148 5

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

Volume 3 of 3

Submitted by:

U.S. Department of Energy
Fernald Area Office
P. O. Box 398705
Cincinnati, Ohio 45239-8705

000001

June 1998

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

(Page 1 of 2)

Design Package	Design Document	Document Description
Volume 1 of 3		
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 point sources

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

(Page 2 of 2)

Design Package	Design Document	Document Description
Volume 2 of 3		
	Excavation Plan	Description of the waste pit excavation activities
	Pre-Operational Schedule	Detailed schedule of activities through facility startup
Volume 3 of 3		
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

Site Preparation Package

DRAFT

Waste Pits Remedial Action Project
(WPRAP)
SITE PREPARATION PACKAGE

***

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

***

Revision No.: E
Issue Date: June 5,1998

Record of Issue/Revisions

Date	Rev. No.	Description of Revision
01/09/98	A	Original Issue of Draft
02/13/98	B	Draft Issue for EPA Review
03/27/98	C	Draft Issue for FDF Review
N/A	D	Not Issued
6/5/98	E	Draft Issue for EPA Review

Table of Contents

Record of Issue/Revisions i
List of Tables iii
List of Figures iv
List of Appendices v
List of Acronyms/Abbreviations vi
1.0 Introduction 1
1.1 Scope of Work 1
1.2 Plan Organization 2
2.0 Site Facilities Layout 3
2.1 Pre-Engineered Buildings 3
2.2 Analytical Laboratory 4
2.3 Portable Structures 4
2.4 Access Roads, Walkways, and Fencing 4
2.4.1 Service Roads 4
2.4.2 Haul Road 5
2.4.3 Personnel Walkways 5
2.4.4 Fencing 5
2.5 Additional Support Facilities 6
3.0 Site Grading and Excavation 7
3.1 Site Clearing 7
3.2 Excavation and Backfilling 7
3.3 Fine Grading 8
3.4 Site Drainage System 8
4.0 Portable Structures 9
4.1 Superintendent's Office 9
4.2 Respirator Wash Facility 9
4.3 Laundry Facility 9
4.4 Changeout Facility 9
4.5 Break Trailer 9
4.6 Administrative Offices 9
5.0 Utilities 10
5.1 Fire Water 10
5.2 Potable Water Supply 10
5.3 Sanitary Sewer 11
5.4 Natural Gas 11
5.5 Electrical 11
6.0 Hazardous Materials and Construction Debris Handling 12
6.1 Fuel Storage Environmental Controls 12
6.2 Waste Fuels, Oils, and Lubricants 13
6.3 Paints, Thinners, and Solvents 13
6.4 Construction Debris 13

000006

List of Tables

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

000007

List of Figures

Figure	Title
2-1	Site Facilities Layout
2-2	Administrative Area Layout
2-3	Typical Floor Plan - Site Laboratory
3-1	Site Grading Plan
4-1	Typical Floor Plan - Superintendent's Office Trailer
4-2	Typical Floor Plan - Respirator Wash Facility
4-3	Typical Floor Plan - Laundry Facility
4-4	Typical Floor Plan - Changeout Facility
4-5	Typical Floor Plan - Break Room
4-6	Typical Floor Plan - Administrative Office
5-1	Site Utility Plan
5-2	Administrative Area Utility Plan

List of Appendices

Appendix	Title
A	Specifications
B	Typical Anchoring and Skirting Systems

000009

List of Acronyms/Abbreviations

AASHTO	American Association of State Highway Transportation Officials
ABMA	American Bearing Manufacturers Association
ACGIH	American Conference of Government Industrial Hygienists
ACI	American Concrete Institute
ACM	Asbestos Containing Material
ACOE	United States Army Corps of Engineers
AFBMA	Anti-Friction Bearing Manufacturers Association
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
ALARA	As Low As Reasonably Achievable
ALTER	Accelerated Life Testing and Environmental Research Facility
AMCA	Air Movement and Control Association
ANS	American Nuclear Society
ANSI	American National Standards Institute
APC	Air Pollution Control
API	American Petroleum Institute
ARAR	Applicable or Relevant and Appropriate Requirement.
ARI	American Refrigeration Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society of Nondestructive Testing
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
AWWT	Advanced Wastewater Treatment
BAT	Best Available Technology
BSL	Biodenitrification Surge Lagoon
CAM	Continuous Air Monitor
CBR	California Bearing Ratio
CDF	Commercial Disposal Facility
CEM	Continuous Emissions Monitor
CEMA	Conveyor Equipment Manufacturers Association
CERCLA	Comprehensive, Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Constituent of Concern
CPT	Cone Penetrometer Test
CRSI	Concrete Reinforcing Steel Institute
CRU	CERCLA/RCRA Unit
CWA	Clean Water Act of 1977, as amended
D&D	Decontamination and Dismantlement
DAC	Derived Air Concentration
DCD	Design Criteria Document

DEEP	Dewatering Excavation Evaluation Program
DOE	United States Department of Energy
DOE-NV	United States Department of Energy - Nevada Office of Operations
DOT	United States Department of Transportation
EJMA	Expansion Joint Manufacturers Association
ERDA	Energy Research and Development Administration
F	Fahrenheit
FDF	Fluor Daniel Fernald, Inc.
FEMP	Fernald Environmental Management Project
FERMCO	Fernald Environmental Restoration Management Corporation
FFCA	Federal Facilities Compliance Agreement
fpm	feet per minute
FS	Feasibility Study
FSAR	Final Safety Analysis Report
ft^2	square foot (feet)
GCS	Gas Cleaning System
GFCI	Ground Fault Circuit Interrupter
GLC	Ground Level Concentration
gpm	gallons per minute
HEPA	High Efficiency Particulate Air (filter)
hr	hour
HVAC	Heating, Ventilation, and Air Conditioning
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineers Society
ID	Induced Draft
IPC	Inclined Plate Clarifier
ISA	International Society for Measurement and Control
IT	IT Corporation
kg	kilogram
kV	kilovolt
kVA	kilovolt-ampere
kW	kilowatt
lb	pound
LLRW	Low Level Radioactive Wastes
m^2	square meter
MAGLC	Maximum Allowable Ground Level Concentration
MAWC	Maximum Average Waste Concentration
MBMA	Metal Building Manufacturers Association
MCC	Motor Control Center
MEI	Maximally Exposed Individual
MHB	Material Handling Building
µCi/cc	microcurie per cubic centimeter
mrem	millirem
MSS	Manufacturers Standardization Society
NAD	North American Datum
NEC	National Electric Code

000011

NEMA	National Electrical Manufacturers Association
NESHAP	National Emission Standards for Hazardous Air Pollutants
NETA	National Electrical Testing Association
NFC	National Fuel Code
NFPA	National Fire Protection Association
NP	Nonplastic
NPDES	National Pollutant Discharge Elimination System
NPH	Natural Phenomenal Hazard
NTS	Nevada Test Site
OAC	Ohio Administrative Code
OBBC	Ohio Basic Building Code
ODOT	Ohio Department of Transportation
OEPA	Ohio Environmental Protection Agency
OSDF	On Site Disposal Facility
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PC	Performance Category
PCB	Polychlorinated Biphenyl
pcf	pounds per cubic foot
pCi/L	picoCuries per liter
PFD	Process Flow Diagram
PID	Photoionizing Detector
PLC	Programmable Logic Controller
PPE	Personal Protective Equipment
psf	pounds per square foot
psi	pounds per square inch
psig	pounds per square inch gauge
PTI	Permit to Install
PTO	Permit to Operate
PVC	Polyvinyl Chloride
QAP	Quality Assurance Plan
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
RLB	Railcar Loadout Building
ROD	Record of Decision
SAE	Society of Automotive Engineers
SCS	Soil Conservation Service
scfm	standard cubic feet per minute
SDI	Steel Deck Institute
sec	second
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPT	Standard Penetration Test
SSC	Structure, System and Component
STD	Standard (DOE)

000012

SWM	Solid Waste Management
SWPPP	FERMCO Storm Water Pollution Prevention Plan
TBC	To Be Considered
TBP	Tributyl Phosphate
TEMA	Tubular Exchanger Manufacturers Association
TOC	Total Organic Carbon
TSDF	Waste Treatment, Storage or Disposal Facility
UBC	Uniform Building Code
UCRL	University of California Research Laboratory
UL	Underwriters Laboratory
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency (EPA)
V	Volt
WAC	Waste Acceptance Criteria
WESP	Wet Electrostatic Precipitator
WPRAP	Waste Pits Remedial Action Project
WTS	IT Corporation Wastewater Treatment System
yd^3	cubic yard
yr	year

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.

000014

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.

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 bollards 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.
- Gas Cleaning System / Wastewater Treatment System (GCS/WTS) Building measuring approximately 130 feet long by 110 feet wide with an approximate eave height of 40 feet.
- Maintenance Building measuring approximately 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).

000016

All pre-engineered buildings will be designed in accordance with the applicable requirements of the Ohio Basic Building Code (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 storage tank, warehouse, lid and liner storage building, maintenance building, and GCS/WTS Building. 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 decontamination and decommissioning 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 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.).

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 downdrain 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 GCS/WTS Building. 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 and terminating 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
- GCS/WTS building
- Dryer Process Area
- Truck wash and boot wash facilities
- Respirator wash facility
- Laundry facility.

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 laundry facility, respirator wash facility, and one designated shower in the changeout facility and transfer it to the BSL (Figure 5-1)
- Collect drain water from the changeout facility toilets, showers, and sinks 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 MDPE pipe. This line will tie into the existing line main at the approximate location shown in Figure 5-1. This line will be routed along the western side of the facility and terminate at the dryer process area. 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.

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.

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.

TABLES

TABLES

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

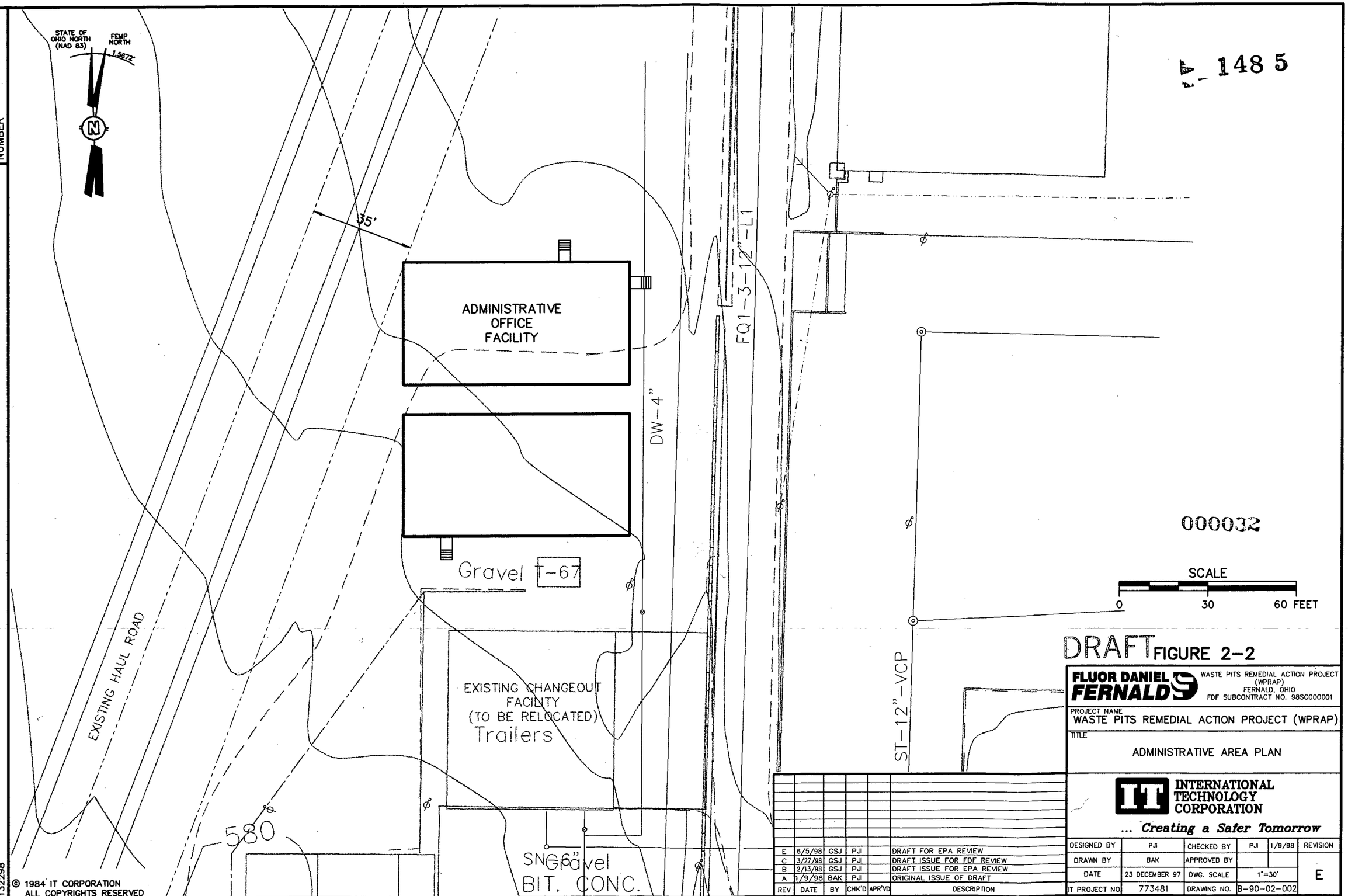
Waste Characterization	Types of Generated Waste	
	Solid Wastes	**Liquid Wastes**
Non-radiological, Non-RCRA	IT is responsible for all aspects of the handling and disposal of this material.	IT is responsible for all aspects of the handling and disposal of this material.
Radiological, Non-RCRA	IT is responsible 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.

