b>		
16	Condition Of Secondary Containment			
17	Safety Equipment			
18	Boundary Markers (e.g., chain, rope)			
19	Emergency & Spill Response Equipment			
20	Manway/Fill Pipe Seals Unbroken			

**P**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
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<b>Environmental Compliance:</b>	<b>Date:</b>
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**E**

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**ATTACHMENT E - HWMU 11, TANK FARM SUMP**

**TANK FARM SUMP**

**Surface Impoundment**

**S**

Inspector's Signature:	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	Signs: -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact			
2	Sump Drainage			
3	Area Condition			
4	Boundary Markers (e.g., chain, rope)			

**A**

**M**

**P**

Comments: \_\_\_\_\_  
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\_\_\_\_\_

Environmental Compliance:	Date:
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**L**

**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	DOCUMENT NO: EW-1015	
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**ATTACHMENT F - HWMU 14, BOX FURNACE**

**Process Unit**

Inspector's Signature: <b>S</b>	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact	<b>A</b>		
2	Boundary Markers (e.g., chain, rope)			
3	Unit Condition			
4	Visible Signs Of Material Release	<b>M</b>		
5	Safety Equipment			
6	Spill Response Equipment			

Comments: \_\_\_\_\_  
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Environmental Compliance:	Date: <b>L</b>
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**E**

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**ATTACHMENT G - HWMU 15, OXIDATION FURNACE NO. 1**

**Process Unit**

Inspector's Signature: <b>S</b>		Badge #:	Date:	
HWMU Facility Owner's Signature:		Badge #:	Date:	
Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact	<b>A</b>		
2	Boundary Markers (e.g., chain, rope)			
3	Unit Condition			
4	Visible Signs Of Material Release	<b>M</b>		
5	Safety Equipment			
6	Spill Response Equipment			

Comments: \_\_\_\_\_  
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Environmental Compliance:	<b>L</b>
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**E**

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**ATTACHMENT H - HWMU 17, PLANT 8 EAST DRUM STORAGE PAD**

Active  
Container Storage

Inspector's Signature: <b>S</b>	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact	<b>A</b>		
2	Boundary Markers (e.g., chain, rope)			
3	Pad Condition			
4	Area Condition			
5	Safety Equipment	<b>M</b>		
6	Visible Signs Of Material Release			

Comments: \_\_\_\_\_

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**P**

Environmental Compliance:	Date: <b>L</b>
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**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT I - HWMU 18, PLANT 8 WEST DRUM STORAGE PAD**

Inactive  
Container Storage

<b>Inspector's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact			
2	<b>Boundary Markers (e.g., chain, rope)</b>			
3	<b>Pad Condition</b>			
4	<b>Area Condition</b>			
5	<b>Safety Equipment</b>			
6	<b>Visible Signs of Material Release</b>			

**Comments:** \_\_\_\_\_

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<b>Environmental Compliance:</b>	<b>Date:</b>
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT J - HWMU 19, CP STORAGE WAREHOUSE (BLDG 56)**

Active Container Storage

<b>Inspector's Signature:</b> <b>S</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact	<b>A</b>		
2	<b>Building Condition</b>			
3	<b>Condition of Secondary Containment</b>			
4	<b>Emergency &amp; Spill Response Equipment</b>	<b>M</b>		
5	<b>Compatibility Codes</b>			
6	<b>Container Management</b>			
7	<b>Conditions Of Drums (Evidence Of Leaks Or Spills)</b>			
8	<b>Safety Equipment</b>		<b>P</b>	

Comments: \_\_\_\_\_  
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<b>Environmental Compliance:</b>	<b>Date:</b>
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	DOCUMENT NO: EW-1015	
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**ATTACHMENT K - HWMU 20, PLANT 1 PAD**

Active  
Container Storage

Inspector's Signature: <b>S</b>		Badge #:	Date:	
HWMU Facility Owner's Signature:		Badge #:	Date:	
Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	Signs: -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact	<b>A</b>		
2	Building Condition			
3	Pad Condition			
4	Condition of Secondary Containment	<b>M</b>		
5	Safety Equipment			
6	Emergency & Spill Response Equipment			
7	Compatibility Codes			
8	Container Management			
9	Conditions Of Drums (Evidence Of Leaks Or Spills)		<b>P</b>	
10	Boundary Markers (e.g., chains, rope)			

Comments: \_\_\_\_\_  
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Environmental Compliance:	Date:
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT L - HWMU 22, ABANDONED SUMP WEST OF PILOT PLANT**

Sump

Inspector's Signature: <b>S</b>		Badge #:	Date:	
HWMU Facility Owners Signature:		Badge #:	Date:	
Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -Emergency & Prior to Entry Cont	<b>A</b>		
2	<b>Boundary Markers (e.g., chain, rope)</b>			
3	<b>Area Condition</b>			

Comments: \_\_\_\_\_

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Environmental Compliance: <b>P</b>	Date:
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FS-F-3627 (REV. 04/03/97)

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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	DOCUMENT NO: EW-1015	
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**ATTACHMENT M - HWMU 25, PLANT 1 STORAGE BUILDING (BLDG 67)**

Inactive Container Storage

Inspector's Signature: <b>S</b>		Badge #:	Date:	
HWMU Facility Owner's Signature:		Badge #:	Date:	
Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact <b>A</b>			
2	Boundary Markers (e.g., chain, rope)			
3	Area Condition			

Comments: \_\_\_\_\_ **M** \_\_\_\_\_

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Environmental Compliance:	Date:
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**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT N - HWMU 27, WASTE PIT NO. 4**

Landfill

Inspector's Signature: <b>S</b>	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact			
2	<b>Boundary Markers (e.g., chain, pipe)</b>			
3	<b>Condition of Soil at Edge of flexible membrane liner (FML)</b> (soil erosion should not expose FML below grade)			
4	<b>Condition of Anchor Trenches</b> (FML should be securely anchored in trench)	<b>M</b>		
5	<b>Condition of Field Seams</b> (tears)			
6	<b>Condition of Factory Seams</b> (tears)			
7	<b>Condition of FML Panels</b> (holes)		<b>P</b>	
8	<b>Condition of Hold-Down Pillows</b> (secure)			
9	<b>Walk Over Monthly Inspection</b>			

Comments: \_\_\_\_\_  
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Environmental Compliance:	Date:
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT O - HWMU 28, TRANE THERMAL LIQUID INCINERATOR**

**Process Unit (With Tanks)**

<b>Inspector's Signature</b> <b>S</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior To Entry Con	<b>A</b>		
2	<b>Boundary Markers (e.g., chain, rope)</b>			
3	<b>Area Condition (Evidence of Leaks)</b>			
4	<b>Bldg. 39A Condition</b>			
5	<b>Tank F3E-406: Overfill/Spill Control Equipment</b>	<b>M</b>		
6	<b>Secondary Containment Condition</b>			
7	<b>Tank Condition or Release Of Waste</b>			
8	<b>Monitoring Equipment</b>			
9	<b>Safety Equipment</b>			

**Comments:** \_\_\_\_\_  
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<b>Environmental Compliance:</b>	<b>Date:</b>
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT P - HWMU 29, PLANT 8 WAREHOUSE (BLDG 80)**

Active Container Storage

<b>Inspector's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior To Entry Contact			
2	<b>Building Condition</b>			
3	<b>Condition of Secondary Containment</b>			
4	<b>Safety Equipment</b>			
5	<b>Emergency &amp; Spill Response Equipment</b>			
6	<b>Compatibility Codes</b>			
7	<b>Container Management</b>			
8	<b>Conditions of Drums (Evidence of Leaks/Spills)</b>			

Comments: \_\_\_\_\_

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<b>Environmental Compliance:</b>	<b>Date:</b>
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT Q - HWMU 34, KC-2 WAREHOUSE (BLDG 63)**

Active Container Storage

Inspector's Signature: <b>S</b>	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	Signs: -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact	<b>A</b>		
2	Building Condition			
3	Condition Of Secondary Containment			
4	Emergency & Spill Response Equipment	<b>M</b>		
5	Compatibility Codes			
6	Container Management			
7	Conditions of Drums (Evidence Of Leaks/Spills)			
8	Safety Equipment			

Comments: \_\_\_\_\_  
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Environmental Compliance:	Date:
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**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT R - HWMU 35, PLANT 9 WAREHOUSE (BLDG 81)**

Active Container Storage

Inspector's Signature: <b>S</b>	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact	<b>A</b>		
2	Building Condition			
3	Condition Of Secondary Containment			
4	Safety Equipment			
5	Emergency & Spill Response Equipment	<b>M</b>		
6	Compatibility Codes			
7	Container Management			
8	Conditions of Drums (Evidence Of Leaks/Spills)			

Comments: \_\_\_\_\_  
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Environmental Compliance:	Date:
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**E**

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**

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**ATTACHMENT S - HWMU 36, STORAGE PAD NORTH OF PLANT 6**

Inactive  
Container Storage

Inspector's Signature: <b>S</b>	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -Emergency & Prior to Entry Cont	<b>A</b>		
2	<b>Boundary Markers (e.g., chain, rope)</b>			
3	<b>Area Condition</b>			

Comments: \_\_\_\_\_ **M** \_\_\_\_\_  
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Environmental Compliance:	Date:
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT T - HWMU 37, PLANT 6 WAREHOUSE (BLDG 79)**

Active Container Storage

<b>Inspector's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior To Entry Contact			
2	<b>Building Condition</b>			
3	<b>Condition Of Secondary Containment</b>			
4	<b>Spill Response Equipment</b>			
5	<b>Compatibility Codes</b>			
6	<b>Container Management</b>			
7	<b>Conditions of Drums (Evidence Of Leaks/Spills)</b>			
8	<b>Safety Equipment</b>			

Comments: \_\_\_\_\_

<b>Environmental Compliance:</b>	<b>Date:</b>
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	DOCUMENT NO: EW-1015	
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**ATTACHMENT U - HWMU 41, SLUDGE DRYING BEDS**

Surface Impoundment

Inspector's Signature: <b>S</b>		Badge #:	Date:	
HWMU Facility Owner's Signature:		Badge #:	Date:	
Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -Emergency & Prior To Entry Contact	<b>A</b>		
2	<b>Boundary Markers (e.g., chain, rope)</b>			
3	<b>Unit Condition (Dike/Liner)</b>			
4	<b>Area Condition</b>			
5	<b>Safety Equipment</b>	<b>M</b>		
6	<b>Visual Evidence Of Material Release</b>			

Comments: \_\_\_\_\_

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Environmental Compliance:	Date: <b>L</b>
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT V - HWMU 42, WASTE PIT NO. 5**

<b>Inspector's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

Surface Impoundment

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior To Entry Cont			
2	<b>Boundary Markers (e.g., chain,</b>			
3	<b>Unit Condition (Dike/Liner)</b>			
4	<b>Bottom Material Exposed</b>			
5	<b>Area Condition</b>			
6	<b>Safety Equipment</b>			
7	<b>Visual Evidence Of Material Release</b>			
8	<b>Estimated Freeboard Level</b>	<b>Feet:</b>	<b>Inches:</b>	
9	<b>Secondary Containment Condition</b>			
10	<b>Emergency and Spill Response Equipment</b>			

Comments: \_\_\_\_\_

<b>Environmental Compliance:</b>	<b>Date:</b>
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Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**

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*Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.*

**ATTACHMENT W - HWMU 46, UNH TANKS (NFS STORAGE AREA)**

**(Tanks F2-605, 606, 607, 608, 02-E004A-Tank)**

RCRA  
Storage Tank

Inspector's Signature: <b>S</b>	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior To Entry Contact	<b>A</b>		
2	<b>Surrounding Area And Unit Integrity</b>			
3	<b>Secondary Containment Condition</b>			
4	<b>Safety Equipment</b>			
5	<b>Boundary Markers (e.g., chain, rope)</b>	<b>M</b>		

Comments: \_\_\_\_\_

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**Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**

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**ATTACHMENT X - HWMU 47, UNH TANKS (NORTH OF PLANT 2)**

**(Tanks F2E-5, F2E-6, & F2E-8)**

**RCRA  
Storage Tank**

Inspector's Signature: <b>S</b>	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	Signs: -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior To Entry Contact	<b>A</b>		
2	Surrounding Area And Unit Integrity			
3	Secondary Containment Condition			
4	Safety Equipment			
5	Boundary Markers (e.g., chain, rope)	<b>M</b>		

Comments: \_\_\_\_\_

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Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**

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**ATTACHMENT Y - HWMU 48, UNH TANKS (SOUTHEAST OF PLANT 2)**

**(Tanks F3E-223)**

RCRA  
Storage Tank

Inspector's Signature:	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	Signs: -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior To Entry Contact			
2	Surrounding Area And Unit Integrity			
3	Secondary Containment Condition			
4	Safety Equipment			
5	Boundary Markers (e.g., chain, rope)			

Comments: \_\_\_\_\_

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Environmental Compliance:	Date:
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**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT Z - HWMU 49, UNH TANKS (DIGESTION AREA, 2 LOCATIONS)**

**(Tanks D1-1, 2, 4, 7, 10 F1-1, 25, 26)**

**RCRA  
Storage Tank**

<b>Inspector's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

<b>Item No.</b>	<b>Item Description</b>	<b>Acceptable</b>	<b>Unacceptable</b>	<b>Observations/Corrective Actions To Be Completed</b>
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact			
2	<b>Surrounding Area And Unit Integrity</b>			
3	<b>Secondary Containment Condition</b>			
4	<b>Safety Equipment</b>			
5	<b>Boundary Markers (e.g., chain, rope)</b>			

**Comments:** \_\_\_\_\_

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<b>Environmental Compliance:</b>	<b>Date:</b>
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT AA - HWMU 50, UNH TANKS (RAFFINATE BLDG, 2 LOCATIONS)**

**(Tanks F1-301, 302, 303 & 308)**

**RCRA  
Storage Tank**

<b>Inspector's Signature:</b> <b>S</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

<b>Item No.</b>	<b>Item Description</b>	<b>Acceptable</b>	<b>Unacceptable</b>	<b>Observations/Corrective Actions To Be Completed</b>
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior To Entry Contact	<b>A</b>		
2	<b>Surrounding Area And Unit Integrity</b>			
3	<b>Secondary Containment Condition</b>			
4	<b>Safety Equipment</b>			
5	<b>Boundary Markers (e.g., chain, rope)</b>	<b>M</b>		

**Comments:** \_\_\_\_\_

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**P**

<b>Environmental Compliance:</b>	<b>Date:</b>
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**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT BB - HWMU 54, THORIUM NITRATE TANK (T2)**

**RCRA  
Storage Tank**

<b>Inspector's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

<b>Item No.</b>	<b>Item Description</b>	<b>Acceptable</b>	<b>Unacceptable</b>	<b>Observations/Corrective Actions To Be Completed</b>
1	<b>Signs:</b> -Danger-Authorized Personnel Only -No Smoking or Open Flame -HWMU Facility Owner and Emergency Information			
2	<b>Boundary Markers (e.g., chain, rope)</b>			
3	<b>Condition of Area</b>			
4	<b>Secondary Containment Condition</b>			

**Comments:** \_\_\_\_\_  
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<b>Environmental Compliance:</b>	<b>Date:</b>
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FS-F-4885 (REV. 04/03/97)

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT CC - HWMU SURFACE IMPOUNDMENT DAILY FREEBOARD INSPECTION LOG**

<b>Inspector's Signature:</b> <b>S</b>	<b>Badge #:</b>	<b>Date:</b>
<b>HWMU Facility Owner's Signature:</b>	<b>Badge #:</b>	<b>Date:</b>

HWMU No.	HWMU Location	Time	Freeboard Level (Feet/Inches)	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
42	Waste Pit #5	<b>A</b>				

Comments: \_\_\_\_\_  
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<b>Environmental Compliance:</b> <b>P</b>	<b>Date:</b>
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FS-F-4886 (REV. 04/03/97)

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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	DOCUMENT NO: EW-1015	
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**ATTACHMENT DD - FEMP RCRA WAREHOUSE, BUILDING \_\_\_\_ OPERATION EQUIPMENT LOG**  
(Sheet 1 of 2)

Inspector's Signature:	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	Procedures Available For All Equipment Used and Processes Conducted In RCRA Warehouse			
2	All PM Inspections Conducted Per Applicable Procedure			
3	Scale: Daily PM Inspection Conducted	A		
	Current Calibration Sticker Present			
	Platform Guard In Place			
	Printer Operational			
4	Check Weights Serviceable (Have Current PM Date)	M		
	Forktruck: Daily PM Inspection Conducted			
	Form FS-F-2414 Completed			
5	Current PM Card Present			
	Holst, Crane: Daily PM Inspection Conducted	P		
	Form FMPC-H&S-2423 Completed			
	Current PM Tag Present			
Equipment Weight Capacity Not Exceeded By Load Weight				

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
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 \_\_\_\_\_  
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Environmental Compliance:	Date:
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<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT DD - FEMP RCRA WAREHOUSE, BUILDING \_\_\_\_ OPERATION EQUIPMENT LOG (cont.)**  
(Sheet 2 of 2)

Inspector's Signature: <b>S</b>		Badge #:	Date:	
HWMU Facility Owner Signature:		Badge #:	Date:	
Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
6	<b>Hand Stacker/Pallet Jack:</b> Daily PM Inspection Conducted	<b>A</b>		
	Form FMPC-SAML-2415 Completed			
7	<b>Current PM Tag Present</b>			
8	<b>Drum Lift &amp; UHLD:</b> Current PM Tag Present	<b>M</b>		
	Daily PM Inspection Conducted (Damaged/Missing Hardware)			
9	<b>Flammable Liquid Cabinets:</b> Positioned On Level Surface	<b>M</b>		
	Vent Port Capped (Unless Using A Vent Fan Adapter)			
	Cabinet Properly Grounded			
	No Combustible Materials Stored In/Around Cabinets			<b>P</b>

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
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<b>Environmental Compliance:</b>	<b>Date:</b>
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**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	DOCUMENT NO: EW-1015	
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**ATTACHMENT EE - HAZARDOUS WASTE STORAGE LOCKER (CLEAN SIDE)**

**Storage Locker  
Clean Side  
(For less than 90-day storage)**

Inspector's Signature: <b>S</b>	Badge #:	Date:
HWMU Facility Owner's Signature:	Badge #:	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
1	Signs: -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior to Entry Contact	<b>A</b>		
2	Locker Condition			
3	Condition of Secondary Containment			
4	Emergency & Spill Response Equipment	<b>M</b>		
5	Compatibility Codes			
6	Container Management			
7	Condition of Drums (Evidence of Leaks/Spills)			
8	Safety Equipment			

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Environmental Compliance:	Date:
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**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	<b>DOCUMENT NO: EW-1015</b>	
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**ATTACHMENT FF - SPECIAL PROJECT HAZARDOUS TANK/CONTAINER/TANKER TRUCK INSPECTION**  
(Sheet 1 of 2)

PROJECT NAME: \_\_\_\_\_

Inspector's Signature: <b>S</b>	Badge #:	Date:
Project Engineer's Sign:	Badge #	Date:
HWMU Facility Owner's Signature:	Badge #	Date:

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
<b>TEMPORARY TANK STORAGE</b>				
List Tank Numbers & Location(s):				
1	Overfill/Spill Control Equipment			
2	Corrosion or Release of Waste			
3	Monitoring Equipment in Place (Content Level)			
4	Surrounding Area Condition & Unit Integrity			
5	Secondary Containment Condition			
6	Accumulation of Precipitation in Secondary Containment: (See Note Below)			
7	Manway Closed (Except When Adding or Removing Waste):			
8	Sump Pump Switch Position (Should be "off")			
9	Tank has "Hazardous Waste" Marking (Label) Affixed			
<b>DRUM STORAGE AREA</b>				
List Location(s):				
1	Drums have "Hazardous Waste" Marking (Label) Affixed			
2	Corrosion, Holes, Dents, Bulges, or Leaks:			
3	All Drums Closed Except When Adding or Removing Waste			
4	Spill Response Equipment			
5	Secondary Containment Equipment			

**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	DOCUMENT NO: EW-1015	
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**ATTACHMENT FF - SPECIAL PROJECT HAZARDOUS TANK/CONTAINER/TANKER TRUCK INSPECTION**  
(Sheet 2 of 2)

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
<b>TANKER TRUCK AND TRAILER</b>				
List Location(s):				
1	Labeled with "Hazardous Waste" Marking			
2	Corrosion, Holes, Dents, Bulges, or Leaks:			
3	Lid/Manway Closed Except When Loading or Removing Waste			
4	Spill Response Equipment			

NOTE: Inspection of special projects is only required when RCRA material is present.

NOTE: HAZARDOUS WASTE CONTAINERS STORED OUTDOOR MUST BE INSPECTED DAILY. INDOOR DRUMS AND STAGING AREAS MUST BE INSPECTED WEEKLY. TANKER TRUCKS MUST BE INSPECTED DAILY.

NOTE: REMOVE ACCUMULATIONS OF PRECIPITATION IN SECONDARY CONTAINMENT PRIOR TO PROJECT START-UP EACH DAY. IF THE PROJECT IS NOT OPERATIONAL (i.e., WEEKENDS/HOLIDAYS), PRECIPITATION SHALL BE REMOVED WHEN THIS LEVEL EXCEEDS APPROXIMATELY ONE INCH.

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Environmental Compliance:	Date:
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**E**

<b>Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)</b>  <i>Compliance with this procedure is mandatory while performing the activities within its scope. Only a controlled copy may be used in the performance of work.</i>	DOCUMENT NO: EW-1015	
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**ATTACHMENT GG - CONTAINER INSPECTION CATEGORIES**

TYPE	CHARACTERISTIC	CORRECTIVE ACTION
I	Material flowing from the container with accumulation on the pallet or pad.	<ol style="list-style-type: none"> <li>1. Notify the Inspector Supervisor.</li> </ol> <p><b>The Supervisor shall notify the AEDO.</b></p> <ol style="list-style-type: none"> <li>2. Immediately stop or contain the leak.</li> <li>3. Supervisor records on the inspection log that the required action has been completed.</li> <li>4. Complete additional cleanup as necessary.</li> </ol>
II	Material on the container exterior only; no material on the pallet or pad.	<ol style="list-style-type: none"> <li>1. Record the leak on the inspection log.</li> <li>2. Notify the Inspector Supervisor.</li> </ol> <p><b>The Supervisor shall notify the AEDO (see EP-0004, "Spill Incident Reporting and Cleanup). The Supervisor shall review the completed inspection logs to prioritize containers for transfer to the overpacking area and subsequent mitigation.</b></p>
III	<p>The container exterior is discolored with visible contamination; no material release.</p> <p>Severe corrosion with deep pitting and/or metal flaking. Dents and/or bulges which affect container to the degree of potential release.</p>	<ol style="list-style-type: none"> <li>1. Record the condition on the inspection log.</li> <li>2. Notify Inspector Supervisor.</li> </ol> <p><b>The disposal requires disposition as directed by the Supervisor.</b></p>

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Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**

DOCUMENT NO: EW-1015

Effective Date: 05/24/97

Revision No. 0

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**ATTACHMENT HH - HAZARDOUS WASTE STORAGE COMPATIBILITY CHART**

REACTIVITY GROUP DESCRIPTION	RGC CODE (1)	A	B	C	D	E	F	G	H	I	J	K	L	M
HALOGENATED ORGANICS AND PCP	A	X	X	O	O	X	X	X	O	O	O	X	O	O
ALCOHOLS AND COMBUSTIBLES	B	X	X	O	O	X	X	X	X	O	O	X	O	O
MINERAL ACIDS + CORROSIVES	C	O	O	X	O	O	O	O	O	O	O	O	O	O
CAUSTICS	D	O	O	O	X	O	O	O	O	O	O	O	O	O
TOXICS AND TCLP METALS	E	X	X	O	O	X	X	X	X	O	O	X	O	O
FLUORIDES	F	X	X	O	O	X	X	X	X	O	O	X	O	O
WATER MIXTURES	G	X	X	O	O	X	X	X	X	O	O	X	O	O
CYANIDES	H	O	X	O	O	X	X	X	X	O	O	X	O	O
OXIDIZERS	I	O	O	O	O	O	O	O	O	X	O	O	O	O
REACTIVES	J	O	O	O	O	O	O	O	O	O	X	O	O	O
IGNITABLE	K	X	X	O	O	X	X	X	X	O	O	X	O	O
PEROXIDES	L	O	O	O	O	O	O	O	O	O	O	O	X	O
EXPLOSIVES	M	O	O	O	O	O	O	O	O	O	O	O	O	X

(1) An "X" indicates a compatible combination, and an "O" indicates an incompatible combination.

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1323

**APPENDIX B**

**S&WP DIVISION PROCEDURE 43-C-601,  
INSPECTION/OPERATION OF SURFACE IMPOUNDMENTS**

Fernald Environmental Management Project Fluor Daniel Fernald, Inc.		Revision No. 1 Effective: 10/10/97 PCN No. N/A	
S&WP DIVISION PROCEDURE	Inspection/Operation Of Surface Impoundments		43-C-601
			TECHNICAL PROCEDURE
Authorization: E. Henry, Team Coach Wastewater Treatment Operations		Supersedes: None	Page 1 of 8

{Direct questions concerning this procedure to the PTR, T. Arnold, X5774}

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## RECORD OF ISSUE/REVISIONS

<u>REV. NO.</u>	<u>EFFECTIVE</u>	<u>DESCRIPTION AND AUTHORITY</u>
N/A	08/28/81	Updated to include Pit No. 6 and requirements for controlling ammonia labels per changes in SOP Nos. 626 and 627, initiated by J. Farr.
N/A	08/27/85	General update of SOP including addition of procedure section per SOP Change Request No. 950, initiated by J. Farr.
N/A	10/28/86	Revision to clearwell operation per SOP Change Request No. P86-250, initiated by M. Griffin.
0	07/30/92	Issued to update inspection/operation per Request No. P92-132, initiated by J. Hensley.
0	08/31/95	Reissued without technical changes to conform to current requirements following Periodic Review R95-046, per Request No. P95-0183, initiated by J. Leslie.
1	10/10/97	Revised and updated following periodic review per Request No. P97-0287, initiated by T. Arnold.

000205

**1328****1.0 PURPOSE**

1.1 The purpose of this procedure is to provide the Inspection and Operation requirements for Waste Pit No. 5, Pit No. 3 Clearwell and the Lime Sludge Lagoons.

**2.0 SCOPE**

2.1 This procedure applies to the Inspection/Operation of Waste Pit No. 5, Pit No. 3 Clearwell and the Lime Sludge Lagoons. These Surface Impoundments are listed as Hazardous Waste Management Units (HWMUs) numbers 42, 39, and 43 respectively.

**3.0 APPLICABLE DOCUMENTS****3.1 Source Documents**

3.1.1 29 CFR 1910.120, "Occupational Safety & Health Act (OSHA)"

3.1.2 40 CFR 261, "Identification & Listing of Hazardous Waste"

3.1.3 40 CFR 264.226, "Inspection of Surface Impoundments"

3.1.4 40 CFR 265.16, "Personnel Training"

3.1.5 40 CFR 265.226, "Inspection of Surface Impoundments (Interim status)"

**3.2 Reference Documents**

3.2.1 EP-0004, "Spill Incident Reporting and Clean-Up"

3.2.2 20-C-616, "Inspection of Hazardous Waste Management Units"

3.2.3 43-C-340, "AWWT Phase I And II Operations"

**3.3 Information Sources**

3.3.1 None.

**4.0 DEFINITIONS**

4.1 **Authorized Personnel** - Personnel who have successfully completed all training requirements to perform work related to this procedure and have been authorized by the Facility Owner to perform the work.

4.2 **Freeboard** - The distance between the top of surface impoundment's/sump's content level and the top of the containment dike/berm.

4.3 **Hazardous Waste Management Unit (HWMU)** - Any unit/facility where hazardous waste is currently controlled or an empty unit which held hazardous waste (i.e. treatment, storage or disposal).

**000206**

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**4.0 DEFINITIONS (cont.)**

- 4.4 **Operators/Inspectors** - Personnel who have successfully completed the training requirements to perform work related to surface impoundments per the guidelines of this procedure.
- 4.5 **Resource Conservation and Recovery Act (RCRA)** - The congressional act which established safe and environmentally acceptable management practices for specific wastes. RCRA requires strict "cradle to grave" control and proper management of hazardous waste.
- 4.6 **Sample** - A portion of a universe or of a whole (e.g., waste pile lagoon, ground water, material, etc.) which can be expected to exhibit the average properties of the universe or whole. For the purposes of this procedure samples do not include any contact wastes, sample extracts, leachates, digestates, or other sample derivatives.
- 4.7 **Spill** - Any unplanned event involving leaking, pumping, pouring, injecting, escaping, emitting, emptying, leaching, releasing, dumping, discharging, or disposing of hazardous waste onto the ground, into water, or into the air, within or beyond the boundaries of the FEMP.
- 4.8 **Surface Impoundment** - A facility or part of a facility which is a topographic depression, manmade excavation, or diked area formed primarily of earthen materials designed to hold liquid hazardous waste or wastes containing free liquids.

**5.0 RESPONSIBILITIES****5.1 The Facility Owner is responsible for the following:**

- 5.1.1 Coordinating and contacting support organizations for assistance as required per this procedure.
- 5.1.2 Controlling access to HWMUs.
- 5.1.3 Ensuring personnel are authorized per the established training requirements as identified by the Department/Staff Manager.
- 5.1.4 Ensuring the Inspection Log(s) are completely filled out.
- 5.1.5 Initiating appropriate work request for problems noted.
- 5.1.6 Signing and distributing Inspection Logs to the RCRA Operating Record (Trailer No. 26) and to Environmental Compliance (EC).
- 5.1.7 Ensuring authorized storage configurations, aisle spacing, waste segregation, and other building requirements are maintained.
- 5.1.8 Ensuring nuclear criticality safety signs are posted.
- 5.1.9 Maintaining a current copy of the RCRA Contingency Plan.

**5.2 The Supervisor is responsible for the following:**

- 5.2.1 Notifying Facility Owner of corrective actions required.

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**5.0 RESPONSIBILITIES (cont.)**

- 5.2.2 Implementing needed corrective actions and recording actions taken including completion date on the appropriate Inspection Log.
- 5.2.3 Contacting Industrial Hygiene or Radiological Safety to determine the appropriate respiratory protection and/or additional protective clothing for the process being performed.
- 5.2.4 Providing Operators/Inspectors with the required Personal Protective Equipment (PPE).
- 5.2.5 Notifying the Assistant Emergency Duty Officer (AEDO) and completing an Incident Investigation Form if a spill occurs.
- 5.3 **Operators** are responsible for the following:
  - 5.3.1 Performing required operations/inspections of surface impoundments per this procedure.
  - 5.3.2 Noting observed deficiencies and notifying the Supervisor.
  - 5.3.3 Following all posted safety requirements.
  - 5.3.4 Taking steps to immediately control a spill or leak.
  - 5.3.5 Notifying the Supervisor (or AEDO in Supervisor's absence) of the magnitude, location, status, and type of material spilled per EP-0004, "Spill Incident Reporting and Clean-Up".

**6.0 GENERAL**

- 6.1 The surface impoundment procedures are to be performed twice every shift (every four (4) hours).
- 6.2 After a period of heavy rain, an area inspection shall be repeated.
- 6.3 For daily and weekly inspections of HWMUs refer to Procedure 20-C-616, "Inspection of Hazardous Waste Management Units".
- 6.4 Warnings, Cautions, and Notes shall precede the Item, Step, Sub-Step, Section, or Sub-Section to which they apply.

**7.0 HEALTH AND SAFETY REQUIREMENTS**

- 7.1 Leather-palm gloves shall be worn when handling sharp-edged or abrasive materials or containers.
- 7.2 Personnel within five (5) feet of the lip of the Bio-Surge Lagoon (BSL) and/or operating a water craft shall wear a life jacket.
- 7.3 Operations involving the use of water craft or outside the restricted walkways shall be performed by at least two (2) persons.

000208

**1323****7.0 HEALTH AND SAFETY REQUIREMENTS (cont.)**

- 7.4 Water craft not in use shall be attached to a secure anchorage on the shore.
- 7.5 Personnel working around the BSL shall carry two-way radios.
- 7.6 Vehicles shall not be driven on the exposed liner membrane surface or within seven (7) feet of the visible edge of the membrane.
- 7.7 Appropriate footwear shall be worn by personnel walking on the membrane. Care shall be taken to impose only minimum loads on the membrane while walking.
- 7.8 When using a water craft in the lagoon, care shall be taken to avoid damage to the lagoon liner by oars or paddles or by sharp or rough surfaces on the boat.
- 7.9 If work is to be performed along the side walls or bottom when the water level is low and the use of potentially damaging equipment is required, a work plan shall be prepared to establish precautions to protect the lagoon liner.
- 7.10 In case of contact with methanol, remove contaminated clothing and wash the affected body area in a safety shower/eye bubbler. If methanol is ingested, induce vomiting. Injured personnel shall report to Medical Services as soon as possible for treatment.
- 7.11 Respiratory protection provided by the Supervisor shall be worn when required.
- 7.12 Safety glasses shall be worn unless additional eye protection is specified by S&H, the Supervisor, or posted signs.
- 7.13 Personnel operating a watercraft shall wear protective equipment specified by a Radiation Work Permit (RWP).
- 7.14 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion, or absorption shall immediately be reported to a Supervisor. The Supervisor shall immediately report the circumstance of possible radioactive materials intake to O&PI, Safety and Health Department, Dosimetry Section for evaluation. When the suspect isotope is uranium, the involved personnel shall report to the Urine Sampling Station at the end of their shift to complete an Incident Investigation Report (IIR), and submit an incident urine sample. The involved personnel 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 personnel shall report to the Dosimetry Section for further determination of actions. Employees are responsible for complying with additional requirements as specified by the Dosimetry Section.
- 7.15 Any situation which could have resulted in the inhalation, ingestion, or absorption of a hazardous material shall immediately be reported to a Supervisor or to the Assistant Emergency Duty Officer (AEDO), who will immediately report the circumstances to Medical and Industrial Hygiene. The involved personnel shall be directed by the Supervisor or AEDO as to when and where to report for medical evaluation, completion of an Incident Investigation Report (IIR), and submitting bioassay samples (e.g. blood, urine). Employees are responsible for complying with any additional requirements as specified by the Dosimetry Section.

**000209**

**1323****7.0 HEALTH AND SAFETY REQUIREMENTS (cont.)**

7.16 Notify the Facility Owner or the Water Plant Supervisor for authorization when Operator access is required beyond the posted chain boundary.

**8.0 PROCEDURE**

**NOTE:** Contact the Supervisor or the AEDO if required results of any step are not obtained, or if any off-normal conditions occur or are observed.

**8.1 Waste Pit No. 5 Operation****OPERATOR**

8.1.1 Ensure no water is entering the pit through the influent discharge line at the east side of Waste Pit No. 5.

8.1.2 Inspect three (3) valves on south side of pit.

8.1.3 Ensure valves are closed to prevent water entry to the pit.

8.1.4 Inspect effluent discharge at the Decant Tower of the pit for water leakage to Pit No. 3 Clearwell.

8.1.5 Check freeboard level gauge at effluent monitoring station at the Decant Tower.

8.1.6 Record the level on the "K-65 Round Sheet" in Procedure 43-C-340, "AWWT Phase I And II Operations".

8.1.7 Perform decant operations as follows if freeboard level is two (2) feet or less:

A. Notify the Supervisor that the freeboard level is two (2) feet or less and decant operation is being initiated.

B. Open sluice gate valve at Decant Tower.

C. Flow shall not exceed approximately 100 gallons per minute to the Pit No. 3 Clearwell.

D. IF flow exceeds 100 gallons per minute,  
THEN adjust the sluice gate valve to reduce the flow.

E. Submit a sample from Pit No. 3 Clearwell composite sampler to the AWWT Process Control Lab for Total Uranium and pH.

F. Close sluice gate valve when freeboard level reaches two feet six inches (2 ft. 6 in.).

**000210**

**1323****8.0 PROCEDURE (cont.)****8.2 Pit No. 3 Clearwell Operation****OPERATOR**

- 8.2.1 Inspect the influent line from Pit No. 5, located at the northwest corner of Pit No. 3 Clearwell, for leakage.
- 8.2.2 Check the freeboard level gauge at the effluent monitoring station at the south corner of Pit No. 3 Clearwell.
- 8.2.3 Record the freeboard level on the "Log - Inside Rounds 'A'" form and the "K-65 Round Sheet" in Procedure 43-C-340, "AWWT Phase I And II Operations".
- 8.2.4 Start pumping operations as follows if freeboard level is five (5) feet or greater:
- A. Notify the Utilities Supervisor that the freeboard level is five (5) feet or greater and pumping operation is being initiated.
  - B. Start the Clearwell pump and align valving to the Bio-Surge Lagoon.
  - C. Submit sample from composite sampler to the AWWT Process Control Lab for Total Uranium and pH.
  - D. WHEN the Clearwell freeboard level lowers to six (6) feet, THEN stop the pump and close valves to the Bio-Surge Lagoon.