FIGURES

FIGURES

DRAWING NUMBER 773481-B9



1485

000032

DRAFT FIGURE 2-2

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

FLUOR DANIEL FERNALD

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

PROJECT NAME
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE
ADMINISTRATIVE AREA PLAN

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

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

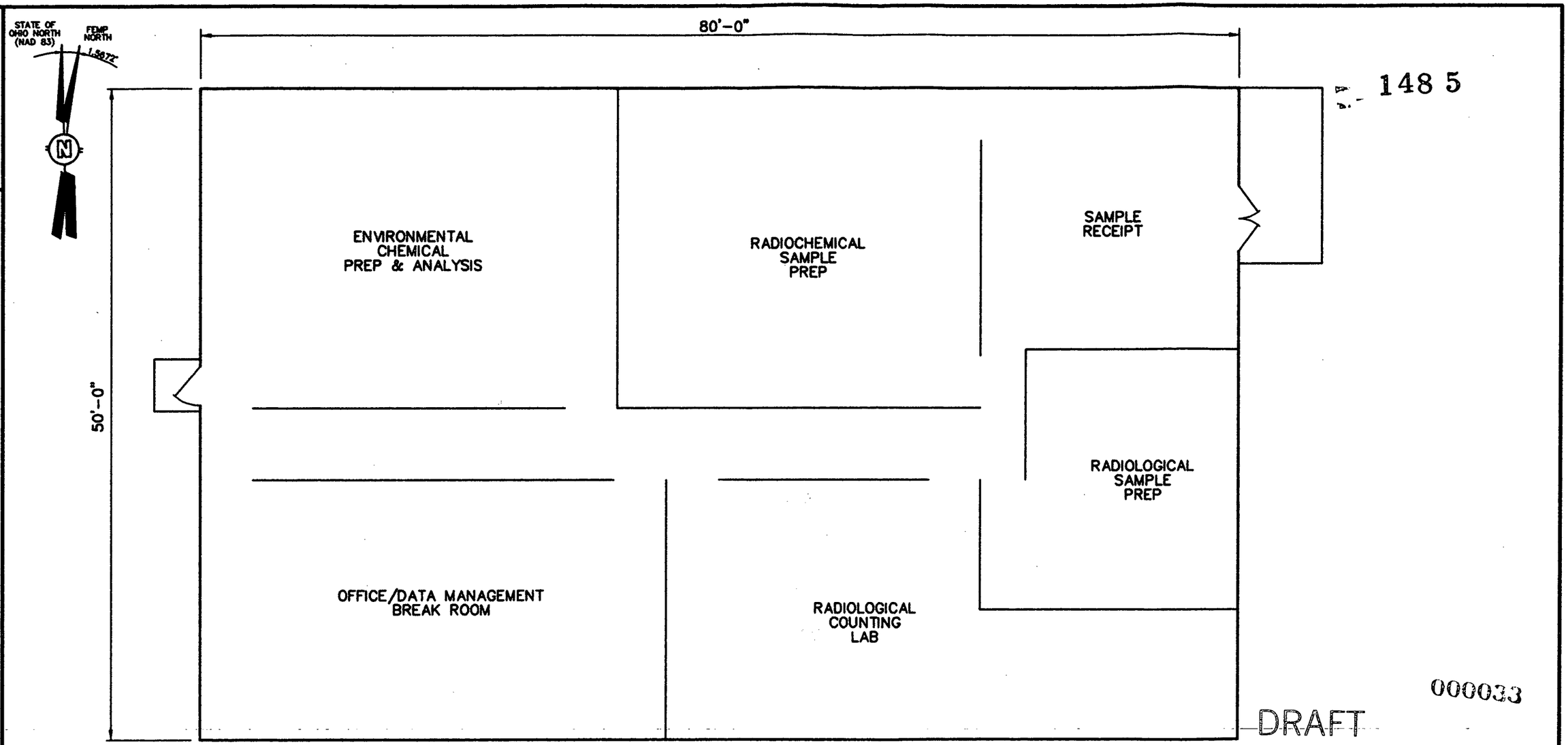
REVISION E

6-2-98
9:19 AM
132298

© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED

"Do Not Scale This Drawing"

DRAWING NUMBER 773481-B7



148 5

000033

DRAFT

FIGURE 2-3

FLUOR DANIEL FERNALD

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

INTERNATIONAL TECHNOLOGY CORPORATION
... Creating a Safer Tomorrow

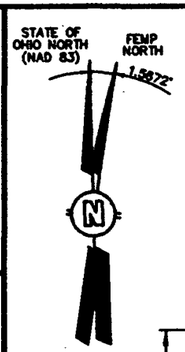
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT
REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	BAK	APPROVED BY			E
DATE	4 DECEMBER 97	DWG. SCALE	1/8"=1'-0"		
IT PROJECT NO.	773481	DRAWING NO.	B-90-02-001		

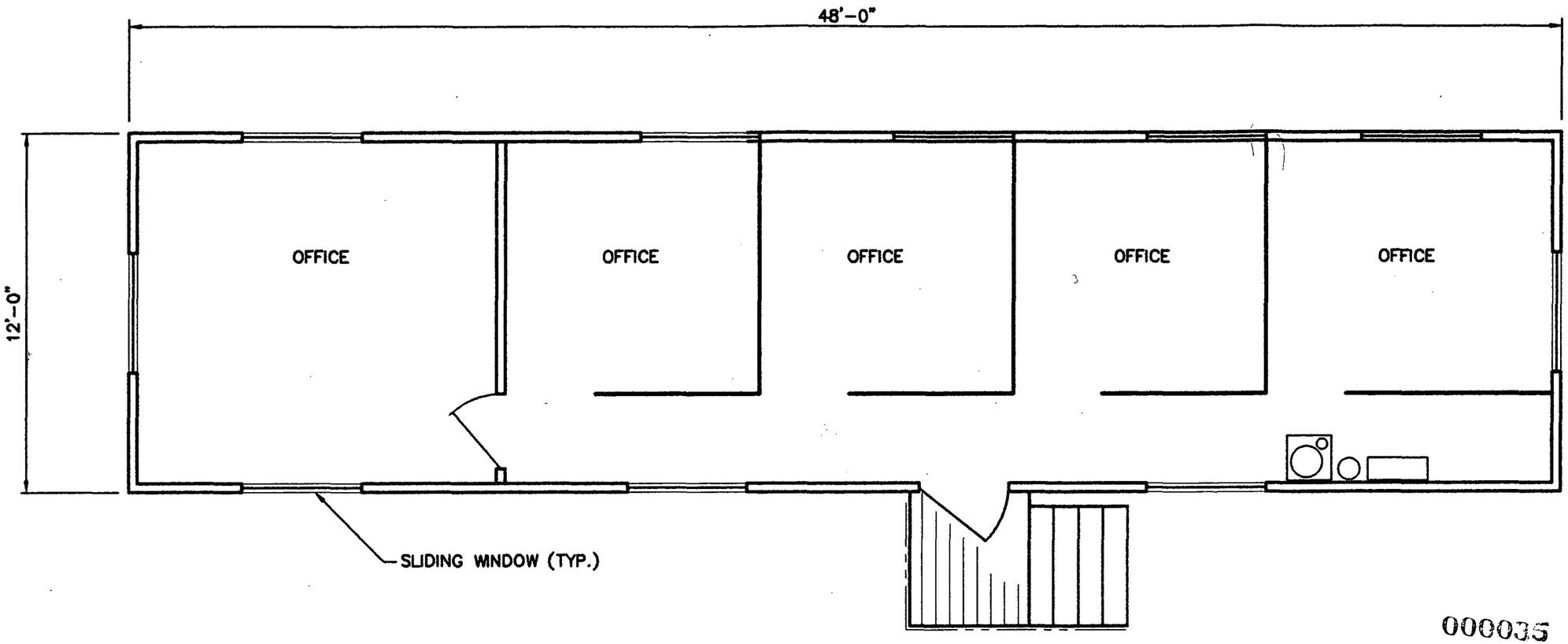
6-2-98
8:54 AM
132298

© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED
"Do Not Scale This Drawing"

DRAWING NUMBER 773481-B3



- 1485



000035

DRAFT

FIGURE 4-1

FLUOR DANIEL FERNALD

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

PROJECT NAME
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE
TYPICAL FLOOR PLAN
SUPERINTENDENTS OFFICE

INTERNATIONAL TECHNOLOGY CORPORATION
... Creating a Safer Tomorrow

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	8/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

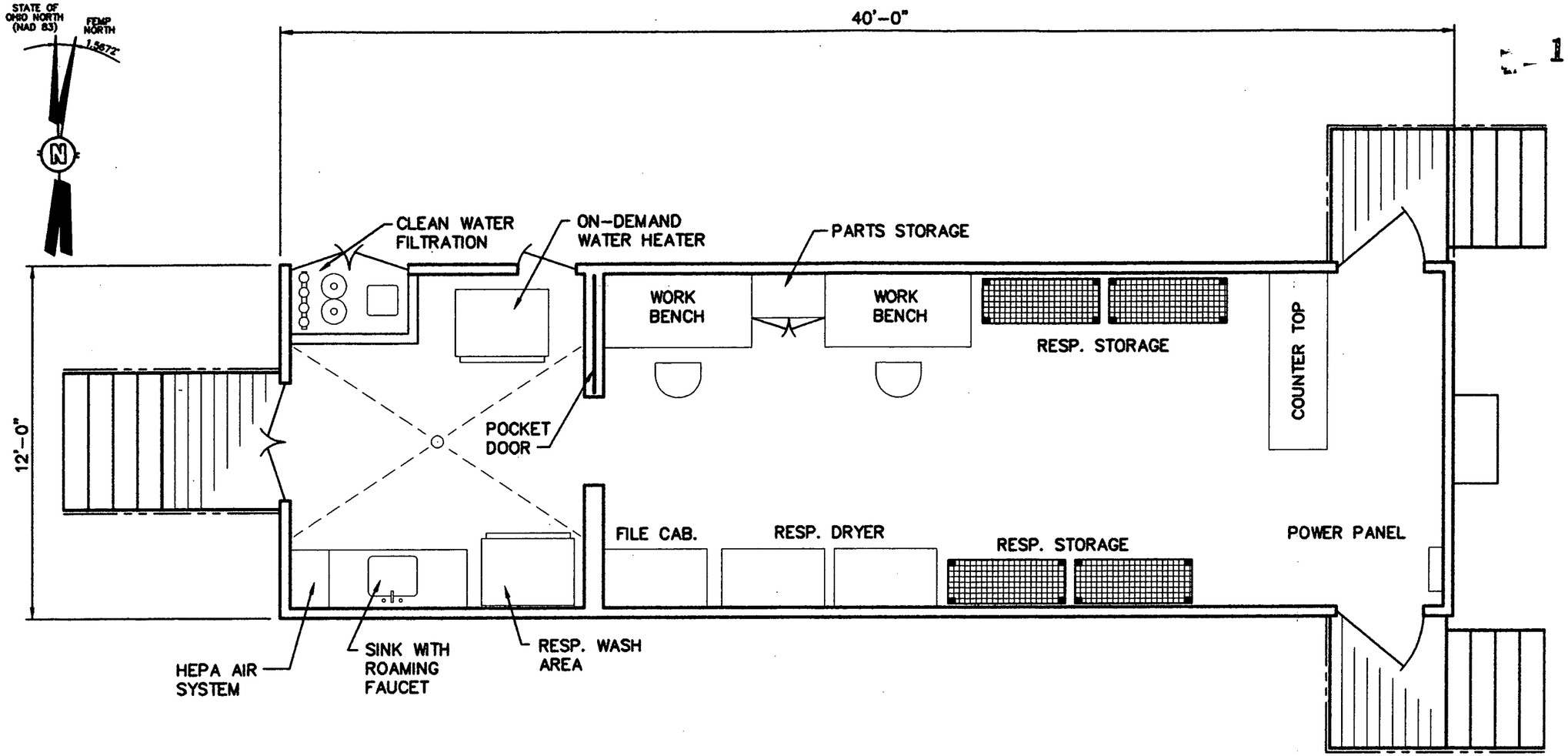
DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	BAK	APPROVED BY			E
DATE	4 DECEMBER 97	DWG. SCALE	1/4"=1'-0"		
IT PROJECT NO.	773481	DRAWING NO.	B-90-02-002		

6-2-98
8:56 AM
132298

© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED

"Do Not Scale This Drawing"

DRAWING NUMBER 773481-B2



1485

000038

DRAFT

FIGURE 4-2

FLUOR DANIEL FERNALD

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

PROJECT NAME
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE
TYPICAL FLOOR PLAN
RESPIRATOR WASH FACILITY

INTERNATIONAL TECHNOLOGY CORPORATION
... Creating a Safer Tomorrow

E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	GSJ	PJI		ORIGINAL ISSUE OF DRAFT
REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION

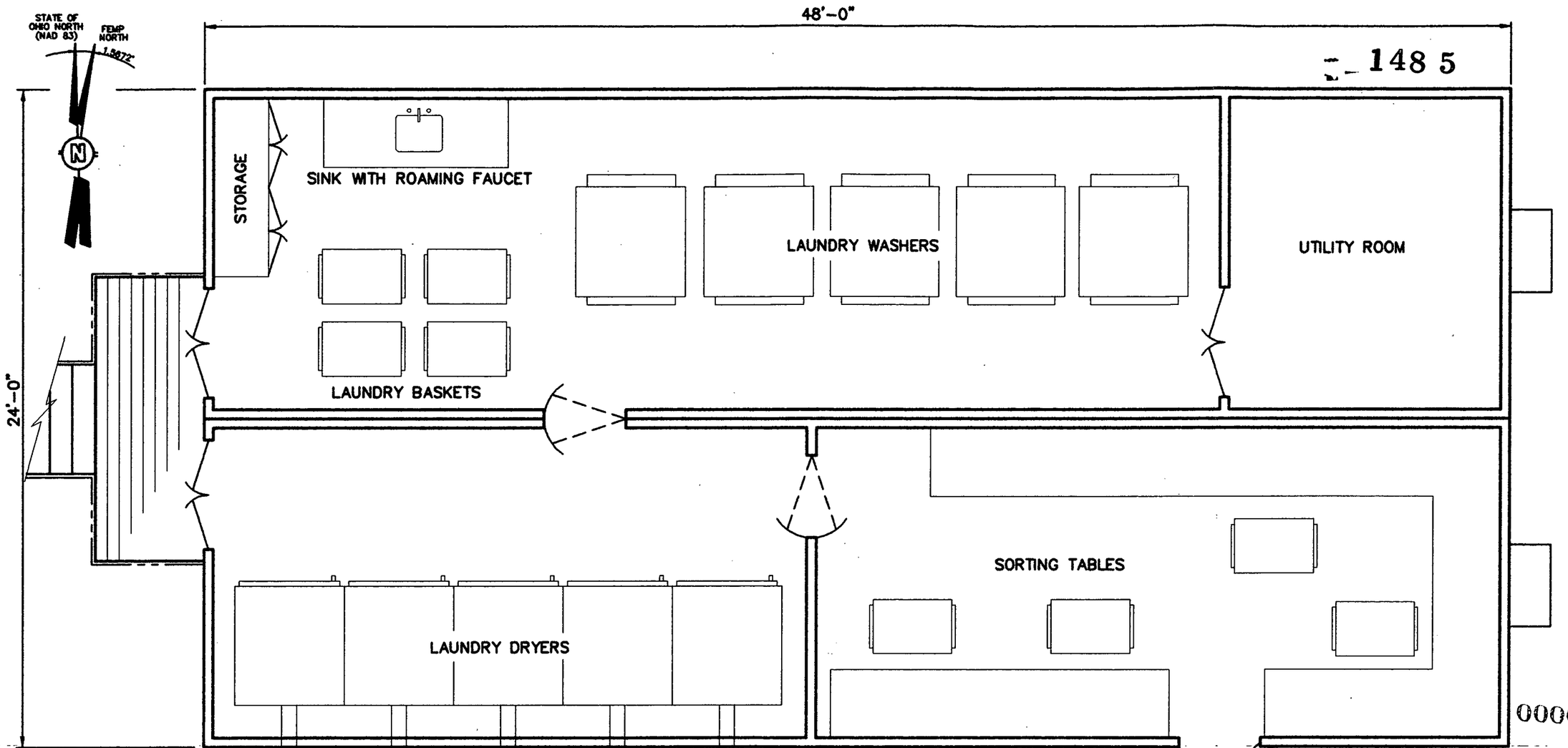
DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	GSJ	APPROVED BY			E
DATE	11-25-97	DWG. SCALE	1/4"=1'-0"		
IT PROJECT NO	773481	DRAWING NO.	B-90-02-003		

6-2-98
9:00 AM
132298

© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED

"Do Not Scale This Drawing"

DRAWING NUMBER 773481-B1



148 5

000037

NOTE:
DRYER EXHAUST SHALL BE HEPA FILTERED

DRAFT

FIGURE 4-3

FLUOR DANIEL FERNALD

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

PROJECT NAME
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE
TYPICAL FLOOR PLAN
LAUNDRY FACILITY

INTERNATIONAL TECHNOLOGY CORPORATION
... Creating a Safer Tomorrow

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	GSJ	PJI		ORIGINAL ISSUE OF DRAFT

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	GSJ	APPROVED BY			E
DATE	11-25-97	DWG. SCALE	1/4"=1'-0"		
IT PROJECT NO.	773481	DRAWING NO.	B-90-02-004		

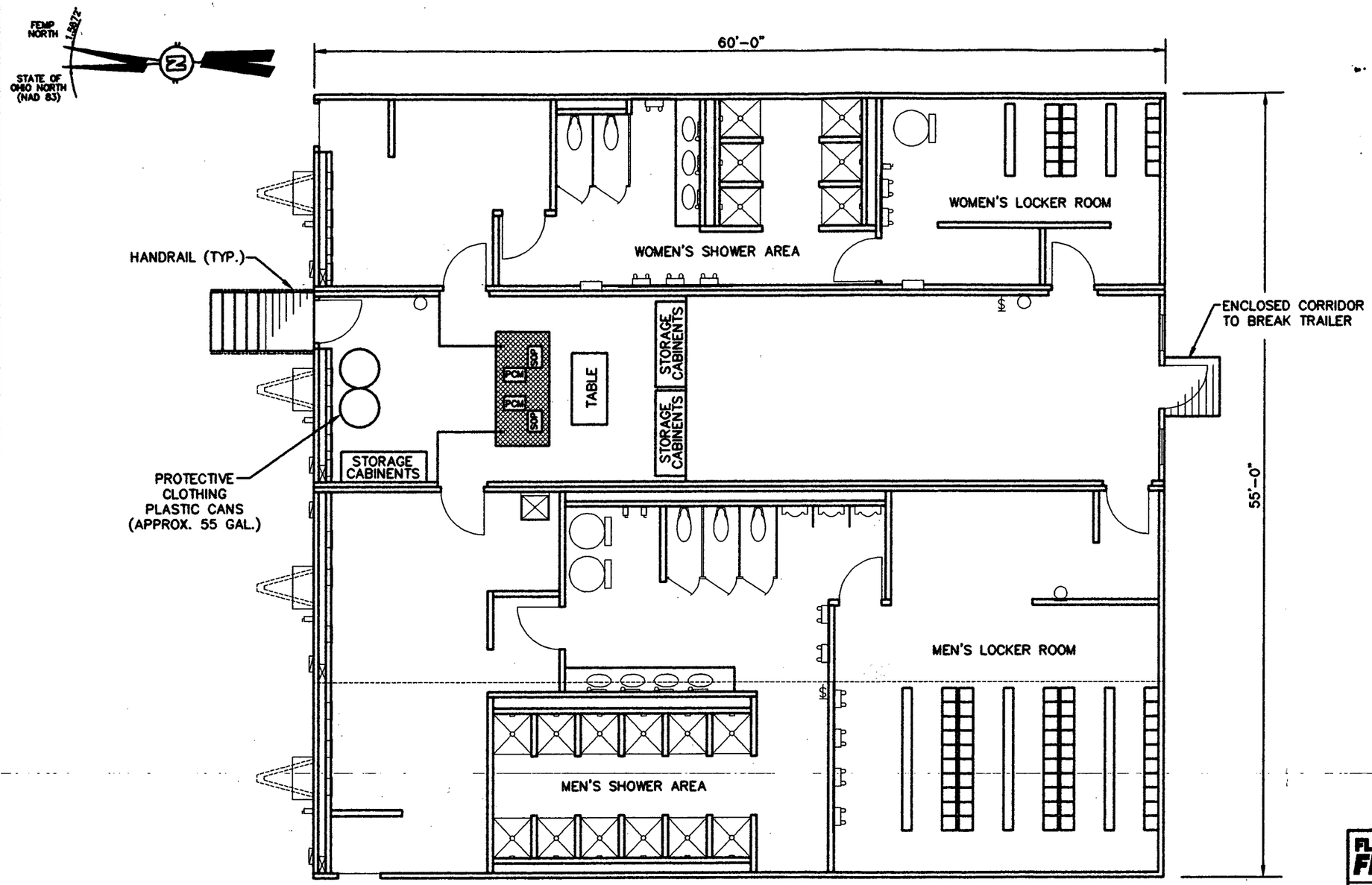
6-2-98
8:58 AM
132298

© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED

"Do Not Scale This Drawing"

148 5

DRAWING NUMBER 773481-B5



000038

DRAFT

FIGURE 4-4

FLUOR DANIEL FERNALD

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

INTERNATIONAL TECHNOLOGY CORPORATION
... Creating a Safer Tomorrow

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

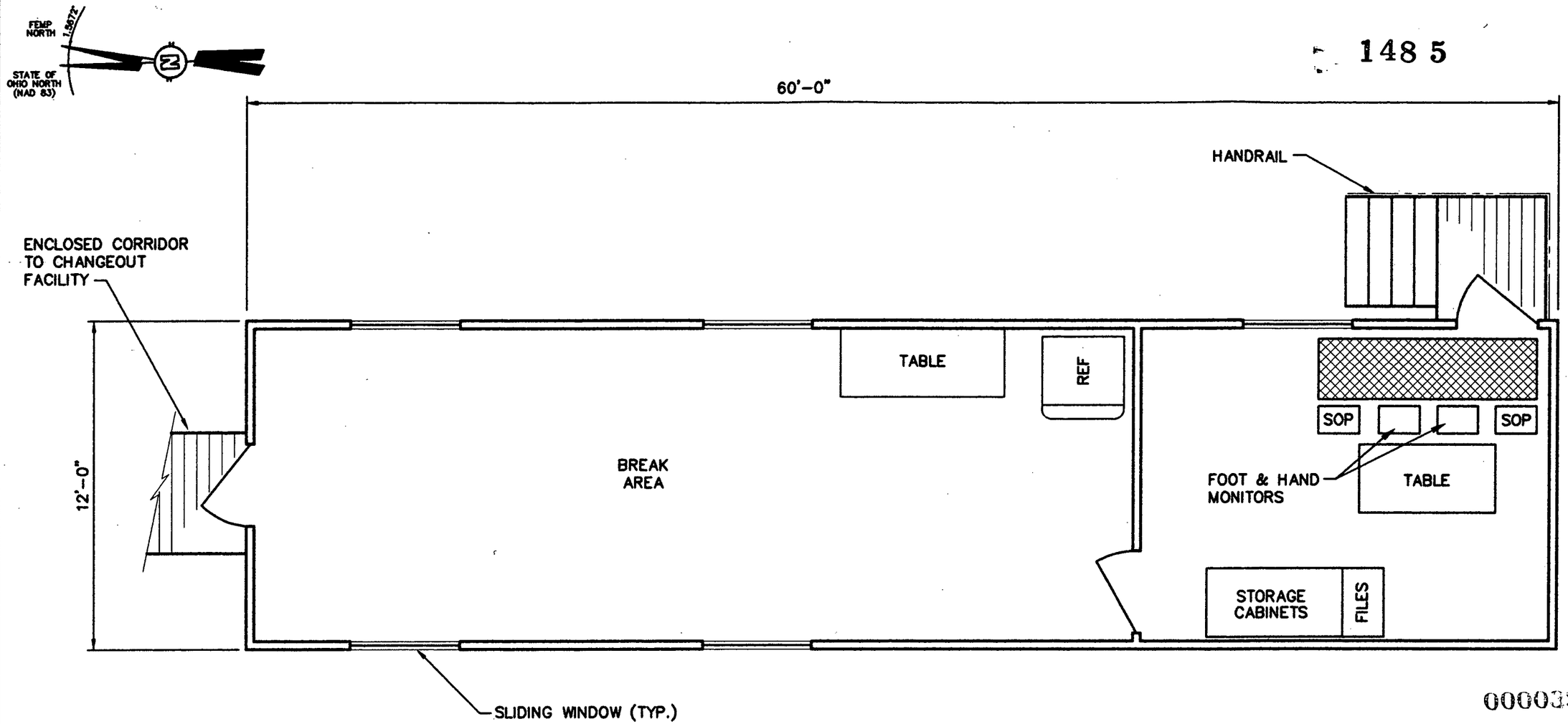
DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	BAK	APPROVED BY			E
DATE	3 DECEMBER 97	DWG. SCALE	1/8"=1'-0"		
IT PROJECT NO	773481	DRAWING NO.	B-90-02-005		

6-2-98
9:09 AM
132298

© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED

"Do Not Scale This Drawing"

DRAWING NUMBER 773481-B4



1485

000039

DRAFT

FIGURE 4-5

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

FLUOR DANIEL FERNALD

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

PROJECT NAME
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE
TYPICAL FLOOR PLAN
BREAK ROOM

INTERNATIONAL TECHNOLOGY CORPORATION
... Creating a Safer Tomorrow

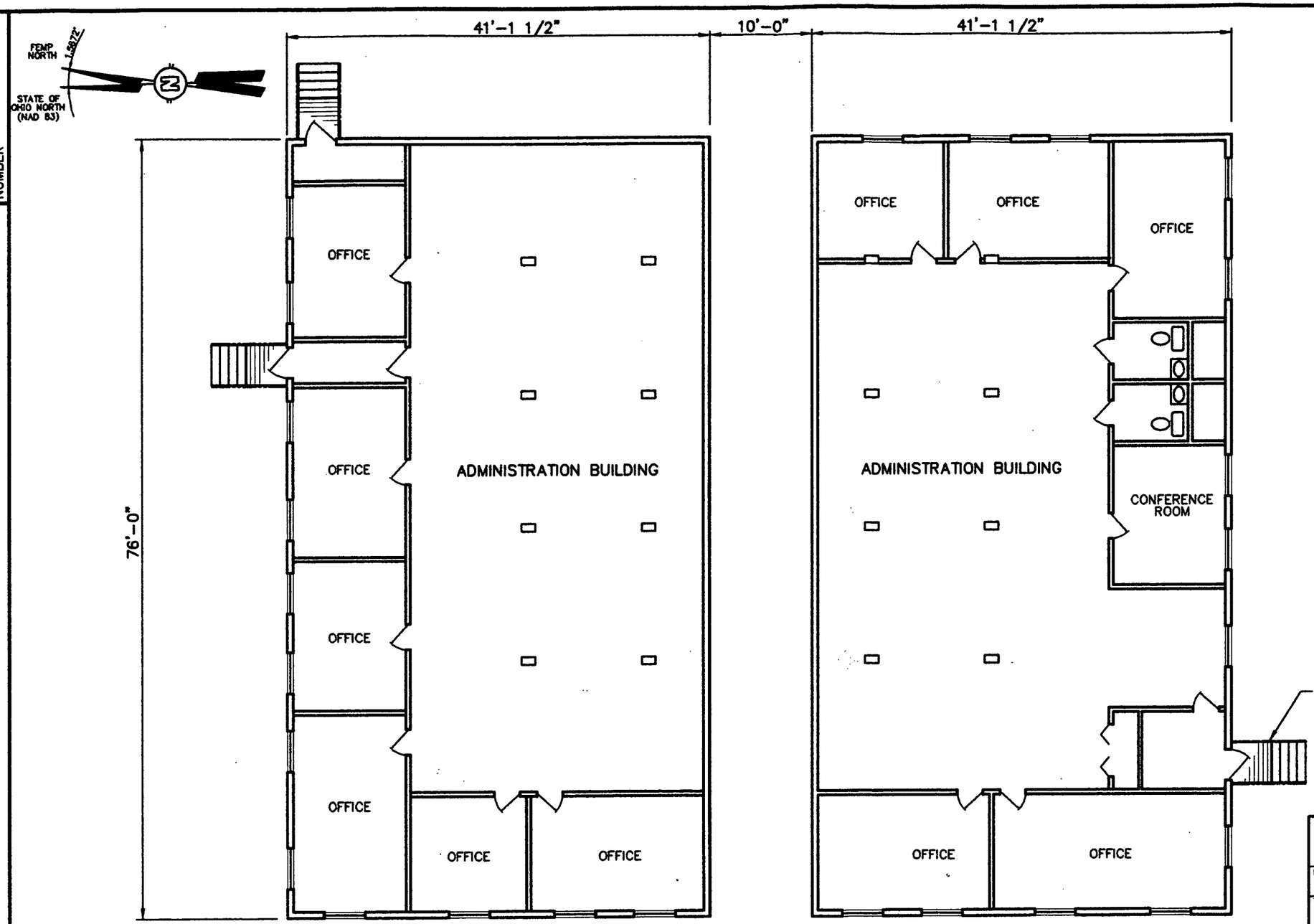
DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98
DRAWN BY	BAK	APPROVED BY		
DATE	4 DECEMBER 97	DWG. SCALE	1/4"=1'-0"	
IT PROJECT NO	773481	DRAWING NO.	B-90-02-006	

REVISION E

© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED
"Do Not Scale This Drawing"

6-2-98
8:51 AM
132298

DRAWING NUMBER 773481-B6



1485

000040

DRAFT

FIGURE 4-6

FLUOR DANIEL FERNALD

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

PROJECT NAME
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE
TYPICAL FLOOR PLAN
ADMINISTRATION BUILDING

INTERNATIONAL TECHNOLOGY CORPORATION

... Creating a Safer Tomorrow

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

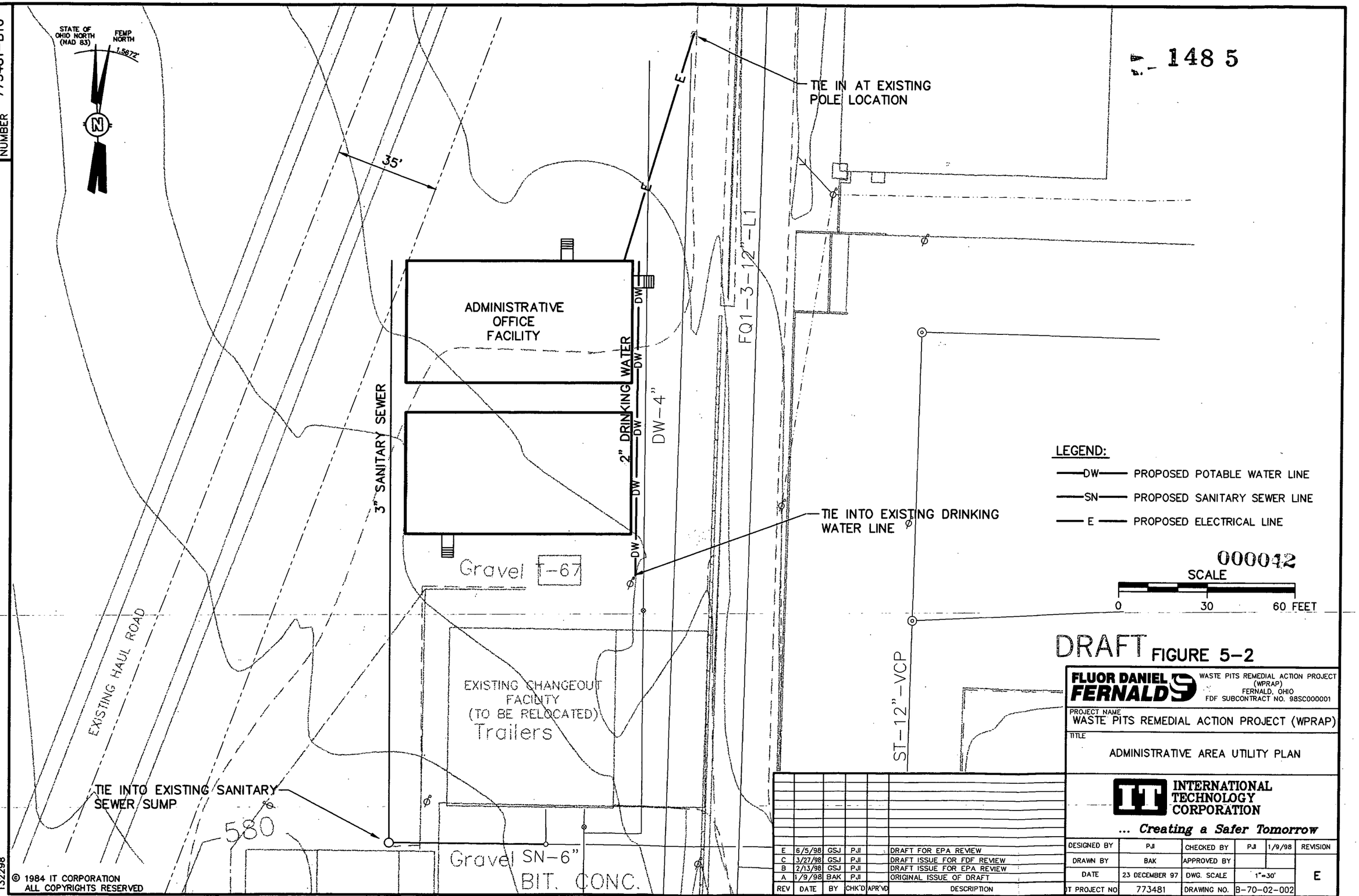
DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	BAK	APPROVED BY			E
DATE	3 DECEMBER 97	DWG. SCALE	3/32"=1'-0"		
IT PROJECT NO.	773481	DRAWING NO.	B-90-02-007		

6-2-98
10:23 AM
132298

© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED

"Do Not Scale This Drawing"

DRAWING NUMBER 773481-B10



1485

000042

DRAFT FIGURE 5-2

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

FLUOR DANIEL FERNALD

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

PROJECT NAME
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE
ADMINISTRATIVE AREA UTILITY PLAN

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

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	BAK	APPROVED BY			E
DATE	23 DECEMBER 97	DWG. SCALE	1"=30'		
IT PROJECT NO	773481	DRAWING NO.	B-70-02-002		

6-2-98
10:17 AM
132298

© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED

"Do Not Scale This Drawing"

APPENDIX
A

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:

Physical Property	Test Method	Requirements
Grab Tensile Strength (lbs)	ASTM D 4632	100
Grab Elongation (%)	ASTM D 4632	10
Flow Rate (gal/min/ft^2)	ASTM D 4491	0.3
Ultraviolet Stability (%)	ASTM D 4355	70

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 2-inch by 2-inch diameter wood with a minimum length of 3 feet.