**8.3 North Lime Sludge Lagoon Operation****OPERATOR**

- 8.3.1 Inspect the influent valve at the southeast corner of the North Lime Sludge Lagoon for leakage.
- 8.3.2 Check the freeboard level gauge at the effluent monitoring station at the northwest corner of the North Lime Sludge Lagoon.
- 8.3.3 Record the level on "K-65 Round Sheet" in Procedure 43-C-340, "AWWT Phase I And II Operations".

**000211**



**APPENDIX C**

**S&WP DIVISION PROCEDURE 43-C-412,  
MANAGEMENT OF WATER COVER FOR WASTE PIT NO. 6**

Fernald Environmental Management Project Fluor Daniel Fernald, Inc.		Revision No. 1 Effective: 10/10/97 PCN No. N/A
S&WP DIVISION PROCEDURE	Management Of The Water Cover For Waste Pit 6	43-C-412
		TECHNICAL PROCEDURE
Authorization: E. Henry, Team Coach Wastewater Treatment Operations	Supersedes: None	Page 1 of 12

{Direct questions concerning this procedure to the PTR, T. Arnold, X5774}

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**RECORD OF ISSUE/REVISIONS**

<u>REV. NO.</u>	<u>EFFECTIVE</u>	<u>DESCRIPTION AND AUTHORITY</u>
0	08/08/91	New procedure for the Management of the Water Cover for Waste Pit 6 per Request No. P91-102, initiated by K. Dunbar.
0	08/03/95	Reissued without technical changes to conform to current requirements following Periodic Review R95-041, per Request No. P95-0173, initiated by J. Leslie.
1	10/10/97	Revised following periodic review and updated format per Request No. P97-0286, initiated by T. Arnold.

## 1.0 **PURPOSE**

1.1 This document establishes the requirements for operating, maintaining, and inspecting the Water Cover (environmental cap) for Waste Pit 6.

## 2.0 **SCOPE**

2.1 This procedure applies to all (utilities) personnel operating, maintaining or inspecting the Water Cover (environmental cap) for Waste Pit 6 located in the Waste Storage Area "Diagram of the Waste Storage Area" (See Figure 1).

## 3.0 **APPLICABLE DOCUMENTS**

### 3.1 Source Documents

3.1.1 None.

### 3.2 Reference Documents

3.2.1 20-C-606, "Hazardous Material Spill Clean-Up"

3.2.2 43-C-340 "AWWT Phase I And II Operations"

### 3.3 Information Sources

3.3.1 None.

## 4.0 **DEFINITIONS**

4.1 Spill - Any unplanned event involving spilling, leaking, pumping, injecting, escaping, emitting, emptying, leaching, releasing, dumping, discharging, or disposing of hazardous waste onto the ground, into water, or into the air, within or beyond the boundaries of the FEMP.

4.2 Storage Location - A defined area, usually a warehouse, approved for long-term storage.

4.3 TSS - Total Suspended Solids.

## 5.0 **RESPONSIBILITIES**

5.1 The **Supervisor** is responsible for:

5.1.1 Ensuring that only personnel trained per this procedure shall inspect Waste Pit 6 and operate the pumps for Pit 6.

5.1.2 Contacting Safety and Health (S&H) to determine the appropriate level of protection for the process being performed.

5.1.3 Providing Operators with the required respiratory protection.

5.1.4 Maintaining records required by State and Federal governments.

5.1.5 Determining when excess water is to be removed and its disposition.

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**5.0 RESPONSIBILITIES (cont.)****Supervisor (cont.)**

5.1.6 Ensuring that personnel checking the water level and removing excess water from Waste Pit 6 are qualified per the established training requirements identified by the Department/Staff Manager.

5.2 The **Operator** is responsible for:

5.2.1 Complying with this procedure.

5.2.2 Performing tasks in accordance with this procedure.

**6.0 GENERAL**

6.1 Warnings, Cautions, and Notes shall precede the Item, Step, Sub-Step, Section, or Sub-Section to which they apply.

**7.0 HEALTH AND SAFETY REQUIREMENTS**

7.1 A defined safety system is not involved.

7.2 Safety glasses shall be worn at all times unless other eye protection is specified by S&H, the Supervisor, or posted signs.

7.3 Personnel safety equipment (eyewash, fire extinguishers, safety showers) shall be available for emergencies.

7.4 Leather-palm gloves shall be worn while handling drums, operating equipment, and handling rough, sharp-edged, or contaminated materials.

7.5 Respiratory protection provided by the Supervisor as specified by S&H shall be worn when required.

7.6 Normal Controlled Area clothing shall be worn unless otherwise specified by S&H.

7.7 Vehicles shall not be driven on the exposed liner membrane surface of Pit 6 or within seven (7) feet of the visible edge of the membrane.

7.8 To protect the membrane, appropriate footwear shall be worn by personnel walking on the membrane. Care shall be taken while walking on the membrane.

7.9 If work is to be performed along the side walls or bottom when the water level is low and the use of potentially damaging equipment is required, a job plan shall be prepared to establish precautions to protect the Waste Pit or lagoon liner.

7.10 An approved life jacket, in addition to other required clothing, shall be worn by personnel within five (5) feet of the Waste Pit or Surge Lagoon.

7.11 Personnel working around the Waste Pit or Surge Lagoon shall carry two-way radios.

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**1323****7.0 HEALTH AND SAFETY REQUIREMENTS (cont.)**

- 7.12 Tasks involving any operation outside the restricted walkways shall be performed by at least two (2) persons.
- 7.13 All samples shall be labeled to identify the type of material.
- 7.14 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion, or absorption shall immediately be reported to a Supervisor. The Supervisor shall immediately report the circumstance of possible radioactive materials intake to O&PI, Safety and Health Department, Dosimetry Section for evaluation. When the suspect isotope is uranium, the involved personnel shall report to the Urine Sampling Station at the end of their shift to complete an Incident Investigation Report (IIR), and submit an incident urine sample. The involved personnel 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 personnel shall report to the Dosimetry Section for further determination of actions. Employees are responsible for complying with additional requirements as specified by the Dosimetry Section.
- 7.15 Any situation which could have resulted in the inhalation, ingestion, or absorption of a hazardous material shall immediately be reported to a Supervisor or to the Assistant Emergency Duty Officer (AEDO), who will immediately report the circumstances to Medical and Industrial Hygiene. The involved personnel shall be directed by the Supervisor or AEDO as to when and where to report for medical evaluation, completion of an Incident Investigation Report (IIR), and submitting bioassay samples (e.g. blood, urine). Employees are responsible for complying with any additional requirements as specified by the Dosimetry Section.
- 7.16 A whole body frisk by S&H is required before being allowed to exit the Waste Storage Area.
- 7.17 A spill of hazardous material shall be reported per Procedure 20-C-606, "Hazardous Material Spill Clean-Up".

**8.0 PROCEDURE****WARNING 1**

During periods of high radon levels, personnel will be denied access to the waste storage area to avoid exposure.

**WARNING 2**

All personnel must wear an approved life jacket in addition to other required clothing when within five (5) feet of the basin to prevent injury.

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**8.0 PROCEDURE** (cont.)

**NOTE 1:** Before periods of pumping, a sample shall be taken from Waste Pit 6.

**NOTE 2:** Allow at least 24 hours settling time prior to sampling.

**8.1 Sampling Waste Pit 6****OPERATOR**

- 8.1.1 At the start and midpoint of each shift when pumping, obtain a one (1) quart polyethylene container.
- 8.1.2 Inspect the polyethylene container for any holes or other damage that could affect container integrity.
- 8.1.3 Inspect the polyethylene container for any type of foreign material that could affect test results.
- 8.1.4 Each polyethylene sample container must be properly labeled to indicate the following information:
- A. Date the sample was taken.
  - B. Time of day the sample was taken.
  - C. Location where the sample was taken.
  - D. Badge number and the name of the person taking the sample.
- NOTE:** The sample from Waste Pit 6 shall be taken from the location where the gasoline-powered pump is located at Pit 6, shown in "Diagram of Waste Pit 6" (See Figure 2).
- 8.1.5 Obtain a sample of Waste Pit 6 effluent using the one (1) quart container.
- 8.1.6 Wipe the outside of the sample container with a damp cloth to remove contaminants.
- 8.1.7 Dispose of the damp cloth in an approved storage receptacle.
- NOTE:** As a minimum, each sample shall be analyzed for Uranium (U), pH, fluoride (ppm), and Total Suspended Solids (TSS).
- 8.1.8 Submit the sample to the AWWT Process Control Lab.
- 8.1.9 Record the analysis results received from the Laboratory Technician on the K-65 Round Sheets in Procedure 43-C-340, "AWWT Phase I And II Operations", located at the AWWT Plant.

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8.0 **PROCEDURE** (cont.)8.2 Removing Water From Waste Pit 6 (cont.)**OPERATOR** (cont.)

8.2.12 Disconnect the fire hose from the middle berm valve located at Pit 5.

8.2.13 Return the fire hose to the designated storage location.

**NOTE 1:** No water from Pit 6 will be pumped into Pit 5.**NOTE 2:** Visual estimations of the flows from Pit 6 are able to be calculated since the dimensions of Pit 6 are known. Exact flow records of Pit 6 are not kept, because precise flow rates are difficult to calculate.

8.2.14 Record the pumping on the "K-65 Round Sheet" in Procedure 43-C-340, "AWWT Phase I And II Operations".

**WARNING 1**

During periods of high radon levels, personnel will be denied access to the waste storage area to avoid exposure.

**WARNING 2**

All personnel must wear an approved life jacket in addition to other required clothing when within five (5) feet of the basin to prevent injury.

8.3 Adding Water To Waste Pit 6**OPERATOR**

8.3.1 Obtain a fire hose from the designated storage location.

8.3.2 Examine all apparatus (fire hose, pump, for example) for any indications of wear or potential failure.

8.3.3 Connect the fire hose to the fire hydrant valve east of Pit 6 (See Figure 2).

8.3.4 Stretch the fire hose to the berm of Waste Pit 6.

8.3.5 Open the valve for the fire hydrant to start filling Waste Pit 6.

**NOTE:** If possible, water levels in all pits should be kept 36 inches below the top of the embankment to eliminate possible overflows.8.3.6 **WHEN** the water level in Waste Pit 6 is six (6) inches below the level indicator marked on the liner,  
**THEN** close the valve for the fire hydrant.

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**8.0 PROCEDURE (cont.)****8.3 Adding Water To Waste Pit 6 (cont.)****OPERATOR (cont.)**

8.3.7 Remove the fire hose from the fire hydrant.

8.3.8 Place the fire hose in its designated storage location.

8.3.9 Record the amount of water pumped to Waste Pit 6 on the "K-65 Round Sheet" in Procedure 43-C-340, "AWWT Phase I And II Operations".

**WARNING 1**

During periods of high radon levels, personnel will be denied access to the waste storage area to avoid exposure.

**WARNING 2**

All personnel must wear an approved life jacket in addition to other required clothing when within five (5) feet of the basin to prevent injury.

**NOTE 1:** During periods of heavy rain inspections shall be performed every two (2) to three (3) hours instead of twice a shift.

**NOTE 2:** The time period between two (2) successive inspections of the Waste Pit 6 Area shall not exceed seven (7) calendar days.

**8.4 Routine Inspections Of Waste Pit 6**

**NOTE 1:** Any of the criteria noted as unacceptable must be corrected in a timely manner.

**NOTE 2:** If more than 0 percent of the surface level is exposed, the condition is unacceptable.

**OPERATOR (cont.)**

8.4.1 Record the water level in the pit on the "K-65 Round Sheet" in Procedure 43-C-340, in "AWWT Phase I And II Operations".

8.4.2 Mark any unacceptable conditions about the inspection on the K-65 Round Sheet" in Procedure 43-C-340, "AWWT Phase I And II Operations" and include any remedial action to be taken.

8.4.3 Record the name and badge number of the person performing the inspection and the date in the appropriate places on the "K-65 Round Sheet" in Procedure 43-C-340, "AWWT Phase I And II Operations".

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**8.0 PROCEDURE** (cont.)**1323****8.4 Routine Inspections Of Waste Pit 6** (cont.)**OPERATOR** (cont.)

8.4.4 Sign the completed inspection list.

8.4.5 Record all routine operating requirements and abnormal conditions on the "K-65 Round Sheet" in Procedure 43-C-340, "AWWT Phase I And II Operations".

8.4.6 Retain these forms on file indefinitely.

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DIAGRAM OF THE WASTE STORAGE AREA

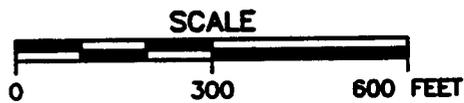
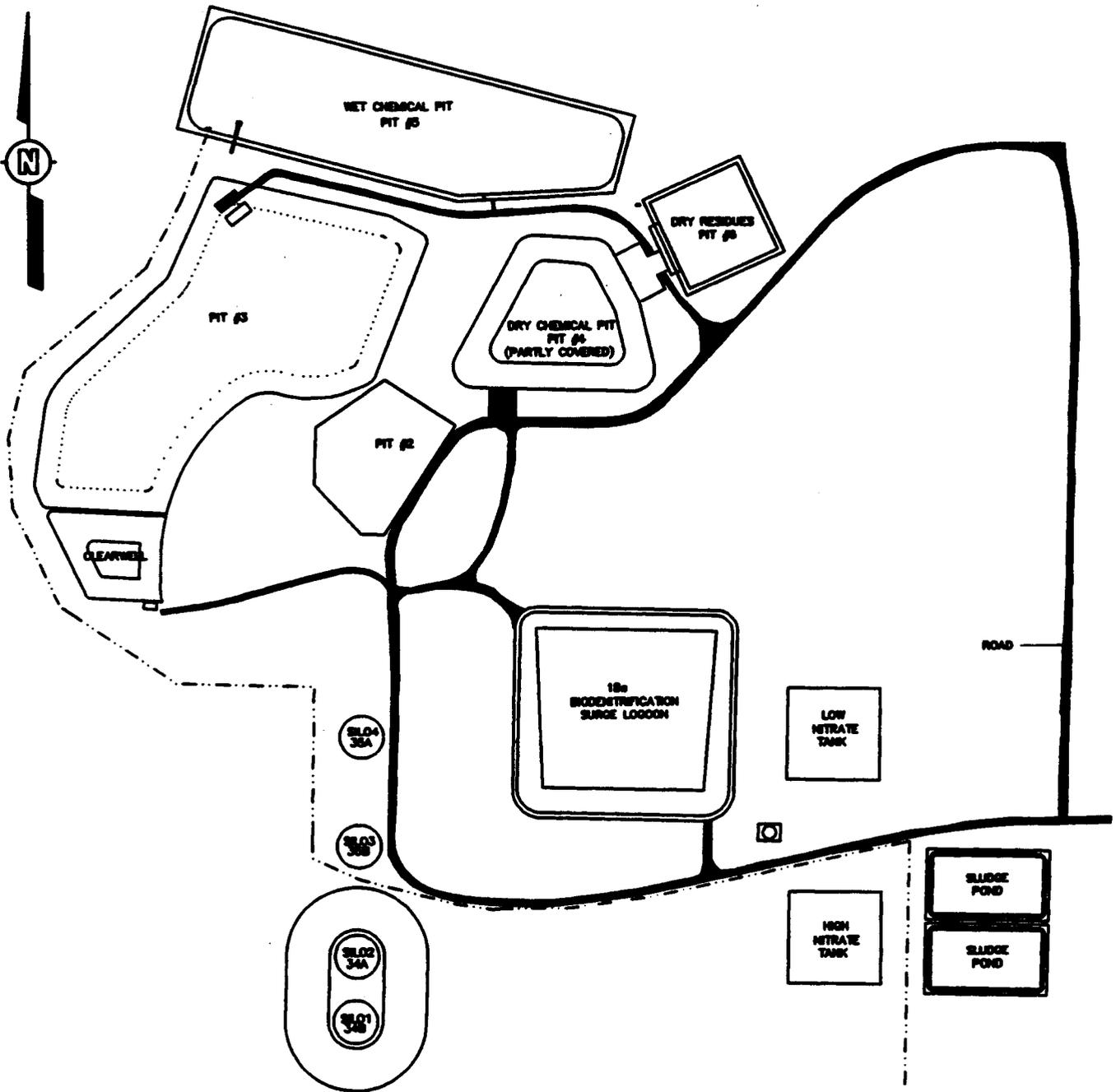


DIAGRAM OF THE WASTE STORAGE AREA  
Figure 1

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DIAGRAM OF WASTE PIT 6

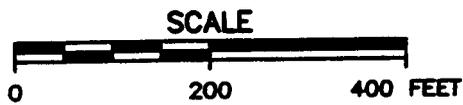
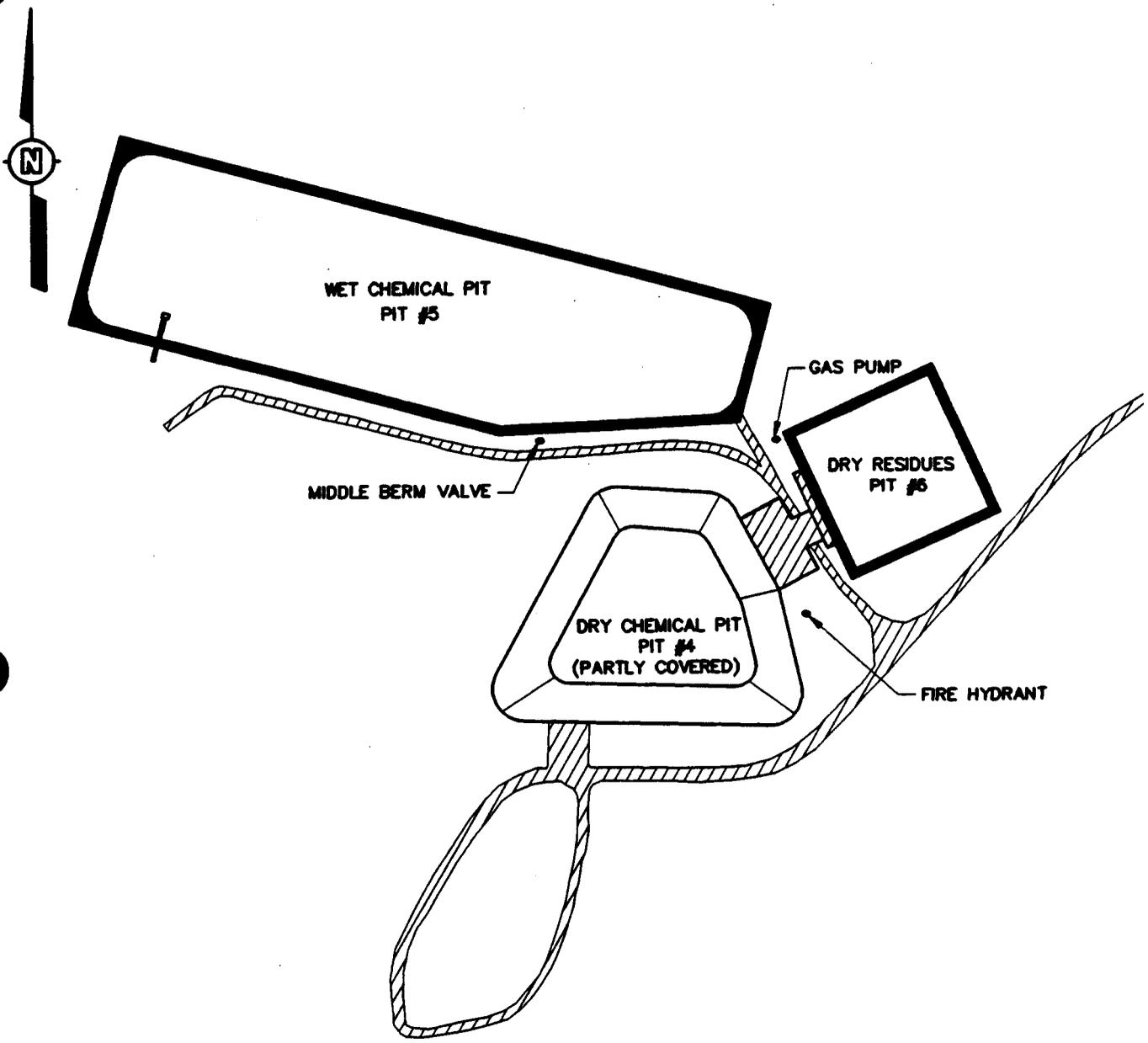


DIAGRAM OF WASTE PIT 6  
Figure 2

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**APPENDIX D**

**S&WP DIVISION PROCEDURE 43-C-340,  
K-65 AREA OPERATOR ROUND SHEET, PAGE 12 OF 13**

AWWT FIELD OPERATOR ROUND SHEET (cont.)

AWWT Field Operator Round Sheet

Date: \_\_\_\_\_

EQUIPMENT OR AREA TO BE CHECKED	EXPECTED OR NORMAL	ACTUAL STATUS		
		BADGE#: 2200 - 0600	BADGE #: 0600 - 1400	BADGE #: 1400 - 2200
Bio Tower Control Room Condition	Okay			
Methanol Tank (ft+in)	Varies			
High Nitrate Tank (ft+in)	Varies			
Surge Lagoon (inches of outage)	Varies			
Collect Samples from Surge Lagoon	N/A			
Collect Sample from South Underdrain	N/A			
K-65 Trench Level	Not Overflowing			
Pit 6 Level	Not Overflowing Below the grass			
Sample Pit 6 if Pumping	N/A			
Pit 5 Level (ft+in)	Varies			
Collect Sample from West Underdrain	N/A			
Cement Pond Condition	OK			
Cement Pond Level (if >zero)	Varies			
Notify supervisor if cement pond level is >= 30 inches	N/A			
Clearwell Level (ft+in)	Varies			
Collect clearwell sample if pumping	N/A			
HWMU Inspection Daily + Weekly on Sunday	N/A			



**APPENDIX E**

**IT CORPORATION PROCEDURE PR028,  
GOVERNMENT PROPERTY PROCEDURES**

Approved by: *Paul Klein*

## **PROCEDURE**

**Subject: GOVERNMENT PROPERTY PROCEDURES**

### **1.0 PURPOSE AND SUMMARY**

This procedure is to establish the guidelines for effective management and control of Government Property (GP) in the possession of the Company including receipt, issue, use, transfer, protection, storage, disposal, maintenance, final disposition, and related services.

### **2.0 TABLE OF CONTENTS**

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility and Authority
- 4.0 Definitions
- 5.0 Text
  - 5.1 Government Property Acquisition
  - 5.2 Receiving Government Property
  - 5.3 Identification and Recording of Government Property
  - 5.4 Use and Maintenance of Government Property
  - 5.5 Government Property Records
  - 5.6 Government Property Inventories
  - 5.7 Safeguarding Government Property
  - 5.8 Government Property Disposition
  - 5.9 Use of Government Property by IT's Vendors
- 6.0 Exception Provisions
- 7.0 Cross-References
- 8.0 Exhibits

### **3.0 RESPONSIBILITY MATRIX**

- 3.1 The Company acknowledges and accepts the responsibility and accountability for all Government Property in the possession, and under the control of the Company or its vendors, in accordance with FAR Part 45.
- 3.2 Responsibility for and the authority to make decisions concerning the management and control of GP is given to the following:
  - 3.2.1 Vice President - Procurement.



- 3.2.1.1 Responsible for development, publication, and implementation of GP policies and procedures;
- 3.2.1.2 Responsible for obtaining and issuing GP identification tags (GPIDTs) to the Contract and Procurement Managers or GP custodians.
- 3.2.2 Operations Vice Presidents/Regional Directors. Responsible for ensuring Operations compliance with established Government Property Procedures.
- 3.2.3 Procurement Managers. Responsible for training Procurement Associates, site personnel, Program/Project Managers, and designated Government Property Custodians in GP procedures.
- 3.2.4 Program/Project Managers.
  - 3.2.4.1 Responsible for appointing GP Custodians with a concurrent notification to the Contract and Procurement Managers;
  - 3.2.4.2 Responsible for all periodic GP inventory and associated reports submitted to the Contract Administrator;
  - 3.2.4.3 Responsible for determining when GP is no longer required and informing the Contract Administrator to take appropriate action;
  - 3.2.4.4 Responsible for establishing and maintaining security procedures that will ensure the security of GP;
  - 3.2.4.5 Responsible for investigating all reports of lost, damaged, destroyed, or stolen GP and preparing an investigation report.
  - 3.2.4.6 Responsible for notifying the Contract Administrator if GFP is not received as specified in the contract.
- 3.2.5 Government Property Custodian.
  - 3.2.5.1 Responsible for receiving GP and attaching GPIDTs;
  - 3.2.5.2 Responsible for entry of GPTL Data into the GPCS;
  - 3.2.5.3 Responsible for the proper utilization, care, maintenance, and security of all GP assigned;
  - 3.2.5.4 Responsible for immediate reporting of discrepancies to the Program/Project Manager and the Contract Administrator.
- 3.2.6 Procurement Associate.
  - 3.2.6.1 Responsible for ordering property and project materials in accordance with applicable FAR requirements and company procedures;
  - 3.2.6.2 Responsible for all GP contract requirements in all purchase order/subcontract vehicles.
- 3.2.7 Contract Administrator.



- 3.2.7.1 Responsible for securing Contracting Officer or higher tier contractor representative approval when necessary for GP actions;
- 3.2.7.2 Responsible for coordinating with the Program/Project Manager the necessary actions for disposition of property;
- 3.2.7.3 Responsible for determining and providing to Procurement Associate GP flowdown clauses for inclusion in subcontracts;
- 3.2.7.4 Responsible for transmitting all periodic property inventory reports to the Contracting Officer or higher-tier contractor representative;
- 3.2.7.5 Responsible for all GP submittals to the Contracting Officer or higher contractor representative;
- 3.2.7.6 Responsible for advising the Program / Project Manger in fulfilling contract GP responsibilities;
- 3.2.7.7 When required by agency or higher-tier contractor procedures the Contract Administrator shall obtain the appropriate agency or higher-tier contractor GP identification tag(s).

#### **4.0 DEFINITIONS**

- 4.1 **Property.** As used in this procedure means all property, both real and personnel. It includes facilities, material, special tooling and test equipment, and agency-peculiar property.
- 4.2 **Government Property (GP).** All property owned by the Government or acquired by the Government under the terms of a contract. It includes both Government furnished property and Company acquired property as defined in this section.
- 4.3 **Government-Furnished Property (GFP).** Property in the possession of or directly acquired by the Government which is subsequently made available to the contractor for use under a specific company or program.
- 4.4 **Contractor-Acquired Property (CAP).** Property purchased or acquired by the Company using Government funds and used by the contractor in performing a contract.
- 4.5 **Agency-Peculiar Property (APP).** Government property peculiar to the mission of one agency. This property may not be transferred to another Government agency without the written consent of the owning agency.
- 4.6 **Project-Specific Property (PSP).** Government property peculiar to the mission project. Permission must be granted by the Government agency or Prime Contractor to the Contract Administrator to transfer this property to another project.
- 4.7 **Expendable Property (EP).** Supplies and materials that are consumed or expended routinely, that lose their identity under contract performance. Expendable property includes small tools with a unit value of not more than \$250. In some instances, however, expendable property may be treated as non-expendable due to client and/or program manager preference.

- 4.8 **Nonexpendable Property (NEP).** Property which is durable with an expected useful life of one or more years, is complete in itself, and does not lose its identity or become a component part of another item. Such items include, but are not limited to, furniture, power tools, calculators, software, binoculars, cameras, etc.
- 4.9 **Government Property Control System (GPCS).** The Company's software program for collecting and processing GP information.

## 5.0 TEXT

- 5.1 **Government Property Acquisition.** The acquisition process includes determining requirements, exploring sources, and initiating transfer or purchase of GP. GP requirements should be determined as soon as possible. This will enable timely action for determining the method of obtaining GP. After the need and method are determined, appropriate coordination is required to ensure timely receipt of GP.

### 5.1.1 Government Furnished Property (GFP).

- 5.1.1.1 Every effort should be made to obtain property in this manner.
- 5.1.1.2 GP requirements should be coordinated with the Contract Administrator or higher-tier contractor representative to determine if the required GP is available from existing inventories.
- 5.1.1.3 If GFP is available, the Contract Administrator will provide the contract schedule of GFP, including required delivery dates, to the Program/ Project Manager.
- 5.1.1.4 If GFP is unavailable on a no-cost basis, then procedures for purchasing Contractor-Acquired Property should be followed.

### 5.1.2 Contractor Acquired Property (CAP).

- 5.1.2.1 The Project/Program Manager or authorized designee shall request CAP by completing a Purchase Requisition (PR) and forwarding it to the appropriate Procurement Associate.
- 5.1.2.2 CAP PRs shall designate that the item to be purchased will be GP and whether it is expendable or nonexpendable.
- 5.1.2.3 The Procurement Associate shall indicate on the Purchase Order (PO) that the item will be GP and whether expendable or nonexpendable.
- 5.1.2.4 The Procurement Associate shall place the order in accordance with applicable FAR requirements and Company Procurement Procedures

- 5.2 **Receiving Government Property.** All GP shall be received by the assigned Government Property Custodian. Documentation of receipt can be in any of the following forms: entry into GPCS; signing and dating either the receiving copy of the IT Purchase Order, or the packing slip or invoice. On receipt of GP, the Government Property Custodian will:

- 5.2.1 Check the quantity received against the packing slip, PO, or transfer document;



5.2.2 Inspect the condition of the GP;

5.2.3 Indicate any overages, shortages, or damage on the receiving report and forward the receiving report in accordance with Company Procedures. In addition, a copy of the receiving report should be sent to the Program/Project Manager if GFP.

**5.3 Identification and Recording of Government Property.** Upon receiving GP, the Government Property Custodian will:

5.3.1 Enter the required data into the GPCS for all CAP (both expendable and non-expendable), attach a GPIDT to nonexpendable GP. Expendable CAP shall be clearly identified as GP by indelibly marking the GP. The following methods of marking GP are acceptable: indelible marker, waterproof paint, engraving, or as directed by the client contract. Although the method of indelible marking is not specified in this policy, it should be consistent throughout a project and, in all cases, the letter "GP" must be included as part of the marking.

5.3.2 Receipt and Issue documents may be used for certain Government property items if written authorization is received from the Contracting Officer or other higher-tier contracting representative.

5.3.3 The GPCS record must include:

- 5.3.4.1 Item Description (including Model and Serial Number)
- 5.3.4.2 GPIDT Number
- 5.3.4.3 Unit of Price
- 5.3.4.4 Unit of Measure
- 5.3.4.5 Date Received
- 5.3.4.6 Contract Number
- 5.3.4.7 Delivery/Task Order Number (if applicable)
- 5.3.4.8 Company Project Number
- 5.3.4.9 Location of Property
- 5.3.4.10 PO Number
- 5.3.4.11 National Stock Number
- 5.3.4.12 Quantity Received
- 5.3.4.13 Quantity On-Hand and Date
- 5.3.4.14 Agency or Higher-Tier Contractor GP Identification Number (if applicable)
- 5.3.4.15 Expendable/Nonexpendable
- 5.3.4.16 Condition Code
- 5.3.4.17 Posting References
- 5.3.4.18 Disposition and Date of Disposition

5.4 **Use and Maintenance of Government Property.** All GP shall be utilized only for purposes authorized by the contract. GP must be used only for the delivery/task order or contract under which it was acquired, unless specifically authorized in writing by the Contracting Office or higher-tier contractor representative.



- 5.4.1 Maintenance and Calibration of Government Property. The Program/Project Manager shall ensure compliance with the maintenance program in accordance with the contract terms, Company Procedures, and the project QA/QC Plan. The program shall include preventative maintenance, routine repair and adjustment, emergency repair, and if applicable, calibration. Costs for routine repair, maintenance, and calibration of GP shall be charged directly to the project to which the property is accountable. The costs for major repair to GP when necessary, as authorized by the contracting officer or higher-tier contracting representative, shall also be directly charged to the project.
- 5.4.2 The Government Property Custodian shall record in the GPCS all maintenance and calibrations performed on receipt of appropriate performance documents.
- 5.5 Government Property Records. GP records are maintained to identify all GP and provide a complete, current, and auditable record of all GP transactions. The only vehicle for GP records is the GPCS along with the required supporting documentation. See the GPCS Procedure Handbook for a listing of system reports and instructions for preparation.
- 5.5.1 GP Records Maintenance. After initial GP records are established in the GPCS, the Government Property custodian is responsible for reporting any transaction concerning the GP.
- 5.5.1.1 Lost, stolen or damaged GP after receipt of a completed Lost, Stolen, or Damage Government Property Report from the Program/Project Manager
  - 5.5.1.2 Equipment maintenance, repair, or calibration after receipt of appropriate documentation from the performer
  - 5.5.1.3 Results of inventories after approved inventory documents are received
  - 5.5.1.4 Transfer of GP after receipt of Contracting Officer or higher-tier contractor representative approval
  - 5.5.1.5 Other disposition of property after receipt of appropriate documentation and approval.
- 5.6 Government Property Inventories. GP inventories will be performed prior to September 30 of each year, or upon contract completions, or upon contract termination, or as required by the contract.
- 5.6.1 Inventory Performers. The Program/Project Manager will designate someone other than the Government Property Custodian to take inventory of the GP. The inventory performer will report the results of the inventory, identifying any discrepancies to the Program Manager or GP Custodian. Any such discrepancies should be reported to the Contract Administrator and the Client Property Administrator, or Contracting Officer, or higher-tier Contracting Representative as appropriate.
- 5.6.2 Inventory Review and Processing. Upon receipt of the inventory reports, the Contract Administrator will perform a review of the inventory results and return the approved results to the Government Property Custodian for GPCS record update.



**5.7 Safeguarding Government Property.**

**5.7.1 Government Property Custodians will take appropriate measures to protect and preserve GP to prevent loss, damage, theft, and deterioration. GP will be clearly identified and should not be intermingled with company-owned or personal property. The Program/Project Manager will ensure that methods are in place for safeguarding GP, and will investigate all instances of lost, stolen, or damaged GP and will prepare an investigation report in memo form which will include the following:**

- 5.7.1.1 Date of incident, if known**
- 5.7.1.2 Complete description of item**
- 5.7.1.3 Condition at time of loss or damage**
- 5.7.1.4 Date of last inventory**
- 5.7.1.5 Projected cost of repair/replacement**
- 5.7.1.6 When last seen**
- 5.7.1.7 Who saw it**
- 5.7.1.8 Who has access**
- 5.7.1.9 Who reported or noted problem**
- 5.7.1.10 Actions taken to locate**
- 5.7.1.11 Remedial actions taken**
- 5.7.1.12 Other relevant information**
- 5.7.1.13 Who performed the investigation and when**

**5.7.2 The investigation report will be submitted to the Contract Administrator with a copy to the Government Property Custodian.**

**5.8 Government Property Disposition.**

**5.8.1 Transfer of Government Property. When requested by the Program/Project Manager, the Contract Administrator shall submit a written request to the Contracting Officer or higher-tier contract representative to transfer property to another contract or delivery/task order.**

**5.8.1.1 When instructions are received, the Contract Administrator will advise the Program/Project Manager who will, in turn, instruct the Government Property Custodian. For GP to be transferred to another contract/delivery/task order, the Government Property Custodian will:**

- deliver the GP to the other contract/delivery/task order;**
- obtain a signed receipt for the GP;**
- make a final entry into the GPCS, transfer the inventory to the receiving GPC, place a copy of the inventory report and transfer report in the project file, and send a copy to the Contract Administrator.**

**5.8.1.2 For GP to be transferred outside of the Company, the Government Property Custodian will:**



- ship the property to the designated depot;
- require a signed receipt of delivery;
- after receiving the receipt or other evidence of safe delivery, make a final entry into the GPCS, forward a report to the project file, and send a copy to the Contractor Administrator.
- when all GP has been disposed, the Program/Project Manager shall complete a "Property and Materials Certificate" (PMC) (Attachment 28.1) and submit the original to the Contract Administrator. If required, a copy of the PMC shall be forwarded to the Contracting Officer or higher-tier contractor representative and the original retained until formal closeout.

**5.9 Use of Government Property by Vendors.** The Company shall require its vendors to adequately care for and maintain GP property and assure that it is used only as authorized by the subcontract. The subcontractor shall maintain a Property Management System in compliance with Part 45 of the Federal Acquisition Regulation.

## **6.0 EXCEPTIONS PROVISIONS**

**6.1** All exceptions must have the prior written approval of the Vice President-Procurement.

## **7.0 CROSS REFERENCES**

- 7.1 IT Equipment Maintenance Procedures
- 7.2 FAR Part 45
- 7.3 DEAR Part 945
- 7.4 DFARS Part 245
- 7.5 EPA Contractor's Guide to Government Property
- 7.6 GPCS System Software Procedure Handbook

## **8.0 ATTACHMENTS**

- 28-1 Property and Materials Certificate - Subcontractor
- 28-2 Property and Materials Certificate - Contractor



Procedure No. PR028  
 Revision No. 2  
 Date 11/15/95  
 Page 9 of 10

Attachment 28-1

Property and Materials Certificate

<b>Subcontractor</b>	<b>Subcontract No.</b>	<b>Delivery/Task Order</b>
----------------------	------------------------	----------------------------

This is to certify that all items of U.S. Government property, purchased or fabricated by us, or loaned to us for use under this Subcontract (this includes facilities, jigs, fixtures, equipment, materials, supplies, etc.) have been disposed in the following manner (check all applicable items):

- Turned over to IT Corporation or an authorized representative of the U.S. Government in the presence of IT. (Detail attached showing description, including component parts and shipping references.)
- Placed in storage by us to be held for the exclusive use of IT Corporation or the U.S. Government for \_\_ years. (Detail attached showing list of equipment and where stored and reference to agreement.)
- Title to such property vests in us by reason of Article \_\_ of this subcontract, and not in IT Corporation or the U.S. Government. (Attached detail showing list of equipment, cost, who paid cost item.)
- Held for us for use on subsequent Subcontract No. \_\_.
- Items listed in the space provided on the reverse of this form (or as an attachment) cannot be located.
- Expendable items only were acquired, and these were consumed in the performance of the Subcontract.
- None purchased, fabricated, or loaned to us.
- Other (Specify)

<b>IT CORPORATION (IT)</b>	<b>NAME OF SUBCONTRACTOR</b>
Acknowledged and Accepted By (Signature):	By (Signature):
Printed Name:	Printed Name:
Title:	Title
Date of Certificate:	Date of Certificate:



Attachment 28-2

Property and Materials Certificate

Contractor	Contract No.	Delivery/Task Order
------------	--------------	---------------------

This is to certify that all items of U.S. Government property, purchased or fabricated by us, or loaned to us for use under this Contract (this includes facilities, jigs, fixtures, equipment, materials, supplies, etc.) have been disposed of the following manner (check all applicable items below):

- Turned over to U.S. Government or its representative. (Detail attached showing description, including component parts and shipping references.)
- Placed in storage by us to be held for the exclusive use of the U.S. Government for \_\_\_ years. (Detail attached showing list of equipment and where stored and reference to agreement.)
- Title to such property vests in us by reason of Article \_\_\_ of this Contract, and not in U.S. Government. (Attached detail showing list of equipment, cost, who paid cost item.)
- Held for us for use on subsequent Contract No. \_\_\_.
- Items listed in the space provided on the reverse of this form (or as an attachment) cannot be located.
- Expendable items only were acquired, and these were consumed in the performance of the Contract.
- None purchased, fabricated, or loaned to us.
- Other (Specify)

CONTRACTING OFFICER REPRESENTATIVE (COR)	IT CORPORATION (IT)
Acknowledged and Accepted By (Signature):	By (Signature):
Printed Name:	Printed Name:
Official Title:	Official Title:
Date of Certificate	Date of Certificate:

IT Corporation is a wholly owned subsidiary of International Technology Corporation

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Pre-Operational HASP

**Waste Pits Remedial Action Project  
(WPRAP)**

***DRAFT***

**PRE-OPERATIONAL HEALTH & SAFETY PLAN**

\*\*\*\*\*

**FLUOR DANIEL FERNALD, INC.  
Fernald, Ohio**

**FDF Subcontract No. 98SC000001**

\*\*\*\*\*

**Submitted  
by  
IT Corporation  
2790 Mossie Boulevard  
Monroeville, PA 15146-2790**

**IT Project No. 773481**

\*\*\*\*\*

**Revision B**

**Issue Date: February 13, 1998**

**Record of Issues/Revisions**

<b>Date</b>	<b>Rev. No.</b>	<b>Description of Issues/Revisions</b>
01/09/98	A	Issue of Pre-Operational Health & Safety Plan - Draft
02/13/98	B	Draft Issue for EPA Review

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B	POHASP Acknowledgment Form
C	WPRAP Hazard Communication Program
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**WASTE PITS REMEDIAL ACTION PROJECT  
(WPRAP)  
PRE-OPERATIONAL HEALTH & SAFETY PLAN**

## **1.0 INTRODUCTION**

The Waste Pit Remedial Action Project (WPRAP), a.k.a. operable Unit 1 (OU1) consists of a 37.7 acre area located in the northwest quadrant of the Fernald Environmental Management Project (FEMP) site (see Figure 1). More definitively, OU1 consists of Waste Pits 1, 2, 3, 4, 5, and 6 which contain sludge, waste materials, debris, and water; the Burn Pit (used for disposal and burning of waste); the Clearwell (a settling basin for surface water runoff from the waste pits and supernatant from Waste Pits 3 and 5); miscellaneous structures and facilities such as berms, liners, concrete pads, underground piping, utilities, railroad tracks, fencing, and soil within the OU1 boundary.

The WPRAP will be conducted in two phases. The first phase is the Pre-Operational Phase which consists of pre-mobilization, mobilization, site preparation, facility construction, and pre-operational programmatic activities. The second phase is the Operational Phase which consists of excavation of wastes from the pits and residual contaminated soils from beneath the pits, preparation of the wastes (e.g. sorting crushing, shredding), treatment by thermal drying, and blending to achieve a uniform product for loading into railcars or boxes as applicable.

## **2.0 PURPOSE/OBJECTIVE**

This Pre-Operational Health & Safety Plan (POHASP) was developed for the Pre-Operational Phase of the Waste Pits Remedial Action Project. This POHASP describes the safety and health hazards associated with the activities conducted during the Pre-Operational Phase of the Project. The information and guidance provided in this POHASP is in compliance with current regulations, guidelines, and site requirements and is used to ensure the safety of personnel during the implementation of on-site activities.

## **3.0 ADMINISTRATION**

In accordance with IT Corporation's long-term commitment to safety, all personnel working at or visiting the WPRAP will be responsible for health and safety and for compliance with all aspects of this POHASP. By sharing this responsibility, we will be reducing the potential for injuries and illness by providing a safer workplace for everyone.

All personnel entering the WPRAP Construction Zone (delineated by orange fencing) shall be oriented on the contents of this POHASP and shall sign an acknowledgment log stating that they have received orientation on the POHASP and understand and will comply with its requirements.

The Site Safety Representative shall reassess this POHASP every six months or sooner if changes in site conditions or events warrant. Prior to inclusion in this POHASP, changes shall be reviewed and approved by the IT Corporation WPRAP Project Manager, the IT Corporation WPRAP Health & Safety Manager and shall undergo the FDF review and approval cycle.

#### **4.0 REGULATIONS AND GUIDELINES**

This POHASP and all activities conducted at the WPRAP will be in compliance with the applicable requirements of the following:

- 29 CFR 1926 - Safety And Health Regulations For Construction
- 29 CFR 1910 - Occupational Safety And Health Standards
- 29 CFR 1910.120 - Hazardous Waste Operations And Emergency Response
- NIOSH/OSHA/USCG/EPA - Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities
- American Conference of Government Industrial Hygienists (ACGIH) - Threshold Limit Values and Biological Exposure Indices, latest edition
- IT Corporation - Waste Pits Remedial Action Project Health & Safety Program
- IT Corporation - Environmental Safety & Health Program Implementation Plan

#### **5.0 HEALTH & SAFETY REQUIREMENTS MATRIX**

To aid in planning and implementation of this POHASP, the Sections found in Attachment A (WPRAP Pre-Operational Phase Health & Safety Requirements Matrix) provide an overview of the following key task-specific safety requirements:

- Activity (tasks)
- Hazard identification
- Personnel Monitoring
- Personal protective equipment
- Training
- Medical surveillance
- Administrative and engineering controls
- Permits
- Decontamination and disposal

## 6.0 DESCRIPTION OF WORK

Following is a description of activities relevant to each task performed under the Pre-Operational Phase of the WPRAP:

### 6.1 Pre-Mobilization

Pre-mobilization is primarily an administrative task which involves the preparation of documents, such as this POHASP, the Health & Safety Program, Facility Layout, Project Schedule, etc. and submittal of these documents for FDF review and approval.

### 6.2 Mobilization

Mobilization involves bringing personnel, tools, materials, and equipment to the job site to perform site preparation for construction of the WPRAP remediation facilities. This task includes: (1) installing temporary offices, trailers, etc.; (2) ensuring that all personnel training requirements are met; (3) establishing equipment and material receiving and lay down areas; (4) receiving all material and equipment required to construct and operate the remediation facilities; (5) storing and maintaining material and equipment in accordance with the manufacturer's recommendations; and (6) providing a waste transfer station for the back and forth transfer of FDF furnished containers.

### 6.3 Site Preparation

Site preparation involves: (1) earthwork to construct the remediation facilities; (2) installation of utilities; (3) construction of haul roads; (4) installation of fencing; (5) installation of the analytical laboratory; (6) installation of a respirator washing facility and a laundry; (7) installation of control point trailers; and (8) installation of any additional portable structures deemed necessary.

### 6.4 Facility Construction

Facility construction involves: (1) construction of a railcar loading facility; (2) erection of buildings, including concrete foundations and pads; (3) installation of processing equipment (e.g. thermal drying equipment, shredder, conveyors, etc.); (4) implementation of traffic controls within the work area; (5) construction waste disposal activities; and (6) performance of all construction testing in accordance with the Construction Acceptance Test Plan.

### 6.5 Programmatic Activities

Programmatic activities include: (1) preparation of administrative and operating procedures in accordance with the principles of the Conduct of Operations

(CONOPS) program; (2) developing specific technical procedures for operations and maintenance activities; (3) training of personnel in the safe and efficient operation of equipment in accordance with the Operator Training Plan and the Operation and Maintenance Plan; (4) conducting System Operability Tests; and (5) supporting the Standard Startup Review.

## 7.0 GENERAL SITE HAZARDS

The potential hazards associated with WPRAP pre-operational activities include radioactive materials, chemical, physical, biological and adverse weather. This section discusses those hazards that are anticipated to be encountered during the performance of the tasks described in Section 6.0.

### 7.1 Radiological Hazards

The controlling radio nuclide for excavation of Pits 1 through 5 (including installation of ramps) is thorium-230. The thorium may be in the form of thorium oxide (Th O<sub>2</sub>) or thorium metal/powder, both of which may be present as contamination in soil and in or on miscellaneous debris. Table 7-1 provides a summary of chemical data for thorium oxide and Table 7.2 provides a summary of chemical data for thorium metal/powder.

Table 7-1  
Radiological Data  
Thorium Oxide

Chemical	Thorium Oxide
Chemical Abstract Service Registry Number	001314-20-1
Occupational Exposure Limits: (FDF/DOE) Air	3 E-12 microcuries per milliliter (Th-230) 5 E-13 microcuries per milliliter (Th-232)
Water	3 E-07 microcuries per milliliter (Th-230) 5 E-08 microcuries per milliliter (Th-232)
Routes of Exposure	Inhalation and Ingestion
Toxic Properties	Toxic due to radioactivity not chemical. Recognized carcinogen
Target Organs	Bones, liver, lungs, lymphatic glands, and parenchymatous tissues
Chemical Properties	Radioactive, white crystalline powder or pills, odorless, Melting Point 3390 EC Nonflammable - Does not explode or burn
OSHA (PEL) ACGIH (TLV)	OSHA < 2.5 millirem/hr - ACGIH -None

**Table 7-2  
Radiological Data  
Thorium Metal/Powder**

<b>Chemical</b>	<b>Thorium Metal/Powder</b>
<b>Occupational Exposure Limit: (FDF/DOE)</b> Air	3 E-12 microcuries per milliliter (Th-230) 5 E-13 microcuries per milliliter (Th-232)
Water	3 E-07 microcuries per milliliter (Th-230)
<b>Routes of Exposure</b>	<b>Inhalation and Ingestion</b>
<b>Toxic Properties</b>	<b>Toxic due to radioactivity not chemical. Recognized carcinogen</b>
<b>Target Organs</b>	<b>Bones, liver, lungs, lymphatic glands, and parenchymatous tissues</b>
<b>Chemical Properties</b>	<b>Radioactive, Greyish-white metal, odorless, Melting Point 1500-150 EC Solid pieces of metal will not burn Finely chipped metals or powders can ignite in air</b>
<b>OSHA (PEL) ACGIH (TLV)</b>	<b>OSHA &lt; 2.5 millirem/hr - ACGIH -None</b>

The controlling radio nuclide for areas other than waste pits 1 through 5 is uranium-238. The uranium may be present as contamination in soils or in or on miscellaneous debris. Table 7-3 provides a summary of chemical data for uranium.

**Table 7-3  
Radiological Data  
Uranium Compounds**

<b>Chemical</b>	<b>Uranium Compounds</b>
<b>Chemical ID</b>	<b>G034-86-0</b>
<b>Occupational Exposure Limit: (FDF/DOE)</b> Air Water	2 E-11 microcuries per milliliter (U-238)
<b>Routes of Exposure</b>	<b>Inhalation and Ingestion</b>
<b>Toxic Properties</b>	<b>Highly Toxic and Radioactive</b>
<b>Target Organs</b>	<b>Lungs, Kidney, Liver</b>
<b>Chemical Properties</b>	<b>Not a significant chemical hazard. May be water reactive. Many uranium compounds are flammable.</b>
<b>OSHA (PEL) ACGIH (TLV)</b>	<b>0.2 mg/m<sup>3</sup> (8 hr TWA - ACGIH) 0.2 mg/m<sup>3</sup> -Insoluble (8 hr TWA - OSHA) 0.05 mg/m<sup>3</sup> - Soluble (8 hr TWA - OSHA)</b>

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Other radioactive materials are present at the WPRAP Analytical Laboratory in the form of radioactive sources which are used to perform calibration and operational tests on laboratory analysis equipment. In addition, FDF Radiological support uses radioactive sources to ensure that personnel equipment is functioning properly. Table 7-4 contains a list of radioactive sources that may be found at the WPRAP Analytical Laboratory.

**Table 7-4**  
**Radiological Data**  
**Radioactive Sources**

RADIONUCLIDE	RADIATION EMITTED	ACTIVITY	PURPOSE
Americium-241 Americium-243	alpha, gamma alpha, gamma	1-5 $\mu$ Ci 1-5 $\mu$ Ci	Pre-operational tests and instrument calibration
Uranium-232 Uranium-234 Uranium-235 Uranium-236 Uranium-238	alpha, gamma alpha, gamma alpha, gamma alpha, gamma alpha, gamma	mCi quantities 1-5 $\mu$ Ci 1-5 $\mu$ Ci 1-5 $\mu$ Ci 1-5 $\mu$ Ci	Pre-operational tests and instrument calibration
Radium-226 Tritium Technicium-99 Tin-113	alpha, gamma beta beta gamma	1-5 $\mu$ Ci 1-5 $\mu$ Ci 1-5 $\mu$ Ci 1-5 $\mu$ Ci	Pre-operational tests and instrument calibration
Plutonium-238 Plutonium-239 Plutonium-240 Plutonium-241 Plutonium-242	alpha, gamma alpha, gamma alpha, gamma alpha, gamma alpha, gamma	1-5 $\mu$ Ci 1-5 $\mu$ Ci 1-5 $\mu$ Ci 1-5 $\mu$ Ci mCi quantities	Pre-operational tests and instrument calibration
Thorium-228 Thorium-230 Thorium-229 Thorium-232	alpha, gamma alpha, gamma alpha, gamma alpha, gamma	1-5 $\mu$ Ci 1-5 $\mu$ Ci mCi quantities 1-5 $\mu$ Ci	Pre-operational tests and instrument calibration
Strontium/Yttrium-90 Yttrium-88 Cobalt-57 Cobalt-60	beta beta gamma gamma	1-5 $\mu$ Ci 1-5 $\mu$ Ci 1-5 $\mu$ Ci 1-5 $\mu$ Ci	Pre-operational tests and instrument calibration
Carbon-14 Cadmium-109 Cesium-137	beta gamma beta, gamma	1-5 $\mu$ Ci 1-5 $\mu$ Ci 1-5 $\mu$ Ci	Pre-operational tests and instrument calibration
Cerium-139 Mercury-203	gamma beta, gamma	1-5 $\mu$ Ci 1-5 $\mu$ Ci	Pre-operational tests and instrument calibration
Natural Uranium	alpha	mCi quantities	Pre-operational tests and instrument calibration
Depleted Uranium	beta	mCi quantities	Pre-operational tests and instrument calibration

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## 7.2 Chemical Hazards

Various chemical hazards may be encountered at the WPRAP during implementation of pre-operational activities. These chemical hazards consist of fuel handling at refueling stations for diesel fuel and the use of natural gas at the drier facility, lubricants (oil & grease) used for routine maintenance on machinery and equipment, and adhesives (plumbers glue and primers) used during installation and repair of water lines, etc. In addition hazardous chemicals are used in the laboratory for preparation and analysis of samples.

Table 7-5 contains a list of chemicals expected to be used or present in the on-site laboratory during the WPRAP. The use of these chemicals will vary from small quantities for sample preservation to larger quantities for sample extraction. For example, chemical preservation of water samples requires approximately 5 milliliters of concentrated acid while sample extraction requires 300 milliliters of methylene chloride. This is a tentative list and is dependent on the final target analyte list required to support the WPRAP activities.

**Table 7-5  
Chemical Data  
Laboratory Chemicals**

<b>Compound</b>	<b>Compound</b>
<b>1,2 Dichloroethane</b>	<b>Hydrogen</b>
<b>1,1 Dichloroethylene</b>	<b>Hydrochloric Acid</b>
<b>1,1 Dichloroethane</b>	<b>Iso-octane</b>
<b>1,1,1 Trichloroethane</b>	<b>Isopropyl Alcohol</b>
<b>1,4 Dichlorobenzene</b>	<b>Lead</b>
<b>2,4 Dichlorophenylacetic Acid (DCAA)</b>	<b>Lindane</b>
<b>2,4 Dinitro toluene</b>	<b>m-Cresol</b>
<b>2,4,5 Trichlorophenol</b>	<b>Mercury</b>
<b>2,4 D</b>	<b>Methanol</b>
<b>2,4,5 TP</b>	<b>Methoxychlor</b>
<b>2,4,6 Trichlorophenol</b>	<b>Methyl Ethyl Ketone</b>
<b>4,4 Dibromooctafluorobiphenyl (DBOB)</b>	<b>Methylene Chloride</b>
<b>Acetic Acid</b>	<b>N-methyl-N-nitroso-p-toluene sulfonamide</b>

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<b>Acetone</b>	<b>Nickel</b>
<b>Antimony</b>	<b>Nitric Acid</b>
<b>Arsenic</b>	<b>Nitrobenzene</b>
<b>Barium</b>	<b>Nitrogen</b>
<b>Benzene</b>	<b>o-Cresol</b>
<b>Cadmium</b>	<b>p-Cresol</b>
<b>Carbon Tetrachloride</b>	<b>PCB</b>
<b>Chlordane</b>	<b>Pentachloronitrobenze</b>
<b>Chlorobenzene</b>	<b>Pentochlorophenol</b>
<b>Chloroethane</b>	<b>Potassium hydroxide</b>
<b>Chloroform</b>	<b>Pyridine</b>
<b>Chromium</b>	<b>Selenium</b>
<b>Copper</b>	<b>Silver</b>
<b>Decachlorobiphenyl</b>	<b>Sodium sulfate</b>
<b>Dethyl ether</b>	<b>Sodium hydroxide</b>
<b>Endrin</b>	<b>Sodium Sulfate, anhydrous</b>
<b>Helium</b>	<b>Sulfuric Acid</b>
<b>Heptachlor</b>	<b>Tetrachloro-m-xylene</b>
<b>Heptachlor Epoxide</b>	<b>Tetrachloroethane</b>
<b>Hexachlorobenzene</b>	<b>Tetrachloroethylene</b>
<b>Hexachlorbutadiene</b>	<b>Toluene</b>
<b>Hexachloroethane</b>	<b>Toxaphene</b>
<b>Hexane</b>	<b>Trichloroethylene</b>

### 7.3 Physical Hazards

The physical hazards expected to be encountered during pre-operational activities are not unique, but are similar to those associated with most large construction projects. These hazards include those due to poor housekeeping, heavy equipment operation, using hand and portable power tools, installing and using electrical power, slips, trips falls, cuts, noise, adverse weather conditions, steel

erection, confined spaces, hot work, ladder work, excavation an trenching, flammable materials, compressed gases, concrete forming, underground and overhead hazards, traffic, heat stress and cold stress.

**7.4 Biological Hazards**

The biological hazards associated with WPRAP pre-operational activities include wild animals, stinging/biting insects, and poisonous plants.

**7.5 Adverse Weather Conditions**

Adverse weather conditions such as high winds, heavy rains, extreme heat or cold, poor visibility, and hail/ice/snow storms may be encountered at the WPRAP.

**8.0 GENERAL SITE HAZARD CONTROL**

At the WPRAP, IT Corporation has implemented the As Low As Reasonably Achievable (ALARA) concept by applying ALARA principles when developing Safe Work Plans, Standard Operating Procedures, and other documents used to provide instruction to personnel who are conducting pre-operational activities. The ALARA principles are implemented through the following controls:

**8.1 Engineering Controls**

To the extent feasible engineering controls are used to prevent or otherwise control personnel exposure to the hazards associated with WPRAP Pre-Operational activities. These engineering controls include, but are not limited to, the following:

- Installing flame scanners in the drier. These scanners monitor the flame and automatically shut off the natural gas supply should an abnormality be detected.
- Use of pressure gauges to alert personnel should undesired pressures occur.
- Use of hooded enclosures in the laboratory to protect personnel from radiological and chemical hazards.
- Use of HEPA filtration and/or scrubbing systems on air and liquid effluents.
- Use of catalytic converters on equipment to reduce carbon monoxide emissions.

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## 8.2 Administrative Controls

The following administrative controls are used to control the hazards associated with WPRAP Pre-Operational activities:

### 8.2.1 General

- A copy of this POHASP will be maintained at the job site at all times. Personnel requiring access to the job site shall be oriented on the contents of this POHASP and shall acknowledge orientation by signing the POHASP Acknowledgment Form (Attachment B) prior to access.
- Minimum protection for any person who may come on-site is as follows:
  - Hard hat.
  - Safety glasses with ridged side shields.
  - Appropriate work clothing as provided by IT.
  - Gloves whenever materials will be handled. Chemical resistant gloves whenever there is potential for contact with site contaminants or other chemicals. Cotton gloves when performing manual tasks such as loading and unloading supplies, moving furniture, or working on equipment with pinch points. Leather palm gloves when working with equipment or materials that present a cut or puncture hazard.
  - Steel toed safety shoes, made with either leather or chemical resistant material depending on the task performed.
- Prior to the start of work each day, personnel receive safety briefings which address specific hazards, whether real or anticipated, associated with the work to be performed that day. Personnel are encouraged to play an active role in these safety briefings by discussing their concerns/questions regarding their safety and by providing suggestions on how to improve safety at the WPRAP. In addition, once each week, personnel receive formal safety training on a topic which is specific to WPRAP activities.

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- IT ensures that only qualified/competent personnel perform WPRAP Pre-Operational activities by providing approved safety training programs, verification and documentation of training, and through field observation of personnel.
- IT ensures that personnel are physically fit to perform pre-operational work activities at the WPRAP by: (1) conducting a medical surveillance programs in accordance with 29 CFR 1910.120, 29 CFR 1926.65, and other applicable regulatory or FDF site-specific requirements.; (2) through a written Hearing Conservation Program prepared in accordance with 29 CFR 1910.95 and 29 CFR 1926.52; and (3) through a written Respiratory Protection Program prepared in accordance with 29 CFR 1910.134 and 29 CFR 1926.103.
- Eating, drinking, smoking, chewing tobacco, and applying makeup are not permitted only in areas designated by FDF Radiological Engineering. At no time are these activities permitted within Contaminated Areas, High Contamination Areas or Airborne Radioactivity Areas.

## 9.0 ENVIRONMENTAL AND PERSONNEL MONITORING

### 9.1 Radiological Hazards

IT Corporation and FDF Radiological Engineering ensure that personnel exposure to radioactive material is maintained ALARA by implementing the following controls:

- Whenever two or more radioactive materials are present at the same time, the radioactive material possessing the most restrictive occupational exposure limit will be used to control worker exposure.
- To verify the effectiveness of engineering and administrative controls, IT Corporation WPRAP personnel are routinely monitored for exposure to airborne radioactive material by using lapel-type air samplers to sample the air within a person's breathing zone (BZ) and general area (GA) air samples to sample air within the general work environment. FDF Radiological Engineering uses this air sampling data to assess radiological conditions to determine if there is a need to increase or decrease the level(s) of protection required to perform the work safely.
- All personnel are required to perform a whole-body survey when exiting from Controlled Areas, Contamination Areas, High Contamination Areas,

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and Airborne Radioactivity Areas at the WPRAP.

- All on-site IT Corporation WPRAP personnel are required to participate in the FDF bioassay programs by submitting in-vitro (urine or feces) samples and by obtaining in-vivo (lung counts) at specified frequencies.
- All personnel are required to wear thermoluminescent dosimeters (TLDs) when on-site. These TLDs are provided by and maintained by FDF Dosimetry support.

## 9.2 Chemical Hazards

Material Safety Data Sheets (MSDSs) are obtained prior to allowing hazardous chemicals on-site at the WPRAP. These MSDSs are kept on file in the Project Health and Safety Office and are available for review by all site personnel.

Although hazardous chemicals may be encountered at the WPRAP, during the pre-operational phase activities, worker exposure to hazardous chemical environments at or above the applicable Occupational Safety and Health Permissible Exposure Levels (OSHA-PELs) or the American Conference of Government Industrial Hygienists Threshold Limit Values (ACGIH-TLVs) is not anticipated.

To confirm that workers have not been exposed to hazardous chemical concentrations at or above the PELs or TLVs, the IT Safety staff ensures that adequate surveys for hazardous environments are performed, survey data is evaluated for representativeness and compared to the action levels given in Table 9 and appropriate measures are taken to assure worker safety.

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Table 9-1  
 Hazardous Chemical Surveillance  
 Action Levels

Instrument	Action Levels	Level of Respiratory Protection and Corrective Action
PID, FID	1-25 ppm unknowns above background (Bkgd) in the breathing zone (BZ)	Utilize APR (Level C)
	25-200 ppm unknowns above Bkgd in the BZ	Utilize SCBA or airline respirator (Level B)
	+200 ppm unknown above Bkgd in the BZ	Stop work and evacuate work areas.
	10 ppm unknowns above Bkgd in the BZ	Notify the IT Site Safety Representative and FDF Industrial Hygiene
CGI	< 5% LEL	Normal Monitoring
	≥ 5% LEL	Continuous Monitoring
	≥ 10% LEL	Stop work and allow to vent, eliminate ignition sources
DM	as calculated	Utilize APR (Level C)
	as calculated	Utilize SCBA or airline respirator (Level B)
CO Analyzer	Background to 25 ppm	Continue monitoring
	>25 ppm <35 ppm	Investigate source and correct Improve ventilation
	≥ 35 ppm	Shut down potential sources Remove personnel and allow CO to dissipate

Personnel are informed of the hazards associated with hazardous chemicals at the WPRAP through orientation on Material Safety Data Sheets, orientation on Pre-Operational Health & Safety Plans, labeling of containers, and through implementation and training on the IT Corporation Hazard Communication Program for the WPRAP (Attachment C).

### **9.3 Physical Hazards**

IT Corporation implements physical hazard controls for the protection of all on-site personnel:

#### **9.3.1 Noise Hazard**

Noise is a potential hazard associated with the operation of heavy equipment, power tools, generators, machinery, etc.. All on-site personnel are required to wear hearing protection in areas where noise levels are known to exceed or are expected to exceed an 8-hour time weighted average (TWA) of 85 dBA. IT Project Safety continuously monitors for excessive noise levels using sound level meters and/or dosimeters. Areas with consistently high (>85 dBA) noise levels are posted with signs notifying personnel that hearing protection is required. All on-site personnel are required to comply with the IT Corporation WPRAP Hearing Conservation Program (Attachment D).

#### **9.3.2 Heat Stress and Cold Stress Hazard**

Pre-operational activities will be performed during the hotter as well as the colder months of the year. Therefore, IT Corporation has developed a Heat Stress Program and a Cold Stress Program to ensure that on-site personnel are made aware of the signs and symptoms of heat and cold stress and are provided with the appropriate protection against the heat and cold stress hazards. The IT Corporation WPRAP Heat Stress Program and Cold Stress Programs are provided as Attachment E and Attachment F respectively.

#### **9.3.3 Heavy Equipment**

All heavy equipment will be used in the manner for which it was intended. Operators will operate the equipment in accordance with the manufacturer's instructions and within the safe operating parameters as defined by the manufacturer.

#### **9.3.4 Hot Work**

All safety requirements specified in Hot Work Permits, Safe Work Plans and other documents approved by IT and FDF will be followed.

Hot work activities (welding, thermal cutting, grinding, etc.) will be

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performed in a manner which provides for the protection of the workers and the environment. This is accomplished by training personnel in the proper use of safe hot work techniques such as: obtaining a Hot Work Permit from Project Safety; wearing proper fire retardant protective clothing; removing combustibles from the work area or covering them with fire -resistant material prior to beginning hot work activities; maintaining a fire watch during hot work activities and continuing the fire watch for a minimum of 30 minutes following the suspension of the hot work activity; training personnel in the proper use of portable fire extinguishers; and maintaining good housekeeping at all times.

Equipment, including connections, cables, gas hoses, fluxes, rods, coatings and electrodes that is used to perform Hot Work will be inspected prior to use.

Personnel will wear appropriate protective equipment, such as fire retardant clothing, when performing hot work activities.

### **9.3.5 Electrical Equipment**

It Project Safety will verify that equipment is suitable for its intended purpose as evidenced by listing, labeling, or certification for that purpose.

All equipment will be operated in accordance with the manufacturer's instructions.

All electrical appliances will be UL approved for the potential hazards of the atmospheres in which they will be used. Electric tools and equipment (saws, drills, compressors, etc.) will be double insulated or grounded. All electric connections will be made through a ground fault circuit interrupter (GFCI) located outside of the hazardous environment. Fire extinguishers consistent with OSHA 1910.150 will be kept in sufficient number to allow on-site personnel to extinguish fires.

Electrical equipment will be inspected for proper insulation prior to use.

Electrical equipment operating at 50 volts or more will be guarded against accidental contact and appropriate signs will be posted.

On-site electrical equipment will be bonded and grounded, spark proof, and explosion resistant as appropriate.

Electrical equipment will be de-energized before inspecting or repairing in

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accordance with the FERMCO Lockout/Tagout Document SSOP-0719 (Attachment G).

All electrical tools will be inspected frequently and defective tools or tools that are questionable will be removed from service and properly tagged.

Personnel using equipment, such as ladders and cranes, will maintain a minimum safe distance of 15 feet from energized overhead lines.

Personnel will wear proper protective equipment in accordance with work permits, safe work plans, or other applicable documents.

### **9.3.6 Portable Ladders**

Ladders will be inspected by a competent person at least once each quarter.

Ladders will be inspected and maintained in accordance with the following guidelines:

- Ladders shall be maintained in good condition at all times. The joint between the steps and side rails shall be tight. All hardware and fittings must be securely attached. Moveable parts must operate freely without binding or undue play.
- Metal bearings of locks, wheels, pulleys, etc. shall be frequently lubricated.
- Frayed or badly worn rope must be replaced.
- Safety feet and other auxiliary equipment shall be kept in good condition to insure proper performance.
- Rungs shall be kept free of grease, oils or other slippery substances.
- Defective ladders will be tagged and removed from service.

Workers will be instructed to visually inspect ladders before each use.

Foundations for portable ladders will be on solid, compacted soils or other solid surface.

Ladders will not be placed in front of doors opening toward the ladder

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unless the door has been blocked, locked or guarded.

Ladders will not be used in the horizontal position as platforms, runways or scaffolds.

The tops step ladders will not be used as a step. The bracing on the back legs of step ladders shall not be used for climbing.

No ladder will be used to gain access to a roof unless the top of the ladder extends at least three feet above the point of support at the eave, gutter, or roof line.

Portable metal ladders will not be used at the WPRAP.

The minimum extension for two-section ladders shall be as follows:

<u>Size of Ladder (Feet)</u>	<u>Overlap (Feet)</u>
Up to and including 36	3
Over 36 up to and including 48	4
Over 48 up to and including 60	5

**9.3.7 Excavation and Trenching**

Excavations greater than 4 feet in depth will be considered a confined space. Entry into these excavations shall be in accordance with the WPRAP Confined Space Entry Program. Please see Section 9.3.13.

**9.3.8 Flammable Materials**

Sources of ignition will be excluded from areas where flammable materials are present.

Fuels will be stored in approved safety containers at predesignated locations and will be posted with warning signs "Flammable Liquid" and "No Smoking".

Equipment on-site will be bonded and grounded, spark proof and explosion resistant as appropriate . Particular attention to bonding and grounding shall be given to the transfer of flammable/combustible liquids.

With the exception of FDF designated smoking areas, smoking shall be prohibited on-site.

Fire extinguishers will be kept in sufficient numbers to allow on-site personnel the extinguish fires. Personnel will be trained in the proper use of these fire extinguishers.

### **9.3.9 Compressed Gases and Systems**

Unless otherwise labeled, compressed gas cylinders shall be considered as being full and shall be handled accordingly.

Cylinders may be moved by tilting and rolling them on their bottom edges.

Valve protectors shall not be used to lift cylinders from one vertical position to another.

When work is finished, when cylinders are empty, or when cylinders are moved at any time, the cylinder valve shall be closed

Compressed gas cylinders, whether full or empty, shall not be used as rollers, supports, or for any purpose other than the purpose for which they were designed.

Suitable cylinder truck, chain, or other steadying device shall be used to prevent cylinders from falling while in use or in storage.

Cylinder markings, such as labels and serial numbers, shall not be removed or altered in any way.

Caution must be taken to prevent sparks, molten metal, electrical currents, excessive heat or flames from coming in contact with compressed gas cylinders.

Compressed gas cylinders will be stored only in those areas approved for this purpose. Storage areas must be well ventilated and protected from extreme weather conditions so as to minimize rusting, freezing, continuous exposure to direct rays from the sun, and contact with the ground. This does not preclude exterior storage.

Compressed gas cylinders shall be secured and stored in an upright position.

All empty cylinders must be labeled "Empty".

Oxygen cylinders shall be stored a minimum distance of 20 feet from any other fuel gas cylinders or combustible materials (especially oil and

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grease), or be separated by a non-combustible barrier at least 5 feet high and having a fire resistance rating of at least 30 minutes.

The following additional precautions shall be taken with compressed gas cylinders:

- Never use oil and grease as lubricating agent on valves or attachments to oxygen cylinders.
- Never locate compressed gas cylinders in an unventilated area.
- Never attempt to mix gases in a cylinder or to use the cylinder for any purpose other than that for which it was intended.
- Never use oxygen for a substitute for compressed air.
- Never use an open flame or any other source of ignition to test for cylinder leaks.
- Cylinders containing oxygen or acetylene or other fuel gases shall not be taken into confined spaces.

### 9.3.10 Concrete Forming

No construction loads will be placed on a concrete structure or portion of a concrete structure unless IT has determined, based on information received from a person qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.

All protruding re-enforced steel, onto and into which personnel could fall, shall be guarded to prevent the hazard of impalement.

No person will be permitted to work under concrete buckets while the buckets are being elevated or lowered into position.

To the extent practical, elevated concrete buckets will be routed so that no person or the fewest number of people are exposed to the hazards associated with falling concrete buckets.

Form work shall be designed, fabricated, erected, supported, braced, and maintained so that it is capable of supporting, without failure, all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork.

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Forms and shores (except those used for slabs on grade and slip forms) shall not be removed until IT determines that the concrete has gained sufficient strength to support its weight and superimposed loads. These determinations shall be based on compliance with one of the following:

- The plans and specifications stipulate conditions for removal of forms and shores and such conditions have been followed.
- The concrete has been properly tested with an appropriate American Society for Testing Materials (ASTM) standard test method designed to indicate the concrete compressive strength and the test results indicate that the concrete has gained sufficient strength to support its weight and superimposed loads.

A limited access zone will be established whenever a masonry wall is being constructed. The limited access zone will conform to the following:

- The limited zone shall be established prior to the start of constructing the wall.
- The limited access zone shall be equal to the height of the wall to be constructed plus 4 feet (1.2192 meters) and shall run the entire length of the wall
- The limited access zone shall be established on the side of the wall that will be unscaffolded.
- The limited access zone shall be restricted to entry by personnel actively engaged in constructing the wall. No other personnel shall be permitted inside the zone.
- The limited access zone shall remain in place until the wall is adequately supported to prevent overturning and to prevent collapse. Where the height of the wall is more than 8 feet (2.4384 meters), the limited access zone shall remain in place until the wall has been adequately braced to prevent overturning and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. The bracing shall remain in place until permanent supporting elements of the structure are in place.
- Lift-slab operations will be designed and planned by a registered professional engineer who has experience in lift-slab construction. Such plans and designs will be implemented by IT and will include detailed instructions and sketches indicating the prescribed method

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of erection.

- Jacking equipment shall be capable of supporting at least two and one-half times the load being lifted during jacking operations and the equipment shall not be overloaded.

The following additional precautions shall be taken when working with concrete:

- Personnel will wear chemical resistant gloves when working with concrete. To prevent concrete burns, personnel should wash with water immediately after working with concrete.
- When positioning loaded concrete trucks, personnel should be alert for underground structures, loosely backfilled areas and excavation banks.
- When using a crane and bucket, always make a test lift to ensure that the crane is capable of handling the load at the maximum reach.
- Use good lifting techniques when wheeling, dumping or shoveling concrete.
- When using a crane and bucket or pump truck, be alert for overhead wires.
- When unfolding or adding truck chutes, keep fingers from between the hinged sections.
- Notify IT Supervision or Safety immediately if you notice shifting or movement of formwork.