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

Vegatation 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. Silt fence installation shall follow field contours.

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 once per week or within 24 hours of a rainfall event of 0.5 inches or greater. 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 --

DRAFT

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:

Sieve Size	Percent Passing by Weight
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:

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

DRAFT

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.

Table 1 Tape Color	
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 ½ 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 --

DRAFT

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 form 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 form 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 if 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. 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 --

DRAFT

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 (⅛-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 ⅝ 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 --

DRAFT

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 medium density polyethylene (MDPE) pipe (PE 3408), Series 6500, 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 ⅛-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 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.

Set valves on solid bearing. 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^2	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^2/ sec^{-1}	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, or ODOT 601.07 (dumped rock).

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 wit 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 --

DRAFT

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 (⅛-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^2-°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 Biodenitrification 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^2-°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.

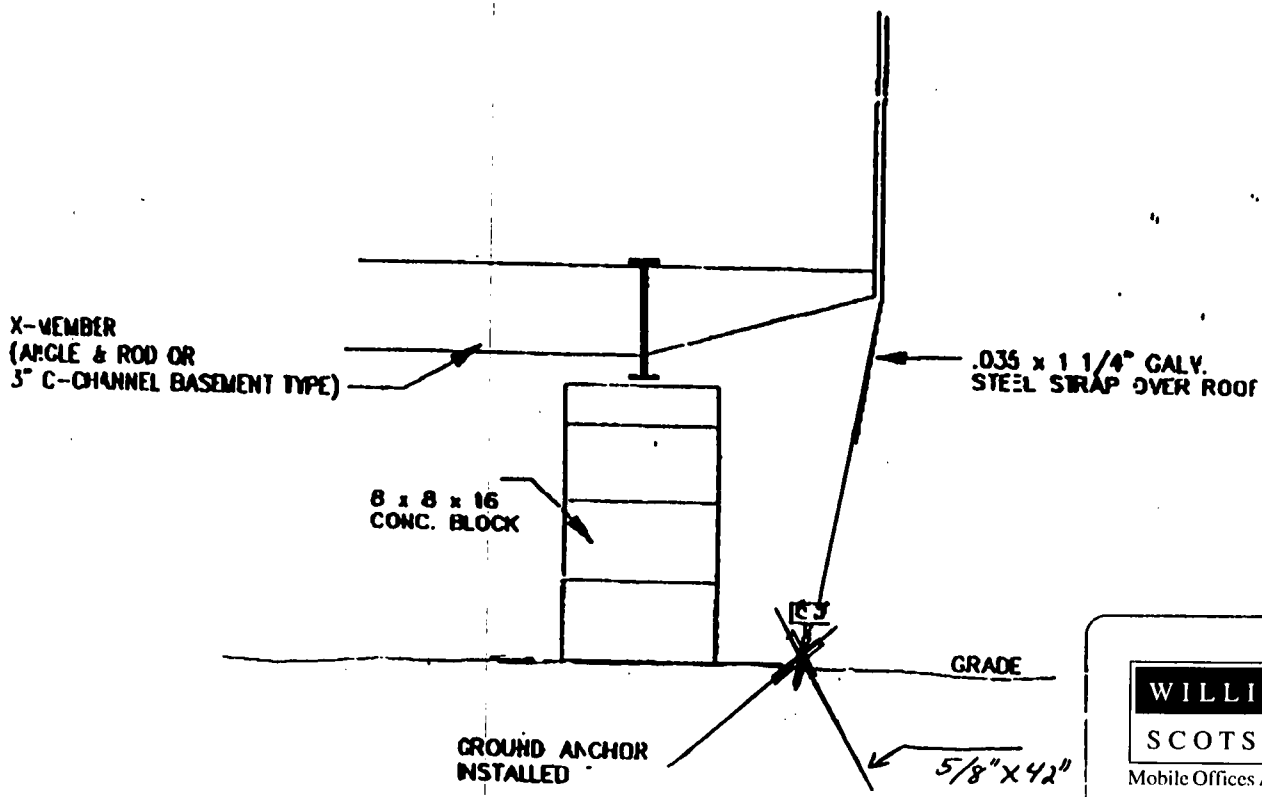
-- End of Section --

DRAFT

APPENDIX
B

APPENDIX B

TYPICAL ANCHORING AND SKIRTING SYSTEMS



WILLIAMS SCOTSMAN®
Mobile Offices And More.

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

Sally Alsfelder
Customer Service
Sales Representative

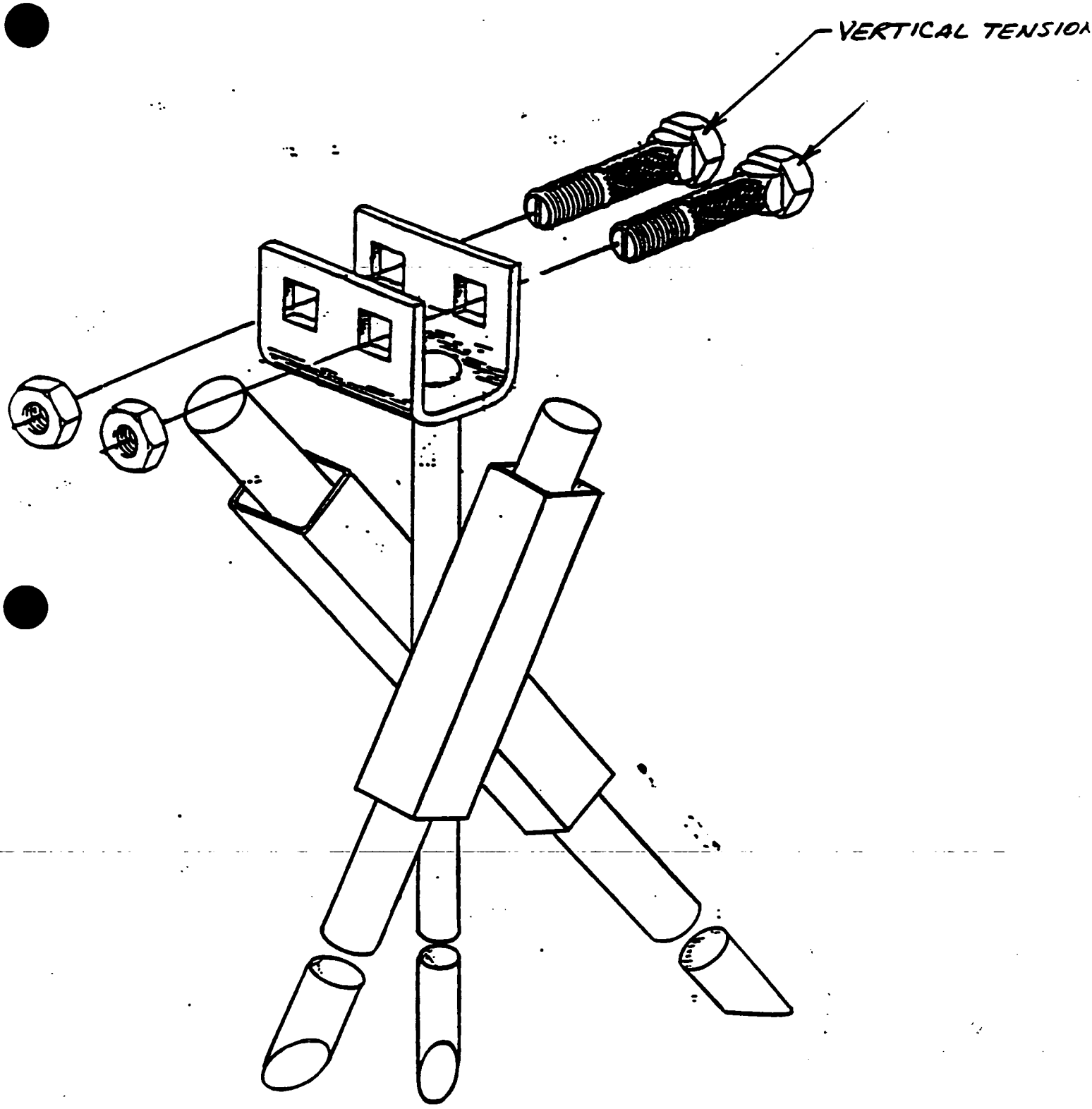
800-782-1500 513-777-5200 FAX: 513-777-9974

680089

(1) PIER DETAIL

FOUNDATION DETAIL

148 5


VERTICAL TENSION

VINYL SKIRTING

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

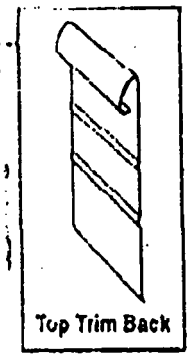
Hammer • Screwdriver • Snips • Plumb Bob or Level • Tape Measure
Power Saw with File • Tooth Blade • Notching Tool • Chalk Line • Utility Knife

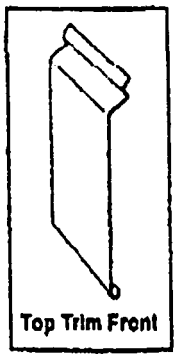
IMPORTANT

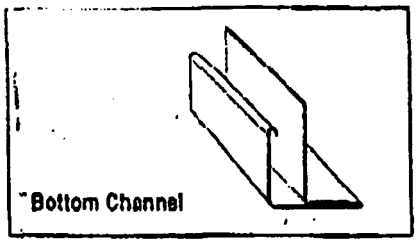
1. Use either a power saw with a fine tooth blade mounted with reverse rotation, or aviation snips to cut skirting components.

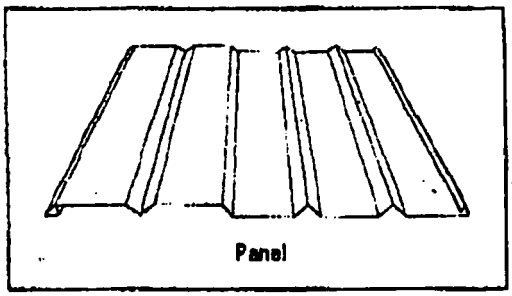
2. To allow for normal expansion and contraction, fasten the Top Trim Back **in the center of the nailing slots.** Fasten positively to the surface of the unit at every slotted hole, leaving $^1/_2$" between lengths. **Do not butt the ends.** Overlap Top Trim Front approximately 1" at joints. Allow $^1/_2$" between pieces of the Bottom Channel when installing.

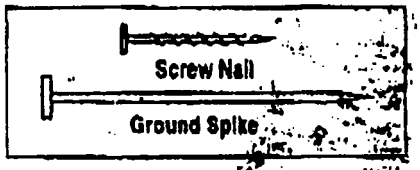
3. **Do not drive the nails too tightly.** The screwtype nails provided offer excellent holding power, but if driven too tightly, the vinyl can, under normal expansion and contraction, become distorted. These special nails should be driven in the middle of the nailing slot just short of touching the Top Trim Back. Nail to achieve $^3/_4$" 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 $^1/_{16}$" gap between nail head and part.


Top Trim Back


Top Trim Front


Bottom Channel


Panel



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 $^1/_2$" 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 $^3/_4$" 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

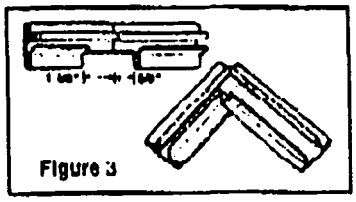


Figure 3

Figure 4

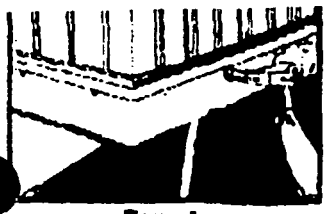


Figure 5

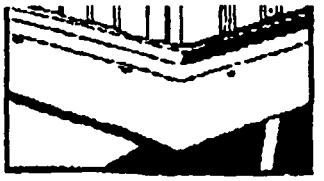


Figure 6

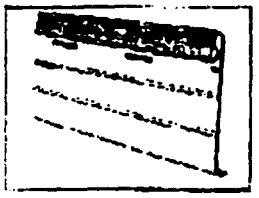


Figure 7

Figure 8

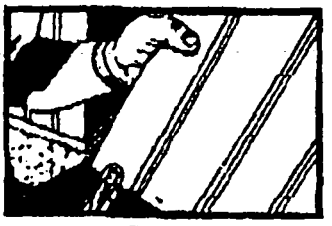


Figure 9

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.

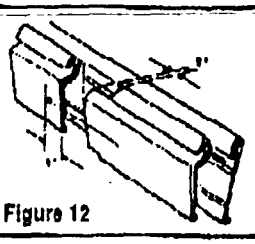


Figure 12

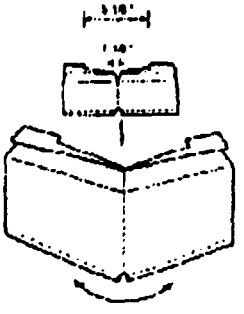
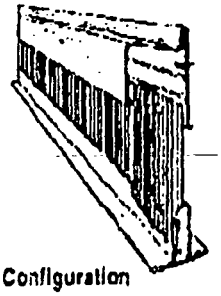


Figure 13



Final Configuration

Step 2...

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 add-on 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.