### 9.3.11 Steel Erection

Only qualified steel erectors, riggers, and crane operators will be used to perform steel erection activities at the WPRAP.

Steel shall be erected in accordance with OSHA Steel Erection Standards (29 CFR 1926, Subpart R).

Wear appropriate personal protective equipment including hard hats, steel toed safety shoes, eye protection, and life saving devices such as lifelines, lanyards, and safety harnesses as appropriate.

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Pre-assemble sections of frames or shed-type buildings on the ground and then lift by crane into position.

Prepare the work area to ensure the safety of cranes and other mobile equipment.

Using hazard ropes, barricades or other means of warning to protect personnel from crane swing radius, falling objects, and trip and fall hazards.

Assure that all personnel are in the clear before making lifts. Use hand signals or two way radio communication to direct lifting operations.

### 9.3.12 Underground and Overhead Hazards

Field management shall take the steps necessary to ensure that all underground and above ground utilities are located and neutralized prior to beginning excavation or facility construction. If these utilities cannot be located, the following steps must be taken to ensure that all utilities to the site area have been neutralized:

- Contact the FDF Facilities Engineer
- Conduct a magnetometer survey.
- Stop excavation or construction if unexpected materials are found.
- Do not erect scaffolds or use ladders within 15 feet of power lines.

All open manholes or other entrances to below ground areas shall be marked stakes and warning tapes to prevent personnel or equipment from standing on or driving over these openings.

### 9.3.13 Confined Spaces

All systems will be locked out/tagged out, electrically/mechanically de-energized, lines entering and leaving broken or blanked off, and appropriately posted with signs and personnel (safety watch) before any entry is made by personnel.

All confined space entry shall be performed in accordance with the IT Corporation WPRAP Confined Space Entry Program.

All workers who enter confined spaces will receive training on confined

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space entry procedures before performing work.

The space will be evaluated by a person who meets the criteria for designation as "Qualified Person". The qualified person will have classroom training in confined space entry procedures, supervised field training in the evaluation of confined spaces, , and experience in conducting confined space evaluations.

An initial hazard assessment will be conducted that includes atmospheric testing for oxygen deficiency, flammable gas concentrations, and toxic gases. No entry will be made if the flammable gas concentration exceeds 10% of the Lower Explosive Limit (LEL).

A confined space entry permit will be completed by the Qualified Person and posted at the entrance to the space. Required personal protective equipment and safety equipment will be specified on this permit.

Communication procedures will be established and reviewed between persons entering the space and the outside standby personnel before entry.

Prior to entering the space, a safety meeting will be conducted with all personnel involved with the entry. All of the hazards and precautions associated with entry will be reviewed at this meeting.

The on-site Safety Representative shall determine the level of respiratory protection required for entry.

A hoisting device or other equivalent mechanism will be immediately available to retrieve any person who enters the space if an emergency situation arises. Ladders or other approved devices will be used for access or egress of personnel. This device shall not be used for routine access/egress of personnel, materials, or equipment.

No personnel entry will be permitted into a tank, vessel or other confined space that has been inerted.

Any person who is to enter a confined space will wear a harness and lifeline that is manned by a standby person provided with equivalent protection and training for entry if needed in any emergency situation.

#### **9.3.14 Traffic**

Vehicle and/or equipment operators will adhere to Project and Site

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requirements regarding the operation of their motor vehicle or equipment. The number of passengers in or on a vehicle or piece of equipment shall not exceed the seating capacity. When equipped with seat belts, the seat belts will be used at all times. Personnel are not permitted to ride in or on vehicles or equipment in a manner not designated for conveyance of people (e.g. riding on the running boards or fenders of trucks).

Ground personnel should always make eye contact and wait for a signal to proceed before passing close to or in front of operating equipment or moving vehicles. Where possible, heavy equipment in stationary operation should be barricaded (with hazard tape) at a sufficient distance for ground personnel to avoid swinging cabs, counterweights, and booms.

#### **9.4 Biological**

IT Corporation uses the following controls to protect on-site personnel from the biological hazards associated with WPRAP pre-operational activities:

##### **9.4.1 Wild Animals**

Wild animals (e.g. stray dogs, cats, racoons, snakes and mice) may be encountered at the WPRAP. On-site personnel are instructed to use discretion and avoid all contact with wild animals. Should these animals present a problem, efforts will be made to remove them from the site.

##### **9.4.2 Insects**

Insects (e.g. mosquitoes, bees, and wasps) may be found at the site during the warmer months of the year. Workers are trained to recognize and to minimize contact with these insects. If insects present a problem, efforts will be made to remove them.

##### **9.4.3 Poisonous Plants**

Poisonous plants (e.g. poison ivy and poison oak) may be encountered at the WPRAP. Workers are trained to recognize these plants and to avoid contact with them.

#### **9.5 Adverse Weather**

In the event of adverse weather conditions, IT Project Safety and FDF, Inc. will determine if operations may continue without the potential for injury to personnel.

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Weather affected work (e.g. work in open locations) will be stopped if lightning, heavy persistent rain, limited visibility, heavy snow, or other adverse weather conditions are in the area of the WPRAP.

Any operation involving the use of cranes, man lifts, or personnel working at heights will be suspended if any wind velocity reaches 25 mph.

## 10.0 TASK-SPECIFIC HAZARDS AND CONTROLS

The hazards and controls listed below are unique to the project task under which they are listed. Please refer to the referenced Sections of this POHASP for the procedures developed for controlling the hazards.

### 10.1 Earthwork and Road Construction

- Radiological Hazards (Section 7.1) (Section 9.1)
- Chemical Hazards (Section 7.2) (Section 9.2)
- Physical Hazards (Section 7.3) (Section 9.3)
  - Noise
  - Excavation and Trenching
  - Heavy Equipment
  - Confined Spaces
  - Flammable Materials
  - Underground and Overhead Hazards
  - Heat Stress/Cold Stress
  - Traffic
  - Adverse Weather Conditions
- Biological Hazards (Section 7.4) (Section 9.4)

### 10.2 Facility Construction

- Radiological Hazards (Section 7.1) (Section 9.1)
- Chemical Hazards (Section 7.2) (Section 9.2)
- Physical Hazards (Section 7.3) (Section 9.3)
  - Noise
  - Excavation and Trenching

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- Heavy Equipment
  - Confined Spaces
  - Flammable Materials
  - Underground and Overhead Hazards
  - Heat Stress/Cold Stress
  - Traffic
  - Adverse Weather Conditions
  - Concrete Forming
  - Electrical Equipment
  - Hot Work
  - Portable Ladders
  - Compressed Gases and Systems
  - Steel Erection
- Biological Hazards (Section 7.4) (Section 9.4)

### 10.3 Installation of Utilities

- Radiological Hazards (Section 7.1) (Section 9.1)
- Chemical Hazards (Section 7.2) (Section 9.2)
- Physical Hazards (Section 7.3) (Section 9.3)
  - Noise
  - Excavation and Trenching
  - Heavy Equipment
  - Confined Spaces
  - Flammable Materials
  - Underground and Overhead Hazards
  - Heat Stress/Cold Stress
  - Traffic
  - Adverse Weather Conditions
  - Compressed gases and systems
  - Electrical Equipment
  - Hot Work

- Biological Hazards (Section 7.4) (Section 9.4)

### 10.4 Drier Performance Testing

- Radiological Hazards (Section 7.1) (Section 9.1)
- Chemical Hazards (Section 7.2) (Section 9.2)

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- Physical Hazards (Section 7.3) (Section 9.3)
  - Noise
  - Heavy Equipment
  - Confined Spaces
  - Flammable Materials
  - Heat Stress/Cold Stress
  - Traffic
  - Adverse Weather Conditions
  - Electrical Equipment
- Biological Hazards (Section 7.4) (Section 9.4)

### 10.5 Laboratory Performance Testing

- Radiological Hazards (Section 7.1) (Section 9.1)
- Chemical Hazards (Section 7.2) (Section 9.2)
- Physical Hazards (Section 7.3) (Section 9.3)
  - Flammable Materials
  - Electrical Equipment
- Biological Hazards (Section 7.4) (Section 9.4)

## 11.0 TRAINING REQUIREMENTS

Prior to performing WPRAP pre-operational activities, personnel must receive the following training:

### 11.1 Worker Training

- FDF, Inc. General Employee Training (GET)
- FDF Site Worker Training

Note: Individuals who have documented proof of previous training, (HAZWOPER + annual refresher), which considered by FDF to be equivalent to Site Worker Training can be exempted from FDF Site Worker Training provided IT Corporation has submitted documented proof of previous training to FDF.

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- FDF, Inc. Radiological Worker II Training

Note: Exception may be granted for Radiological Worker II Training received at other DOE sites or from the GCBCTC by submitting documentation of training to FDF and by completing the FDF Radiological Worker Test and Practical Exam.

- FDF Construction Rules and Regulations Training
- Respirator Training and Fit Test
- OSHA Supervised Field Experience (24 hours of Hazardous Waste Site Supervised Experience per 29 CFR 1910.120.
- All on-site personnel involved with Project Management, Supervision, Engineering, Safety, or similar positions must successfully complete a certified OSHA Construction Safety Outreach 30 Hour program course. A record of this training must be provided to FDF, Inc.
- Orientation on the Pre-Operational Health & Safety Plan (POHASP)

### 11.2 Visitor Training

- GET/RP or have an escort with all required worker training.
- Orientation on the POHASP
- Orientation on current site conditions and activities.
- 40 hour OSHA Training that meets the requirements of 29 CFR 1910.120

## 12.0 EMERGENCY CONTINGENCY AND RESPONSE PLAN

This Emergency Contingency and Response Plan has been developed to cover extraordinary conditions that might occur at the WPRAP.

### 12.1 Reporting

The following emergency numbers shall be used to report emergencies at the WPRAP:

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**12.1.1 Emergency Numbers**

<b>NAME</b>	<b>FEMP TELEPHONE NUMBER</b>	<b>RADIO</b>
<b>Ambulance</b>	<b>648-6511</b>	<b>Control</b>
<b>Hospital</b>	<b>648-6511</b>	<b>Control</b>
<b>Fire</b>	<b>648-6511</b>	<b>Control</b>
<b>Security</b>	<b>648-6511</b>	<b>Control</b>
<b>Emergency Response</b>	<b>648-6511</b>	<b>Control</b>
<b>Assistant Emergency Duty Manager (AEDO)</b>	<b>648-4749 648-4444</b>	<b>202/Control</b>

**12.1.2 Site Notification Procedures**

All emergencies shall be reported to the FDF "Communications Center" to ensure rapid response. Whenever personnel are working, a means to report emergencies shall be available at all work locations. This may be accomplished by one or more of the following methods:

- Phone 648-6511
- Activate a local site fire alarm station
- Radio to "Control"

Any injury, no matter how minor, shall be reported to FEMP Medical for evaluation or treatment. The injured party shall be accompanied by the supervisor in charge or his designee. The FDF WPRAP Health & Safety Officer shall be notified as soon as possible after the injury/accident has occurred.

Personnel 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:

- Serious Injury
- Injury Complicated by Contamination
- Chemical or Radiation/Contamination Release
- Chemical Splash (Eye and Skin)
- Any Fire
- Property Damage
- Adverse Weather Conditions
- Unusual Occurrences
- Loss of Containment
- Loss of Utilities

When an emergency or abnormal condition is observed, personnel shall contact the Communications Center at extension 6511 or via radio (Control). Stay on the phone line until the dispatcher hangs up.

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

- Name
- Badge Number
- Location where emergency has occurred
- Nature of emergency
- Number of personnel with injuries
- Unusual conditions (odors, symptoms, vapors, smoke)
- Current status of the emergency

### 12.2 Evacuation Routes

Should a situation require an emergency evacuation of the work area, all equipment should be shut off (if possible) and left in place. Personnel should immediately proceed to Rally Point 6 located on 2<sup>nd</sup> Street. This location is shown in Figure 1.

### 12.3 Emergency Equipment

The FEMP Medical Facility is staffed and equipped to handle most types of medical emergencies. The medical facility is staffed with Emergency Medical technicians (EMT) and is equipped with an ambulance to transport injured personnel to the nearest off-site hospital should extended or specialized medical

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treatment be necessary.

The Medical Facility is located at the east end of the Occupational Safety & Health Building (Building 53). The location of the Medical Facility is shown in Figure 2.

#### **12.4 Emergency Response**

The FEMP Emergency Services will handle all emergencies. Any request for emergency help should be requested by telephone (648-6511) or on any FEMP radio frequency by calling "Control".

#### **12.5 Medical Emergencies**

The FEMP Medical Department shall serve as the first-aid person.

#### **12.6 Fire Emergencies**

All work sites shall maintain effective communication to summon fire fighting assistance. Access to work areas shall be maintained at all times to permit 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.

The FEMP Emergency Response Team (ERT) will also respond to all on-site fire emergencies. For any fire at the FEMP call 648-6511.

Any discharge of a fire extinguisher shall be reported as soon as practical to the on duty Fire Fighter/Emergency Response Specialist by radio (Call number 303) or by phone at 648-4298.

#### **12.7 Explosion Emergency**

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

- Activate the closet fire alarm if possible. Notify other employees by an alternate method if a fire alarm is not available.
- Evacuate the work area
- Proceed to the appointed rally point (Rally Point 6)
- 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 by phone (6511)
- Call for medical assistance if necessary.

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- Report to your supervisor for accountability.

## **12.8 Chemical Emergencies**

### **12.8.1 Splashes**

Flush the affected area for 15 minutes and report to FERMCO Medical Services.

### **12.8.2 Personal Contamination (Chemical)**

When contaminated with a corrosive or caustic material, flush the affected area with clean water for 15 minutes. Report to FERMCO Medical Services.

When contaminated with other materials, contact FDF Industrial Hygiene and remain at the work location until a representative of Industrial Hygiene arrives and provides further instructions.

All instances of personal contamination shall be reported to FDF Industrial Hygiene, FDF WPRAP Safety Officer, IT WPRAP Safety Representative, and the FDF Assistant Emergency Duty Officer.

Any situation which could have resulted in the inhalation, ingestion, or absorption of a hazardous material shall immediately be reported to IT Supervision and Safety and to the FDF Assistant Emergency Duty Officer (AEDO), who will report the circumstances to FEMP Medical Services and Industrial Hygiene. The involved personnel shall be directed by the AEDO or IT Supervision as to when and where to report for medical evaluation, completion of an Incident Investigation Report, and submission of bioassay samples (e.g. blood, urine).

## **12.9 Radiological Emergencies**

### **12.9.1 Releases**

The release area shall be evacuated. The supervisor in charge, AEDO, Radiological Control Technicians, and the FDF WPRAP Safety Officer shall be notified of the release.

### **12.9.2 Personal Contamination (Radiological)**

Contamination should be avoided where possible by making minimum contact with the contaminant. All instances of personal radiological

contamination must be reported to FDF Radiological Control, FDF WPRAP Safety Officer, IT Safety Representative, and the FDF AEDO.

Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion, absorption, or injection shall be immediately reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to FDF ES&H Radiological Control Department for evaluation. When the suspect isotope is uranium, the involved person shall report to the Urine Sampling Station at the end of their respective shift to complete an Investigation Report (IRR Form FMPC-ES&H-1458), and submit an incident urine sample. The involved person 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 person shall report to the Radiological Control Department for further determination of actions. Personnel are responsible for complying with additional requirements as specified by the Radiological Control Department.

#### **12.10 Weather Limitations/Adverse Conditions**

Any outside work will be suspended if warnings for high winds, lightning or tornados are sounded. Any operations utilizing cranes, or personnel working on elevated steel type work will be suspended if wind velocity reaches 25 mph.

Work on elevated steel (walking) will be suspended during rain or when icy conditions exist.

#### **12.11 Accident Investigations**

Any injury or accident shall require the supervisor to complete an accident report. For injuries and illnesses a "Supervisor's Report of Injury" shall be submitted within 24 hours of the event and forwarded to FERMCO Medical Services and the FDF WPRAP Contract Administrator. Should a serious accident or injury occur, the involved area should not be disturbed until approved by the FDF WPRAP Safety Officer.

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**ATTACHMENT A**  
**WPRAP PRE-OPERATIONAL HASP**  
**HEALTH & SAFETY REQUIREMENTS MATRIX**

**ATTACHMENT A  
WPRAP PRE-OPERATIONAL HASP**

**Health & Safety Requirements Matrix**

Activity (Tasks)	Hazard Identification	Frequency & Type of Air and Personnel Monitoring Required	Personal Protective Equipment	Training Requirements	Medical Monitoring & Surveillance Requirements	Administrative & Engineering Control Measures	Permit(s)	Decontamination & Disposal Procedures
<p>1.0 General Project min. requirements</p> <p>Note: These requirements apply to all sections of this matrix</p>	<p>Work within a radiologically controlled area</p> <p>Work at a Hazardous Waste Site</p> <p>Work at a Construction Site</p>	<p>Thermoluminescent dosimetry (TLD)</p> <p>Periodic personal air sampling surveillance by FDF Radiological Safety</p> <p>Hand &amp; Foot surveys when exiting controlled areas</p> <p>Whole-body survey required when exiting radiologically controlled areas</p> <p>General Area (GA) air sampling by FDF Radiological Safety</p>	<p>Company issued clothing</p> <p>Steel toed leather safety shoes</p> <p>Hard hat</p> <p>Safety glasses with ridged side shields</p> <p>Protective clothing as specified in Work Permits</p> <p>Respiratory protection as specified in Work Permits</p>	<p>Site Worker:</p> <p>GET/RP 40 hr HAZWOPER Hazard Communication Rad Worker II Orientation on PSHSP Orientation on H&amp;S Matrix Orientation on Project Specific MSDSs Respirator Training</p> <p>Visitors:</p> <p>GET/RP or have an escort with all required training Orientation on PSHSP Orientation on current site conditions/hazards</p>	<p>Physical: Baseline, annual, and at termination</p> <p>All injuries/illnesses must be reported to Project Management, Supervision or Health &amp; Safety and to the FDF Medical Department</p> <p>Baseline, quarterly, and termination in-vitro examination (urine sampling)</p> <p>Baseline, annual, and termination in-vivo examination (lung counting)</p> <p>Medical approval for respirator use</p>	<p>Daily specific task review of matrix requirements</p> <p>Daily Tool Box Safety Meeting</p> <p>Weekly Formal Safety Meeting</p> <p>Compliance with the Project Health &amp; Safety Program</p>	<p>FDF Work Permit</p> <p>Radiological Work Permit (RWP)</p> <p>Hot Work Permits</p> <p>Penetration Permits</p>	<p>Personal and material radiological contamination monitoring to exit radiologically controlled areas.</p> <p>Disposal of contaminated materials (anti Cs wastes, etc..) in approved containers</p>

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## Health & Safety Requirements Matrix

Activity (Tasks)	Hazard Identification	Frequency & Type of Air and Personnel Monitoring Required	Personal Protective Equipment	Training Requirements	Medical Monitoring & Surveillance Requirements	Administrative & Engineering Control Measures	Permit(s)	Decontamination & Disposal Procedures
1.0 General Project min. requirements (continued)	<p>Use of manlifts (JLG, Grove, Scissors, etc.)</p> <p>Hoisting and Rigging</p>		<p>Personal fall protection (full-body harness with lanyard) is required when working in lifts with articulating arms or baskets</p> <p>PPE as required by task-specific work permits, radiological work permits, lift plans, or other documents that define the scope of work</p>	<p>Only trained/qualified operator shall operate manlifts</p> <p>Fall protection training when working in lifts with articulating arms or baskets</p> <p>Riggers shall meet the FDF Training requirements for Levels 1, 2 or 3 riggers</p> <p>Personnel shall be oriented on any unique lift plans</p> <p>Crane operators shall be qualified</p>	<p>Medical approval for work at heights</p> <p>Medical approval required for crane operators</p>	<p>All lifts are to be inspected in accordance with Project Specific Safety Instructions and operated in accordance with the manufacturer's or other written instructions</p> <p>100% tie off (personal fall protection) required when in equipment except for scissors lifts equipped with top rail, mid rail, and toe boards</p> <p>Control (barricade) the swing radius of the lift</p> <p>Maintain a minimum distance of 10 feet from power lines.</p> <p>Hoisting and rigging shall comply with the Fluor Daniel Fernald, Inc. Hoisting and Rigging Manual, Section 15</p> <p>A Lift Plan shall be prepared for all lifts over 2,000 lbs. These Plans must be approved by FDF</p> <p>Worker orientation and compliance with all lift plans.</p> <p>Verification of all worker qualifications.</p>	<p>FDF approved Lift plan</p>	

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## Health & Safety Requirements Matrix

Activity (Tasks)	Hazard Identification	Frequency & Type of Air and Personnel Monitoring Required	Personal Protective Equipment	Training Requirements	Medical Monitoring & Surveillance Requirements	Administrative & Engineering Control Measures	Permit(s)	Decontamination & Disposal Procedures
1.0 General Project min. requirements (continued)	<p>Weather limitations for outdoor activities</p> <p>Cuts, abrasions, and puncture wounds</p> <p>Noise exposure</p>	<p>Monitor ambient temperatures and for other weather conditions</p> <p>Personnel are instructed to be aware of workplace conditions</p> <p>Conduct noise exposure assessments as necessary</p>	<p>See Heat Stress and Cold Stress Hazard Identification Section</p> <p>Leather palm gloves or equivalent hand protection</p> <p>Hearing protection (ear plugs, ear muffs, etc.) where noise levels 85 dBA</p>	<p>Workers shall be trained to recognize hazardous weather conditions</p> <p>Workers will be trained in the proper use of sharp tools</p> <p>Personnel exposed to noise levels 85 dBA shall be placed under the Project Hearing Conservation Program.</p>	<p>Report all injuries to Project management, supervision, safety and FDF Medical..</p> <p>Audiometric evaluation required in accordance with the WPRAP Hearing Conservation Program.</p>	<p>Outdoor activities will be suspended when one or more of the following conditions occur:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Lightning</li> <li><input type="checkbox"/> Heavy persistent rain</li> <li><input type="checkbox"/> Poor visibility</li> <li><input type="checkbox"/> Wind gusts of 25 mph or greater will stop elevated work and crane work.</li> </ul> <p>Personal Protective Equipment (PPE) to be specified in safe work plans, operating procedures and work permits.</p> <p>Areas where noise levels exceed 85 dBA are to be posted "Hearing Protection Required"</p>		

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## Health & Safety Requirements Matrix

Activity (Tasks)	Hazard Identification	Frequency & Type of Air and Personnel Monitoring Required	Personal Protective Equipment	Training Requirements	Medical Monitoring & Surveillance Requirements	Administrative & Engineering Control Measures	Permit(s)	Decontamination & Disposal Procedures
Section 2.0 Construction of WPRAP Facilities	Radiological  Chemical  Physical <ul style="list-style-type: none"> <li>• Noise</li> <li>• Excavation &amp; Trench</li> <li>• Heavy Equipment</li> <li>• Confined Spaces</li> <li>• Flammable Materials</li> <li>• Underground &amp; Overhead Hazards</li> <li>• Heat Stress</li> <li>• Cold Stress</li> <li>• Traffic</li> <li>• Adverse Weather</li> <li>• Concrete Forming</li> <li>• Electrical Equipment</li> <li>• Hot Work</li> <li>• Portable Ladders</li> <li>• Compressed Gases</li> <li>• Steel Erection</li> </ul> Biological	See Section 1.0  Personnel and area air sampling for radioactivity when digging trenches to run electrical lines	See Section 1.0  Lockout/Tagout materials  Grounding equipment (GFCI)  Shoring in trenches > 4 feet in depth  Anti-shock PPE  Orange Safety Vest  Respiratory Protection (Confined Spaces & Airborne contamination areas)	See Section 1.0  Respirator Training if required for confined space entry or airborne radioactivity area  Lockout/Tagout Training	See Section 1.0	See Section 1.0  Verify isolation of utilities and systems Lockout/Tagout in accordance with Safety Instruction #6 FERMCO Lockout/Tagout (Hazardous Energy Control) Procedure.  Installation in accordance with electrical standards	See Section 1.0  Confined Space Entry Permit	See Section 1.0

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## Health & Safety Requirements Matrix

(Tasks)	Hazard Identification	Frequency & Type of Air and Personnel Monitoring Required	Personal Protective Equipment	Training Requirements	Medical Monitoring & Surveillance Requirements	Administrative & Engineering Control Measures	Permit(s)	Decontamination & Disposal Procedures
Section 3.0  Earthwork and Road Construction	Radiological  Chemical  Physical <ul style="list-style-type: none"> <li>• Noise</li> <li>• Excavation &amp; Trench</li> <li>• Heavy Equipment</li> <li>• Confined Spaces</li> <li>• Flammable Materials</li> <li>• Underground &amp; Overhead Hazards</li> <li>• Heat Stress</li> <li>• Cold Stress</li> <li>• Traffic</li> <li>• Adverse Weather</li> <li>• Portable Ladders</li> </ul> Biological	See Section 1.0  Personnel and area air sampling for radioactivity when performing earthwork and road construction	See Section 1.0 ing  Lockout/Tagout materials  Shoring in trenches > 4 feet in depth  Orange Safety Vest  Respiratory Protection (Confined Spaces & Airborne contamination areas)	See Section 1.0  Respirator Training if required for confined space entry or airborne radioactivity area  Lockout/Tagout Training	See Section 1.0	See Section 1.0	See Section 1.0  Confined Space Entry Permit	See Section 1.0

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## Health & Safety Requirements Matrix

(Tasks)	Hazard Identification	Frequency & Type of Air and Personnel Monitoring Required	Personal Protective Equipment	Training Requirements	Medical Monitoring & Surveillance Requirements	Administrative & Engineering Control Measures	Permit(s)	Decontamination & Disposal Procedures
Section 4.0 Installation of Utilities	Chemical  Physical <ul style="list-style-type: none"> <li>• Noise</li> <li>• Excavation &amp; Trench</li> <li>• Heavy Equipment</li> <li>• Confined Spaces</li> <li>• Flammable Materials</li> <li>• Underground &amp; Overhead Hazards</li> <li>• Heat Stress</li> <li>• Cold Stress</li> <li>• Traffic</li> <li>• Adverse Weather</li> <li>• Electrical Equipment</li> <li>• Hot Work</li> <li>• Portable Ladders</li> <li>• Compressed Gases</li> <li>• Steel Erection</li> </ul> Biological	See Section 1.0  Personnel and area air sampling for radioactivity when digging trenches to run utility lines  Confined Space Monitoring	See Section 1.0  Lockout/Tagout materials  Grounding equipment (GFCI)  Shoring in trenches > 4 feet in depth  Anti-shock PPE  Orange Safety Vest  Respiratory Protection (Confined Spaces & Airborne contamination areas)	See Section 1.0  Respirator Training if required for confined space entry or airborne radioactivity area  Lockout/Tagout Training	See Section 1.0	See Section 1.0  Verify isolation of utilities and systems Lockout/Tagout in accordance with Safety Instruction #6 FERMC0 Lockout/Tagout (Hazardous Energy Control) Procedure.  Installation in accordance with electrical standards	See Section 1.0  Confined Space Entry Permit	See Section 1.0

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### Health & Safety Requirements Matrix

(Tasks)	Hazard Identification	Frequency & Type of Air and Personnel Monitoring Required	Personal Protective Equipment	Training Requirements	Medical Monitoring & Surveillance Requirements	Administrative & Engineering Control Measures	Permit(s)	Decontamination & Disposal Procedures
Section 5.0 Drier Performance Testing	Chemical  Physical <ul style="list-style-type: none"> <li>• Noise</li> <li>• Heavy Equipment</li> <li>• Confined Spaces</li> <li>• Flammable Materials</li> <li>• Heat Stress</li> <li>• Cold Stress</li> <li>• Traffic</li> <li>• Adverse Weather</li> <li>• Electrical Equipment</li> </ul> Biological	See Section 1.0  Gaseous effluent monitoring  Confined Space Monitoring	See Section 1.0  Lockout/Tagout materials  Grounding equipment (GFCI)  Anti-shock PPE  Orange Safety Vest  Respiratory Protection (Confined Spaces & Airborne contamination areas)	See Section 1.0  Respirator Training if required for confined space entry or airborne radioactivity area  Lockout/Tagout Training	See Section 1.0	See Section 1.0  Verify isolation of utilities and systems Lockout/Tagout in accordance with Safety Instruction #6 FERMC0 Lockout/Tagout (Hazardous Energy Control) Procedure.  Installation in accordance with electrical standards	See Section 1.0  Confined Space Entry Permit	See section 1.0

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### Health & Safety Requirements Matrix

(Tasks)	Hazard Identification	Frequency & Type of Air and Personnel Monitoring Required	Personal Protective Equipment	Training Requirements	Medical Monitoring & Surveillance Requirements	Administrative & Engineering Control Measures	Permit(s)	Decontamination & Disposal Procedures
Section 6.0 Laboratory Performance Testing	Radiological Chemical Physical • Flammable Materials • Electrical Equipment Biological	See Section 1.0 Gaseous effluent monitoring	See Section 1.0 Lockout/Tagout materials Grounding equipment (GFCI) Anti-shock PPE Respiratory Protection (Airborne contamination areas)	See Section 1.0 Respirator Training if required for airborne radioactivity area Lockout/Tagout Training	See Section 1.0	See Section 1.0 Verify isolation of utilities and systems Lockout/Tagout in accordance with Safety Instruction #6 FERMCO Lockout/Tagout (Hazardous Energy Control) Procedure.	See Section 1.0	See Section 1.0

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**ATTACHMENT B**

**POHASP ACKNOWLEDGMENT FORM**



**ATTACHMENT C**

**WPRAP HAZARD COMMUNICATION PROGRAM**

**IT CORPORATION**  
**WASTE PITS REMEDIAL ACTION PROJECT**  
**HAZARD COMMUNICATION PROGRAM**

**1.0 INTRODUCTION**

There are specific regulatory requirements for working with hazardous chemicals. These requirements are found in Title 10 of the Code of Federal Regulations, Part 1910.1200 (10 CFR 1910.1200). The regulatory requirements specify that employers must make information, relative to hazardous substances in the workplace, available to employees.

Accordingly, this Hazard Communication Program has been developed and implemented to ensure written compliance with the aforementioned regulatory requirements and to provide the methodology to be used to convey right-to-know information to IT personnel and subcontracted personnel who who are or could be working with hazardous chemicals at the Waste Pits Remedial Action Project (WPRAP).

This copy shall be in compliance with 10 CFR 1910.1200 and 29 CFR 1926.59. A copies of these regulations are available for review at the on-site IT WPRAP Safety Office.

**2.0 PURPOSE**

The purpose of this Hazard Communication Program is to establish an effective system for transmitting information on hazardous substances to employees, contractors, and the public (when required) by means of material safety data sheets, labels on containers, training programs, hazardous substance surveys, and environmental hazard surveys.

**3.0 DEFINITIONS**

- X **Workplace** - A building or work area or contiguous group of buildings or work areas at one geographical location composing a plant site used by the employer on a permanent or temporary basis to conduct business.
  
- X **Work Area** - A room, section of a room or defined space within a workplace where workers are based for the regular performance of their duties.

**4.0 PROGRAM RESPONSIBILITIES**

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IT Corporation WPRAP management and supervision or their designated representatives shall ensure the following:

- X a current copy of the Material Safety Data Sheet (MSDS) has been provided to Fluor Daniel Fernald for review at least 5 days before delivery of the chemical onsite.
- X a current MSDS has been obtained for each chemical in the workplace and is readily available in the workplace or work area.
- X a hazard determination has been performed for each chemical in the workplace.
- X a list of hazardous chemicals has been compiled, kept current, and is maintained in the workplace.
- X a copy of all MSDSs have been provided to IT WPRAP Document Control.
- X hazardous chemical containers are labeled in accordance with the requirements of this program;
- X employees and contractors have been trained in accordance with the requirements of this program; and
- X all chemicals are procured through the IT WPRAP Purchasing Department.

## 5.0 PROGRAM APPROACH

This Hazard Communication Program shall be implemented through the following program steps:

- X **Material Safety Data Sheets** - Procurement, review, and file maintenance of distributor and manufacturer Material Safety Data Sheets;
- X **Hazard Determination** - Assessment of the material safety data sheet information to determine if a chemical is hazardous;
- X **Hazardous Substance Surveys** - Maintenance of current hazardous surveys for each workplace;

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- X **Hazard Information System** - Initial and continuing system to inform employees, contractors, and the public (when required) of hazards in routine and non-routine activities;
- X **Environmental Hazard Surveys** - Maintenance of current environmental hazard surveys for each workplace;
- X **Hazard Labeling** - Establishment and maintenance of material labeling and identification throughout the workplace;
- X **Information and Training** - The initial informing of project supervision, employees, contractors, and the public (when required) as well as initial and continuing training of IT WPRAP supervision and employees to enable their effective use of material safety data sheets, hazardous substance surveys, material information forms, labeling requirements, and the hazard information system;

The IT WPRAP Purchasing Department shall ensure the following:

- X a request for the MSDS appears as a line item on all chemical purchase requisitions.
- X the supplier provides a current copy of the Material Safety Data Sheet at least five days prior to onsite delivery of the chemical.
- X a copy of the Material Safety Data Sheet has been sent to IT WPRAP Document Control.

IT WPRAP Stores/Warehouse shall ensure the following:

- X the Material Safety Data Sheet is provided prior to delivery of all chemicals;
- X no chemicals are received unless the a MSDS is available in-house.
- X all hazardous chemical containers are properly labeled in accordance with the requirements of this program.
- X no unlabeled hazardous chemical containers are issued.

IT WPRAP Document Control shall:

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- X maintain a current MSDS "Master Log".
- X maintain a current file of "Hazardous Substance Surveys"; and
- X maintain training records.

IT WPRAP Safety shall:

- X generate and post Hazardous Substance Surveys in accordance with the requirements of this program,
- X generate Environmental Hazard Surveys in accordance with the requirements of this program.
- X whenever necessary, update this Hazard Communication Program to reflect changes to the Law and changes in activities relevant to hazardous substances in the workplace.

IT WPRAP Training shall:

- X provide training in accordance with the requirements of this program.
- X provide training documentation to Document Control.

## 6.0 PROGRAM REQUIREMENTS

The following program requirements shall be met:

### Material Safety Data Sheets

No chemical shall be received by IT WPRAP project personnel or subcontractor unless a current material safety data sheet is provided with the chemical or is otherwise readily available onsite. The material safety data sheet shall be in English and shall contain at least the following information:

- X the identity used on the label, except where the specific chemical identity is being withheld as a trade secret;
- X if the hazardous chemical is a single substance, its chemical and common name(s);

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- X if the chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common name(s) of the ingredients which contribute to these known hazards, and the common name(s) of the mixture itself;
- X if the hazardous chemical is a mixture which has not been tested as a whole, the chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise 1% or greater of the composition, except that chemical identified as carcinogens shall be listed if the concentrations are 0.1% or greater;
- X the chemical and common name(s) of all ingredients which have been determined to be health hazards and which comprise less than 1% (0.1% for carcinogens) of the mixture, if there is evidence that the ingredients(s) could be released from the mixture in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health hazard to employees;
- X the chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;
- X physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);
- X the physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;
- X the health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;
- X the primary routes of entry (such as inhalation, ingestion);
- X the OSHA permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;
- X whether the hazardous chemical is listed in the National Toxicology Program (NTP) Annual Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions), or by OSHA;

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- X any generally applicable control measures which are known, such as appropriate engineering controls, work practices, or personal protective equipment;
- X emergency and first aid procedures;
- X the date of preparation of the material safety data sheet or the last change to it; and
- X the name, address, and telephone number of the chemical manufacturer, importer, employer, or any other responsible party preparing or distributing the material safety data sheet, who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

### **Hazard Determination**

A hazard determination shall be performed for each chemical in the workplace. the chemical shall be determined to be hazardous when: a review of the material safety data sheet confirms that the chemical is hazardous; or the chemical is listed in one of the following:

- X 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA); or
- X Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment, American Conference of Industrial Hygienists (ACGIH) (latest edition).

### **Hazardous Substance Survey**

IT WPRAP Safety shall prepare a Hazardous Substance Survey for each workplace. The survey shall be prepared using the Hazardous Substance Survey Form (ITC-227) which is available from IT WPRAP Document Control. A copy of the survey shall be posted in a location or locations where notices to employees are normally posted. In addition, a copy of the survey shall be sent to Document Control. The Hazardous Substance Survey shall be updated annually.

### **Hazardous Information System**

IT Corporation WPRAP employees and contractors shall be informed of hazardous chemicals onsite by way of the following program documents:

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- X material safety data sheets;
- X hazardous substance surveys;
- X container labeling; and
- X training.

### **Hazard Labeling**

With the exception of portable containers into which a hazardous chemical or hazardous mixture is transferred from a labeled container, and which is intended for the exclusive use of the person who made the transfer, each hazardous chemical or hazardous mixture container shall be labeled, tagged or marked with the following information:

- X chemical name or common name of the hazardous chemical(s) therein;
- X appropriate hazard warnings; for example, corrosive, ignitable, health hazard, etc.; and
- X the name, address and telephone number of the manufacturer, importer, or other responsible party.