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

***

Revision No.: E
Issue Date: June 5,1998

Record of Issue/Revisions

Date	Rev. No.	Description of Revision
01/09/98	A	Original Issue of Draft
02/13/98	B	Draft Issue for EPA Review
03/27/98	C	Draft Issue for FDF Review
N/A	D	Not Issued
6/5/98	E	Draft Issue for EPA Review

000094

1485

Table of Contents

Record of Issue/Revisions i
List of Tables iii
List of Figures iv
List of Acronyms/Abbreviations v
1.0 Introduction 1
1.1 Project Background 1
1.2 Site Description 1
1.3 Scope of Work 1
2.0 Plan Objectives 3
2.1 Erosion Control 3
2.2 Dust Control 4
2.3 Storm Water Management 4
3.0 Site Conditions 6
3.1 Climate and Weather Data 6
3.2 Current Site Layout and Significant Hydrologic Features 6
3.3 Summary of Runoff Estimates 7
4.0 Erosion Control During Construction 8
4.1 Use and Location of Silt Fences 8
4.2 Use of Vegetation and Planting 8
4.3 Disposal of Erosion Control Structures 8
5.0 Dust Control 9
5.1 Use of Water Sprays 9
5.2 Use of Temporary Covers/Barriers 9
5.3 Other Control to Manage/Minimize Dust 9
5.4 Dust Monitoring Methods 9
6.0 Storm Water Management 10
6.1 Existing Storm Water Management Structures 10
6.2 Postconstruction Storm Water Management 10
6.3 Removal/Management of Construction Water Within Excavations 10
6.4 Treatment, Analysis, and Disposal of Storm Water and Sediment 11
6.5 Storm Water Management Contingencies 11
6.5.1 Failure of Silt Fencing 11
6.5.2 Excessive Rainfall 11
6.5.3 Storm Drain Blockage/Backup 12
7.0 Maintenance and Inspection 13
7.1 Maintenance of Erosion Control and Storm Water Management Features 13
7.2 Inspection Schedule 13

000095

List of Tables

1485

Table	Title
3-1	Estimated Runoff for Preconstruction Conditions
3-2	Estimated Runoff for Postconstruction Conditions

000096

List of Figures

1485

Figure	Title
1-1	Overall Site Facilities Map
1-2	Existing Topography and Drainage Patterns
1-3	Site Facilities Layout
3-1	Preconstruction Storm Water Management
3-2	Postconstruction Storm Water Management
4-1	Site Grading Plan
7-1	Erosion Control and Storm Water Management Inspection Record

000097

List of Acronyms/Abbreviations

1485

AASHTO	American Association of State Highway Transportation Officials
ABMA	American Bearing Manufacturers Association
ACGIH	American Conference of Government Industrial Hygienists
ACI	American Concrete Institute
ACM	Asbestos Containing Material
ACOE	United States Army Corps of Engineers
AFBMA	Anti-Friction Bearing Manufacturers Association
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
ALARA	As Low As Reasonably Achievable
ALTER	Accelerated Life Testing and Environmental Research Facility
AMCA	Air Movement and Control Association
ANS	American Nuclear Society
ANSI	American National Standards Institute
APC	Air Pollution Control
API	American Petroleum Institute
ARAR	Applicable or Relevant and Appropriate Requirement.
ARI	American Refrigeration Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society of Nondestructive Testing
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
AWWT	Advanced Wastewater Treatment
BAT	Best Available Technology
BSL	Biodenitrification Surge Lagoon
CAM	Continuous Air Monitor
CBR	California Bearing Ratio
CDF	Commercial Disposal Facility
CEM	Continuous Emissions Monitor
CEMA	Conveyor Equipment Manufacturers Association
CERCLA	Comprehensive, Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Constituent of Concern
CPT	Cone Penetrometer Test
CRSI	Concrete Reinforcing Steel Institute
CRU	CERCLA/RCRA Unit
CWA	Clean Water Act of 1977, as amended
D&D	Decontamination and Dismantlement
DAC	Derived Air Concentration
DCD	Design Criteria Document

000098

1485

DEEP	Dewatering Excavation Evaluation Program
DOE	United States Department of Energy
DOE-NV	United States Department of Energy - Nevada Office of Operations
DOT	United States Department of Transportation
EJMA	Expansion Joint Manufacturers Association
ERDA	Energy Research and Development Administration
F	Fahrenheit
FDF	Fluor Daniel Fernald, Inc.
FEMP	Fernald Environmental Management Project
FERMCO	Fernald Environmental Restoration Management Corporation
FFCA	Federal Facilities Compliance Agreement
fpm	feet per minute
FS	Feasibility Study
FSAR	Final Safety Analysis Report
ft^2	square foot (feet)
GCS	Gas Cleaning System
GFCI	Ground Fault Circuit Interrupter
GLC	Ground Level Concentration
gpm	gallons per minute
HEPA	High Efficiency Particulate Air (filter)
hr	hour
HVAC	Heating, Ventilation, and Air Conditioning
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineers Society
ID	Induced Draft
IPC	Inclined Plate Clarifier
ISA	International Society for Measurement and Control
IT	IT Corporation
kg	kilogram
kV	kilovolt
kVA	kilovolt-ampere
kW	kilowatt
lb	pound
LLRW	Low Level Radioactive Wastes
m^2	square meter
MAGLC	Maximum Allowable Ground Level Concentration
MAWC	Maximum Average Waste Concentration
MBMA	Metal Building Manufacturers Association
MCC	Motor Control Center
MEI	Maximally Exposed Individual
MHB	Material Handling Building
µCi/cc	microcurie per cubic centimeter
mrem	millirem
MSS	Manufacturers Standardization Society
NAD	North American Datum
NEC	National Electric Code

000099

1485

NEMA	National Electrical Manufacturers Association
NESHAP	National Emission Standards for Hazardous Air Pollutants
NETA	National Electrical Testing Association
NFC	National Fuel Code
NFPA	National Fire Protection Association
NP	Nonplastic
NPDES	National Pollutant Discharge Elimination System
NPH	Natural Phenomenal Hazard
NTS	Nevada Test Site
OAC	Ohio Administrative Code
OBBC	Ohio Basic Building Code
ODOT	Ohio Department of Transportation
OEPA	Ohio Environmental Protection Agency
OSDF	On Site Disposal Facility
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PC	Performance Category
PCB	Polychlorinated Biphenyl
pcf	pounds per cubic foot
pCi/L	picoCuries per liter
PFD	Process Flow Diagram
PID	Photoionizing Detector
PLC	Programmable Logic Controller
PPE	Personal Protective Equipment
psf	pounds per square foot
psi	pounds per square inch
psig	pounds per square inch gauge
PTI	Permit to Install
PTO	Permit to Operate
PVC	Polyvinyl Chloride
QAP	Quality Assurance Plan
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
RLB	Railcar Loadout Building
ROD	Record of Decision
SAE	Society of Automotive Engineers
SCS	Soil Conservation Service
scfm	standard cubic feet per minute
SDI	Steel Deck Institute
sec	second
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPT	Standard Penetration Test
SSC	Structure, System and Component
STD	Standard (DOE)

000100

1485

SWM	Solid Waste Management
SWPPP	FERMCO Storm Water Pollution Prevention Plan
TBC	To Be Considered
TBP	Tributyl Phosphate
TEMA	Tubular Exchanger Manufacturers Association
TOC	Total Organic Carbon
TSDF	Waste Treatment, Storage or Disposal Facility
UBC	Uniform Building Code
UCRL	University of California Research Laboratory
UL	Underwriters Laboratory
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency (EPA)
V	Volt
WAC	Waste Acceptance Criteria
WESP	Wet Electrostatic Precipitator
WPRAP	Waste Pits Remedial Action Project
WTS	IT Corporation Wastewater Treatment System
yd^3	cubic yard
yr	year

000101

1.0 Introduction

1485

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. 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. An overall map of the waste pits area and OU1 facilities is provided in Figure 1-1. 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. 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. Environmental Protection Agency (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
- Grading the site as necessary to install facilities and equipment

- Installation of portable structures including a changeout facility, breakroom, respirator wash facility, laundry facility, supervisor trailer, and administrative offices
- Installation of an on-site analytical laboratory
- Construction of building and process equipment foundations and floor slabs
- Erection of process facilities and structures associated with material handling, railcar loadout, and drying operations
- Erecting temporary/permanent barriers and fencing, as required
- Erection of equipment storage and maintenance areas
- Construction/improvement as necessary of service roads, haul roads, and personnel walkways
- Installation of additional catch basins and storm drains.

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.

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.

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).
- Develop methods for erosion control consistent with the SWPPP.
- Describe erosion control procedures and measures that will be implemented during site preparation and the construction phase.
- Provide an evaluation of the site's existing and proposed hydrologic features, including topography, soil conditions, and surface water hydrology.
- Evaluate the impact proposed hydrologic alterations will have on erosion control and sedimentation.
- Present proposed hydrologic alterations in connection with site preparation and construction activities and describe how and when they will be implemented.
- Describe how temporary erosion and sediment control measures will minimize erosion and prevent sediment pollution and the potential effectiveness of control measures.
- 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.
- Specify appropriate maintenance and inspection requirements for temporary and permanent features.
- Provide adequate flexibility in the plan to allow for field conditions and as-built modifications that may be required at a later date.

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

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 generation 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. The project will comply with the FEMP Sitewide Dust Control Policy.

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.

- Provide a discussion of pertinent regulatory criteria for storm water management at the facility.

- 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.

- Specify appropriate maintenance and inspection requirements for storm water management structures, facilities, and features.

- Provide adequate flexibility in the plan to allow for field conditions and as-built modifications that may be required at a later date.

- Provide an analysis of historical climatological data relative to the facility.

- Provide calculations or modeling to demonstrate the adequacy of storm water management systems to accommodate rainfall events.

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 -10°F and 0°F 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 85°F, will exceed 88°F 5% of the days, will exceed 89°F 2.5% of the days, and exceed 92°F 1% of the days. The wet bulb temperature will exceed 75°F on 10% of the days annually, 77°F 5% of the days, 78°F 2.5% of the days, and 79°F 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.

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

1485

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 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.

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.

5.0 Dust Control

1485

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 contamination area 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. Crusting agents may be used for dust control in lieu of water spray due to ambient conditions.

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 15 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. The project will comply with the FEMP Sitewide Dust Control Policy.

6.0 Storm Water Management

1485

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 biodenitrification 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)

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

1485

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
- Excessive rainfall
- 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 Excessive Rainfall

In the event of a rainfall event in excess of the 25-year, 24-hour storm (4.8 inches), water would continue to be managed as currently designed. During such an event, 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 an excessive rainfall 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.

6.5.3 Storm Drain Blockage/Backup

1485

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.

148 5

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

TABLES

Table 3-1
Estimated Runoff for Preconstruction Conditions

Drainage Location	Area (square feet)	Curve Number (CN)	Runoff Depth[1] (inches)	Total Runoff[1] (gallons)
Paddys 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: [1] Values are based on a 25-year, 24-hour storm event equal to 4.8 inches.

Table 3-2
Estimated Runoff for Postconstruction Conditions

Drainage Location	Area (square feet)	Weighted Curve Number (CN)	Average Runoff Depth[1] (inches)	Total Runoff[1] (gallons)
Paddys 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[2]	46,350	98	4.56	131,750

Note: [1] Values are based on a 25-year, 24-hour storm event equal to 4.8 inches.
[2] Storm water is directed to the Clearwell during the operational phase.

FIGURES

FIGURES

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: _____

Reference: FDF Storm Water Pollution Prevention Plan.

FIGURE 7-1

DRAFT

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

***

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

***

Revision No.: E
Issue Date: June 5,1998

Record of Issue/Revisions

1485

Date	Rev. No.	Description of Revision
01/09/98	A	Original Issue of Draft
02/13/98	B	Draft Issue for EPA Review
03/27/98	C	Draft Issue for FDF Review
N/A	D	Not Issued
6/5/98	E	Draft Issue for EPA Review

List of Figures

1485

Figure	Title
1-1	Waste Pit Remedial Action Project Work Area Plan
4-1	HWMU 27, Waste Pit No. 4 - Monthly Inspection Record
4-2	HWMU 42, Waste Pit No. 5 - Monthly Inspection Record
4-3	HWMU Surface Impoundment Daily Freeboard Inspection Log
4-4	Waste Pits Area - Shift Inspection Log
4-5	WPRAP Area - Daily/Weekly Inspection Checklist

000128

1485

List of Appendices

Appendix	Title
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.

000129

List of Acronyms/Abbreviations

1485

AASHTO	American Association of State Highway Transportation Officials
ABMA	American Bearing Manufacturers Association
ACGIH	American Conference of Government Industrial Hygienists
ACI	American Concrete Institute
ACM	Asbestos Containing Material
ACOE	United States Army Corps of Engineers
AFBMA	Anti-Friction Bearing Manufacturers Association
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
ALARA	As Low As Reasonably Achievable
ALTER	Accelerated Life Testing and Environmental Research Facility
AMCA	Air Movement and Control Association
ANS	American Nuclear Society
ANSI	American National Standards Institute
APC	Air Pollution Control
API	American Petroleum Institute
ARAR	Applicable or Relevant and Appropriate Requirement.
ARI	American Refrigeration Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society of Nondestructive Testing
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
AWWT	Advanced Wastewater Treatment
BAT	Best Available Technology
BSL	Biodenitrification Surge Lagoon
CAM	Continuous Air Monitor
CBR	California Bearing Ratio
CDF	Commercial Disposal Facility
CEM	Continuous Emissions Monitor
CEMA	Conveyor Equipment Manufacturers Association
CERCLA	Comprehensive, Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Constituent of Concern
CPT	Cone Penetrometer Test
CRSI	Concrete Reinforcing Steel Institute
CRU	CERCLA/RCRA Unit
CWA	Clean Water Act of 1977, as amended
D&D	Decontamination and Dismantlement
DAC	Derived Air Concentration
DCD	Design Criteria Document

000130

1485

DEEP	Dewatering Excavation Evaluation Program
DOE	United States Department of Energy
DOE-NV	United States Department of Energy - Nevada Office of Operations
DOT	United States Department of Transportation
EJMA	Expansion Joint Manufacturers Association
ERDA	Energy Research and Development Administration
F	Fahrenheit
FDF	Fluor Daniel Fernald, Inc.
FEMP	Fernald Environmental Management Project
FERMCO	Fernald Environmental Restoration Management Corporation
FFCA	Federal Facilities Compliance Agreement
fpm	feet per minute
FS	Feasibility Study
FSAR	Final Safety Analysis Report
ft^2	square foot (feet)
GCS	Gas Cleaning System
GFCI	Ground Fault Circuit Interrupter
GLC	Ground Level Concentration
gpm	gallons per minute
HEPA	High Efficiency Particulate Air (filter)
hr	hour
HVAC	Heating, Ventilation, and Air Conditioning
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineers Society
ID	Induced Draft
IPC	Inclined Plate Clarifier
ISA	International Society for Measurement and Control
IT	IT Corporation
kg	kilogram
kV	kilovolt
kVA	kilovolt-ampere
kW	kilowatt
lb	pound
LLRW	Low Level Radioactive Wastes
m^2	square meter
MAGLC	Maximum Allowable Ground Level Concentration
MAWC	Maximum Average Waste Concentration
MBMA	Metal Building Manufacturers Association
MCC	Motor Control Center
MEI	Maximally Exposed Individual
MHB	Material Handling Building
µCi/cc	microcurie per cubic centimeter
mrem	millirem
MSS	Manufacturers Standardization Society
NAD	North American Datum
NEC	National Electric Code

000131

1485

NEMA	National Electrical Manufacturers Association
NESHAP	National Emission Standards for Hazardous Air Pollutants
NETA	National Electrical Testing Association
NFC	National Fuel Code
NFPA	National Fire Protection Association
NP	Nonplastic
NPDES	National Pollutant Discharge Elimination System
NPH	Natural Phenomenal Hazard
NTS	Nevada Test Site
OAC	Ohio Administrative Code
OBBC	Ohio Basic Building Code
ODOT	Ohio Department of Transportation
OEPA	Ohio Environmental Protection Agency
OSDF	On Site Disposal Facility
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PC	Performance Category
PCB	Polychlorinated Biphenyl
pcf	pounds per cubic foot
pCi/L	picoCuries per liter
PFD	Process Flow Diagram
PID	Photoionizing Detector
PLC	Programmable Logic Controller
PPE	Personal Protective Equipment
psf	pounds per square foot
psi	pounds per square inch
psig	pounds per square inch gauge
PTI	Permit to Install
PTO	Permit to Operate
PVC	Polyvinyl Chloride
QAP	Quality Assurance Plan
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
RLB	Railcar Loadout Building
ROD	Record of Decision
SAE	Society of Automotive Engineers
SCS	Soil Conservation Service
scfm	standard cubic feet per minute
SDI	Steel Deck Institute
sec	second
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPT	Standard Penetration Test
SSC	Structure, System and Component
STD	Standard (DOE)

000132

1485

SWM	Solid Waste Management
SWPPP	FERMCO Storm Water Pollution Prevention Plan
TBC	To Be Considered
TBP	Tributyl Phosphate
TEMA	Tubular Exchanger Manufacturers Association
TOC	Total Organic Carbon
TSDF	Waste Treatment, Storage or Disposal Facility
UBC	Uniform Building Code
UCRL	University of California Research Laboratory
UL	Underwriters Laboratory
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency (EPA)
V	Volt
WAC	Waste Acceptance Criteria
WESP	Wet Electrostatic Precipitator
WPRAP	Waste Pits Remedial Action Project
WTS	IT Corporation Wastewater Treatment System
yd^3	cubic yard
yr	year

000133

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 Fluor Daniel Fernald, Inc. (FDF) 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.