Labels, tags or markings for hazardous chemical mixtures shall include the chemical or common name of either the top 5 hazardous chemicals in the mixture by volume or those hazardous chemicals constituting 5% or more of the mixture.

Signs, placards, process sheets, batch tickets, operating procedures, or other such written materials may be used in lieu of affixing labels to stationary process containers, as long as the alternative method identifies the container to which it is applicable and conveys the labeling information required by this section. The written materials shall be made available in the work area and throughout each work shift.

**All** labels, tags, or markings shall be legible, in English, and prominently displayed on the container or, in the case of stationary process tanks, must be available in the work area throughout each work shift.

Labels on incoming or outgoing hazardous chemical and hazardous mixture containers shall not be defaced or removed, unless the container is immediately relabeled, marked or

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tagged in accordance with the requirements of this section.

### **Employee Information and Training**

Employees and contractors shall be provided with information and training on hazardous chemicals in their work area at the time of initial assignment. Additional instruction shall be provided whenever the potential for exposure to the hazardous chemical is altered or whenever IT Corporation receives new and significant information concerning the hazards of a chemical. Hazardous chemical training shall be updated annually.

#### **Information**

Employees and contractors shall be informed of:

- X The requirements of this Hazard Communication Program;
- X Any hazardous chemical(s) or hazardous mixture(s) in their work area; and
- X The location and availability of this Hazard Communication Program, including the lists of hazardous chemicals and hazardous chemical mixtures in the workplace, material safety data sheets, and material information sheets.

#### **Training**

Employee and contractor training shall include at least:

- X Methods and observations that may be used to detect the presence of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals being released, etc.);
- X The physical and health hazards of the hazardous chemical(s) or hazardous mixtures(s) in the work area;
- X The measures employees and contractors can take to protect themselves from the hazards, including specific procedures that have been implemented to protect employees and contractors from exposure to the hazards, such as appropriate work practices, emergency procedures, and personal protective equipment to be used, and

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- X The details of this Hazard Communication Program, including, but not limited to: an explanation of the labeling system; use of the material safety data sheet; use of the material information sheet; and, where employees and contractors can obtain the appropriate hazard information.

### **Training Materials**

The following materials shall be used to provide hazardous material information and training to B&W NESI employees and contractors:

- X Appendix A - Initial Training Outline for Management and Supervision;
- X Appendix B - Employee Training;
- X Appendix C - Hazard Communication Review;
- X Appendix D - Hazards; and
- X Appendix E - Communicating Hazardous Information.

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**APPENDIX A**

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IT CORPORATION  
WASTE PITS REMEDIAL ACTION PROJECT  
HAZARD COMMUNICATION PROGRAM

APPENDIX A

INITIAL TRAINING OUTLINE FOR MANAGEMENT AND SUPERVISION

I. WRITTEN HAZARD COMMUNICATION PROGRAM

- A. The purpose of the Hazard Communication Program
- B. Program Approach
- C. Responsibilities of Management and Supervision
- D. Program Requirements

II. EMPLOYEE INFORMATION AND TRAINING

A. Information shall include:

- X The existence of the Field Operations Hazard Communication Program
- X The components of the Program
- X Availability of Material Safety Data Sheets

B. Training shall include:

- X Where hazardous chemicals may be encountered in the individual(s) work area(s)
- X What hazardous chemicals may be encountered in the work area(s)
- X Proper use of Material Safety Data Sheets

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- X The hazardous properties of the chemicals which are encountered in the work area(s)
- X The symptoms arising from exposure to the hazardous chemicals in the work area(s)
- X Appropriate emergency treatment
- X Appropriate personal protective equipment and proper conditions for safe use
- X Emergency procedures for spills, leaks, fires, or other accidents
- C. Must provide training at the time of initial assignment and whenever a new hazard is introduced to the workplace.
- D. Retraining is required annually.

### III. CONTAINER LABELING

- A. Each hazardous chemical container must be labeled, tagged or marked. Labels, tags or markings must contain: the chemical or common name of the hazardous substance; hazard warnings appropriate for employee protection, and the name, address, and telephone number of the manufacturer of the substance.
- B. All labels, tags, or markings shall be legible, in English, and prominently displayed on the container, or in the case of stationary process tanks, must be available in the work area throughout each work shift.
- C. Labels on incoming or outgoing hazardous chemical containers shall not be defaced or removed, unless the container is immediately relabeled, tagged, or marked in accordance with the requirements of the Hazard Communication Program.
- D. Labels, tags, or markings are not required on portable containers into which a hazardous chemical is transferred for a labeled container and which is intended for the exclusive use of the person who made the transfer.
- E. Signs, placards, process sheets, batch tickets, operating procedures, or other such written materials may be used in lieu of affixing labels to stationary process containers, as long as the alternative method identifies the container to which it is

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applicable and conveys the labeling information required by this Hazard Communication Program. The written materials shall be made available in the work area and throughout each work shift.

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**APPENDIX B**

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**IT CORPORATION**  
**WASTE PITS REMEDIAL ACTION PROJECT**  
**HAZARD COMMUNICATION PROGRAM**  
**APPENDIX B**

**EMPLOYEE TRAINING OUTLINE**

- I. GENERAL INFORMATION
  - A. Right-To-Know Law
  - B. Existence of the IT Corporation WPRAP Hazard Communication Program
  - C. Responsibilities of Management, Supervision and Employees
  - D. Hazard Communication Program Requirements
  
- II. EMPLOYEE TRAINING
  - A. Availability of Material Safety Data Sheets, and Hazardous Substance Surveys.
  - B. What hazardous chemicals may be encountered in the work area(s).
  - C. Where hazardous chemicals may be encountered in the work area(s).
  - D. Proper use of Material Safety Data Sheets.
  - E. Hazardous properties of chemicals encountered in the workplace.
  - F. Symptoms arising from exposure to hazardous chemicals in the workplace.
  - G. Appropriate emergency treatment.
  - H. Emergency procedures for spills, leaks, fires, or other accidents.
  - I. Appropriate personal protective equipment and proper conditions for safe use.

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J. Labeling requirements.

**APPENDIX C**

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IT CORPORATION  
WASTE PITS REMEDIAL ACTION PROJECT  
HAZARD COMMUNICATION PROGRAM  
APPENDIX C  
HAZARD COMMUNICATION REVIEW

Now more than ever, chemicals are an integral part of our lives. They benefit us when used correctly. However, when used incorrectly, they create unnecessary hazards.

It is important for everyone working with hazardous chemicals to know and understand the hazards involved so that they can protect themselves and others. To reduce chemical related injuries and illnesses in the workplace, the Federal Government has passed laws and regulations to identify and evaluate the potential hazards of chemicals.

The Federal Law is called the "Hazard Communication Standard". This law provide that the information obtained from chemical evaluations be conveyed to the user(s) of the chemical(s). Chemical hazards are broken down into two categories:

**Physical Hazards** - These hazards pertain to properties of the chemical that could create fires, explosions, or reactions if improperly stored or handled. For example, alcohol ignites rapidly when it contacts a flame or spark. If left uncontrolled, the fire could result in injury or property damage.

**Health Hazards** - These hazards pertain to possible bodily injury due to excessive exposure to the chemical. For example, liquid caustic soda will cause a severe chemical burn if splashed on the skin.

Before you handle any chemical, you should be aware of the hazards associated with the chemical(s). There are three primary ways to obtain chemical hazards(s) information:

**Labels on Containers** - According to Hazard Communication requirements, labels must include the product name, the appropriate hazard warning and the name, address, and telephone number of the manufacturer. Some manufacturers will also include precautionary statements and first-aid information on the labels. All chemical containers entering and leaving IT Corporation WPRAP facilities must be labeled in accordance with the aforementioned requirements. Read The Labels. Know the Hazards.

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**Material Safety Data Sheets** - Another source of information on chemicals in your workplace is the Material Safety Data Sheet (MSDS). This document provide more detailed information on the label. The MSDS is broken down into sections providing specific information the chemical: such as ingredients, physical data and reactivity data which may indicate physical hazards of a product, specific health effects which may occur from overexposure to the chemical, first-aid instructions, emergency instructions, etc. **Read the MSDS. Know the Hazards.**

**Training** - The third source of information is training. Presentations such as this one, provide you with: general information on chemical hazards and where to find additional information. For example, specific information for each chemical or chemical mixture can be found in the MSDS(s). In addition, IT Corporation uses written procedures, safe work plans, the project specific health and safety plan and the like to provide employees and contractors with information necessary for their personal protection and for the protection of the public and the environment.

In summary, remember there are a number of sources of hazard information employed at the WPRAP. All of these information sources are available to you. **Always take the time to read the label before you handle any chemical.** Refer to the MSDS if more information is needed. If you are unable to find the information that your need, ask your supervisor. All of the aforementioned information is available to you so that you can know the hazards of the chemicals that you work with and take the necessary precautions to protect yourself, fellow workers, the general public, and the environment, from these hazards.

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**APPENDIX D**

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**IT CORPORATION**  
**WASTE PITS REMEDIAL ACTION PROJECT**  
**HAZARD COMMUNICATION PROGRAM**

**APPENDIX D**

**HAZARDS**

We have all read labels on certain household chemical cleaners and products with the warning statement "Flammable, keep away from flame or sparks" and labels on aerosol can with the warning statements "Do not puncture" and "Do not incinerate or expose to heat or flame". These warning statements refer to the specific physical hazards of the substance. A physical hazard is a hazard which presents an increased risk due to fire, explosion, or chemical reaction.

There are nine groups of chemicals with specific physical hazards that you should be aware of. They are as follows:

- X Flammable Gases, Liquids and Solids
- X Combustible Liquids
- X Oxidizers
- X Compressed Gases
- X Water Reactive Chemicals
- X Explosives
- X Organic Peroxides
- X Pyrophorics
- X Unstable or reactive Chemicals

The most common physical hazards which you may encounter are flammability and combustibility. Flammable materials may exist as solids, liquids or gases. The most frequently

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encountered is liquid. Because of the similarity of the hazards, we will discuss flammable liquids and combustible liquids together. Both of these groups are potential fire hazards.

In order to start a fire, three things are necessary. They are fuel, oxygen, and a source of ignition. A combustible or flammable liquid provides fuel in the form of vapor. It is important to understand that the liquid itself does not burn. Only its vapors burn. An open container of a flammable or combustible liquid will evaporate into the air. As the liquid evaporates, the vapors accumulate above the liquid. The vapor layer is actually a mixture of vapor from the liquid and air which contains oxygen. When the liquid is classified as flammable or combustible, it means that the vapor and air mixture which forms over the liquid may be ignited with a spark or flame depending on the concentration of vapor. At room temperature, a flammable liquid will readily evaporate to produce enough vapor concentration to ignite. However, if the combustible liquid is heated, the higher temperature will cause it to evaporate more quickly and an ignitable vapor concentration may result. The temperature that produces ignitable vapor concentration is called the "flash point". Keep in mind, this does not mean that the vapors will burn themselves. There must be a flame or spark to ignite the vapors. A flammable liquid has a flash point below 100° F. As you can see, a flammable liquid may be a hazard in the presence of an ignition sources, even at room temperature. A combustible liquid has a flash point at or above 100° F. but below 200°F. would need to be heated to its flash point before an ignitable vapor concentration could be provided. If the vapors of a flammable or combustible liquid are allowed to accumulate in an enclosed area, such as tanks or a small room without ventilation, a source of ignition may cause an explosion depending on the vapor concentration. Since the hazard from flammable and combustible liquid involves the vapor to reduce the likelihood of a fire or explosion, efforts should be made to prevent vapors from getting into the air in the first place by keeping containers and mixing vessels tightly closed. Ventilation should be used to reduce the concentration of vapors to a level which is too low to ignite. Also, keep flames, sparks, and other sources of heat away from flammable or combustible liquids. Use spark-proof tools when working on containers of flammable and combustible materials, or when you know that an ignitable vapor concentration may be present. If you are unsure whether a particular chemical(s) is flammable or combustible, always check the label, the Material Safety Data Sheet (MSDS), or ask your supervisor. Be sure to follow established procedures for working with not only flammable and combustible materials, but also with all hazardous chemicals.

The next group of hazardous chemicals is the oxidizers. Oxidizers may present two types of hazards. First, they support combustion, that is, they may give off oxygen making flammable or combustible materials burn with more intensity. Second, oxidizers and flammable or combustible materials are mixed, the ensuing reaction may give off enough heat to cause spontaneous ignition. Oxidizers should always be stored away from flammable or combustible materials. In the event of fire, this will prevent the oxidizers from increasing the fire's intensity. Note that, in general, oxidizers are not flammable. Oxidizers should be stored in the original containers and not mixed

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with other chemicals unless it is done in a controlled environment and only when instructed to do so by procedures or at the direction of your supervisor. Also, since oxidizers may be corrosive, be sure to wear proper protective clothing and equipment to protect your skin and your eyes from direct contact.

A compressed gas can be a hazard if there is a sudden or unplanned release of pressure from a tank, cylinder, or pressurized line. This pressure may result in projectiles or objects striking individuals. Since compressed gas containers can be different for each facility, it is important to know the basic safety instructions which have been established for each project. Some general rules for handling gas cylinders are:

- X Secure all cylinders during storage and transport
- X Keep the protective cap on the cylinder when not in use
- X Use the proper regulators
- X Set cylinders down slowly so that they do not violently strike the ground or each other
- X When in doubt, always ask your supervisor for proper use and handling information for compressed gas systems

The next group of hazardous chemicals are the explosives. Explosives present a hazard when subjected to sudden shock, pressure, or high temperature. If you work with explosives, your supervisor will provide you with the proper handling and storage instructions. Flammable solids may present special hazards. For example, some flammable solids will ignite from friction, moisture or spontaneous chemical change. Other materials, such as magnesium, burn vigorously and cannot be easily extinguished. It is very important to know the conditions to avoid when handling flammable solids so that you can take proper precautions to protect yourself, fellow workers, the public and the environment. Remember that equipment used around flammable gases should be explosion proof and of the non-sparking type. Remember also to keep flammable materials away from sources of ignition, such as, flames, sparks, and hot surfaces.

Organic Peroxide, the next chemical group, may pose fire or explosion hazard due to its chemical reactivity. Under conditions of heat, friction, shock, or combining with other chemicals, these chemicals will decompose. If decomposition is rapid, an explosion may result. Sometimes the decomposition will produce fire, due to the release of heat and oxygen. Organic peroxides are often combustible materials as well. It is very important to follow specific safety instructions when handling organic peroxides. Instructions may include, "Avoid shock", "Do not heat the material unless instructed to", "Do not mix with other chemicals unless instructed to". Also,

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some chemicals, such as isopropyl ether, when stored for long periods of time, may begin to form peroxides. It is very important that these chemicals be discarded by the expiration date recommended by the chemical manufacturer or supplier.

The next chemical group, pyrophoric chemicals, presents a fire hazard. This group of chemicals will spontaneously burn and should only be handled in a controlled environment.

Unstable or reactive chemicals will undergo vigorous chemical change when subjected to heat or shock. This change may generate extensive heat or may change the state of the material. For example, monomers used in the manufacture of various polymer products, will react by generating heat if specific controls measures are not taken. Always be certain to follow established procedures for handling reactive chemicals. Refer to the Material Safety Data Sheet (MSDS) for conditions to avoid.

Water reactive chemicals will generate flammable or toxic gas when they come in contact with water or moisture. For example, some biocides produce chlorine gas when exposed to water or moisture. Chlorine is not only toxic, but is also corrosive to most metals, including steel. Remember, keep water reactive chemicals away from water or moisture.

We have discussed nine specific physical hazards of chemicals. Each group presents some unique hazards involving fire, explosion, or chemical reaction. Be sure to that you understand these hazards and remember, there are several sources of information that you can use to help you learn about the hazards associated with the chemicals that you work with.

- X Labels provide the basic warning
- X Material Safety Data Sheets provide more detailed information
- X Your supervisor will provide you with the specific information and instructions you will need to protect yourself, fellow workers, the public, and the environment from the hazards associated with the chemicals that you work with.

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**APPENDIX E**

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**IT CORPORATION**  
**WASTE PITS REMEDIAL ACTION PROJECT**  
**HAZARD COMMUNICATION PROGRAM**  
**APPENDIX E**  
**COMMUNICATING HAZARDOUS INFORMATION**

Exposure to chemicals is an everyday occurrence. We have all read labels on containers of household cleansers, pesticides, and paint products with warning labels such as, "Caution May Be Harmful if Swallowed" or "Avoid Inhaling Vapors". These warnings refer to the health hazards associated with exposure to the chemical. Health hazards are defined as the increased risk of bodily harm from overexposure. In your workplace you may encounter chemical containers with similar labels. It is very important that you read these labels so that you can use the chemical safely.

This training focuses on a review of health hazards associated with chemical exposure and what can be done to reduce or eliminate these hazards.

First we need to address chemical exposure or how we come in contact with chemicals. There are three (3) pathways of internal exposure:

- X **Inhalation** - Exposure to the chemical hazards by breathing airborne chemical dust, vapor, gas, fume, or mist into the lungs.
- X **Ingestion** - Exposure to the chemical hazards by eating or drinking the chemical.
- X **Absorption** - Exposure to the chemical hazards by absorbing the chemical through the skin.

External exposure to chemical hazards occurs when the chemical comes in direct contact with the skin.

Since exposure to chemicals is an everyday occurrence, what determines whether any health related problems will or may occur is the type and amount of chemical you are exposed to.

Considerable research has been done regarding chemical exposure in the workplace. The Federal

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Government and various organizations have determined acceptable limits for chemical exposure to a number of substances. These acceptable limits indicate the estimated amount of a chemical that a healthy individual can breathe each working day for a working lifetime without suffering any adverse health effects. These limits also indicate whether a chemical can be absorbed through the skin.

The Federal OSHA limits are called **Permissible Exposure limits (PEL's)**. Another government organization publishes voluntary limits called **Threshold Limit Value (TLV's)**. If you are not overexposed, that is, you keep your exposure below the PEL or TLV, you should not experience any health-related problem from the chemical. If you are overexposed to the chemical hazards, there may be some acute effects or symptoms that you may experience. For example:

- X Overexposure by inhalation may cause coughing, irritation of the throat, tightness of the chest, drowsiness, or unconsciousness.
- X Overexposure by ingestion may cause nausea or vomiting.
- X Overexposure by absorption may cause the same symptoms as overexposure by inhalation or ingestion.
- X Overexposure by skin contact may cause itching, burning, redness, rash, or blistering.

Many chemicals have specific warning properties such as odor or irritation that will alert you their presence. The Material Safety Data Sheet (MSDS) will provide you with information on acute effects and warning properties such as odor.

Unfortunately, a few chemicals have poor warning properties or no warning properties at all. **Be sure that you are aware of these chemicals and the proper way to handle them before you work with them. Review the MSDS or check with your supervisor.**

Earlier we defined **Health Hazards** as "the increased risk of bodily harm from overexposure". There are seven (7) basic groups of chemicals which present health hazards. The first group is called **corrosives**. These are chemicals which can burn body tissue. If a corrosive liquid, such as acid, is splashed on the skin, it may burn the tissue enough to cause scarring. Liquid caustic is an example of a corrosive chemical which you may encounter. If liquid caustic were to be splashed in the eyes, partial or total loss of vision could occur. **You should always wear skin and eye protection when handling corrosives.** Skin protection should include gauntlet-type gloves for hand and arm protection, a face shield for protection of the face, and a lab apron for protection of the body. Eye protection should include chemical splash goggles. **It is important**

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to know the location of the nearest eyewash fountain and safety shower prior to handling corrosive chemicals. Refer to written procedures, the MSDS, for guidance on the appropriate protective clothing and equipment to be worn for protection from the corrosive chemical. **Remember, When In Doubt, Ask Your Supervisor.**

The second group is called irritants and sensitizers. An irritant is not a corrosive but may cause reddening or inflammation of the skin or eye. The reddening or inflammation is not permanent. Certain soaps or detergent are examples of eye irritants. Gloves and splash-proof chemical goggles should provide you with adequate protection against irritants.

The third group is called sensitizers. A sensitizer is a chemical that causes allergic reaction in body tissue. The reaction may be a skin rash or shortness of breath somewhat like asthma. Not all individuals will have a reaction to a sensitizer and unfortunately, it is not possible to tell which individuals will or will not experience a reaction. To become "sensitized", an individual must first become exposed to the chemical. After one or more exposures, the individual's immune system responds and causes allergic reaction. It is best to limit your exposure to sensitizers to prevent the possibility of developing an allergy. **If you work with sensitizers, avoid all skin contact and do not breathe any dusts or vapors. Always use appropriate protective clothing and equipment.**

The fourth group is called systemic toxins. Systemic toxins are chemicals which may cause damage to a specific body organ if exposed for either a brief (acute) or prolonged (chronic) period. For example, overexposure to alcohol for a short period of time may effect the central nervous system causing drowsiness. Since this effect happens over a relatively short time period (hours), it is called an acute effect. Other systemic toxins may cause chronic health effects. These effects occur after months or years of overexposure. Certain dusts, such as coal dust, may cause lung obstruction after years of overexposure. Another example is overexposure to solvent vapor. Over a period of time overexposure to solvent vapor may cause damage to the liver and/or kidneys. This damage is similar to the damage which occurs from consumption of too much alcohol over a period of years. Specific organs of the body that may be affected from overexposure to systemic toxins are indicated on the MSDS's. **As with each previous group of chemicals, always review the MSDS, and written instructions prior to working with systemic toxins.**

The fifth and sixth groups of chemical are called toxic and highly toxic. Toxic and highly toxic refers to how poisonous a chemical is. For example; consumption of 1/3 to 3 teaspoons of a toxic chemical would be fatal in the average adult 50 % of the time and consumption of up to 1/3 of a teaspoon of a highly toxic chemical would be fatal to the average adult 50% of the time. **Obviously, internal exposure through inhalation, ingestion and absorption of toxic and highly**

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**toxic chemicals must be avoided.**

The seventh and final group of chemicals are called **carcinogens**. Carcinogens are chemicals that may increase the risk of cancer. There are two classes of carcinogens. They are known as human carcinogens and suspected carcinogens.

Known human carcinogens are those chemicals which have been proven to cause cancer in humans. The Federal Government has developed specific regulations to deal with know carcinogens. These regulations require specific training for those persons who work with carcinogens.

Suspected carcinogens are chemicals which have caused cancer in laboratory animals but have not been proven to cause cancer in humans. Due to the possibility that suspected carcinogens may cause cancer in humans, suspected carcinogens should be handled with the same precautions and safety measures as known carcinogens.

**Exposure to all carcinogens should always be kept to a minimum.** Many carcinogens do have established exposure limits. However, you should always use extra caution and protection when working around them. As with the other chemical groups, always follow established safety rules and procedures when working with carcinogens.

Because of the variety of health hazards that chemicals can pose, a number of engineering methods and procedures have been developed to protect you from the hazards. Engineering methods are permanent control measures which are normally built into a process. Some good examples of engineering control methods are the use of ventilation or enclosures. Procedures are used when engineering methods may not be sufficient to prevent chemical exposure.

Sometimes, even engineering methods and procedures cannot guarantee that chemical exposure can be controlled within the established limits. In these instances, you must use appropriate personal protective clothing and equipment. **Remember, if you do not know what personal protective clothing and equipment is needed to work with hazardous chemicals, review the MSDS, and/or ask your supervisor.**

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**ATTACHMENT D**

**WPRAP HEARING CONSERVATION PROGRAM**

**IT CORPORATION**  
**WASTE PITS REMEDIAL ACTION PROJECT**  
**HEARING CONSERVATION PROGRAM**

**PURPOSE**

This Hearing Conservation Program is for use at the Waste Pits Remedial Action Project (WPRAP) whenever noise levels exceed the levels specified in Attachment A. This Hearing Conservation Program is designed to reduce the employee's exposure to acceptable levels through the use of administrative and engineering controls and/or the appropriate personal protective equipment.

**SCOPE**

This procedure shall be implemented in all work functions where there is the possibility that employee noise exposure will equal or exceed the levels specified in Attachment A.

**REFERENCES**

29 CFR 1910.95 - General Industry  
29 CFR 1926.52 - Construction

**ADMINISTRATION**

The IT WPRAP Health & Safety Representative is responsible for implementing the requirements of this procedure. Technical assistance may be obtained through the IT Industrial Hygiene Function, or the Fluor Daniel Fernald (FDF) Industrial Hygiene WPRAP representative.

**PROCEDURE**

**ACTION LEVEL**

The action level for implementation of the Hearing Conservation Program is:

**General Industry** - Noise exposures equal to or exceeding and 8-hour Time Weighted Average (TWA) sound level of 85 decibels on the A scale (dBA) or,

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equivalently, a noise dose of 50 percent.

**Construction -** See attachment A

## **EXPOSURE MONITORING**

An initial determination as to which employees have a noise exposure greater than or equal to the action level must be made by performing either representative area or personal noise monitoring. Monitoring must be repeated whenever production or equipment changes occur which may result in increased noise exposures.

## **EMPLOYEE NOTIFICATION**

Each employee shall be notified when exposed at or above the action level as measured by noise monitoring. The affected employee or his representative must be allowed to observe any noise measurements being conducted.

## **AUDIOMETRIC TESTING**

IT Corporation will ensure that a baseline audiogram is performed within six months of the employee's first exposure at or above the action level and annually thereafter. If mobile test van is used for audiometric testing, the baseline must be established within 1 year of the first exposure and the employee must wear hearing protection for the period exceeding 6 months. The audiometric testing shall be provided at no cost to the employee.

Audiometric tests must be performed by a licensed or certified audiologist, otolaryngologist or physician, or a certified/competent technician. A technician who operates a microprocessor audiometer does not need to be certified. All audiometric tests must be performed in accordance with the requirements of 20 CFR 1910.95(h).

Prior to receiving an audiometric test, the employee must not be exposed to workplace noise for at least 14 hours. Hearing protection may be substituted for this 14 hours of non-exposure requirement.

## **EVALUATION OF AUDIOGRAMS**

The employee's annual audiogram must be compared to the baseline audiogram in order to determine if a standard threshold shift (STS) has occurred. An STS is a change in the hearing threshold of an average of 10 dB or more at 2000, 3000, and 4000 Hertz (Hz) in either ear when compared to the baseline audiogram. This comparison may be done by

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a technician.

If an STS is indicated, the employer may retest the employee within 30 days and consider the results of the retest as the annual audiogram. Questionable audiograms must be referred to an audiologist, otolaryngologist, or physician for review in order to determine the need for further evaluation. A revised baseline audiogram may be established if it is determined that the STS is persistent or that the employee's hearing threshold has improved.

Upon confirmation of a work related STS, the affected employee must be:

- X Notified within 21 days, in writing, of the audiometric results.
- X Fitted with proper hearing protectors, trained in their proper care and use, and required to use them.
- X Employees already required to use hearing protectors must be refitted and retained with proper hearing protectors which offer greater attenuation if necessary.
- X Referred for clinical audiological evaluation and otological examination as appropriate.

## HEARING PROTECTION

Whenever employee exposure to noise exceeds the levels shown in Attachment A, administrative or engineering controls shall be implemented to reduce the noise exposure to within acceptable levels. If administrative or engineering controls fail to adequately reduce the noise exposure, personal protective equipment (hearing protectors) will be provided to the employee at no cost to the employee. Hearing protectors must reduce employee exposure to at least an 8-hour TWA of 90 dBA (85 dBA for those employees with a demonstrated STS).

## TRAINING AND INFORMATION

An annual training program will be implemented for all employees who are exposed to noise at or above the action level. This training must include:

- X The effects of noise on hearing.
- X The purpose of hearing protectors and the attenuation of various types, including

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instruction on selection, fitting, use, and care.

- X The purpose of audiometric testing and an explanation of test procedures.

A copy of 20 CFR 1910.95 - Occupational Noise Exposure must be posted in the workplace. Informational materials pertaining to the standard which are supplied to the employer by OSHA must be provided to all affected employees. All training and education material used to comply with this standard must be provided to OSHA upon request.

### **RECORDKEEPING**

All exposure monitoring records will be retained for a minimum of 2 years. Audiometric test results for each employee will be retained for the duration of employment.

All required records will be provided to the employee, including former employees or their representatives upon request. In the event that the company ceases to do business, all records will be transferred to the successive employer.

## ATTACHMENT A

## PERMISSIBLE NOISE EXPOSURES

DURATION PER DAY, HOURS	SOUND LEVEL dBA SLOW RESPONSE
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ OR LESS	115

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**ATTACHMENT E**  
**WPRAP HEAT STRESS PROGRAM**

IT CORPORATION  
WASTE PITS REMEDIAL ACTION PROJECT  
HEAT STRESS PROGRAM

## 1.0 INTRODUCTION

Adverse climatic conditions are important considerations in planning and conducting activities at the Waste Pits Remedial Action Project (WPRAP). High ambient temperature can result in health effects ranging from transient heat fatigue, physical discomfort, increased accident probability, personal injury, to serious illness or death. Heat stress is of particular concern when chemical protective garments are worn, since these garments prevent evaporative body cooling. Wearing personal protective equipment can put a worker at considerable risk of developing heat stress. Therefore, IT Corporation has developed this Heat Stress Program for implementation at the WPRAP.

## 2.0 REFERENCES

Threshold Limit Values and Biological Exposure Indices for 1997, American Conference of Government Industrial Hygienists.

Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, NIOSH/OSHA/USCG/EPA, Health and Human Services, Public Health Services, Center for Disease Control, NIOSH.

Criteria for a Recommended Standard, Occupational Exposure to Hot Environments, Revised Criteria 1986, U.S. Department of Health and Human Services, Public Health service, Center for Disease Control, NIOSH.

## 3.0 DEFINITIONS

*Chemical protective clothing* is defined as, but is not limited to:

- Polyethylene coated Tyvek
- Saranex coated Tyvek
- Medium weight polyvinylchloride (PVC)
- Sigel suits (heavyweight PVC)
- Fully encapsulating suits

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*Wet Bulb Globe Temperature (WBGT)* is the environmental temperature determined by using a black globe thermometer, a natural (static) wet bulb thermometer and dry bulb thermometer.

#### 4.0 PROGRAM ADMINISTRATION

To ensure that this Heat Stress Program is used effectively, it is important to assign specific responsibilities for its implementation. These responsibilities are as follows:

##### 4.1 Health & Safety Representative

The WPRAP Health & Safety Representative will be responsible for initial on-site coordination of this heat stress program. He/she shall establish the work/rest regimens and assure that they are consistent with the requirements of the ACGIH TLV booklet and based on the Wet Bulb Globe Thermometer (WBGT) readings. He/she shall assure that physiological monitoring is conducted in accordance with Fluor Daniel Fernald, Inc. SPR 12-10. The Health & Safety Representative will track heat stress exposure.

##### 4.2 Project Manager

The WPRAP Project Manager will be responsible for field implementation of this heat stress program. This includes the assurance that all on-site personnel comply with the Program. He shall be responsible for establishing and monitoring safe work practices, including assuring that physically demanding work will be only be conducted on off-shifts during the months of June, July, and August. He will ensure that all personnel potentially exposed to heat have proper training and that on-site supervision implements the program in his absence.

##### 4.3 Project Supervisor

The Project Supervisor will be responsible for ensuring that work crews comply with all site requirements, including this heat stress program. In the absence of the Health & Safety Representative, he shall be responsible for ensuring implementation of physiological monitoring.

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#### 4.4 Project Workers

All Project Workers shall be responsible for understanding and complying with all site requirements, including the requirements of this heat stress program. Project workers shall be responsible for observing their fellow workers for signs of heat stress and for informing project supervision whenever they suspect that a fellow worker is exhibiting any of the signs of heat stress.

### 5.0 GUIDELINES

The following guidelines are intended to be used as a means for initial establishment of the work-rest regimen. It shall be the responsibility of the WPRAP Safety Representative to evaluate conditions and make the final determination on the work-rest regimen. Physiological monitoring will be used to establish more stringent regimens.

#### 5.1 Unacclimatized Workers

The total heat exposure to unacclimated workers who are not wearing protective clothing shall not exceed the guidelines provided in Attachment 1. Note that it generally takes between 7 and 10 days for a worker to become acclimated to heat.

If the workers are wearing chemical protective clothing, the WBGT reading must be adjusted by 4EF. That is, 4EF must be added to the WBGT reading and the adjusted reading compared to the guidelines provided in Attachment 1.

The guidance provided in Attachment 3 shall be used to determine the applicable Metabolic Heat Rate to be used with Attachment 1.

#### 5.2 Acclimatized Workers

The total heat exposure to acclimatized workers not wearing protective clothing shall not exceed the guidelines provided in Attachment 2.

If the workers are wearing chemical protective clothing, the WBGT reading must be adjusted by 4EF. That is, 4EF must be added to the WBGT reading and the adjusted reading compared to the guidelines provided in Attachment 2.

The guidance provided in Attachment 3 shall be used to determine the applicable Metabolic Heat Rate to be used with Attachment 2.

### 5.3 Physiological Monitoring

When workers are wearing chemical protective clothing, physiological monitoring will be required when the WBGT temperature exceeds 78EF (25.5EC).

The physiological measurements (pulse and temperature) must be taken as early as possible in the rest period and before the worker is permitted to drink liquids.

Once the initial work-rest regimen has been established, physiological monitoring will be performed to determine if the established work-rest regimen should be adjusted in accordance with the following:

#### A. Baseline Information

Prior to the start of work, determine a baseline heart rate (pulse) and oral or tympanic (ear) temperature for each worker. Use Attachment 4 to document these measurements.

#### B. Increasing the Work Period

Increases in the work period are made based on the work-rest regimen established from WBGT readings. These WBGT readings will change throughout the shift as the temperature rises or falls.

If, after the first work cycle, the worker's pulse or temperature do not increase or only increase slightly (10% or less for the pulse and 0.5% or less for the temperature) from the baseline, the work period can be increased by 20%.

If, after the next work cycle, there is still no significant increase (10% or less for the pulse and 0.5% or less for the temperature) from the baseline, the work period can be increased by 10%. However, the rest period shall remain the same.

Increases in the work period can be made throughout the work shift provided there are no significant changes in the worker's pulse rate or temperature.

#### C. Decreasing the Work Period

If, after the first work cycle, a worker's pulse exceeds 110 beats per minute (bpm) or temperature exceeds 99.6EF (37.6EC) shorten the work period by 30%. The rest period remains the same.

If, after the next work cycle, the pulse exceeds 110 bpm or temperature exceeds 99.6EF (37.6EC) shorten the work period by 30%. The rest period remains the same.

Do not permit a worker to return to work if his/her temperature exceeds 100.6EF (38.1EC).

## 6.0 PREVENTING HEAT STRESS

The work-rest regimens established through compliance with this Program are designed to prevent heat stress.

Adequate liquids shall be provided and workers will be encouraged to drink sufficient amounts necessary to replace lost body fluids. These liquids shall be kept cool.

Cooling devices such as vortex tubes or cooling vests may be worn beneath protective garments. If these cooling devices are used, the ambient WBGT measurements will not be used to establish the work-rest regimen. In these cases the work-rest regimen will be determined by physiological monitoring.

Cool down areas and the rules for using these areas will be established as agreed upon by Fluor Daniel Fernald Radiological Engineering and Industrial Hygiene.

Workers will remove their protective garments during the rest period.

Workers will not be assigned other tasks during the rest period.

## 7.0 TRAINING

Those personnel (including contractor personnel) potentially exposed to heat stress conditions shall be provided the following training:

- A. All personnel will be informed of the importance of adequate rest and proper diet for the prevention of heat stress.
- B. All personnel will be informed of the harmful effects of excessive alcohol

as associated with heat stress.

- C. All personnel will be oriented on the sources of heat stress, the influence of protective garments , and the importance of acclimatization.
- D. All personnel will be instructed on recognizing the signs and symptoms of heat stress and what to do when these signs or symptoms are recognized either in themselves or in fellow workers.
- E. Personnel will receive instruction in the proper use of cool down rooms.

**ATTACHMENT F**

**WPRAP COLD STRESS PROGRAM**

**IT CORPORATION**  
**WASTE PITS REMEDIAL ACTION PROJECT**  
**COLD STRESS PROGRAM**

**1.0 INTRODUCTION**

Adverse weather conditions are important considerations in planning and conducting activities at the Waste Pits Remedial Action Project (WPRAP). Low ambient temperatures can result in health effects ranging from reduced mental alertness, reduction of rationale decision making, or loss of consciousness with the threat of fatal consequences. It Corporation has developed this Cold Stress Program to insure that workers are protected from exposure to cold so that their deep core body temperature does not fall below 96.8EF (36EC)

**2.0 REFERENCES**

Threshold Limit Values and Biological Exposure Indices for 1997, American Conference of Government Industrial Hygienists.

**3.0 PROGRAM ADMINISTRATION**

To ensure that this Cold Stress Program is used effectively, it is important to assign specific responsibilities for its implementation. These responsibilities are as follows:

**3.1 Health & Safety Representative**

The WPRAP Health & Safety Representative will be responsible for initial on-site coordination of this cold stress program. He/she shall assure that all personnel potentially exposed to cold have had the appropriate training and that suitable warm clothing is made available.

**3.2 Project Manager**

The WPRAP Project Manager will be responsible for field implementation of this cold stress program. This includes assurance that all on-site personnel comply with the Program.

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### 3.3 Project Supervisor

The Project Supervisor will be responsible for assuring that work crews comply with all site requirements, including this cold stress program. Whenever the Health & Safety Representative is absent from the site, the Project Supervisor will assume the Health & Safety Representative's responsibilities.

### 3.4 Project Workers

All Project Workers shall be responsible for understanding and complying with all site requirements, including this cold stress program. Project Workers shall be responsible for observing their fellow workers for signs of cold stress and for informing project supervision whenever they suspect that a fellow worker is exhibiting any of the signs of cold stress.

## 4.0 GUIDELINES

The following guidelines will be used to protect workers from cold stress:

### 4.1 Preventing Cold Stress

- A. Equivalent Temperature (ET) shall be determined by using the Wind Chill Index provided as Attachment A.
- B. The work warm up regimen provided as Attachment B will be followed when the ET is below -15EF.
- A. Workers shall be provided with warm clothing, such as mittens, heavy socks, etc., when the equivalent air temperature falls below 40-45EF.
- B. When the equivalent air temperature falls below 30-40EF (depending on worker comfort), additional warm clothing shall be provided. This clothing may include, but is not limited to, the following:
  - 1. Insulated suits such as whole-body thermal underwear.
  - 2. Wool socks + polypropylene socks when there is the potential of sweating.
  - 3. Insulated gloves. When temperatures are extremely low

(<5-10EF) gloves with surfaces that reflect body heat back to the hand should be used.

4. Insulated boots
5. Insulated head coverings, such as knit caps
6. Auxiliary heated versions of handwear, footwear, etc., may be used in lieu or in combination with other warm clothing.

C. When the air temperature is below 35EF, the following work practices shall be followed:

1. If the outer layer of clothing may become wet, the outer layer of clothing must be made of material that is impermeable to water.
2. If a worker's underclothing becomes wet, he/she must change into dry clothing immediately. Note: If the clothing becomes wet from sweating, the worker may finish the task that caused the sweating before changing into dry clothing.
3. Workers shall be provided a warm area (65EF or above) to change from work clothing into personal clothing.
4. Workers will be provided with a warm break area (60EF or above).
5. If appropriate, space heaters may be provided in the work area so that workers can warm their hands and feet as necessary.
6. Hot liquids, such as soups and hot chocolate, shall be provided in the break area. Workers will be discouraged from drinking coffee because of its diuretic and circulatory effects.
7. The buddy system will be practiced at all times.
8. Because of the added danger of cold injury due to

evaporation of liquids, such as gasoline, hexane, and alcohol, workers shall take special precautions to avoid soaking their clothing with these liquids.

9. Work shall be arranged in such a way as to minimize sitting still or standing for long periods.

## 5.0 RESTRICTIONS FOR RESPIRATORY PROTECTION

In cold weather, limitations on the use of Powered Air Purifying Respirators (PAPRs) shall be implemented as follows:

1. Between ambient temperatures of 0EF and 15EF, the use of PAPRs will be limited to 15 minutes of continuous exposure.
2. Below an ambient temperature of 0EF, the use of PAPRs shall be prohibited.
3. At 32EF and below, personnel who will be wearing PAPRs shall be given a special briefing on the use of PAPRs in cold weather.

## 6.0 TRAINING

Those personnel (including contractor personnel) who may be exposed to cold stress conditions shall be provided the following training:

- A. Instruction in the proper use of warm clothing.
  1. Avoid overdressing when going into warm areas or when performing activities which are strenuous.
  2. Use a layering system, e.g. Wear lighter/thinner clothing next to the body and heavier clothing over the lighter clothing.
- B. Instruction in the recognition of impending frostbite. Including the increased potential for frostbite when wearing a PAPR in cold conditions.
- C. Proper eating and drinking habits.

- D. Recognition of signs and symptoms of impending hypothermia or excessive cooling of the body even when shivering does not occur.
- E. Safe work practices.
- F. First aid treatment
- G. Limitations of Powered Air Purifying Respirators (PAPR) in cold environments.

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**WASTE PITS REMEDIAL ACTION PROJECT**  
**COLD STRESS PROGRAM**  
**ATTACHMENT A**  
**ACGIH WIND CHILL INDEX**

**IT CORPORATION**  
**WASTE PITS REMEDIAL ACTION PROJECT**  
**COLD STRESS PROGRAM**  
**ATTACHMENT B**  
**WORK WARM UP SCHEDULE**

**ATTACHMENT G**

**FERMCO LOCKOUT/TAGOUT DOCUMENT**

	<b>TITLE: FERNCO LOCKOUT/TAGOUT (HAZARDOUS ENERGY AND MATERIAL CONTROL) PROCEDURE</b>	
	DOCUMENT NO: SSOP-0719 REVISION NO: 2	
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RECORD OF ISSUE/REVISIONS

<u>DATE</u>	<u>REV. NO</u>	<u>DESCRIPTION AND AUTHORITY</u>
04-30-93	0	Procedure required for energy control (Lockout and Tagout) per Request No. S92-225, initiated by A. Miller. This procedure replaces PP-FMPC-0719, dated 2/15/91, Revision 0.
02-14-94	1	Major revision to procedure to reflect new Lockout and Tagout process per Request No. S93-293, initiated by A. Miller. This procedure supersedes SSOP-0719, dated 4/30/93, Rev. 0.
03-20-95	2	Significant revision of Sections 5.3, 7.1, 7.2, 7.3, 7.4B, 7.12, and 7.13 per Request No. S94-150, initiated by R. E. Maurer. This procedure supersedes SSOP-0719, dated 2/14/94, Rev. 1 and SSOP-1067, dated 2/24/94, Rev. 0.

The latest changes to this document are indicated by a "change bar" ( | ) in the right margin. Changes are also shaded in the text when needed to help identify changes. Note: Change bars and shading from the previous revision are removed, only changes for the latest revision are shown.

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**1.0 PURPOSE**

This procedure provides instructions for the lockout and/or tagout of all processes, machines, or equipment to ensure isolation from all potentially hazardous energy and materials before any servicing and/or maintenance (preventive and corrective) activities are performed at the Fernald Environmental Management Project (FEMP).

**2.0 SCOPE**

This procedure applies to all FERMCO personnel, subcontractors, and teaming partners in FERMCO managed facilities.

This procedure provides a dual approach to the lockout/tagout process by combining both centrally and individually controlled approaches. It provides the means by which each Facility Owner shall maintain control over all lockout/tagout activities within his/her Facility. It also provides the means by which each Authorized Employee shall maintain a measure of control over the safety of his/her work environment while performing the work. This procedure is initiated by work order/requests for maintenance or construction, by operating procedures, or by approved documents. No other procedure shall take precedence over this procedure.

Work on the following is NOT covered by this procedure:

- Motorized vehicles
- Routine adjustments, cleaning, and tightening operations per Energy Isolation Plan (EIP) requirements.
- Cord and plug electrical equipment work if the cord and plug are NOT connected to a receptacle and the cord and plug remain in the exclusive control of the Authorized Employee while the work is being performed
- Electrical voltage of less than 30 volts
- Portions of a system controlled and worked on solely by CG&E when the work does not present a hazard to the FEMP site workers or equipment
- Hot taps SHALL NOT be performed at the FEMP except in special cases as stated in SPR 2-29, "Hot Tapping"

**3.0 DEFINITIONS - See Attachment A.**

**4.0 RESPONSIBILITIES**

The following persons/organizations are assigned responsibilities by this procedure. Attachment B describes each specific responsibility.

AFFECTED EMPLOYEES

APPOINTED EMPLOYEES

AUTHORIZED EMPLOYEES

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**4.0 RESPONSIBILITIES (cont.)**

CONSTRUCTION MANAGER/CONSTRUCTION ENGINEER/CONSTRUCTION CONTRACTS MANAGER

FACILITY OWNERS or FACILITY OWNER DESIGNEES

OCCUPATIONAL SAFETY & HEALTH (OS&H) COMPLIANCE

QUALIFIED EMPLOYEES

QUALITY ASSURANCE

RESPONSIBLE SUPERVISORS

SUBCONTRACTORS

TRAINING DEPARTMENT

UTILITY ENGINEER

**5.0 GENERAL**

Operating procedures and/or energy isolation plans (EIP,) shall be used to ensure an orderly shutdown of the equipment or system.

5.1 Multiple work assignments may occur under a single Facility Owner lockout/tagout control as long as each Authorized Employee follows the requirements of this procedure.

5.2 Whenever major replacement, repair, renovation, or modification of equipment or machines is performed and new machines or equipment are installed, Facility Owners and/or Engineering shall ensure that energy or materials isolating devices are included in the design, and will accept a Facility Owner lock.

5.3 Personal locks (keys) MAY be transferred from Authorized Employees of one shift to the next as long as new DANGER - PERSONNEL WORKING tags are hung by the on-coming (replacement) Authorized Employees and there is a transfer of the keys. The replacement Authorized Employees of the same craft should follow this procedure concerning placement of DANGER - PERSONNEL WORKING (see SPR 2-62, "Safety Tags") tags and verify (independently) the isolation of hazardous energy or hazardous material.

**NOTE:** The transferring of keys transfers control of the locks.

5.4 Facility Owners shall maintain Authorized Employee and Qualified Employee lists.

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## 5.0 GENERAL (cont.)

5.5 Both types of danger tags, "DANGER - DO NOT OPERATE" and "DANGER - PERSONNEL WORKING", are multi-part 4" x 7-1/2" forms. The portion of the tag that is hung is constructed of Tyvek with a pressure sensitive overlamine on the side containing the written information. The tag that must be recorded according to this procedure, the "DANGER - DO NOT OPERATE" tag (see SPR 2-62, "Safety Tags"), is uniquely prenumbered (similarly to the work request/order forms). The "DANGER - PERSONNEL WORKING" tags (see SPR 2-62) are not recorded and are not prenumbered.

5.6 The Facility Owner is responsible for conducting quarterly inspections of all facility owner locks and tags hung in the areas under their control (refer to Attachment B for Facility Owner responsibilities).

## 6.0 PREREQUISITES

"DELETED"

Personnel Requirements - Training for locking and tagging equipment.

"DELETED"

## 7.0 PROCEDURE

**NOTE:** Cautions and Warnings precede the steps to which they apply.

**NOTE:** All alphanumeric steps in this procedure must be performed in the listed order. Where steps are shown without alphanumeric order (with bullets), they may be performed in any order provided they are completed prior to the next alphanumeric step.

**NOTE:** If the requested work activity is to be performed in a physically isolated area, go to Section 7.16.

### 7.1 DETERMINING THE NEED FOR AN ENERGY ISOLATION PLAN

#### FACILITY OWNER or AUTHORIZED EMPLOYEE

1. Determine the need for an Energy Isolation Plan (EIP). Unless the machine or system and components meets **ALL** of the following seven conditions, an Energy Isolation Plan (EIP) must be developed.

- The machine or system and components has no potential for stored or residual energy or reaccumulation of stored energy after shutdown that could endanger personnel.

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## 7.1 DETERMINING THE NEED FOR AN ENERGY ISOLATION PLAN (cont.)

### FACILITY OWNER or AUTHORIZED EMPLOYEE

- The machine or system and components has a single energy source that can be readily identified, isolated, and locked out.
  - The isolation and locking out of the energy source de-energize and deactivates the machine or system and components.
  - The machine or system and components is isolated from the energy source and locked out during servicing or maintenance.
  - The lockout device is under the "exclusive control" of the Authorized Employee(s) performing service or maintenance.
  - The servicing or maintenance does NOT create hazards to other personnel.
  - The employee, in utilizing the exception, has had no accidents involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance.
2. If one of the above conditions does not exist, prepare and have approved an Energy Isolation Plan prior to any work being performed.
  3. If an EIP is not required, go to 7.3, Preparing for Lockout and Tagout.

## 7.2 DEVELOPING AN ENERGY ISOLATION PLAN

### FACILITY OWNER or FACILITY OWNER DESIGNEE

**NOTE:** A Specific Equipment Plan is an Energy Isolation Plan (see definition) for a specific item of equipment, machinery, or system.

1. Complete a Specific Equipment Plan Worksheet (Attachment C) or Energy Isolation Plan Form (Attachment D). As a minimum, a Specific Energy Plan Worksheet should include the following:
  - The person initiating the plan and the date initiated.
  - The location of the equipment.

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## 7.2 DEVELOPING AN ENERGY ISOLATION PLAN (cont.)

### FACILITY OWNER or FACILITY OWNER DESIGNEE

- The equipment and manufacturer's identification.
  - The Equipment Inventory Control number or serial number.
  - The type of hazardous energy or material sources associated with the equipment.
  - Where and how the energy or hazardous material source(s) are to be isolated.
  - Sequence of isolation, where required.
  - The alternate methods of isolating the energy and hazardous material source(s) if the energy source is not capable of being locked out.
  - Information regarding other possible areas containing energy or hazardous material that should be evaluated prior to performing the task.
  - Test for verification of isolation.
  - Steps for restoring energy to the equipment.
2. Sign the SEP/EIP.
  3. Obtain the issuer's signature (person who gathered the information on the SEP/EIP).
  4. Forward the SEP/EIP to OS&H Compliance for concurrence.

**NOTE:** The Facility Owner may choose to have, or OS&H Compliance may require, the additional review/approval of the SEP/EIP by Maintenance, Engineering, and/or others.

5. An EIP will be developed by Qualified Employee(s), listing the potential energy hazard(s) and the sequential order in which the job/task will be performed (See Attachment D).

### OS&H COMPLIANCE

6. Review, verify, and approve the SEP/EIP and return two copies of the SEP/EIP to the Facility Owner.

**NOTE:** If not approved, return the SEP/EIP worksheet to the Facility Owner with comments on why it was rejected.

7. After resolving any comments, return to step 1 above.

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## 7.2 DEVELOPING AN ENERGY ISOLATION PLAN (cont.)

### FACILITY OWNER

8. Maintain a copy of the approved SEP/EIP in a file or binder where it is accessible to the Authorized Employees.
9. Place an additional copy (in a plastic sleeve) near the process, machinery, and/or equipment so that it will be accessible to Authorized Employees.

## 7.3 PREPARING FOR LOCKOUT AND TAGOUT

### WARNING

**OPERATION OF A DANGER - DO NOT OPERATE TAGGED EQUIPMENT OR SYSTEM IS NEVER PERMITTED.**

- Where Facility Owner locks are not applicable or do not provide the level of protection required, other means of isolation may be used. As a minimum, a DANGER - DO NOT OPERATE tag must be put in place. Those other means include air gaps, blind slips, blank flanges, jack stands, blocks, double valve isolation, and others as outlined in DOE-STD-1030-92, DOE Standard Guide to Good Practices For Lockout and Tagouts.
- In case of an emergency (where taking no action would create a greater hazard or allow a hazard to continue), when it is necessary to close valves or open circuit breakers, this procedure shall be suspended for the purpose of eliminating the emergency condition. No work is to be performed to repair the condition until all isolated energy or material sources have been locked out and tagged out per this procedure.
- CAUTION tags should be used for situations that require special operator or maintenance precautions or to amplify information that should be brought to the attention of the shift supervisor and/or operating personnel. CAUTION tags are not acceptable as part of the lockout/tagout procedure for personal protection.
- Fire Protection systems are normally locked and/or tagged just like any other system at the FEMP; however, where the lock would create a greater hazard and after the approval of the Manager of OS&H, permission MAY be granted for a "tag only" isolation. When this is done, other measures that provide protection equal to lockout/tagout must be established.

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7.3 PREPARING FOR LOCKOUT AND TAGOUT (cont.)

- A tripped electrical circuit breaker does not constitute an open circuit for the purposes of this procedure. If a circuit breaker is tripped, before an employee can work on the system, the reason(s) for the condition must be determined and controlled by a qualified employee.
- Test equipment used on electrical circuits shall be checked for proper operation immediately before and after the test(s). Exposed employee(s) must don the appropriate Personal Protected Equipment (PPE), as listed in SPR 2-61, when testing voltage greater than 600 volts.

**WARNING:**

**A DANGER - DO NOT OPERATE TAG MAY BE PUT IN PLACE TO PROTECT THE EQUIPMENT BUT IS INSUFFICIENT TO PROVIDE A SAFE CONDITION AND ISOLATION BOUNDARY FOR PERSONNEL PROTECTION.**

**WARNING**

**OPERATION OF A DANGER - DO NOT OPERATE TAGGED EQUIPMENT OR SYSTEM IS NEVER PERMITTED.**

- **DANGER - DO NOT OPERATE** tags hung by the Facility Owner and verified by a Qualified, Authorized Employee for process control, equipment, and environmental protection, do not require a Facility Owner lock to be installed.

**NOTE:** Use of this procedure is initiated by work order/requests for maintenance or construction, operating procedures, or other approved documents.

**FACILITY OWNER**

1. Authorize isolation and installation of a Facility Owner lock(s) with **DANGER - DO NOT OPERATE** tag(s) for personnel protection at each point of energy or material isolation.
2. Notify all employees who may be affected by the pending hazardous energy or hazardous material isolation.

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### 7.3 PREPARING FOR LOCKOUT AND TAGOUT (cont.)

#### FACILITY OWNER or QUALIFIED, AUTHORIZED EMPLOYEE

3. If the Facility Owner is NOT performing the lockout/tagout, discuss with the Qualified, Authorized Employee(s) the method(s) of hazardous energy or hazardous material isolation per the approved energy or material isolation plan.

**NOTE:** The Authorized Employee who is performing the hazardous energy or hazardous material isolation must be a "Qualified Employee" for the hazard being isolated. (Example: A qualified pipe fitter may be required to install pipe blank flanges prior to installing a lock and/or tag.)

4. Locate and identify, using the energy or material isolation plan (if applicable), the energy or material isolation devices necessary to isolate or safeguard the affected equipment of all systems.

### 7.4 INSTALLING THE LOCKOUT AND/OR TAGOUT DEVICE

#### FACILITY OWNER or QUALIFIED, AUTHORIZED EMPLOYEE

1. Place the energy or material isolation device in the required position (specified in the EIP).
2. Install the Facility Owner lock and DANGER - DO NOT OPERATE tag on the identified energy or material isolation device. Observe the following:
  - a. If the installation of a Facility Owner lock and the associated DANGER - DO NOT OPERATE tag will prevent independent verification of the isolation, the verification may be made before the Facility Owner lock and the associated DANGER - DO NOT OPERATE tag are installed. This shall be done only if there is a way to maintain the safe condition after the check is complete and before the Facility Owner lock and DANGER - DO NOT OPERATE tag are installed.

**NOTE:** The Facility Owner lock and "DANGER - DO NOT OPERATE" tag are the first to be installed and the last to be removed.

**NOTE:** Multiple work activities may be performed under one Facility Owner lock and DANGER - DO NOT OPERATE tag.

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#### 7.4 INSTALLING THE LOCKOUT AND/OR TAGOUT DEVICE (cont.)

##### FACILITY OWNER or QUALIFIED, AUTHORIZED EMPLOYEE

- b. When more than one activity is to be performed, install the Facility Owner lock with a DANGER - DO NOT OPERATE tag before any other tag is installed.

**NOTE:** Hazardous energy or hazardous materials isolation must NOT normally impact conditions established for safety, fire protection, or environmental requirements unless approved by the Facility Owner and a FERMCO department manager or above.

3. If a Facility Owner lock cannot be installed, hang a DANGER - DO NOT OPERATE tag and use an alternate means of rendering the energy or material isolation source inoperative.

**NOTE:** When a Facility Owner lock cannot be used for personnel protection, an energy or material isolation plan must be verified and approved by the Safety Engineer of OS&H Compliance.

**NOTE:** OS&H Compliance Safety Engineering and others may be consulted to assist in finding an alternate means of rendering the energy or material isolation source inoperative.

4. If a Facility Owner lock is not used per step 3 above, record that the lock was not used on the DANGER - DO NOT OPERATE tag under "Position of Component" and in the Lockout/Tagout Log under "Tag and Lock Number" (Attachment E).

5. Ensure that each DANGER - DO NOT OPERATE tag is numbered and contains the following:

- Date of the hazardous energy or hazardous material isolation
- Equipment or process being isolated
- Activity or service that requires the lockout
- Position of the component
- Signature of the person authorizing the installation of the Facility Owner lock and DANGER - DO NOT OPERATE tag

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#### 7.4 INSTALLING THE LOCKOUT AND/OR TAGOUT DEVICE (cont.)

##### FACILITY OWNER or QUALIFIED, AUTHORIZED EMPLOYEE

- Signature of the person installing the Facility Owner lock and DANGER - DO NOT OPERATE tag

**NOTE:** Do not separate or seal the components of the DANGER - DO NOT OPERATE tag; the Independent Verifier must still sign and date the tag before it can be separated (Section 7.9).

6. Repeat Steps 1 through 5 of this section as many times as necessary to install the specified locks/tags.

##### FACILITY OWNER

7. Maintain control of keys to the installed Facility Owner locks.

##### FACILITY OWNER or DESIGNEE

8. Enter the following information in the Lockout/Tagout Log (Attachment E):
  - Type of tag - Caution or DDNO (for DANGER - DO NOT OPERATE tag)
  - Tag/Lock # (Facility Owner's tag/lock number)
  - Location of the Tag/Reason for the Tag
  - Position: On/Off - Open/Closed
  - F.O./Designee Name, Badge #, and Date of Authorization
  - Authorized Emp. Name, Badge #, and Date Installed
  - Verifier Name, Badge #, and Date Authorized
  - Date Tag Removed/By Whom and Badge #
9. Control the log and maintain it in the secured Facility Owners lockout/tagout cabinet.

**NOTE:** If this section is not applicable to the work being performed, go to Section 7.5.

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## 7.5 WORKING ON LIQUID SYSTEMS, GAS SYSTEMS, OR PIPING

### QUALIFIED, AUTHORIZED EMPLOYEE

1. For liquid and/or gas systems whose maximum operating temperature is less than 200°F and maximum operating pressure is less than 500 psig, the following methods shall be used:

- a. Isolate systems and components normally operating at temperatures and pressures above ambient, through the use of at least one valve between the work area and any heated or pressurized fluid. Vent, and if possible, drain.

**NOTE:** The venting and draining of hazardous materials shall be performed with the proper care and by an approved procedure.

- b. If possible, maintain the equipment in a depressurized state by tagging open a vent or drain in the isolated portion of the system to be worked on, using a DANGER - DO NOT OPERATE tag (allowing for thermal expansion/contraction).
- c. If a normal depressurization path cannot be provided within the work boundary, use other methods to ensure adequate depressurizing and draining of system or component (loosening fasteners on flanged connections or valve bonnets, removing instrument tubing, etc.). Strict supervisory control and advance planning are required if these methods are used.

2. When isolating systems or equipment whose operating temperature exceeds 200°F or operating pressure exceeds 500 psig, the following limits shall be observed in addition to those above:

- a. At least two shutoff valves in series ("two-valve protection") shall be used to provide isolation from the fluid. The requirements for two-valve protection shall apply to all paths from which the fluid could cross the work boundary.

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## 7.5 WORKING ON LIQUID SYSTEMS, GAS SYSTEMS, OR PIPING (cont.)

### QUALIFIED, AUTHORIZED EMPLOYEE

- b. Single-valve isolation may be used if the system operating controls are locked/tagged where pressures greater than 500 psig and/or temperatures greater than 200°F cannot be reached. (For example, if a boiler is cooled down for maintenance and its operating controls are locked and tagged, work on the steam system can be done with single-valve isolation.)
- c. If the required two-valve protection cannot be obtained and the system must remain in operation, the Facility Owner or OS&H Compliance may authorize single-valve isolation, provided that the following three conditions are all met:
  - (1) Alternate isolation devices (such as blank flanges, blocks, or freeze seals) have been considered and determined to be unfeasible or impracticable.
  - (2) Approval of the single-valve isolation is documented on the energy or materials isolation plan.
  - (3) The integrity of the single isolation valve is verified by venting or draining the portion of the system to be worked on and observing it for at least 15 minutes to ensure there are no leaks and the valve is closed before starting work.

## 7.6 WORKING ON EQUIPMENT REQUIRING VALVE ISOLATION

**NOTE:** If this section is not applicable to the work being performed, go to the next section.

### FACILITY OWNER or QUALIFIED, AUTHORIZED EMPLOYEE

1. Ensure that pneumatically or solenoid operated valves that fail-open have the valve operating supplies isolated and a jacking device or gag installed to keep the valve shut. Tagout the valve and its energy or materials isolation device with a DANGER - DO NOT OPERATE Facility Owner tag and lock (if for personnel protection).

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## 7.6 WORKING ON EQUIPMENT REQUIRING VALVE ISOLATION (cont.)

### FACILITY OWNER or QUALIFIED, AUTHORIZED EMPLOYEE

2. Ensure that pneumatically or electrically operated valves that fail shut are verified in the isolated position and the valve operating supplies are isolated, locked out for personnel protection, and tagged out.
3. To use a pneumatically or electrically operated valve as a hazardous energy or hazardous materials control boundary, isolate the motive energy source for the valve and lock/tag out the valve after the valve is in the required position.
4. Tag out all local and remote pneumatic and electric valve operators when the valve is used as a system isolation boundary point.
5. Do NOT use pressure operated valves, regulators and check valves as isolation boundary valves unless the valve is mechanically restrained in the required position with a gagging device designed to be used for isolation valve purpose, locked out for personnel protection, and tagged out.
6. Consider and, if necessary, specify additional isolation to ensure protection when working on valve motor actuators with manual overrides, springs, or other operating mechanisms.
7. For personnel protection, for a motor or for a pneumatically operated valve used as an isolation boundary point:
  - a. place a Facility Owner lock and a DANGER-DO NOT OPERATE tag on the local control point (e.g., handwheel, manual operator)
  - b. tag remote control points (e.g., control switches).
8. After locks/tags are applied to energy or material isolating devices, relieve, disconnect, restrain, and otherwise ensure all potentially hazardous stored or residual hazardous energy sources.

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### 7.7 WORKING ON ELECTRICAL EQUIPMENT REQUIRING ELECTRICAL GROUNDING

**NOTE:** If this section is not applicable to the work being performed, go to the next section.

**WARNING:**

**ELECTRICAL CONTROL CIRCUITS SHOULD NOT BE USED AS BOUNDARY ISOLATION POINTS SINCE THEY DO NOT PROVIDE ADEQUATE PROTECTION TO INTERRUPT MAIN POWER.**

1. If electrical grounding devices are required, ensure that the location and sequence for installation of each device is specified in the energy or material isolation plan.
2. Place DANGER - DO NOT OPERATE tags on all electrical grounding devices used in lockout/tagout to ensure the placement of the grounds until the work is complete and the removal of the grounds before re-energizing the system.

### 7.8 WORKING ON ROTATING/MOVING EQUIPMENT

**NOTE:** If this section is not applicable to the work being performed, go to the next section.

1. Where isolation from a hazardous energy source does NOT eliminate the potential for hazardous movement/rotation of equipment, block the equipment or otherwise secure the equipment to prevent movement.
2. Install a Facility Owner DANGER - DO NOT OPERATE tag and, if possible, Facility Owner lock in place to block or secure devices.

### 7.9 VERIFYING ISOLATION AND PROPER INSTALLATION OF LOCKOUT/TAGOUT DEVICES

**WARNING:**

**THE UNDERLYING PRINCIPLE OF INDEPENDENT VERIFICATION IS THAT ANYONE CAN MAKE A MISTAKE. THIS ALSO MEANS THAT ANY INCONSISTENCY IDENTIFIED BY THE VERIFIER COULD BE THE VERIFIER'S MISTAKE. THE VERIFIER SHOULD NOT CHANGE THE POSITION OR STATUS OF A COMPONENT TO CORRECT AN INCONSISTENCY.**

**NOTE:** Tags without locks are not acceptable for personnel protection unless indicated on the energy isolation pla. 000358

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**7.9 VERIFYING ISOLATION AND PROPER INSTALLATION OF LOCKOUT/TAGOUT DEVICES (cont.)**

**NOTE:** Independent Verification shall be the normal method of verification unless special authorization exists in the energy or material isolation plan for concurrent dual verification.

**NOTE:** Concurrent dual verification (see definition in Attachment A) is permitted in only those unique cases where independent verification would not be effective (e.g., throttled valves); it must be approved in the energy or material isolation plan. Some energy or material isolation devices such as throttled valves (valves in an intermediate position: between fully open and fully closed) cannot be verified independently and may require concurrent dual verification.

**NOTE:** The individual performing independent verification must be a different Qualified, Authorized Employee than the one who installed the DANGER - DO NOT OPERATE tag and Facility Owner lock.

**NOTE:** The independent verification must also be separated by a period of time after the hazardous energy or hazardous material isolation, DANGER - DO NOT OPERATE tagging, and Facility Owner lock installation has been completed.

**QUALIFIED, AUTHORIZED EMPLOYEE**

1. Independently verify the correct installation of the equipment or components covered by the lockout/tagout per the EIP.
  - Identify the correct component
  - Identify the correct position of the energy or material in the isolation plan
  - Correct position determinates, as appropriate
    - Process parameters observed
    - Remote indicators
    - Valve stems/position indicators
  - Perform a safe condition test of isolation per the EIP.

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7.9 VERIFYING ISOLATION AND PROPER INSTALLATION OF LOCKOUT/TAGOUT DEVICES (cont.)

QUALIFIED, AUTHORIZED EMPLOYEE

**WARNING:**

USE ONLY STEPS LISTED IN THE ENERGY AND MATERIAL ISOLATION PLAN TO VERIFY ISOLATION.

**NOTE:** Verify the isolation of the equipment by operating the push button or other normal operating control(s), unless otherwise prohibited by the EIP.

2. If the safe condition check/verification of isolation reveals any inconsistencies, immediately notify the Facility Owner.
3. If an inconsistency is discovered such as a DANGER - DO NOT OPERATE tag without a Facility Owner lock installed, the verifier should immediately stop and notify her/his Responsible Supervisor and the Facility Owner.
4. Verify the Stop Work and complete all documentation.
5. If the correct installation is verified, sign and date the DANGER - DO NOT OPERATE tag. The tag should also be separated and sealed (the plastic laminate covering the Tyvek copy).
6. Verify the correct completion of all documentation.
7. Initial and date the Lockout/Tagout Log.

7.10 NOTIFICATION OF INSTALLATION

QUALIFIED, AUTHORIZED EMPLOYEE

1. Notify the Facility Owner of the installation of the lockout and/or tagout.

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**7.10 NOTIFICATION OF INSTALLATION (cont.)**

**FACILITY OWNER or DESIGNEE**

2. Notify all Affected Employees of the installation of the lockout/tagout.

**NOTE:** The energy and material isolation plan will list any Affected Employees and/or others who must be notified.

**7.11 PERFORMING REQUESTED ACTIVITY (SAFE CONDITION CHECK) - (See Attachment A for the definition.)**

**AUTHORIZED EMPLOYEE**

1. Before starting work, review the points of the hazardous energy or hazardous material isolation and confirm the isolation of all hazardous energy or hazardous material sources.

**NOTE:** A physical walkdown should be performed to verify the isolation per the energy or material isolation plan.

**NOTE:** If an approved group lockout (see Attachment A, Definitions) is used, a DANGER - PERSONNEL WORKING tag and associated personal lock for each Authorized Employee is placed on the group lock box per Section 7.12, Installing a Group Lockout.

2. Use test equipment to test the circuit elements and electrical parts of equipment to which Authorized Employees will be exposed.
3. Verify the de-energization of the circuit elements and equipment parts by doing one of the following:
  - checking the position indicators on electrical isolation devices,
  - visually verify the opening of any disconnects,
  - or by performing a voltage check to ensure the cessation of available power.

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**7.11 PERFORMING REQUESTED ACTIVITY (SAFE CONDITION CHECK) - (See Attachment A for the definition.) (cont.)**

**WARNING:**

**USE ONLY THE STEPS LISTED IN THE APPROVED ENERGY OR MATERIAL ISOLATION PLAN TO VERIFY ISOLATION.**

4. As the review of each point of hazardous energy or hazardous material isolation is made, each Authorized Employee performing the requested activity shall install a DANGER - PERSONNEL WORKING tag and a personal lock.
 

**NOTE:** Hanging a DANGER - PERSONNEL WORKING tag and personal lock signifies the agreement of the Authorized Employee with the hazardous energy or hazardous material isolation plan. No activity or service is to begin until all Authorized Employees have installed their own personal locks and DANGER - PERSONNEL WORKING tags for each operation.
5. If an inconsistency is found, immediately stop any action and report the inconsistency to the Responsible Supervisor.
6. Prior to restarting any action, resolve the inconsistency with the Responsible Supervisor and/or Facility Owner. Restart at step 1 of this section.
7. Perform the requested activity for which the hazardous energy or hazardous material isolation has been performed.
8. During a shift change, unless excluded in an approved energy and material isolation plan, Authorized Employees working on the activity may leave their personal locks and DANGER - PERSONNEL WORKING tags installed for the duration of the time that they are assigned to the activity (over several days and through different shifts). They must perform a Safe Condition Check and ensure that their personal lock and DANGER- PERSONNEL WORKING tag is in place each time they return to the activity.

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**7.12 INSTALLING A GROUP LOCKOUT**

**FACILITY OWNER OR QUALIFIED, AUTHORIZED EMPLOYEE**

1. Place a Facility Owner lock and DANGER - DO NOT OPERATE tag at each point of isolation of hazardous energy or hazardous material source.
2. Independently verify isolation of each hazardous energy or hazardous material source (see Section on Verification).
3. Log the installation of the Facility Owner Lock and DANGER - DO NOT OPERATE tag in the Lockout/Tagout Log.
4. Place the keys from the installed Facility Owner lock(s) into the group lock box.
5. Place a Facility Owner lock and DANGER - DO NOT OPERATE tag on the group lock box.
6. Log the installation of the Facility Owner Lock and DANGER - DO NOT OPERATE tag in the Lockout/Tagout Log.
7. Maintain control of the Facility Owner lock's key to the group lock box.

**EACH AUTHORIZED EMPLOYEE (who will be doing the work)**

8. Perform a Safe Condition Check:
  - a. If in agreement with isolation, place a personal lock and a DANGER - PERSONNEL WORKING tag on the group lock box.
  - b. If not in agreement with isolation, stop work and contact the Supervisor.

**7.13 TEMPORARY OR PARTIAL CLEARANCE/SUSPENDED WORK/PRE- AND POST-TROUBLESHOOTING**

**A. TEMPORARY OR PARTIAL CLEARANCE**

**NOTE:** Temporary or partial removal of a lockout/tagout is not allowed, EXCEPT when required as a part of an approved energy and material isolation plan (Example: To stroke a motor operated valve or to check phase rotation on a motor). It is important that a temporary or partial removal of lockout/tagout is NOT regarded as an opportunity to take shortcuts.

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**7.13 TEMPORARY OR PARTIAL CLEARANCE/SUSPENDED WORK/PRE- AND POST-TROUBLESHOOTING (cont.)**

**B. SUSPENDED WORK**

**AUTHORIZED EMPLOYEE**

1. If work is to be suspended, and personal locks and DANGER - PERSONNEL WORKING tags are to be removed (refer to Section 7.14):
  - a. Leave the Facility Owner's lock(s) and DANGER - DO NOT OPERATE tag(s) in place during the work suspension if required for safety reasons.
  - b. If the Facility Owner's lock(s)/tag(s) are to be cleared, all Authorized Employees working on the affected equipment or system must first remove their personal lock(s) and DANGER - DO NOT OPERATE tags from the energy or material isolation device.

**C. PRE-TROUBLESHOOTING**

**FACILITY OWNER**

1. If testing or troubleshooting is required, verify the existence of an approved energy and material isolation plan or Standard Operating Procedure requiring the testing or troubleshooting of a component prior to isolation of the system/equipment.
  - Temporary lockout and tagout may be allowed during single-craft (e.g., electrician only) short-term (not to exceed the end of the shift) work if:
    - The EIP contains approval of temporary lockout and tagout.
    - The EIP is displayed on the system/equipment.
    - Only personal locks and DANGER - PERSONNEL WORKING tags are used.
    - If work exceeds the shift, a Facility Owner lock and DANGER - DO NOT OPERATE tag must be applied per this procedure. CAUTION tags may be installed on remote control operating switches.

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**7.13 TEMPORARY OR PARTIAL CLEARANCE/SUSPENDED WORK/PRE- AND POST-TROUBLESHOOTING (cont.)**

**FACILITY OWNER**

2. If an approved energy and material isolation plan does not exist requiring the testing or troubleshooting of a locked/tagged component and one is required, have one created and approved.

**D. POST-TROUBLESHOOTING**

1. Ensure that an approved energy and material isolation plan exists for testing and troubleshooting a locked and tagged component.
2. Obtain authorization for "lifting" (i.e., temporary removal) of locks/tags from the Facility Owner or Designee.
3. Ensure the removal of all tools and equipment from the equipment.
4. Verify that no personnel could be harmed by operation of the component(s).
5. Ensure the acceptability to OS&H Compliance and to the Responsible Supervisor (if applicable) of the planned operation.
6. Authorize temporary clearance of the Facility Owner locks and DANGER - DO NOT OPERATE tags.
7. Document the authorization and the reason for lifting the Facility Owner locks and DANGER - DO NOT OPERATE tags on the Lockout/Tagout Log (Attachment E).