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.

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

000136

- 3.0 - Applicable Documents
- 4.0 - Definitions
- 5.2 - Responsibilities (Supervisor)
  Note: The IT Construction Manager will serve as the Inspection Supervisor and forward logs to the FDF Project Director for processing within FDF.
- 5.3 - Responsibilities (Operators)
- 6.0 - General
- 7.0 - Health and Safety Requirements
- 8.0 - Procedure
- 8.1 - Waste Pit No. 5 Operation
- 8.2 - Pit No. 3 Clearwell Operation

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

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. Additional procedures related to the maintenance of the existing facilities may be used by IT to perform these activities.

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. Additional procedures related to the maintenance of the existing facilities may be used by IT to perform these activities.

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. Additional procedures related to the maintenance of the existing facilities may be used by IT to perform these activities.

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.

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. Additional procedures related to the maintenance of the existing facilities may be used by IT to perform these activities.

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 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 once per week and 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. Additional procedures related to the maintenance of the existing facilities may be used by IT to perform these activities.

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.

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. Additional procedures related to the maintenance of the existing facilities may be used by IT to perform these activities.

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.

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.

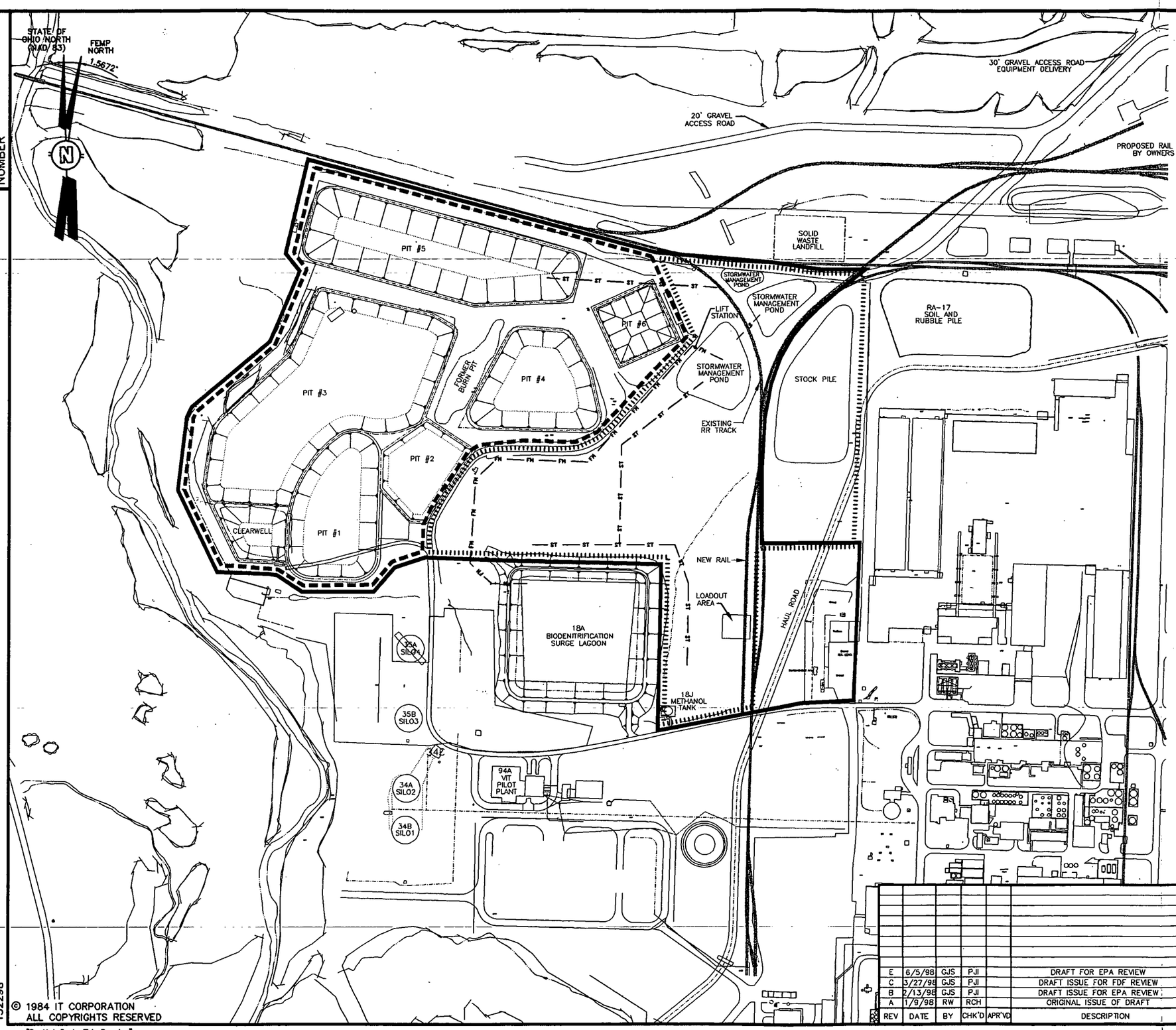
5.0 Government Furnished Property

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 applicable FEMP requirements.

FIGURES

FIGURES

DRAWING NUMBER 773481-B8



LEGEND:

- EXISTING RAIL
- NEW RAIL
- FIRE WATER
- STORM DRAIN
- FORCE MAIN
- PROCESS FACILITY LOCATION
- WASTE PIT AREA
- IT WORK AREA

DRAFT

SCALE

0 300 600 FEET

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GJS	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GJS	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GJS	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	RW	RCH		ORIGINAL ISSUE OF DRAFT

FLUOR DANIEL FERNALD

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

PROJECT NAME
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE
FIGURE 1-1
WORK AREA PLAN

INTERNATIONAL TECHNOLOGY CORPORATION

... *Creating a Safer Tomorrow*

DESIGNED BY	RCH	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	RW	APPROVED BY			E
DATE	12 DEC 97	DWG. SCALE	1"=300'		
IT PROJECT NO	773481	DRAWING NO.	773481-B8		

© 1984 IT CORPORATION
ALL COPYRIGHTS RESERVED

"Do Not Scale This Drawing"

6-2-98
9:49 AM
132298

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: _____

_____

_____

_____

IT-FS-F-3632 (Rev. 5/29/98)

FIGURE 4-1

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: _____

_____

_____

_____

IT-FS-F-3647 (Rev. 5/29/98)

FIGURE 4-2

HWMU SURFACE IMPOUNDMENT DAILY FREEBOARD INSPECTION LOG

Inspector's Signature:	Badge #:	Date:
Supervisor's Signature:	Badge #:	Date:

HWMU No.	HWMU Location	Time	Freeboard Level (Feet/Inches)	Acceptable	Unacceptable	Observations/Corrective Actions to be Completed
42	Waste Pit #5					

Comments: _____

_____

_____

_____

_____

IT-FS-F-4886 (Rev. 5/29/98)

FIGURE 4-3

INTERNATIONAL TECHNOLOGY CORPORATION

WASTE PITS AREA - SHIFT INSPECTION LOG

Date: _____
Day: _____

Time	Waste Pit # 5						Waste Pit #6[2]							Clearwell					
	Freeboard	Decant		Time[1]		Clearwell Composite[1] Sample No.	Freeboard	Operation	Pit #6 Sample No.	Analytical Resusts				Freeboard	Pumping		Time[1]		Clearwell Composite[2] 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																			

	Operator	Badge No.	Supervisor	Badge No.
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.				

[1]Complete only during decant/pumping operations
[2]Complete during periods of adding/removing water

FIGURE 4-4

INTERNATIONAL TECHNOLOGY CORPORATION

WPRAP AREA
DAILY/WEEKLY
INSPECTION CHECKLIST

Inspector Name:		Badge Number:		Date:
Supervisor Name:		Badge Number:		Date:
Area	**Inspection Item**	**Status**		**Comments**
		Acceptable	**Unacceptable**	
COMPLETE WEEKLY				
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:			
COMPLETE DAILY				
Stormwater Management Pond	Area Neat			
	Condition of Liner			
	Condition of Dike			
	Sedimentation			

Comments: _____

FIGURE 4-5

000150

1485

APPENDIX
A

APPENDIX A

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

CONTROL NUMBER: _____
SITE PROCEDURE EW-1015
REVISION NO. 0

1485

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

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 1 of 62	

TABLE OF CONTENTS

SECTION	TITLE	PAGE
1.0	PURPOSE	4
2.0	SCOPE	4
3.0	REFERENCES	4
4.0	RESPONSIBILITIES	4
5.0	GENERAL	6
6.0	PREREQUISITES	6
7.0	PROCEDURE	8
	7.1 PROVIDING INSPECTION DOCUMENTS	8
	7.2 COMPLETING AND ROUTING THE APPLICABLE HAZARDOUS WASTE MANAGEMENT UNIT (HWMU) INSPECTION LOG	8
	7.3 INSPECTING CONTAINER STORAGE AREAS FOR ACTIVE AND INACTIVE HWMUs	11
	7.4 INSPECTING CONTAINERS WITHIN ACTIVE STORAGE CONTAINER AREA HWMUs	12
	7.5 INSPECTING EQUIPMENT	14
	7.6 INSPECTING ACTIVE ABOVEGROUND RCRA STORAGE TANKS	14
	7.7 INSPECTING SURFACE IMPOUNDMENTS	15
	7.8 INSPECTING PROCESS UNITS	16
	7.9 INSPECTING LANDFILLS	16
	7.10 INSPECTING SUMPS	17
	7.11 INSPECTING HAZARDOUS WASTE STORAGE LOCKERS	17
	7.12 INSPECTING SPECIAL PROJECTS UTILIZING TEMPORARY RCRA STORAGE	18
8.0	RECORDS	19
9.0	DRIVERS	19
10.0	DEFINITIONS	19

LIST OF TABLES

TABLE 1 - HWMU IDENTIFICATION 22
TABLE 2 - PALLET DRUM CAPACITY & STACKING LIMITS 24
TABLE 3 - NFPA 30 25

LIST OF ATTACHMENTS

ATTACHMENT A	HWMU 1, FIRE TRAINING FACILITY	26
ATTACHMENT B	HWMU 4, DRUM STORAGE AREA NEAR LOADING DOCK (LAB BLDG)	27
ATTACHMENT C	HWMU 5, DRUM STORAGE AREA SOUTH OF W-26 (LAB BLDG)	28
ATTACHMENT D	HWMU 10, NAR SYSTEM COMPONENTS	29
ATTACHMENT E	HWMU 11, TANK FARM SUMP	31
ATTACHMENT F	HWMU 14, BOX FURNACE	32
ATTACHMENT G	HWMU 15, OXIDATION FURNACE NO. 1	33
ATTACHMENT H	HWMU 17, PLANT 8 EAST DRUM STORAGE PAD	34
ATTACHMENT I	HWMU 18, PLANT 8 WEST DRUM STORAGE PAD	35
ATTACHMENT J	HWMU 19, CP STORAGE WAREHOUSE (BLDG 56)	36
ATTACHMENT K	HWMU 20, PLANT 1 PAD	37
ATTACHMENT L	HWMU 22, ABANDONED SUMP WEST OF PILOT PLANT	38
ATTACHMENT M	HWMU 25, PLANT 1 STORAGE BUILDING (BLDG 67)	39
ATTACHMENT N	HWMU 27, WASTE PIT NO. 4	40
ATTACHMENT O	HWMU 28, TRANE THERMAL LIQUID INCINERATOR	41
ATTACHMENT P	HWMU 29, PLANT 8 WAREHOUSE (BLDG 80)	42
ATTACHMENT Q	HWMU 34, KC-2 WAREHOUSE (BLDG 63)	4
ATTACHMENT R	HWMU 35, PLANT 9 WAREHOUSE (BLDG 81)	4
ATTACHMENT S	HWMU 36, STORAGE PAD NORTH OF PLANT 6	45
ATTACHMENT T	HWMU 37, PLANT 6 WAREHOUSE (BLDG 79)	46
ATTACHMENT U	HWMU 41, SLUDGE DRYING BEDS	47
ATTACHMENT V	HWMU 42, WASTE PIT NO. 5	48
ATTACHMENT W	HWMU 46, UNH TANKS (NFS STORAGE AREA)	49
ATTACHMENT X	HWMU 47, UNH TANKS (NORTH OF PLANT 2)	50
ATTACHMENT Y	HWMU 48, UNH TANKS (SOUTHEAST OF PLANT 2)	51
ATTACHMENT Z	HWMU 49, UNH TANKS (DIGESTION AREA, 2 LOCATIONS)	52
ATTACHMENT AA	HWMU 50, UNH TANKS (RAFFINATE BLDG, 2 LOCATIONS)	53
ATTACHMENT BB	HWMU 54, THORIUM NITRATE TANK (T2)	54
ATTACHMENT CC	HWMU SURFACE IMPOUNDMENT DAILY FREEBOARD INSPECTION LOG	55
ATTACHMENT DD	FEMP RCRA WAREHOUSE, BUILDING OPERATION EQUIPMENT LOG	56
ATTACHMENT EE	HAZARDOUS WASTE STORAGE LOCKER (CLEAN SIDE)	58
ATTACHMENT FF	SPECIAL PROJECT HAZARDOUS TANK/CONTAINER/ TANKER TRUCK INSPECTION	59
ATTACHMENT GG	CONTAINER INSPECTION CATEGORIES	61
ATTACHMENT HH	HAZARDOUS WASTE STORAGE COMPATIBILITY CHART	62

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.

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.

- 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.

- 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.

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.

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:

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.

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 ~~and~~ 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).

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).

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.

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.

      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).

10. Record any discrepancies on the Inspection Log.

11. Report any discrepancies to the Inspection Supervisor.

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.

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.

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.

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).

(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-489O.

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.

(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 accessability 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 ≤ 2 or ≥ 12.5.

10.4 Dent - A crease, depression, or hollow made by a blow or pressure, or a concave distortion.

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.

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.

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

SAMPLE

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

SAMPLE

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-gllon drums on top.**
- **Two pallets of 55-gallon drums with two pallets of 85-gallon drums on top.**

SAMPLE

Table 3 - NFPA 30

EPA RCRA Definitions		NFPA 30 Definitions	
RCRA Ignitable Liquid (D001)	Flash Point <140°F	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

SAMPLE

Indoor Unprotected Storage of Liquids in Containers

		Container Storage	
Class	Max. Pile Height (ft)	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[illegible]
IIIB	15	55,000	55[illegible]

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 26 of 62	

ATTACHMENT A - HWMU 1, FIRE TRAINING FACILITY

Landfill

Inspector's Signature:	Badge #:	Date:
HWMU Facility Owner 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., chain, rope)**			
3	**Area Condition**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3607 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 27 of 62	

ATTACHMENT B - HWMU 4, DRUM STORAGE AREA NEAR LOADING DOCK (LAB BLDG)

Inactive Container Storage

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	**Boundary Markers (e.g., chain, rope)**			
3	**Area Condition**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3609 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 28 of 62	

ATTACHMENT C - HWMU 5, DRUM STORAGE AREA SOUTH OF W-26 (LAB BLDG)

Inactive Container Storage

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	**Boundary Markers (e.g., chain, rope)**			
3	**Area Condition**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3610 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)** *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.*	DOCUMENT NO: EW-1015	
	Effective Date: 05/24/97	Revision No. 0
	Page 29 of 62	

ATTACHMENT D - HWMU 10, NAR SYSTEM COMPONENTS
(Sheet 1 of 2)

Process Unit With Tanks

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	**Tank Signs:** -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency & Prior To Entry Contact			
2	**Surrounding Area & Unit Integrity**			
3	**Condition Of Secondary Containment**			
4	**Safety Equipment**			
5	**Liquor Coolers E3E-210, E3E-211 & F3E-220** **Signs:** -Danger-Authorized Personnel Only -No Smoking Or Open Flame -Emergency & Prior to Entry Contact			
6	**Corrosion Or Release Of Waste**			
7	**Surrounding Area & Unit Integrity**			
8	**Weir Box F3E-207, 213, 215, & 218:** **Signs:** -Danger-Authorized Personnel Only -No Smoking Or Open Flame -Emergency Contact			
9	**Corrosion Or Release Of Waste**			
10	**Surrounding Area & Unit Integrity**			
11	**Spill Response Equipment**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3615 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 30 of 62	

ATTACHMENT D - HWMU 10, NAR SYSTEM COMPONENTS
(Sheet 2 of 2)

Process Unit With Tanks

SAMPLE

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

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
12	**Denitration Pot G3E-207:** **Signs:** -Danger-Authorized Personnel Only -No Smoking or Open Flame -Emergency Contract			
13	**Overfill/Spill Control Equipment**			
14	**Monitoring Equipment In Place (Content Level)**			
15	**Surrounding Area & Unit Integrity**			
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**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3615 (REV. 04/03/97)

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 31 of 62	

ATTACHMENT E - HWMU 11, TANK FARM SUMP

TANK FARM SUMP

Surface Impoundment

SAMPLE

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)**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3616 (REV. 04/03/97)

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 32 of 62	

ATTACHMENT F - HWMU 14, BOX FURNACE

Process Unit

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	**Boundary Markers (e.g., chain, rope)**			
3	**Unit Condition**			
4	**Visible Signs Of Material Release**			
5	**Safety Equipment**			
6	**Spill Response Equipment**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3619 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 33 of 62	

ATTACHMENT G - HWMU 15, OXIDATION FURNACE NO. 1

Process Unit

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	**Boundary Markers (e.g., chain, rope)**			
3	**Unit Condition**			
4	**Visible Signs Of Material Release**			
5	**Safety Equipment**			
6	**Spill Response Equipment**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3620 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 34 of 62	

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

Active Container Storage

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	**Boundary Markers (e.g., chain, rope)**			
3	**Pad Condition**			
4	**Area Condition**			
5	**Safety Equipment**			
6	**Visible Signs Of Material Release**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3622 (REV. 04/03/97)

SAMPLE

ATTACHMENT I - HWMU 18, PLANT 8 WEST DRUM STORAGE PAD

Inactive Container Storage

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	**Boundary Markers (e.g., chain, rope)**			
3	**Pad Condition**			
4	**Area Condition**			
5	**Safety Equipment**			
6	**Visible Signs of Material Release**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3623 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 36 of 62	

ATTACHMENT J - HWMU 19, CP STORAGE WAREHOUSE (BLDG 56)

Active Container Storage

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	**Building Condition**			
3	**Condition of Secondary Containment**			
4	**Emergency & Spill Response Equipment**			
5	**Compatibility Codes**			
6	**Container Management**			
7	**Conditions Of Drums (Evidence Of Leaks Or Spills)**			
8	**Safety Equipment**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3624 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 37 of 62	

ATTACHMENT K - HWMU 20, PLANT 1 PAD

Active Container Storage

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	**Building Condition**			
3	**Pad Condition**			
4	**Condition of Secondary Containment**			
5	**Safety Equipment**			
6	**Emergency & Spill Response Equipment**			
7	**Compatibility Codes**			
8	**Container Management**			
9	**Conditions Of Drums (Evidence Of Leaks Or Spills)**			
10	**Boundary Markers (e.g., chains, rope)**			

Comments: _____

Environmental Compliance:	Date:

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)** *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.*	DOCUMENT NO: EW-1015	
	Effective Date: 05/24/97	Revision No. 0
	Page 38 of 62	

ATTACHMENT L - HWMU 22, ABANDONED SUMP WEST OF PILOT PLANT

Sump

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 -Emergency & Prior to Entry Cont			
2	**Boundary Markers (e.g., chain, rope)**			
3	**Area Condition**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3627 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 39 of 62	

ATTACHMENT M - HWMU 25, PLANT 1 STORAGE BUILDING (BLDG 67)

Inactive Container Storage

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	**Boundary Markers (e.g., chain, rope)**			
3	**Area Condition**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3630 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 40 of 62	

ATTACHMENT N - HWMU 27, WASTE PIT NO. 4

Landfill

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	**Boundary Markers (e.g., chain, 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: _____

Environmental Compliance:	Date:

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 41 of 62	

ATTACHMENT O - HWMU 28, TRANE THERMAL LIQUID INCINERATOR

Process Unit (With Tanks)

Inspector's Signature:	Badge #:	Date:
HWMU Facility Owner 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 Con			
2	**Boundary Markers (e.g., chain, rope)**			
3	**Area Condition (Evidence of Leaks)**			
4	**Bldg. 39A Condition**			
5	**Tank F3E-406: Overfill/Spill Control Equipment**			
6	**Secondary Containment Condition**			
7	**Tank Condition or Release Of Waste**			
8	**Monitoring Equipment**			
9	**Safety Equipment**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3633 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 42 of 62	

ATTACHMENT P - HWMU 29, PLANT 8 WAREHOUSE (BLDG 80)

Active Container Storage

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	**Building Condition**			
3	**Condition of Secondary Containment**			
4	**Safety Equipment**			
5	**Emergency & Spill Response Equipment**			
6	**Compatibility Codes**			
7	**Container Management**			
8	**Conditions of Drums (Evidence of Leaks/Spills)**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3634 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 43 of 62	

ATTACHMENT Q - HWMU 34, KC-2 WAREHOUSE (BLDG 63)

Active Container Storage

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	**Building Condition**			
3	**Condition Of Secondary Containment**			
4	**Emergency & Spill Response Equipment**			
5	**Compatibility Codes**			
6	**Container Management**			
7	**Conditions of Drums (Evidence Of Leaks/Spills)**			
8	**Safety Equipment**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3639 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 44 of 62	

ATTACHMENT R - HWMU 35, PLANT 9 WAREHOUSE (BLDG 81)

Active Container Storage

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	**Building Condition**			
3	**Condition Of Secondary Containment**			
4	**Safety Equipment**			
5	**Emergency & Spill Response Equipment**			
6	**Compatibility Codes**			
7	**Container Management**			
8	**Conditions of Drums (Evidence Of Leaks/Spills)**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3640 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 45 of 62	

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

Inactive Container Storage

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 -Emergency & Prior to Entry Contact			
2	**Boundary Markers (e.g., chain, rope)**			
3	**Area Condition**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3641 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 46 of 62	

ATTACHMENT T - HWMU 37, PLANT 6 WAREHOUSE (BLDG 79)

Active Container Storage

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	**Building Condition**			
3	**Condition Of Secondary Containment**			
4	**Spill Response Equipment**			
5	**Compatibility Codes**			
6	**Container Management**			
7	**Conditions of Drums (Evidence Of Leaks/Spills)**			
8	**Safety Equipment**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3642 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 47 of 62	

ATTACHMENT U - HWMU 41, SLUDGE DRYING BEDS

Surface Impoundment

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 -Emergency & Prior To Entry Contact			
2	**Boundary Markers (e.g., chain, rope)**			
3	**Unit Condition (Dike/Liner)**			
4	**Area Condition**			
5	**Safety Equipment**			
6	**Visual Evidence Of Material Release**			

Comments: _____

Environmental Compliance:	Date:

FS-F-3646 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 48 of 62	

ATTACHMENT V - HWMU 42, WASTE PIT NO. 5

Surface Impoundment

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	**Boundary Markers (e.g., chain,**			
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: _____

Environmental Compliance:	Date:

FS-F-3647 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 49 of 62	

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

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

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: _____

Environmental Compliance:	Date:

FS-F-3651 (REV. 04/03/97)

SAMPLE

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

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

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: _____

Environmental Compliance:	Date:

FS-F-3652 (REV. 04/03/97)

SAMPLE

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: _____

Environmental Compliance:	Date:

FS-F-3653 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 52 of 62	

ATTACHMENT Z - HWMU 49, UNH TANKS (DIGESTION AREA, 2 LOCATIONS)

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

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: _____

Environmental Compliance:	Date:

FS-F-3654 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 53 of 62	

ATTACHMENT AA - HWMU 50, UNH TANKS (RAFFINATE BLDG, 2 LOCATIONS)

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

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: _____

Environmental Compliance:	Date:

FS-F-3655 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)** *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.*	DOCUMENT NO: EW-1015	
	Effective Date: 05/24/97	Revision No. 0
	Page 54 of 62	

ATTACHMENT BB - HWMU 54, THORIUM NITRATE TANK (T2)

RCRA
Storage Tank

SAMPLE

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 -HWMU Facility Owner and Emergency Information			
2	**Boundary Markers (e.g., chain, rope)**			
3	**Condition of Area**			
4	**Secondary Containment Condition**			

Comments: _____

Environmental Compliance:	Date:

FS-F-4885 (REV. 04/03/97)

Title: INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 55 of 62	

ATTACHMENT CC - HWMU SURFACE IMPOUNDMENT DAILY FREEBOARD INSPECTION LOG

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

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

Comments: _____

Environmental Compliance:	Date:

FS-F-4886 (REV. 04/03/97)

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 56 of 62	

ATTACHMENT DD - FEMP RCRA WAREHOUSE, BUILDING ____ OPERATION EQUIPMENT LOG
(Sheet 1 of 2)

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

Item No.	Item 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			
	Current Calibration Sticker Present			
	Platform Guard In Place			
	Printer Operational			
	Check Weights Serviceable (Have Current PM Date)			
4	**Forktruck:** Daily PM Inspection Conducted			
	Form FS-F-2414 Completed			
	Current PM Card Present			
5	**Hoist, Crane:** Daily PM Inspection Conducted			
	Form FMPC-H&S-2423 Completed			
	Current PM Tag Present			
	Equipment Weight Capacity Not Exceeded By Load Weight			

Comments: _____

Environmental Compliance:	Date:

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 57 of 62	

ATTACHMENT DD - FEMP RCRA WAREHOUSE, BUILDING ____ OPERATION EQUIPMENT LOG (cont.)

(Sheet 2 of 2)

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

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
6	**Hand Stacker/Pallet Jack:** Daily PM Inspection Conducted			
	Form FMPC-SAML-2415 Completed			
7	**Current PM Tag Present**			
8	**Drum Lift & UHLD:** Current PM Tag Present			
	Daily PM Inspection Conducted (Damaged/Missing Hardware)			
9	**Flammable Liquid Cabinets:** Positioned On Level Surface			
	Vent Port Capped (Unless Using A Vent Fan Adapter)			
	Cabinet Properly Grounded			
	No Combustible Materials Stored In/Around Cabinets			

Comments: _____

Environmental Compliance:	Date:

FS-F-4887 REV. 04/03/97)

SAMPLE

ATTACHMENT EE - HAZARDOUS WASTE STORAGE LOCKER (CLEAN SIDE)

Storage Locker
Clean Side
(For less than 90-day storage)

SAMPLE

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	**Locker Condition**			
3	**Condition of Secondary Containment**			
4	**Emergency & Spill Response Equipment**			
5	**Compatibility Codes**			
6	**Container Management**			
7	**Condition of Drums (Evidence of Leaks/Spills)**			
8	**Safety Equipment**			

Comments: _____

Environmental Compliance:	Date:

FS-F-4889 (REV. 04/11/97)

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 59 of 62	

ATTACHMENT FF - SPECIAL PROJECT HAZARDOUS TANK/CONTAINER/TANKER TRUCK INSPECTION
(Sheet 1 of 2)

PROJECT NAME:_____

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

Item No.	Item Description	Acceptable	Unacceptable	Observations/Corrective Actions To Be Completed
TEMPORARY TANK STORAGE 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			
DRUM STORAGE AREA 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			

SAMPLE

Title: **INSPECTION OF HAZARDOUS WASTE MANAGEMENT UNITS (HWMUs)**	DOCUMENT NO: EW-1015	
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.	Effective Date: 05/24/97	Revision No. 0
	Page 60 of 62	

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
TANKER TRUCK AND TRAILER List Location(s):				
1	**Labeled with "Hazardous Waste" Marking**			
2	**Corrosion, Holes, Dents, Bulges, or Leaks:**			
3	**Lid/Manway Closed Except When Adding 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:

FS-F-4890 (REV. 04/11/97)

SAMPLE

ATTACHMENT GG - CONTAINER INSPECTION CATEGORIES

TYPE	CHARACTERISTIC	CORRECTIVE ACTION
I	Material flowing from the container with accumulation on the pallet or pad.	1. Notify the Inspector Supervisor. **The Supervisor shall notify the AEDO.** 2. Immediately stop or contain the leak. 3. Supervisor records on the inspection log that the required action has been completed. 4. Complete additional cleanup as necessary.
II	Material on the container exterior only; no material on the pallet or pad.	1. Record the leak on the inspection log. 2. Notify the Inspector Supervisor. **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.**
III	The container exterior is discolored with visible contamination; no material release. Severe corrosion with deep pitting and/or metal flaking. Dents and/or bulges which affect container to the degree of potential release.	1. Record the condition on the inspection log. 2. Notify Inspector Supervisor. **The drum requires disposition as directed by the Supervisor.**

SAMPLE

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 PCB	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.

SAMPLE

APPENDIX
B

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}

TABLE OF CONTENTS

RECORD OF ISSUE/REVISIONS 2

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 APPLICABLE DOCUMENTS 3
- 3.1 Source Documents 3
- 3.2 Reference Documents 3
- 3.3 Information Sources 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 GENERAL 5

7.0 HEALTH AND SAFETY REQUIREMENTS 5

8.0 PROCEDURE 7
- 8.1 Waste Pit No. 5 Operation 7
- 8.2 Pit No. 3 Clearwell Operation 8
- 8.3 North Lime Sludge Lagoon Operation 8

1485

RECORD OF ISSUE/REVISIONS

REV. NO.	EFFECTIVE	DESCRIPTION AND AUTHORITY
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.

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).

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.

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.

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.

1485

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 for Total Uranium and pH.

F. Close sluice gate valve when freeboard level reaches two feet six inches (2 ft. 6 in.).

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 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".

APPENDIX

C

APPENDIX C

S&WP DIVISION PROCEDURE 43-C-412, MANAGEMENT OF WATER COVER FOR WASTE PIT NO. 6

CONTROL NUMBER

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}

TABLE OF CONTENTS

RECORD OF ISSUE/REVISIONS 2

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 APPLICABLE DOCUMENTS 3
- 3.1 Source Documents 3
- 3.2 Reference Documents 3
- 3.3 Information Sources 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 3

6.0 GENERAL 4

7.0 HEALTH AND SAFETY REQUIREMENTS 4

8.0 PROCEDURE 5
- 8.1 Sampling Waste Pit 6 6
- 8.2 Removing Water From Waste Pit 6 7
- 8.3 Adding Water To Waste Pit 6 8
- 8.4 Routine Inspections Of Waste Pit 6 9

LIST OF FIGURES

Figure 1, Diagram Of The Waste Storage Area 11
Figure 2, Diagram Of Waste Pit 6 12

RECORD OF ISSUE/REVISIONS

1485

REV. NO.	EFFECTIVE	DESCRIPTION AND AUTHORITY
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.