**FACILITY OWNER and AUTHORIZED EMPLOYEE(S)**

8. Meet and agree to release the lockout/tagout on the designated energy/material source(s) per the EIP.
9. Release the affected components, remove the locks and tags from the affected components and, following completion of that action, clear to Facility Owner Lock and DANGER - DO NOT OPERATE tag. The affected component(s) are now cleared.

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**7.13 TEMPORARY OR PARTIAL CLEARANCE/SUSPENDED WORK/PRE- AND POST-TROUBLESHOOTING (cont.)**

**FACILITY OWNER**

10. Make the required entries in the Lockout/Tagout Log.

**AUTHORIZED EMPLOYEE(S)**

11. Perform the testing or troubleshooting as outlined in the approved energy and material isolation plan.
12. If the equipment is ready to be returned to service, remove the remainder of the Lockout/Tagout by completing Section 7.14.
13. If the equipment is not ready to be returned to service:
- Restore the equipment to the isolation position/condition (per the approv: EIP),
  - Reinstall the DANGER - DO NOT OPER: tags
  - Perform a safe condition check as described in Sections 7.10 and 7.11 (include new tags and log entries), and

**NOTE:** If other jobs or operations require the retests (as defined by the energy and materials isolation plan) to be delayed after clearing tags, ensure that the Affected and Authorized Employees in the area are aware of this fact.

**NOTE:** The status of the retests should be included in every shift turnover until the system is fully restored. CAUTION tags on system controls may be used for extra assurance to prevent inadvertently operating the system until retests are complete.

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**7.14 REMOVING LOCKOUTS/TAGOUTS**

**NOTE:** When it is necessary to remove energy or material isolation devices and restore hazardous energy for the purpose of testing equipment following the performance of servicing, inspecting, construction, or maintenance activities, no exception to this procedure is permitted, unless these actions are approved as part of a previously approved energy or materials isolation plan.

**AUTHORIZED EMPLOYEE**

1. Notify the Facility Owner and Affected Employees prior to the restoration of hazardous energy.
2. Ensure the removal of all tools and any items associated with the job from the work site.
3. When work is complete, notify the Responsible Supervisor of the work status.

**RESPONSIBLE SUPERVISOR**

4. Physically check the work site to confirm the completion of the work, that no unsafe conditions were created by the work, the removal of any work-related materials, and the accountability of all authorized personnel from the work site.
5. Notify the Facility Owner of the completion of work.

**FACILITY OWNER**

6. Check the work site to confirm the completion of the work, verifying the shutdown condition of the controls, and the removal of tools and excess materials from the work site.

**FACILITY OWNER and AUTHORIZED EMPLOYEE(S)**

7. If work is complete and satisfactory, release and then remove or authorize the removal of the Personal locks, DANGER - PERSONNEL WORKING tags, Facility Owner lock(s), and/or DANGER - DO NOT OPERATE tag(s) from energy or material isolation devices.

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#### 7.14 REMOVING LOCKOUTS/TAGOUTS (cont.)

##### FACILITY OWNER and AUTHORIZED EMPLOYEE(S)

8. If an Authorized Employee has left a personal lock and/or DANGER - PERSONNEL WORKING tag installed and is NOT available to remove it, the personal lock and/or DANGER - PERSONNEL WORKING tag may be removed under the direction of the Facility Owner if it can be verified that:
- The Authorized Employee who installed the personal lock and/or DANGER - PERSONNEL WORKING tag is NOT onsite.
  - A reasonable effort has been made to contact and inform the Authorized Employee that all personal locks and/or DANGER - PERSONNEL WORKING tag are to be removed.
  - The Authorized Employee has knowledge of the removal of his/her personal lock and/or DANGER - PERSONNEL WORKING tag prior to resuming work at the site.
9. If work is not complete and satisfactory, consult with the Responsible Supervisor and complete the requested activity.

##### FACILITY OWNER

10. Make the required entries in the Lockout/Tagout Log.
11. Notify Affected Employees of the removal of the lockout/tagout.
12. Update all normal configuration and status/equipment status logs, boards, and documentation.

**NOTE:** The Facility Owner must coordinate the approvals necessary to establish the plant conditions required when a lockout/tagout is cleared. The Facility Owner must also ensure the understanding of the person clearing tags about which components are to be repositioned when clearing the lockout/tagout.

##### 13. Dispose of tags after use as follows:

- a. Tags which were installed in a radiologically controlled area should be disposed of inside the area in accordance with applicable procedures.
- b. Return other tags to the Facility Owner for disposal.
- c. Enter the appropriate information on the Lockout/Tagout Log (Attachment E).

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### 7.15 MISSING, MUTILATED, or ILLEGIBLE TAGS

#### FACILITY OWNER

1. Verify (by using the Lockout/Tagout Log) the continuing requirement for the Facility Owner lock or DANGER - DO NOT OPERATE tag or CAUTION tag.
2. Obtain and complete a replacement tag.
3. Note the replacement of the tag and the number of the replacement tag on the Lockout/Tagout Log (Attachment E).
4. Install the tag.

**NOTE:** A safe condition check is NOT required unless designated by the Facility Owner.

5. Have the replacement tag independently verified.
6. Remove and dispose of the damaged or mutilated tag.

### 7.16 PROCEDURE FOR PHYSICALLY ISOLATED AREAS (UNDER CONSTRUCTION OR DEMOLITION)

**NOTE:** When making connections to site energy and/or material distribution systems (e.g., steam, water, electrical, air) and/or activities performed in a physically isolated facility, all applicable portions of Sections 7.1 through 7.15 of this procedure must be completed.

**NOTE:** All employees performing lockout and tagout activities under this section of the procedure will be responsible for their own safety by personally locking-out and tagging the equipment on which they are working. Group lockout is permitted as defined in this procedure (see the definition of "Group Lockout" in Attachment A and Lockout/Tagout Log for Isolated Areas in Attachment F).

#### SUBCONTRACTOR AND SUBCONTRACT EMPLOYEES

1. Building isolation practice requirements for physically isolating facilities for demolition and/or destruction include:
  - All utilities shall be cut at the facility/project boundary.
  - All energized pipe or conduit shall be marked every 10 to 20 feet with a marker stating that the lines are energized

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## 7.16 PROCEDURE FOR PHYSICALLY ISOLATED AREAS (UNDER CONSTRUCTION OR DEMOLITION) (cont.)

### SUBCONTRACTOR AND SUBCONTRACT EMPLOYEES

- All lines shall be tested to verify that they are de-energized prior to performing work

**NOTE:** The representative shall ensure that each lock is uniquely numbered. The personal locks come from Stores numbered and must have a number etched on the attached tag.

- An adequate quantity of DANGER - PERSONNEL WORKING tags (obtained from FERNCO Stores).

### APPOINTED EMPLOYEES

2. All employees performing work on the physically isolated project shall attend no less than General Employee Training (GET), which identifies the requirements of Lockout/Tagout at the FEMP for Affected Employees.

**NOTE:** GET training does not qualify Appointed Employees as "Authorized" to perform lockout and tagout under the requirements of Section 7.1 through 7.14 of this procedure.

### SUBCONTRACT REPRESENTATIVE

3. Train (or ensure training by checking the subcontract employee's training records) and document the following basic responsibilities for controlling hazardous energy and materials for employees:

#### INITIATE

- Requirements for the protection of "Appointed Employees," and equipment and hazardous material control for performing work directly under the control of the subcontractor's organization.

#### PREPARE

- Selection of "appointed employee(s)" based on training to perform work in a physically isolated area/facility.
- Notification of all Affected Employees of the impending lockout/tagout activity by the appointed employee.

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**7.16 PROCEDURE FOR PHYSICALLY ISOLATED AREAS (UNDER CONSTRUCTION OR DEMOLITION) (cont.)**

**SUBCONTRACT REPRESENTATIVE**

- Maintenance of adequate quantities of personal locks and **DANGER - PERSONNEL WORKING** tags necessary to perform the work and documentation on the Lockout/Tagout Log to whom the personnel locks were issued.

**INSTALL**

- Location and de-energization of energy sources and installation of personal locks and **DANGER - PERSONNEL WORKING** tags by appointed employees. In some cases, other means of securing stored energy may be required. The intent of this procedure is that all energy shall be controlled.

**SAFE BOUNDARY CHECK**

- Assurance of the isolation of all potentially hazardous energy (including all potential energy) and material, as well as the installation of personal locks and **DANGER - PERSONNEL WORKING** tags by appointed employee(s) who have checked for proper de-energization of equipment by testing or inspecting equipment by:
  - a. Reading gauges
  - b. Checking with a meter
  - c. As directed by her/his management

**REMOVING LOCKS AND TAGS (Suspending Work/Temporary or Clearance)**

- If work is suspended or partial clearance is required, refer to "REMOVING LOCKS AND TAGS" above. If equipment is again de-energized for repair, refer to "INITIATE", "PREPARE", and "INSTALL" as outlined in this section.
- Removal of all tools and materials upon completion of work.
- Notification of the Responsible Supervisor concerning the completion of the activity.

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## 7.16 PROCEDURE FOR PHYSICALLY ISOLATED AREAS (UNDER CONSTRUCTION OR DEMOLITION) (cont.)

### SUBCONTRACT REPRESENTATIVE

- Notification of all Affected Employees of the completion of the work and of the pending return to service of the equipment by the appointed employee(s).
- Discarding tags and returning the locks to the subcontractor's representative per the subcontractor's procedure when work is complete.

## 8.0 APPLICABLE DOCUMENTS

### 8.1 DRIVERS

- DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities"
- DOE-STD-1030-92, "Guide to Good Practices for Lockout and Tagouts"
- DOE-STD-1036-93, "Guide to Good Practices for Independent Verification"
- DOE 4330.4B, "Maintenance Management Program"
- 29 CFR 1910.147 - "Occupational Safety and Health Standards"
- 29 CFR 1910.331-335 and 339 - "Occupational Safety and Health Standards"

### 8.2 REFERENCES

- SSOP-0061, "FEMP Work Request/Order Procedure"
- RSM-0013, "Fire Protection Impairment"
- SPR 2-29, "Hot Tapping"
- SPR 7-01, "Electrical Safety-Related Work Practices"
- SPR 7-62, "Safety Tags"

## DEFINITIONS

NOTE: All definitions describing "employees" are listed on this page. Following the employee listings, alphabetical order will be used.

Affected Employee - The level of training for an Affected Employee is covered in General Employee Training (GET). An employee whose job requires her/him:

- To operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout.

or

- To work in an area in which such servicing or maintenance is being performed but does NOT require entry into the path of hazardous energy or material.

Appointed Employee - A subcontractor employee trained to the requirements of the contractor's lockout/tagout program, who performs lockout/tagout activities according to the contractor's lockout/tagout program in physically isolated areas for construction and demolition activities as outlined in Section 7.16. Persons in this category may not perform lockout/tagout under Section 7.1 through Section 7.12, unless they have successfully completed the FERMCO Lock and Tag training course (Lesson #1622).

Assistant Emergency Duty Officer (AEDO) - The emergency management authority on site when the Emergency Operations Center (EOC) is not operational. The AEDO is the incident commander of the FEMP emergency response activities. In non-emergency times, the AEDO is the Utility Engineer.

Authorized Employee - A qualified employee who locks out or tags out machines or equipment in order to perform service or maintenance on that machine or equipment or whose work requires her/him to enter the path of hazardous energy or hazardous material. An Affected Employee becomes an Authorized Employee when that employee's duties include performing service or maintenance covered in this procedure. An Authorized Employee also includes anyone who authorizes lockouts/tagouts or work performed in this procedure. Authorized Employees are not required in activities performed in Section 7.16 of this procedure.

Capable of being locked out - An energy or material isolating device is considered capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy or material isolating devices are considered capable of being locked out if lockout can be achieved without dismantling, rebuilding, or replacing the energy or material isolating device or permanently altering its energy or material control capability.

CAUTION Tag - A tag used to assure that notice of some precaution or some information that is necessary prior to the operation of a process, machinery, and/or equipment is readily apparent. CAUTION tags shall NOT be used for personnel protection (i.e., CAUTION tags shall NOT be used where it is appropriate to use a lock and DANGER - DO NOT OPERATE tag). The use of CAUTION tags should be restricted to those situations in which a component or system is functional, but when some precaution or item(s) of information is necessary prior to operation. CAUTION tags in use are tracked via the Lockout and Tagout

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## DEFINITIONS (cont.)

Cleared - An energy or material isolation device is "cleared" when all locks and tags have been removed. The Facility Owner lock and associated DANGER - DO NOT OPERATE Tag(s) shall be the last lock and tag(s) removed. An energy or material isolation device cannot be cleared until all Authorized Employees working on the affected equipment or system have released it.

Concurrent Dual Verification - In operations where it is critical that the Authorized Employee who is isolating the hazardous energy or hazardous material follow a specific process or series of sequential steps, it may be impossible for the verifier to determine that the steps were performed correctly through observation of the completed action. These operations should be verified by two Authorized Employees independently observing that the proper steps, sequence, or adjustments are performed according to the energy or material isolation plan. The interaction between the Authorized Employee performing the isolation and the Authorized Employee verifying the action should be minimal so as to maintain independence. This type of verification is only allowed in special cases authorized in the individualized energy or material isolation plan.

Construction Manager/Construction Engineer/Construction Contracts Manager - A person who oversees construction activities within a designated work package assigned to construction.

Controlled Document - A document that is dated, signed, and can be verified to be the most current version prior to its use.

Controlled Drawing - A drawing that is dated, signed, and can be verified to be the most current revision prior to its use.

DANGER - DO NOT OPERATE Tag (See SPR 2-62 for an example) - A tag used to warn against hazardous conditions if machinery or equipment is energized or material is not contained or constrained. The tag shall contain the legend "DANGER - Do Not Operate". The tag is hung by, or under the authority of, the Facility Owner. The use of DANGER - DO NOT OPERATE tags is tracked via the Lockout and Tagout Log.

DANGER - PERSONNEL WORKING Tag (See SPR 2-62 for an example) - A tag used to confirm that each Authorized Employee (except on activities covered by Section 7.16) working on an activity has agreed that the hazardous energy or hazardous material has been correctly isolated at the point identified by the tag. The use of DANGER - PERSONNEL WORKING tags is NOT tracked via the Lockout and Tagout Log (except on activities covered by Section 7.16). This tag shall NOT be hung by itself; it must accompany, or be above, where a DANGER - DO NOT OPERATE tag is already hanging (except on activities covered by Section 7.16).

Energized - Connected to an energy source or containing residual or stored energy.

Energy or Material Isolation Device - A mechanical device that prevents the transmission or release of hazardous energy or hazardous material, including, but not limited to, the following: a manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate hazardous energy or hazardous materials. Push buttons, selector switches, and other control circuit type devices are NOT energy or material isolating devices.

## DEFINITIONS (cont.)

Energy (or Hazardous Material) Isolation Plan (EIP) - A written plan that outlines in detail the steps and special pieces of hardware necessary for isolating all hazardous energy and hazardous materials of a specific process, equipment, machine, or system. An energy or material isolation plan outlines steps used for the restoration of hazardous energy and hazardous materials for testing purposes. An energy or material isolation plan is written by, or under the authorization of, the Facility Owner and approved by OS&H Compliance. It is a controlled document. The plan shall include one or more of the following:

- The specific steps for shutting down, isolating, blocking, and securing the specific machine, equipment, or components to control the hazardous energy or hazardous materials.
- The steps for the placement and removal of Facility Owner locks and DANGER - DO NOT OPERATE tags.
- The specific requirements for testing a machine or equipment to determine and verify (including independent verification) the effectiveness of the Facility Owner locks, DANGER - DO NOT OPERATE tags, and other hazardous energy and hazardous material control measures.
- Any special instructions such as checks to be made or people to be notified including notification of Affected Employees.
- Drawings or other means to ensure the use of the correct energy or material isolation devices and maintenance of the proper configuration.

Examples of energy or material isolation plans include Specific Equipment Plans, Maintenance Work Instructions, Operating Procedures, Specific Equipment Plans (Construction), documented "walk-downs" of valve and/or equipment alignments, and other similar, controlled documents.

Energy Source - The origin of the energy directly or indirectly supplied to an affected system, for example, electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or potential (gravity) energy.

Exclusive Control - Energization or de-energization of an isolation point under the complete control of an Authorized Employee who is performing the work activity.

Facility Owner - An individual who is responsible for a facility or area at the FEMP. This responsibility is assigned by FERMCO management.

Facility Owner Designee or Facility Owner Alternate - An "Alternate" is an assigned replacement for a Facility Owner having the same authority and responsibility as the Facility Owner. A "designee" is authorized to act for the Facility Owner with some limited authority and responsibility to the extent authorized by the Facility Owner. This authority and responsibility is granted by the Facility Owner in writing.

### DEFINITIONS (cont.)

**Facility Owner Locks** - A uniquely identified lock used for personnel protection to isolate hazardous energy and hazardous material sources under the authorization of the Facility Owner. The use of Facility Owner locks is tracked via the Lockout and Tagout Log. These locks shall only be used to secure energy or material isolation devices from unauthorized use.

**NOTE:** This definition does NOT apply to personal locks installed by the Authorized Employees performing the requested activity.

**Gagged** - A mechanical device used to ensure that equipment or a device can not be operated.

**Group Lockout** - A special means of isolating equipment that reduces the number of locks required for Authorized Employees performing the work while providing the same level of protection. It can be used by multiple crafts or groups when approved by the Facility Owner. A Group Lockout consists of:

- A Facility Owner lock and DANGER - DO NOT OPERATE tag being placed at each point of isolation of hazardous energy or hazardous material source,
- Independent verification of isolation of hazardous energy or hazardous material source,
- Placing the keys from the installed Facility Owner locks into the group lock box,
- A Facility Owner lock and DANGER - DO NOT OPERATE tag being placed on the lock box,
- and control of the Facility Owner's key to the group lock box being maintained by the Facility Owner or Designee.

Each Authorized Employee who will be doing the work must perform a Safe Condition Check and place a personal lock and a DANGER - PERSONNEL WORKING tag on the group lock box.

**Hazardous Material** - Any material that by its chemical composition (i.e., recognized toxicity), physical condition (e.g., temperature, pressure), or location in regards to another hazard (e.g., water near electrical service) creates a danger to nearby workers, equipment, or the environment. Examples of hazardous materials include those toxic materials defined and listed in various Federal, state, and local regulations as well as those materials presenting temperature, pressure, or situational hazards.

**Hot Tap** - A method used in repair, maintenance, and service activities that involves direct connection (e.g., welding on a piece of equipment such as a pipeline, vessel, or tank that is under pressure) to an energy or material source that has NOT been isolated for the purpose of installing connections or appurtenances. Hot taps should only be used when continuity of service is essential. Performing a "hot tap" means that a connection is made to an energized line (usually electricity or a pressurized fluid). (Except in special cases, approved by OS&H Compliance and FERMC0 department management, where no other acceptable means exists to perform this activity, hot taps SHALL NOT be performed at the FEMP.)

## DEFINITIONS (cont.)

Independent Verification - The act of checking a condition separately from activities related to establishing the condition or component's position. Independent Verification recognizes the human element of component operation i.e., any individual, no matter how proficient and conscientious, can make a mistake.

Lockout - The placement of a Facility Owner lock (with associated DANGER - DO NOT OPERATE tag) on an energy or material isolating device in accordance with an established procedure, ensuring that the energy or material isolating device and the equipment being controlled cannot be operated until the lock or lockout device is removed.

Lockout Device - The Facility Owner method that holds the energy or materials isolating device in the safe position and prevents the energizing of a machine or equipment for personnel protection. A lockout device may include blank flanges and bolted slip blinds. Where a lock cannot be installed, jacks, air gaps, or other devices approved by OS&H Compliance may be used.

Lockout and Tagout Log (Attachment E) - A log consisting of an index and a record sheet(s) (by activity) used by the Facility Owner for recording the placement and removal of Facility Owner locks, DANGER - DO NOT OPERATE tags, and CAUTION tags on equipment within a facility (except on activities covered by Section 7.16).

Normal Production Operations - The utilization of a machine or equipment to perform its intended production function.

Personal Locks - Unique locks used by Authorized Employees to ensure hazardous energy or material isolation while they are performing an activity that requires the isolation of hazardous energy or hazardous materials. There are no master keys available; only the Authorized Employee has keys to his/her locks. These locks will only be used by Authorized Employees to control energy or materials isolation devices already locked by the Facility Owner (except on activities covered by Section 7.16).

Physically Isolated Facility - A facility or section of a facility that has had all FEMP supplied sources of energy and hazardous material isolated from it. Physically isolated means that a gap exists in the utilities and materials sources or the energy or material isolation devices have been Facility Owner locked and DANGER - DO NOT OPERATE tagged by the Facility Owner, Construction Contracts Manager, or Subcontractor's Lockout/Tagout Program Coordinator.

Process Control - A method used to control a process (material processing/handling/transfer) using energy isolation devices and tagging with "DANGER - DO NOT OPERATE" tags only. The use of process control is to prevent the accidental release of hazardous energy and/or material but does not provide the required personal protection for employees entering the path of hazardous energy to perform servicing or maintenance type activities.

Program Coordinator - The subcontractor's representative who is responsible for the lockout/tagout program of physically isolated areas per Section 7.16 of this procedure.

## DEFINITIONS (cont.)

**Qualified Employee** - A properly trained, Authorized Employee who is capable of using the necessary equipment and/or knowledge to verify the isolation of the potential hazard for which he/she is "qualified" and who is familiar with the construction and operation of the equipment being isolated and the hazards involved.

**NOTE:** The Qualified Employee's supervisor shall determine if an employee is "properly trained" based on the supervisor's knowledge of the work involved, the employee's experience (including the equipment involved), and the employee's training. As a minimum, an employee qualified in electricity shall meet 29 CFR 1910.331-335 and 339 requirements.

**Released** - The condition that exists when the Facility Owner and the Authorized Employee conducting the activity have checked the work area to ensure the safety of all affected employees, changed or eliminated the boundary isolation points, and removed the energy or material isolation devices.

**Removed** - An energy or materials isolation device is removed by an Authorized Employee when the Authorized Employee removes his/her personal lock and DANGER - PERSONNEL WORKING tag from the energy or materials isolation device. An energy or materials isolation device cannot be cleared until all Authorized Employees working on the affected equipment or system have released it and removed their DANGER - PERSONNEL WORKING tag(s) and personal lock(s). The Facility Owner will remove the Facility Owner lock(s) and DANGER - DO NOT OPERATE tag(s) after the Authorized Employee has removed his/her DANGER - PERSONNEL WORKING tag(s) and personal lock(s).

**Safe Condition Check** - An inspection of conditions established to permit work to be performed within a lockout/tagout boundary. This is attained by isolating a work area from all sources of hazardous energy or hazardous materials and removing or securing all sources of potential hazardous energy or hazardous materials inside the boundary.

**Servicing and/or Maintenance** - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, maintaining, and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment, and making adjustments or tool changes, which could cause the employee to be exposed to the unexpected energization or startup of the equipment or release of hazardous energy or hazardous materials.

**Setting up** - Any work performed to prepare a machine or equipment to perform its normal production operation.

**Short Term** - When applied to tagging, the period of the employee's shift including overtime.

**Specific Equipment** - One type of an EIP which outlines in detail the steps and special pieces of hardware necessary for isolating all hazardous energy and hazardous materials of a specific process, equipment, machine, or system.

**Subcontractor** - Personnel performing work at the FEMP who are not employed by DOE, FERMCO, or a teaming partner and whose work is defined by a contract.

## DEFINITIONS (cont.)

Subcontractor Representative - The overseer of the subcontractor lock and tag responsibilities in physically isolated areas. Provides lock(s), training requirement(s), and generates and maintains the appropriate documentation.

Tagout - The placement of a DANGER - DO NOT OPERATE tag or DANGER PERSONNEL WORKING Tag on an energy or materials isolating device, in accordance with an established energy or materials isolation plan, to indicate that the energy or material isolating device and the equipment being controlled may NOT be operated until the DANGER - DO NOT OPERATE tag is removed.

Tagout Device - A DANGER - DO NOT OPERATE tag or DANGER - PERSONNEL WORKING Tag.

Troubleshooting - Locating the cause of trouble in machinery or equipment.

FERMCO  
SITE DOCUMENT SYSTEM

1. ICP No.	IC96-038
2. Effective Date:	5/7/96
3. Expiration Date:	N/A

# INTERIM CHANGE TO A PROCEDURE

4. AFFECTED PROCEDURE NUMBER/REVISION/DATE  
OP-0004 REV. 2 03-20-95

5. AFFECTED PAGE NUMBER: 8-1

6. PROCEDURE TITLE: FERMCO LOCKOUT/TAGOUT PROCEDURE

7. SPECIFIC ACTIVITY/AREA AFFECTED: TRAINING REQUIREMENTS

8. CHANGE:  
DELETE WORDS "... and annual refresher training..."  
FROM THE SECOND BULLETED ITEM ON THE PAGE.

9. JUSTIFICATION:  
ANNUAL REFRESHER NO LONGER APPLICABLE.

APPROVAL SIGNATURE: [Signature]  
(Functional Area Manager)

5-7-96  
(Date)

SUBJECT EXPERT: [Signature]

5-7-96  
(Date)

CHECKER: [Signature]

5-7-96  
(Date)

## RESPONSIBILITIES

### AFFECTED EMPLOYEES

- Ensure their own safety and the safety of other Affected Employees.
- Attend and successfully complete initial training and annual refresher training on this procedure.

### AUTHORIZED EMPLOYEES

- Implement the requirements of this procedure (except Section 7.16) and review energy or material isolation plans on machinery or equipment for servicing or maintenance of an identified equipment or process.
- Attend and successfully complete all scheduled training and periodic refresher training on hazardous energy or hazardous material sources; the type and magnitude of the hazardous energy or hazardous materials present at the work site prior to locking out processes, systems, machinery, or equipment, or working under the protection of lockout/tagout devices.
- Obtain proper authorization before hanging or removing a Facility Owner lock and an associated DANGER - DO NOT OPERATE tag or a CAUTION tag.
- Control their personal locks and the DANGER - PERSONNEL WORKING tags.
- Prohibit from shutting down, de-energizing, and restarting or re-energization any equipment or system NOT directly under their control.

### CONSTRUCTION MANAGER/CONSTRUCTION ENGINEER/CONSTRUCTION CONTRACTS MANAGER

- Ensures that subcontract personnel working at the FEMP perform activities in accordance with this procedure or, if working in an exempted area, that they are using a lockout/tagout procedure that offers the same level of protection.
- Ensures the proper generation and maintenance of all required lockout/tagout documentation. If the work is in an area without an assigned Facility Owner, the Construction Manager/Construction Engineer/Construction Contract Manager shall be the Facility Owner with all the responsibilities noted in this procedure including keeping the required logs and creating energy or materials isolation plans.
- Coordinates activities with Facility Owners for appropriate hazardous energy and hazardous materials control of equipment, systems, or utilities.
- Ensures the required language of this procedure is contained in contracts with subcontractors.
- Initiates the proper permits to support subcontractor activities.
- Ensures the inclusion of the requirements for lockout/tagout in the project documents.

000381

## RESPONSIBILITIES (cont.)

FACILITY OWNER or FACILITY OWNER DESIGNEE

- Oversees all activities of an assigned facility or an area of the FEMP.
- Knows how to isolate all hazardous energy or hazardous materials sources within their facility and who to contact.
- Ensures that this procedure is followed within their facilities.
- Keeps the required lockout and tagout logs for tracking Facility Owner locks, DANGER - DO NOT OPERATE tags, CAUTION tags, energy or materials isolation plans, and quarterly inspections.
- Ensures that no work in their facility is performed without their consent.
- Ensures that Facility Owner locks, associated DANGER - DO NOT OPERATE tags, and CAUTION tags are only installed and removed in their facilities only with their authorization (verbal and/or written).
- Ensures that Authorized and Qualified Employees are adequately trained (in the judgement of the Facility Owner) to perform their responsibilities.
- Attends the training offered to learn about hazardous energy or hazardous materials sources and the methods of hazardous energy or hazardous materials isolation in their facilities.
- Ensures that all Affected Employees are made aware of hazardous energy or hazardous material isolation activities prior to the requested activity.
- Maintains files with hazardous energy material isolation plans and lockout/tagout logs.
- Updates or initiates energy or material isolation plans (Controlled Documents or Drawings), when required.
- Ensures compliance with this procedure by subcontract personnel working in the facilities.
- Uses the Lockout & Tagout log to conduct a quarterly inspection of all Facility Owner locks, DANGER - DO NOT OPERATE tags, and CAUTION tags hanging in their facility.
  - Notes any improper use of these tags.
  - Resolves any conflicts between the field observations and the Lockout/Tagout log.
  - After ensuring that the need still exists for a CAUTION tag older than 90 days, removes the old tag and replaces it with a new one and, documents it as required in Section 7.12.
  - Initials and date the bottom of each Lockout/Tagout log as the inspections are complete.
- Corrects findings identified by others in inspections and audits of their facilities lockout/tagout program.
- Ensures that whenever equipment or machines is/are replaced, repaired, renovated, or modified, the equipment or machine becomes capable of being locked out.

**RESPONSIBILITIES (cont.)****OCCUPATIONAL SAFETY & HEALTH (OS&H) COMPLIANCE**

- Coordinates the training requirements for each Affected and Authorized Employee on the purpose and use of this procedure, the recognition of applicable hazardous energy or hazardous material sources, the type and magnitude of hazardous energy or hazardous materials available in the work place, and the methods and means of isolation.
- Conducts random periodic inspections of the logs, locks, and tags to ensure compliance with this procedure and verify that previously identified findings have been corrected or are being corrected.
- Reports the findings from periodic inspections to Facility Owners and the Manager of OS&H.
- Reviews and approves (by signing) all energy or materials isolation plans.

**QUALIFIED EMPLOYEES** use the necessary equipment and/or knowledge to verify the isolation of the potential hazard for which they are qualified. This verification is the boundary and safe condition check. Electrically qualified employees will meet 29 CFR 1910.331-335 and 339 requirements.

**QUALITY ASSURANCE**

- Conducts an annual audit/surveillance of a minimum of ten FEMP procedural requirements within the boundaries of this procedure. This audit/surveillance will be conducted in a manner that meets the requirements of 29 CFR 1910.147 for periodic inspections.
- Submits a letter to the Manager of OS&H reporting on the findings of the audit(s) and/or surveillance(s) certifying that the assessments have taken place.
- Follows up with the Facility Owner and the responsible department manager to ensure the implementation of proper and timely corrective actions where major findings or concerns are found.

**RESPONSIBLE SUPERVISOR(S)**

- Verifies the generation and maintenance of all documentation required by this procedure.
- Assists the Facility Owner with direct action or by assigning personnel to identify and/or isolate the various hazardous energy and hazardous materials sources.
- Randomly monitors the performance of their employees to ensure compliance with this procedure.
- Ensures that Authorized and Qualified Employees perform the required safe condition checks.

000383

**RESPONSIBILITIES (cont.)****SUBCONTRACTORS**

- Prohibits the shutting down, de-energizing, restarting or re-energizing of any equipment or system NOT directly under their control.
- Ensures that Affected Employees within their organization are familiar with the FEMP Lockout/Tagout Program and this procedure.
- Trains their Authorized Employees and Responsible Supervisors in the FEMP Lockout/Tagout Program.
- Monitors their employees periodically for effective performance under FEMP's Lockout/Tagout Program. The frequency shall be as necessary, based on the work involved, hazards, level of employee knowledge, and previous observations to ensure effective performance by the subcontractor employee.
- Designates a responsible person(s) to coordinate and fulfill the requirements of Section 7.16 of this procedure for lockout/tagout activities for physically isolated facilities under construction or demolition.

**TRAINING DEPARTMENT**

- Conducts effective initial and continuing training programs that meet the requirements of this procedure.
- Conducts annual refresher training for Affected and Authorized Employees.

**UTILITY ENGINEER** for the purpose of this procedure, acts as the Facility Owner, including ensuring the generation and maintenance of the proper documentation in the absence of the assigned Facility Owner or Facility Owner Designee.

ATTACHMENT C

**SPECIFIC EQUIPMENT PLAN**

INITIATED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

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

MACHINE: \_\_\_\_\_

EQUIPMENT: \_\_\_\_\_

MMIC/SERIAL NUMBER: \_\_\_\_\_

Lock capable  
(y)-yes, (n)-no,  
(N/A)-not applicable

Description/shut off location  
(if valve or switch must be locked  
"open", indicate that below)

ELECTRICAL \_\_\_\_\_

\_\_\_\_\_

PNEUMATIC \_\_\_\_\_

\_\_\_\_\_

HYDRAULIC \_\_\_\_\_

\_\_\_\_\_

OTHER (Specify) \_\_\_\_\_

\_\_\_\_\_

OTHER (Specify) \_\_\_\_\_

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**NOTE HERE:**

Possible areas containing stored energy to be evaluated or if sequence of isolation (e.g., switch 1 must be off before valve A is opened) is important.

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

ATTACHMENT D

ENERGY ISOLATION PLAN FORM

[Process/Project Description - Requiring an EIP]

WORK ORDER NUMBER: \_\_\_\_\_ LOCATION: \_\_\_\_\_

PURPOSE : [Of the EIP]

STATE DATE : [On or before (date)]

COMPLETION DATE: [On or before (date)] **NOTE:** Not to exceed 30 days.]

WORK DESCRIPTION: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sequence of Activities:

1. Notify the Facility Owner of the work to occur. Post a copy of this plan near the work activity.
2. Identify the steps to take to isolate the energy sources(s) and the work to be done. Multiple steps will be documented on the EIP.
3. Inform the Facility Owner when the work is completed.

**NOTE:** Operation of a device that has a DANGER tag (other than the tag belonging to the operator of the device) attached to it is cause for disciplinary action and may result in termination.

ENERGY ISOLATION PLAN APPROVAL

Supervisor \_\_\_\_\_ Date \_\_\_\_\_

OSHC \_\_\_\_\_ Date \_\_\_\_\_

TBD (as required) \_\_\_\_\_ Date \_\_\_\_\_

TBD (as required) \_\_\_\_\_ Date \_\_\_\_\_

**Fernald Environmental Management Project**



**Lockout/Tagout Log**

**Facility Owner:** \_\_\_\_\_

**Facility:** \_\_\_\_\_

TAG TYPE (CAUTION OR DANGER - DO NOT OPERATE)	TAG #/LOCK #	LOCATION OF THE TAG/ REASON FOR THE TAG	POSITION: ON/OFF OPEN/CLOSED	AUTHORIZED BY: F.O./ENGINEER NAME, BADGE, AND DATE	INSTALLED BY: QUAL AUTH'D EMPLOYEE NAME, BADGE, AND DATE	VERIFIED BY: QUAL AUTH'D EMP. NAME, BADGE, AND DATE	AUTHORIZED REMOVAL: NAME, BADGE, AND DATE	REMOVED BY: AUTH'D EMP. NAME, BADGE, AND DATE

000387

1323

PS-3000 (01/12/96)

Lockout/Tagout Sheet Instructions Sheet

Enter the following information:

- Block 1 - Identify the type of tag hung: (CAUTION or DANGER - DO NOT OPERATE).
- Block 2 - Identify the DANGER - DO NOT OPERATE tag and Facility Owner Lock number applied at the component isolated from the energy source.
- Block 3 - Identify the name of the equipment, the specific location of the component being isolated, and the reason for the hazardous energy or material isolation.
- Block 4 - Identify the position (on/off, open/closed, etc.) of the energy isolation device.
- Block 5 - Print the name, badge number, and the date when the Facility Owner/Designee authorized his/her lock and DANGER - DO NOT OPERATE tag be hung on the energy isolation device.
- Block 6 - Print the name, badge number, and the date when the Qualified, Authorized Employee hung the facility owner lock and DANGER - DO NOT OPERATE tag on the energy isolation device.
- Block 7 - Print the name, badge number, and the date when the Qualified, Authorized Employee (Independent Verifier) confirmed the energy isolation sources had been properly isolated.
- Block 8 - Print the name, badge number, and the date when the Facility Owner authorized removal of the energy isolation sources.
- Block 9 - Print the name and badge number of the Authorized Employee who removed the Facility Owner's lock and tag, and record the date the equipment system was put back into service.

The Facility Owner is responsible for conducting an inspection (audit) of the Lockout/Tagout Log Sheet every 90 days (quarterly) and record the date in which the event(s) occurred.

Lockout/Tagout Inspection Date

Jan: (Name of Evaluator): \_\_\_\_\_

Date: \_\_\_\_\_

April: (Name of Evaluator): \_\_\_\_\_

Date: \_\_\_\_\_

July: (Name of Evaluator): \_\_\_\_\_

Date: \_\_\_\_\_

Oct: (Name of Evaluator): \_\_\_\_\_

Date: \_\_\_\_\_

When the log sheet has been completed, sign and date the line of completion and place the form in Facility Owner's file.

\_\_\_\_\_  
Verified Log Sheet Completed

\_\_\_\_\_  
Date

000388

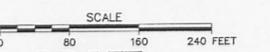
1328





LEGEND:  
 DIRECTION OF FLOW

000114



**DRAFT**  
 FIGURE 1-2

**FLUOR DANIEL FERNALDS** WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)  
 FERNALD, OHIO  
 FDF SUBCONTRACT NO. 98SC000001

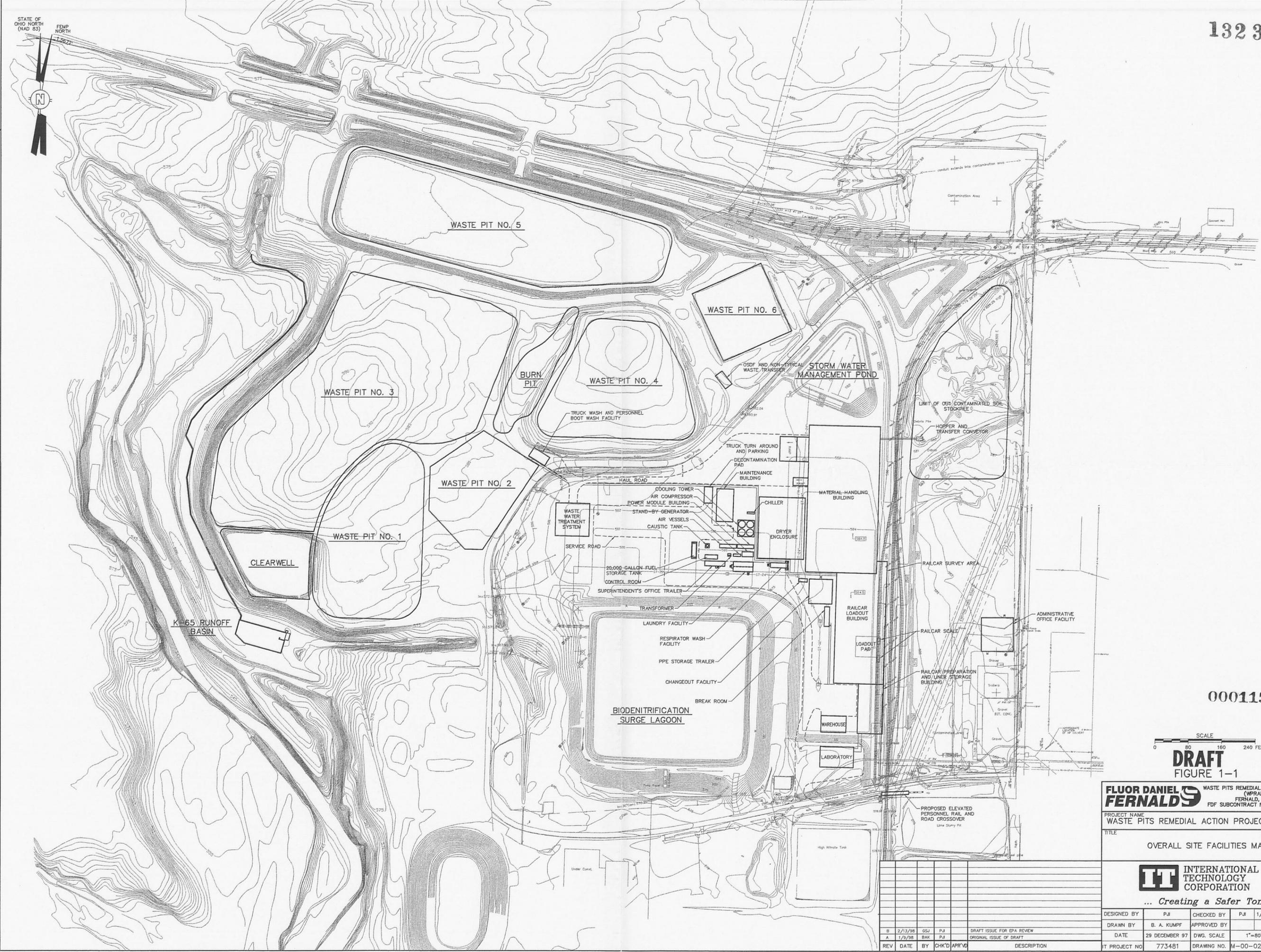
PROJECT NAME  
 WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE  
 EXISTING TOPOGRAPHY AND DRAINAGE PATTERNS

**IT** INTERNATIONAL TECHNOLOGY CORPORATION  
 ... Creating a Safer Tomorrow

DESIGNED BY	P.J.	CHECKED BY	P.J.	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			
DATE	29 DECEMBER 97	DWG. SCALE	1"=80'		B
IT PROJECT NO.	773481	DRAWING NO.	M-00-80-001		

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
B	2/13/98	CSJ	P.J.		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	P.J.		ORIGINAL ISSUE OF DRAFT



000115



**DRAFT**  
FIGURE 1-1

**FLUOR DANIEL FERNALDS** WASTE PITS REMEDIAL ACTION PROJECT (WPRAP) FERNALD, OHIO FDF SUBCONTRACT NO. 98SC000001

PROJECT NAME  
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE  
OVERALL SITE FACILITIES MAP

**IT** INTERNATIONAL TECHNOLOGY CORPORATION  
... Creating a Safer Tomorrow

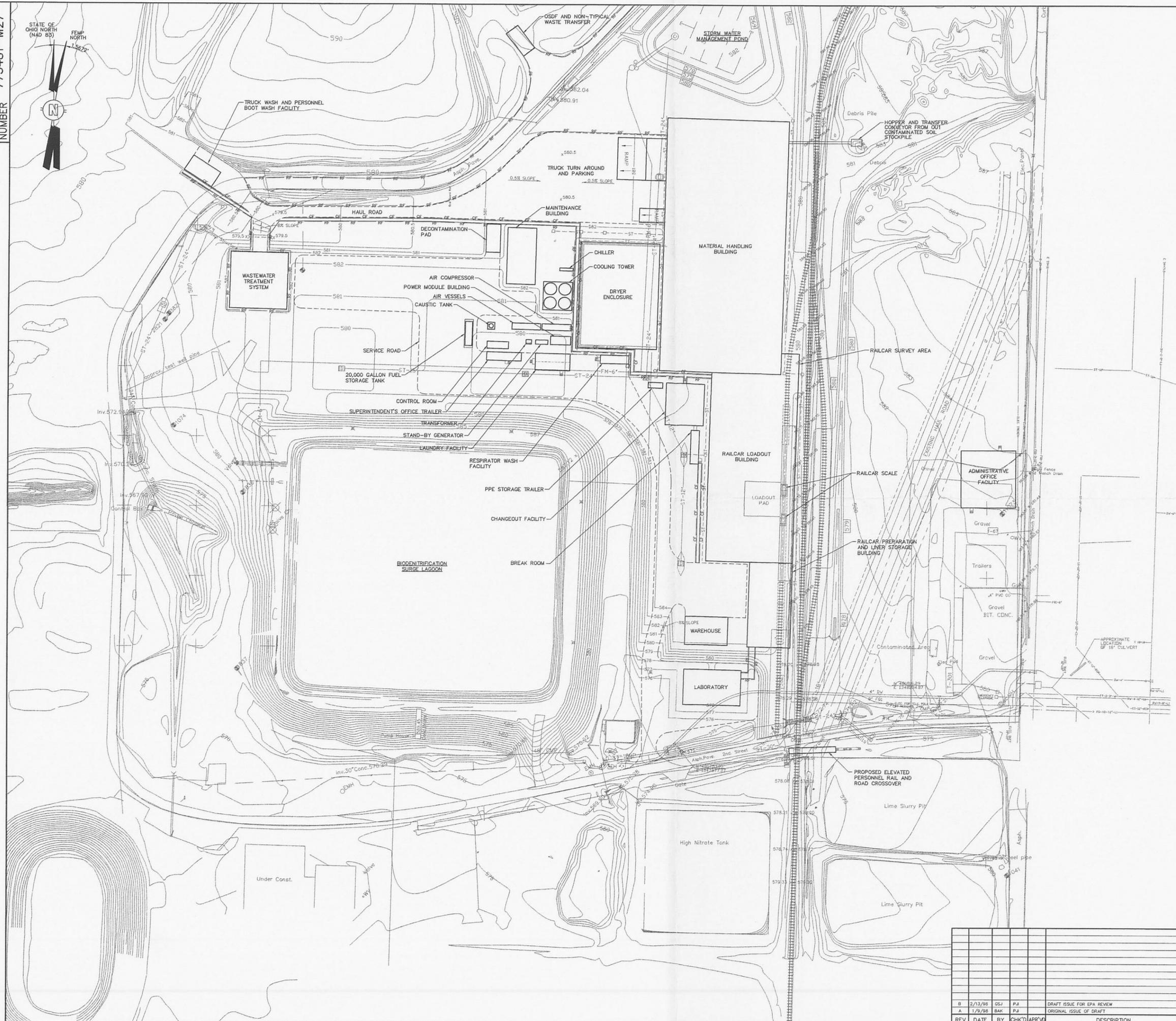
DESIGNED BY	PJH	CHECKED BY	PJH	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			
DATE	29 DECEMBER 97	DWG. SCALE	1"=80'		B
IT PROJECT NO.	773481	DRAWING NO.	M-00-02-001		

REV	DATE	BY	CHK'D	APP'VD	DESCRIPTION
B	2/13/98	GSJ	PJH		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJH		ORIGINAL ISSUE OF DRAFT

DRAWING NUMBER 773481-M27

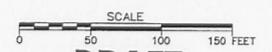


1323



LEGEND:  
 -CF- CONSTRUCTION FENCE  
 -RF- RADIOLOGICAL FENCE

000113



**DRAFT**  
 FIGURE 1-3

**FLUOR DANIEL FERNALDS** WASTE PITS REMEDIAL ACTION PROJECT (WRAP)  
 FERNALD, OHIO  
 FDF SUBCONTRACT NO. 98SC00001

PROJECT NAME  
 WASTE PITS REMEDIAL ACTION PROJECT (WRAP)

TITLE  
 SITE FACILITIES LAYOUT

**ITC** INTERNATIONAL TECHNOLOGY CORPORATION  
 ... Creating a Safer Tomorrow

DESIGNED BY	PJL	CHECKED BY	PJL	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'		B
REV	DATE	BY	CHK'D	APPR'VD	DESCRIPTION
B	2/13/98	GLJ	PJA		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJA		ORIGINAL ISSUE OF DRAFT
IT PROJECT NO	773481	DRAWING NO.	M-90-02-001		

6 FEB 98  
 1:40  
 AEF: MFW/GO



- LEGEND:**
- K-65 STORMWATER BASIN (120,920 GALLONS)
  - STORMWATER MANAGEMENT POND (544,630 GALLONS)
  - PADDY'S RUN (170,370 GALLONS)
  - DIRECTION OF FLOW
- NOTE:**
- RUNOFF VOLUMES ARE BASED ON 25-YEAR, 24-HOUR STORM EVENT OF 4.8 INCHES.
- 000112**

**DRAFT** FIGURE 3-1

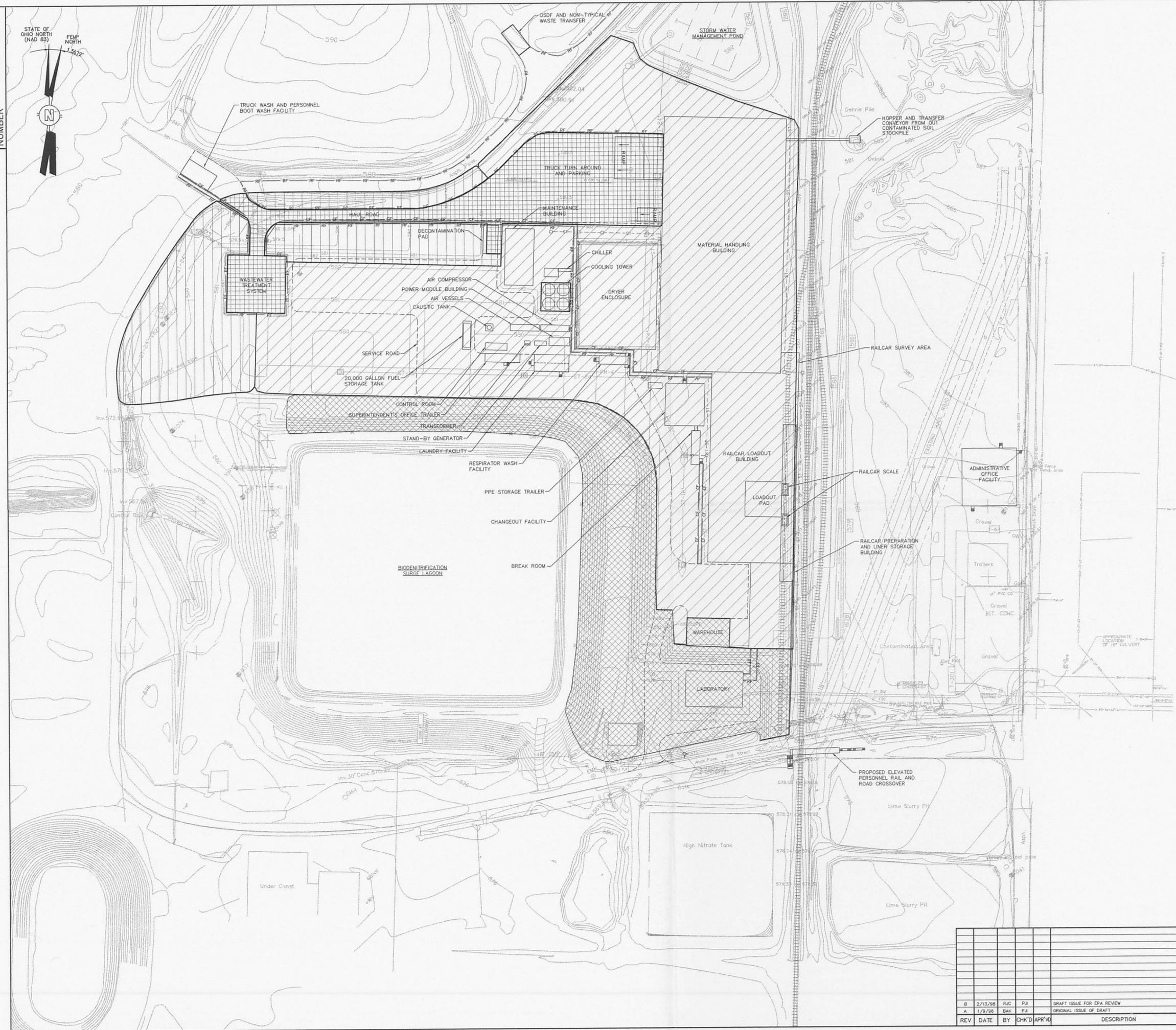
**FLUOR DANIEL FERNALD** WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)  
 FERNALD, OHIO  
 FDF SUBCONTRACT NO. 98SC000001

PROJECT NAME  
 WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE  
 PRECONSTRUCTION  
 STORM WATER MANAGEMENT



DESIGNED BY	PJA	CHECKED BY	PJA	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			
DATE	23 DECEMBER 97	DWG. SCALE	1"=50'		B
REV	DATE	BY	CHK'D	APPR'VE	DESCRIPTION
B	2/13/98	GSJ	PJA		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJA		ORIGINAL ISSUE OF DRAFT
IT PROJECT NO.	773481	DRAWING NO.	M-90-80-010		



- LEGEND:**
- K-65 STORMWATER BASIN (107,090 GALLONS)
  - STORMWATER MANAGEMENT POND (606,330 GALLONS)
  - PADDY'S RUN (187,690 GALLONS)
  - CLEARWELL (131,750 GALLONS)
  - DIRECTION OF FLOW
  - CONSTRUCTION FENCE
  - RADIOLOGICAL FENCE

000111

**NOTE:**  
RUNOFF VOLUMES ARE BASED ON 25-YEAR, 24-HOUR STORM EVENT OF 4.8 INCHES.

**DRAFT**  
FIGURE 3-2

**FLUOR DANIEL FERNALDS** WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)  
FERNALD, OHIO  
DFD SUBCONTRACT NO. 98SC000001

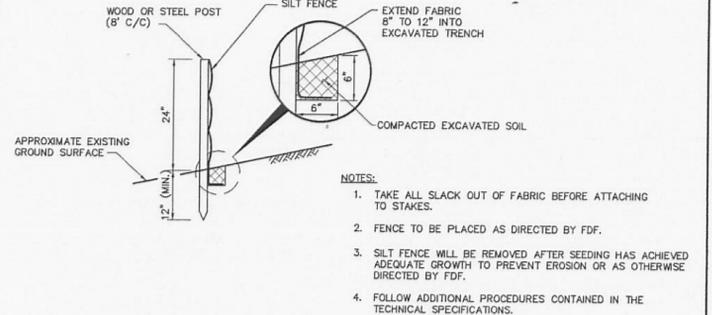
PROJECT NAME  
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE  
POSTCONSTRUCTION STORM WATER MANAGEMENT

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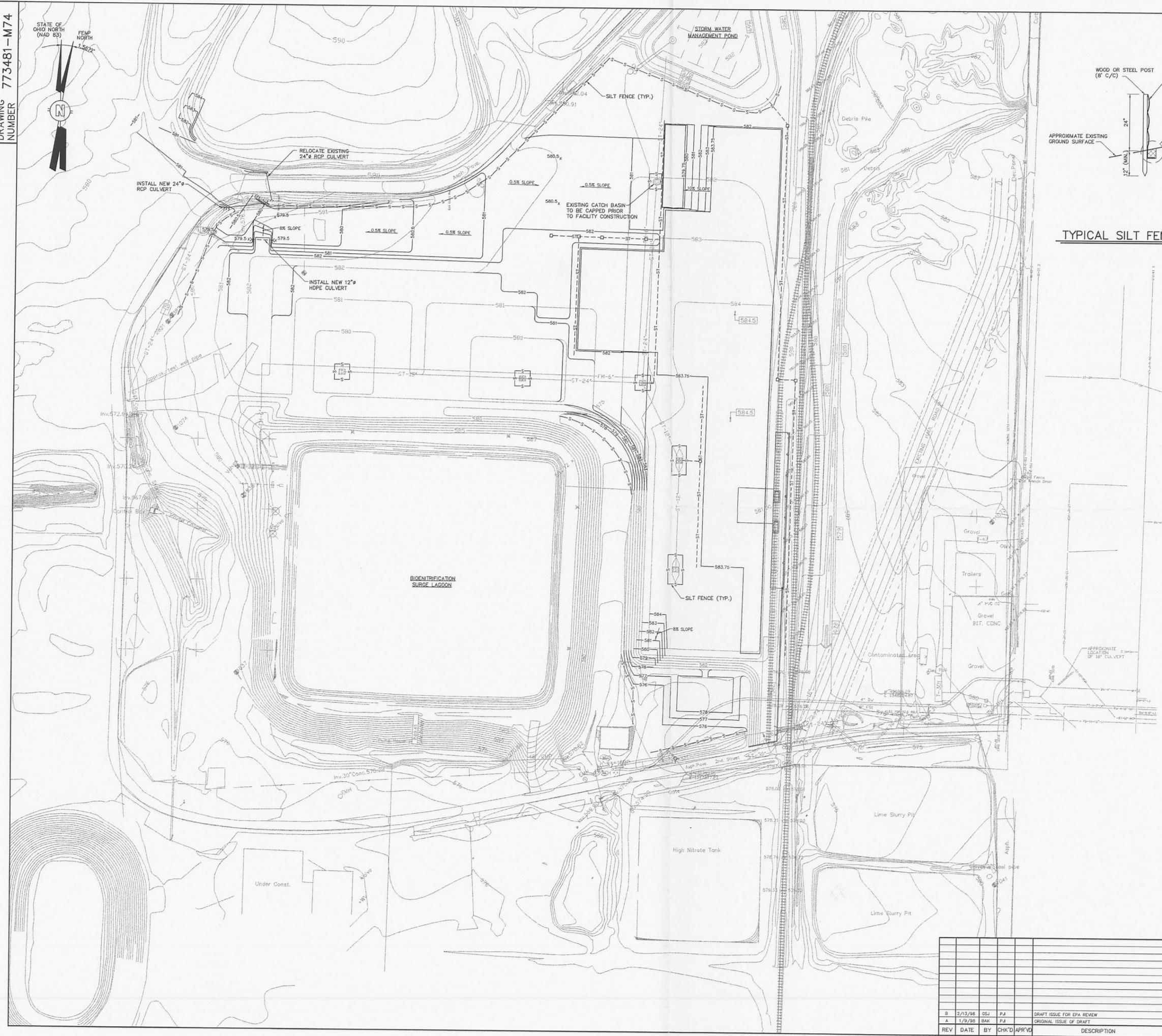
DESIGNED BY	PJ	CHECKED BY	PJ	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'		B
PROJECT NO.	773481	DRAWING NO.	M-90-80-011		

REV	DATE	BY	CHK'D	APPR'VD	DESCRIPTION
B	2/13/98	RJC	PJ		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJ		ORIGINAL ISSUE OF DRAFT



TYPICAL SILT FENCE INSTALLATION DETAIL

NOT TO SCALE



000110

LEGEND:  
---ST--- PROPOSED STORM WATER LINE

DRAFT  
FIGURE 4-1

FLUOR DANIEL FERNALDS WASTE PITS REMEDIAL ACTION PROJECT (WPRAP) FERNALD, OHIO FDF SUBCONTRACT NO. 98SC000001

PROJECT NAME WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

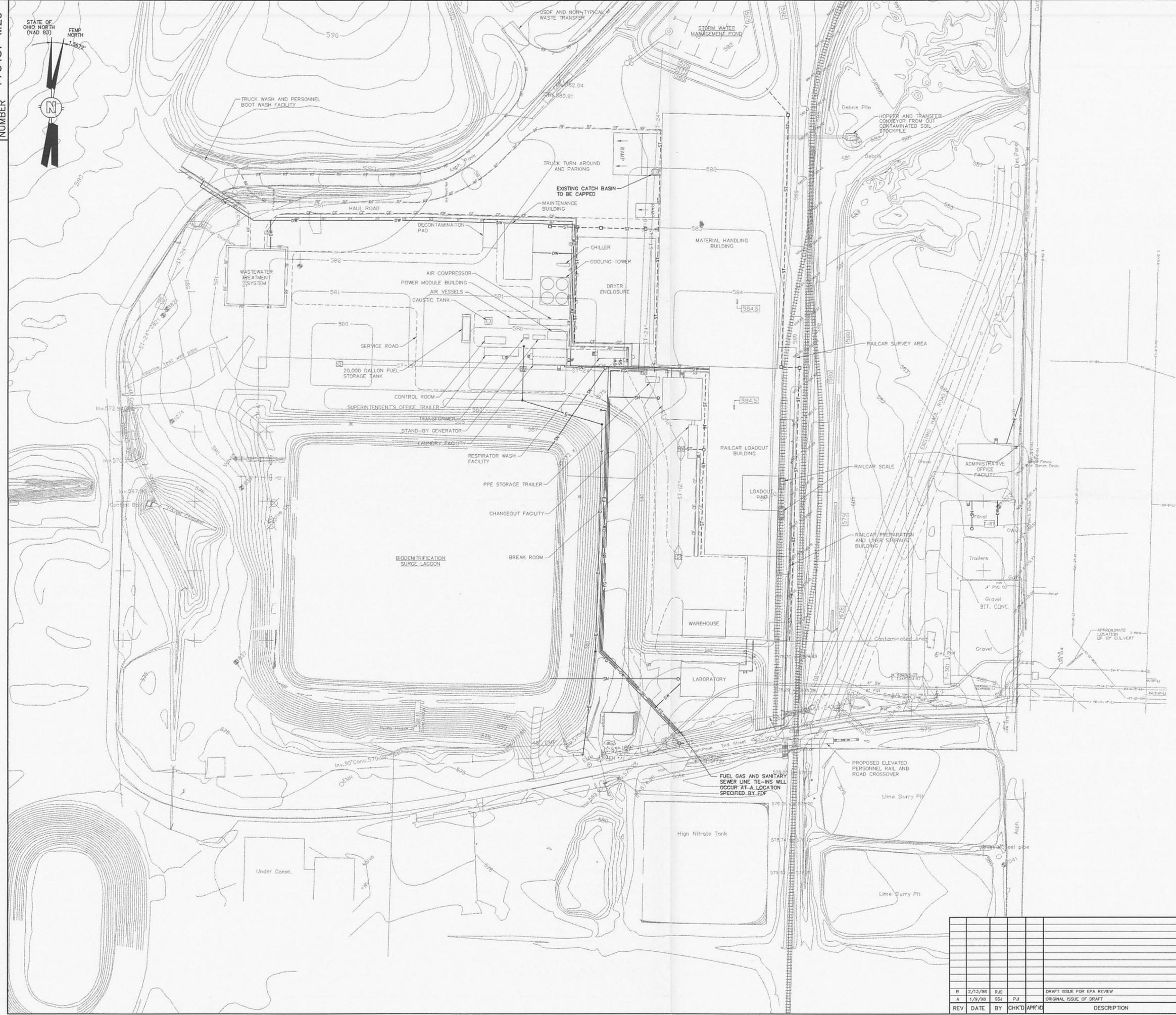
TITLE SITE GRADING PLAN

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... Creating a Safer Tomorrow

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'		B
PROJECT NO	773481	DRAWING NO.	M-90-80-001		

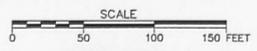
REV	DATE	BY	CHK'D	APPROV'D	DESCRIPTION
B	2/13/98	CSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

0. ALL PER 86 UNLESS NOTED OTHERWISE



- LEGEND:**
- DW— PROPOSED DRINKING WATER LINE
  - E— PROPOSED ELECTRICAL LINE
  - FG— PROPOSED FIRE PROTECTION LINE
  - FG— PROPOSED FUEL GAS LINE
  - SN— PROPOSED SANITARY SEWER LINE
  - ST— PROPOSED STORM WATER LINE
  - DW— EXISTING DRINKING WATER LINE
  - E— EXISTING ELECTRICAL LINE
  - FG— EXISTING FIRE PROTECTION LINE
  - ST— EXISTING STORM WATER LINE
  - FM— EXISTING FORCE MAIN
  - CF— CONSTRUCTION FENCE
  - RF— RADIOLOGICAL FENCE

000036



**DRAFT**  
FIGURE 5-1

**FLUOR DANIEL FERNALDS** WASTE PITS REMEDIAL ACTION PROJECT (WRAP) FERNALD, OHIO FDF SUBCONTRACT NO. 98SC000001

PROJECT NAME  
WASTE PITS REMEDIAL ACTION PROJECT (WRAP)

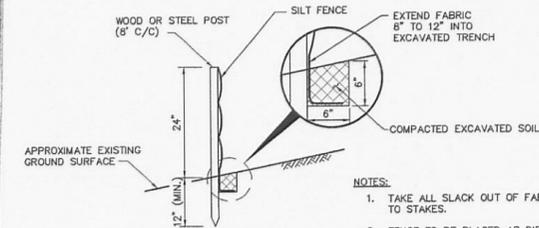
TITLE  
SITE UTILITIES PLAN



... Creating a Safer Tomorrow

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'		B
PROJECT NO.	773481	DRAWING NO.	M-70-02-001		

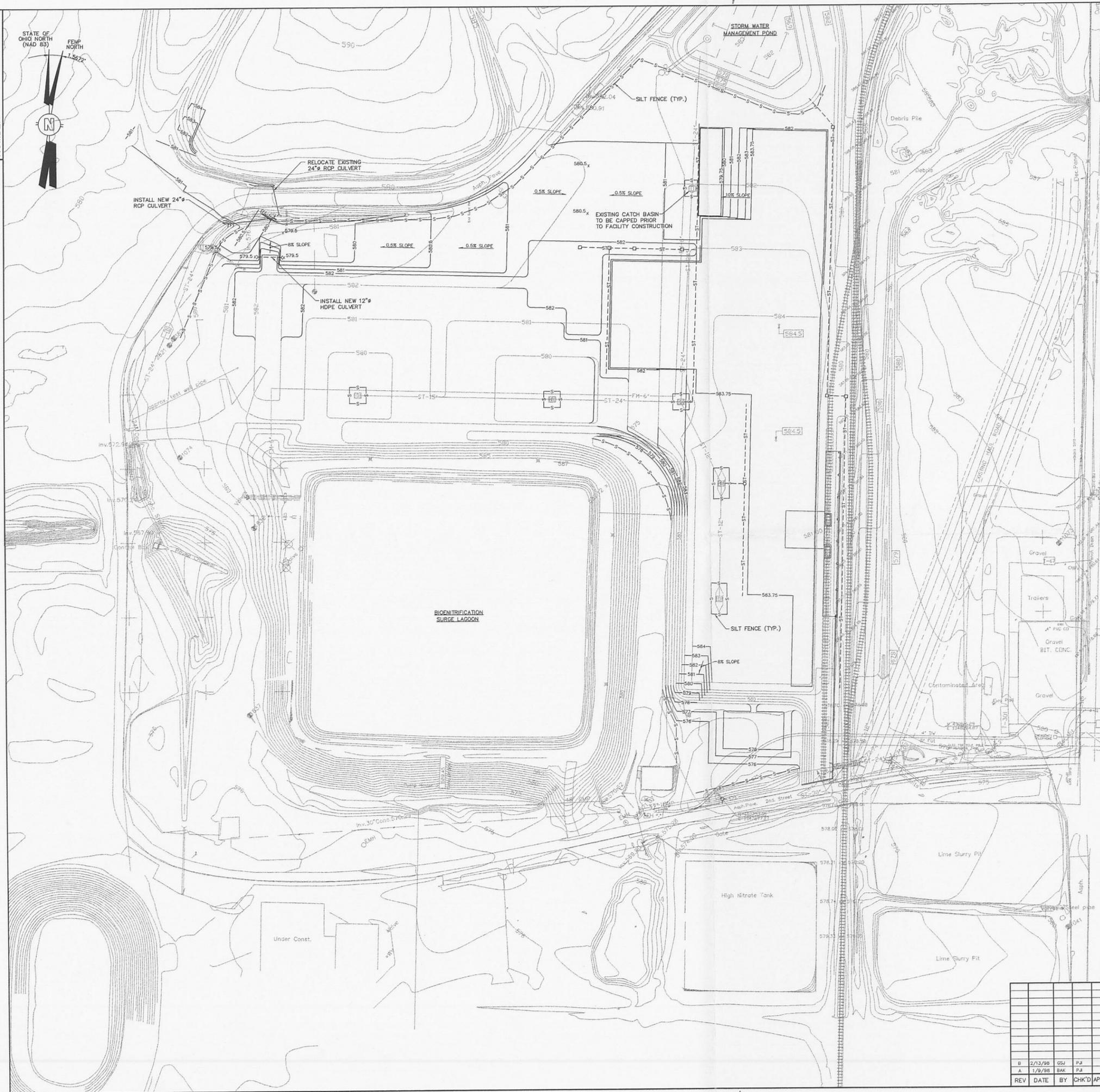
REV	DATE	BY	CHK'D	APP'G	DESCRIPTION
B	2/13/98	RJC			DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	OSJ	PJA		ORIGINAL ISSUE OF DRAFT



- NOTES:
1. TAKE ALL SLACK OUT OF FABRIC BEFORE ATTACHING TO STAKES.
  2. FENCE TO BE PLACED AS DIRECTED BY FDF.
  3. SILT FENCE WILL BE REMOVED AFTER SEEDING HAS ACHIEVED ADEQUATE GROWTH TO PREVENT EROSION OR AS OTHERWISE DIRECTED BY FDF.
  4. FOLLOW ADDITIONAL PROCEDURES CONTAINED IN THE TECHNICAL SPECIFICATIONS.

TYPICAL SILT FENCE INSTALLATION DETAIL

NOT TO SCALE



600029

LEGEND:  
---ST--- PROPOSED STORM WATER LINE

**DRAFT**  
FIGURE 3-1

**FLUOR DANIEL FERNALD** WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)  
FERNALD, OHIO  
FDF SUBCONTRACT NO. 98SC00001

PROJECT NAME  
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

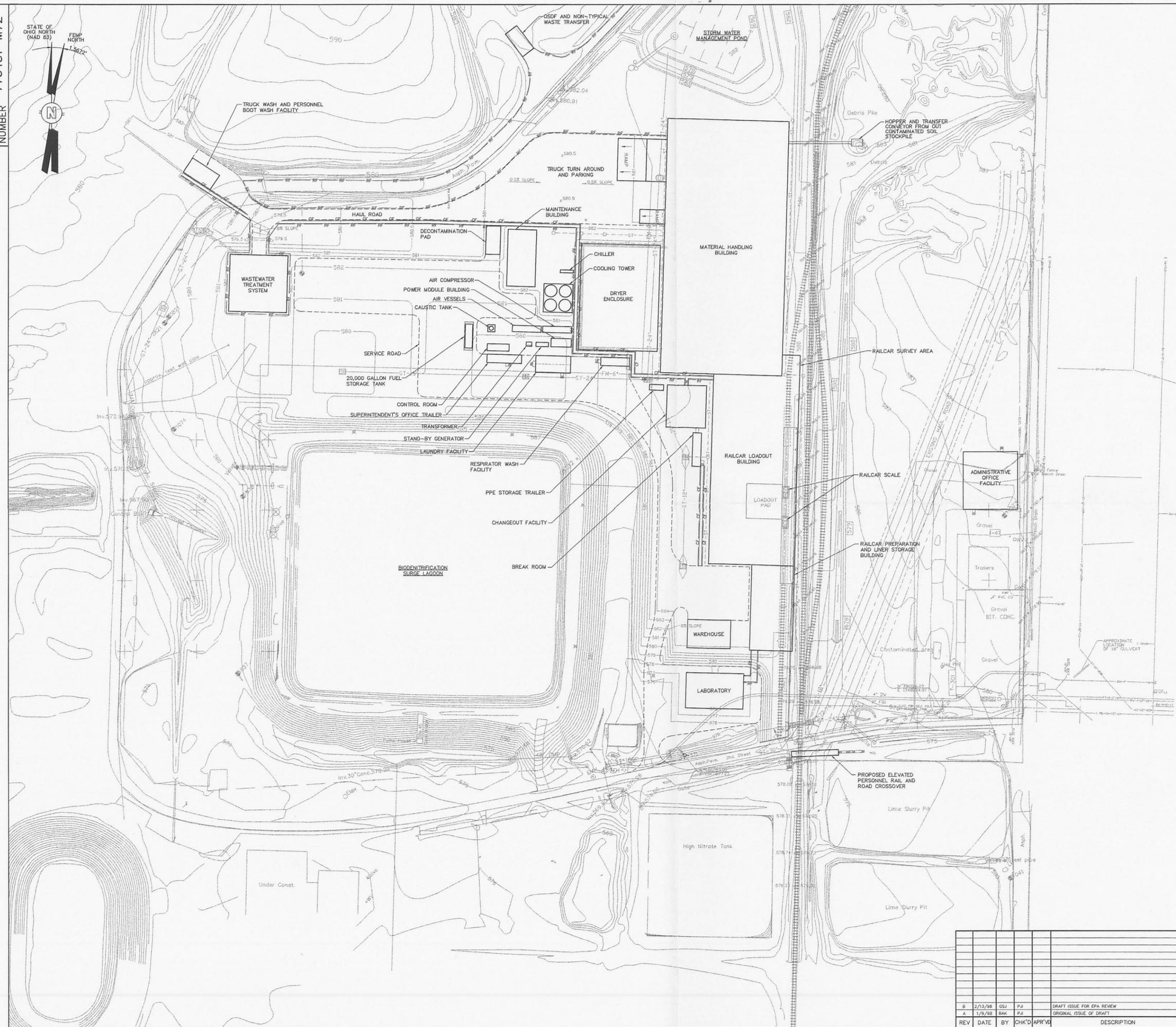
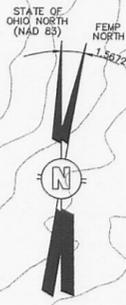
TITLE  
SITE GRADING PLAN



INTERNATIONAL TECHNOLOGY CORPORATION  
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REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
B	2/13/98	CSJ	PJ		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJ		ORIGINAL ISSUE OF DRAFT

DESIGNED BY	CHK'D	CHECKED BY	DATE	REVISION
PJ		PJ	1/9/98	
B. A. KUMPF				
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'	B
PROJECT NO.	773481	DRAWING NO.	M-90-80-001	



LEGEND:  
 -CF- CONSTRUCTION FENCE  
 -RF- RADIOLOGICAL FENCE

**DRAFT**  
 FIGURE 2-1

**FLUOR DANIEL FERNALDS** WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)  
 FERNALD, OHIO  
 PFD SUBCONTRACT NO. 98SC00001

PROJECT NAME: WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE: SITE FACILITIES LAYOUT

**INTERNATIONAL TECHNOLOGY CORPORATION**  
 ... Creating a Safer Tomorrow

DESIGNED BY	PJL	CHECKED BY	PJL	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'		B
PROJECT NO.	773481	DRAWING NO.	M-90-02-001		

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
B	2/13/98	GSJ	PJA		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJA		ORIGINAL ISSUE OF DRAFT