1485

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.

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

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.

1485

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.

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.

8.0 **PROCEDURE** (cont.)

> **WARNING**
>
> 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 high pit levels, such as early spring, portable pumps and hoses may be required to transfer materials from Waste Pit 6 to the Surge Lagoon or General Sump.

NOTE 2: Transfers of effluent from one pit to another location will be dictated by a Supervisor or a qualified representative.

8.2 Removing Water From Waste Pit 6

OPERATOR

8.2.1 Obtain the fire hose from the designated storage location.

8.2.2 Connect one (1) end of the fire hose to the gasoline-powered pump at Pit 6.

8.2.3 Stretch the other end of the fire hose to the middle berm valve for Pit 5 (See Figure 2).

8.2.4 Connect the fire hose to the middle berm valve for Pit 5 (See Figure 2).

8.2.5 Examine all apparatus (fire hose, pump, for example) for any indications of wear or potential failure.

NOTE: The suction hose strainer should be a few inches below the surface of the water to assure the transfer of as few solids as possible.

8.2.6 Start the gasoline-powered pump at Pit 6.

8.2.7 Open the middle berm valve at Pit 5 (See Figure 2).

8.2.8 Pump the excess water to the Surge Lagoon.

8.2.9 WHEN the water level in Pit 6 is six (6) inches from the top of the solids,
THEN stop the gasoline-powered pump.

8.2.10 Close the middle berm valve at Pit 5.

8.2.11 Disconnect the fire hose from the gasoline-powered pump.

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

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 nearest available fire hydrant.

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.

8.0 **PROCEDURE** (cont.)

1485

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

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".

8.0 **PROCEDURE** (cont.)

1485

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.

DIAGRAM OF THE WASTE STORAGE AREA

1485

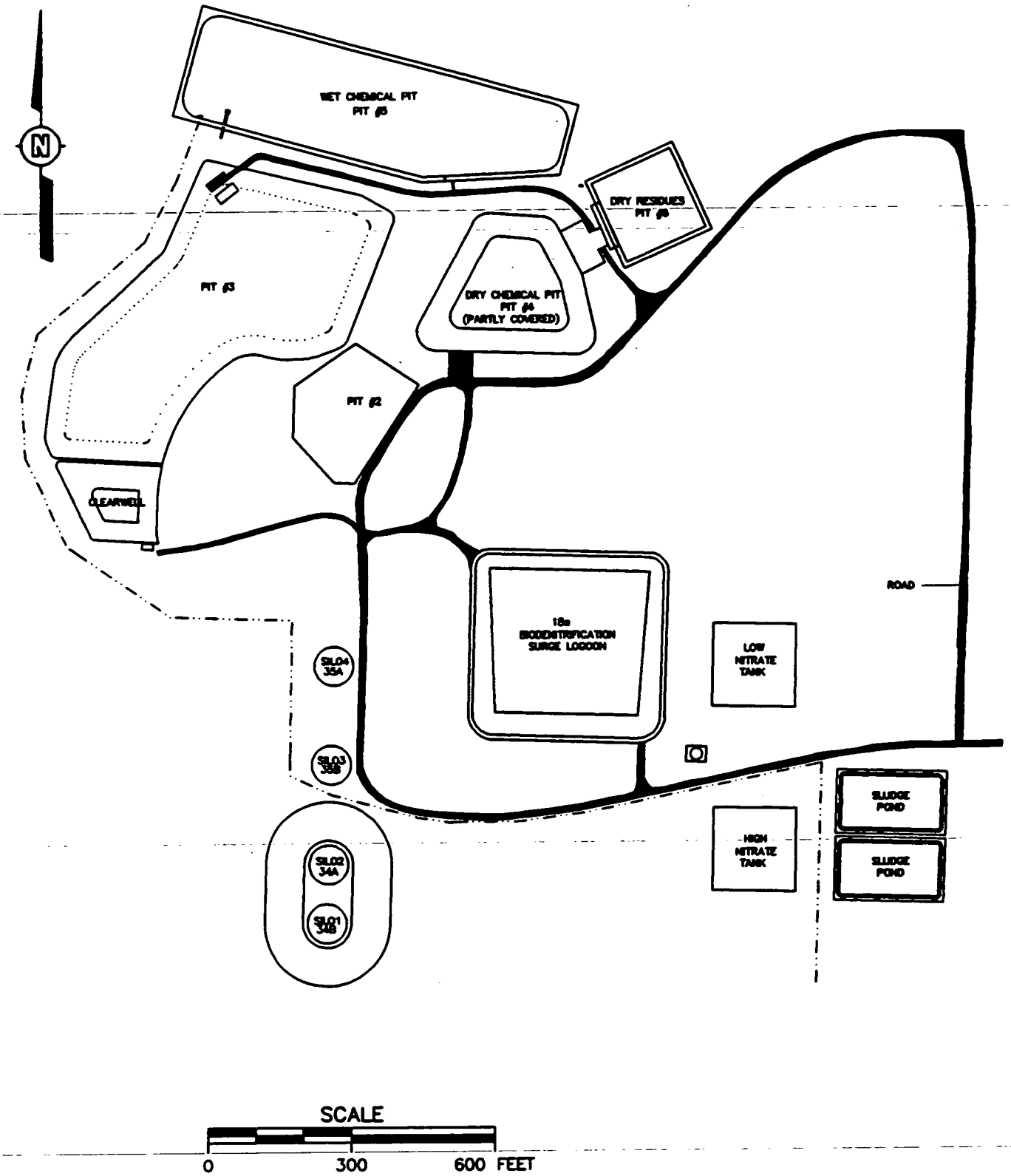


DIAGRAM OF THE WASTE STORAGE AREA
Figure 1

DIAGRAM OF WASTE PIT 6

1485

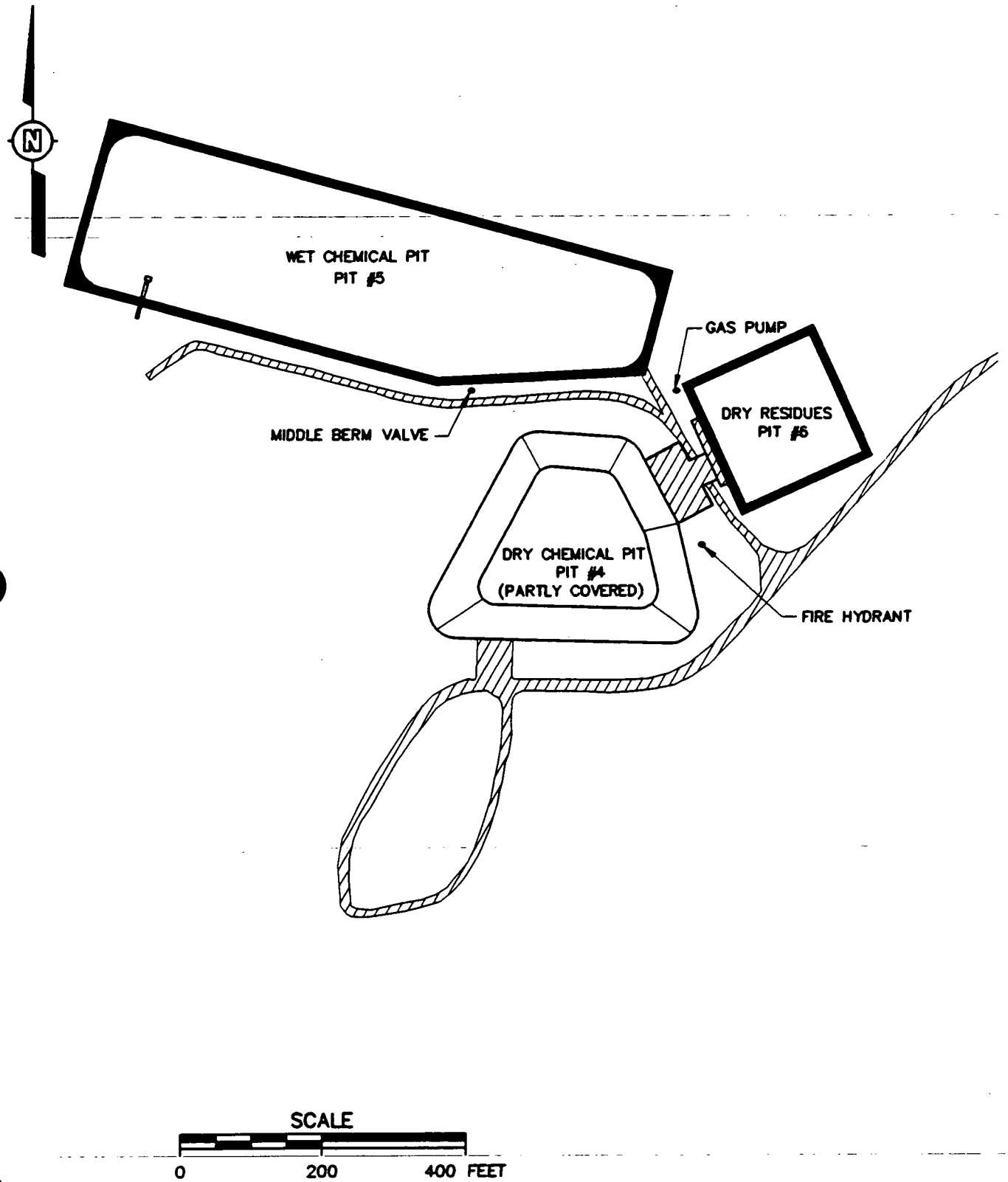


DIAGRAM OF WASTE PIT 6
Figure 2

000236

APPENDIX
D

APPENDIX D

S&WP DIVISION PROCEDURE 43-C-340, K-65 AREA OPERATOR ROUND SHEET, PAGE 12 OF 13

1485

AWWT FIELD OPERATOR ROUND SHEET (cont.)

AWWT Field Operator Round Sheet **Page 12 of 13**

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			

Pre-Operational HASP

Waste Pits Remedial Action Project (WPRAP)

****

PRE-OPERATIONAL HEALTH & SAFETY PLAN REVISION E

****

FLUOR DANIEL FERNALD, INC.
Fernald, Ohio

FDF Subcontract No. 98SC000001

****

Submitted
by
IT Corporation
2790 Mosside Boulevard
Monroeville, PA 15146-2790

IT Project No. 773481

****

June 05, 1998

Waste Pits Remedial Action Project
(WPRAP)

****

PRE-OPERATIONAL HEALTH & SAFETY PLAN
REVISION E

****

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

Approved by:_____ Date: _____
Thomas A. Bauman, Health & Safety Mgr.

Approved by:_____ Date: _____
Cornelius M. Murphy, IT Project Manager

Approved by:_____ Date: _____
Millard Dunham, IT Project Engineer

****

Original Issue Date: June 5, 1998

Record of Issues/Revisions

Date	Rev. No.	Description of Issues/Revisions
01/09/98	A	Issue of Pre-Operational Health & Safety Plan - Draft
02/28/98	B	For EPA Approval
03/04/98	C	For FDF Approval
06/05/98	D	Not Issued
06/05/98	E	For EPA Approval

TABLE OF CONTENTS

Record of Issue/Revisions i
List of Tables v
List of Figures vi
List of Attachments vii
List of Acronyms and Abbreviations viii

1.0 Introduction 1
2.0 Purpose/Objective 1
3.0 Responsibilities 1
3.1 General 1
3.1 IT WPRAP Project Manager 2
3.1 IT WPRAP Radiological Control Manager 2
3.1 IT WPRAP Site Health & Safety Representative 2
3.1 IT WPRAP Health & Safety Representative 3
4.0 Regulations and Guidelines 3
5.0 Health & Safety Requirements Matrix 3
6.0 Description of Work 4
6.1 Pre-Mobilization 4
6.2 Mobilization 4
6.3 Site Preparation 4
6.4 Facility Construction 4
6.5 Programmatic Activities 5
7.0 Workplace Hazard Assessment 5
80 WPRAP Site Hazards And Hazard Control 6
8.1 Radiological Hazards 6
8.2 Radiological Hazard Control 10
8.3 Chemical Hazards 11
8.4 Chemical Hazard Control 14
8.5 Physical Hazards 15
8.5.1 Noise Hazard 15
8.5.2 Noise Hazard Control 15
8.5.3 Heat and Cold Stress Hazards 16
8.5.4 Heat Stress Hazard Control 16
8.5.5 Cold Stress Hazard Control 18
8.5.6 Motorized Vehicle and Mechanized Equipment Hazards 20
8.5.7 Motorized Vehicle and Mechanized Equipment Hazard Control 20
8.5.8 Hot Work Hazards 22
8.5.9 Hot Work Hazard Control 22
8.5.10 Electrical Hazards 23
8.5.11 Electrical Hazard Control 23

8.5.12 Portable Ladder Hazards 24
8.5.13 Portable Ladder Hazard Control 24
8.5.14 Excavation and Trenching Hazards 26
8.5.15 Excavation and Trenching Hazard Control 26
8.5.16 Flammable Material Hazards 28
8.5.17 Flammable Material Hazard Control 28
8.5.18 Compressed Gas Hazards 28
8.5.19 Compressed Gas Hazard Control 28
8.5.20 Concrete and Masonry Construction Hazards 30
8.5.21 Concrete and Masonry Construction Hazard Control 30
8.5.22 Steel Erection Hazards 32
8.5.23 Steel Erection Hazard Control 32
8.5.24 Underground Hazards 32
8.5.25 Underground Hazard Control 33
8.5.26 Confined Space Hazards 33
8.5.27 Confined Space Hazard Control 33
8.5.28 Traffic Hazards 34
8.5.29 Traffic Hazard Control 34
8.5.30 Housekeeping Hazards 35
8.5.31 Housekeeping Hazard Control 35
8.5.32 Hand and Power Tool Hazards 35
8.5.33 Hand and Power Tool Hazard Control 35
8.5.34 Slip, Trip and Fall Hazards 36
8.5.35 Slip, Trip and Fall Hazard Control 36
8.5.36 Overhead Hazards 36
8.5.37 Overhead Hazard Control 37
8.6 Biological Hazards and Hazard Control 37
8.6.1 Wild Animals 37
8.6.2 Insects 37
8.6.3 Poisonous Plants 37
8.7 Adverse Weather 37
9.0 General Site Hazard Control 38
9.1 Engineering Controls 38
9.2 Administrative Controls 38
10.0 Task-Specific Hazards and Controls 41
10.1 Earthwork and Road Construction 41
10.2 Facility Construction 42
10.3 Installation of Utilities 43
10.4 Dryer Performance Testing 43
10.5 Laboratory Performance Testing 44
11.0 Training Requirements 44
11.1 Worker Training 44
11.2 Visitor Training 45

12.0 Emergency Contingency and Response Plan 45
12.1 Reporting 45
12.1.1 Emergency Numbers 45
12.1.2 Site Notification Procedures 45
12.1.3 What to Report 46
12.2 Evacuation Routes 47
12.3 Emergency Equipment 47
12.4 Emergency Response 47
12.5 Medical Emergencies 47
12.6 Fire Emergencies 47
12.7 Explosion Emergencies 48
12.8 Chemical Emergencies 48
12.8.1 Splashes 48
12.8.2 Personal Contamination (Chemical) 48
12.9 Radiological Emergencies 49
12.9.1 Releases 49
12.9.2 Personal Contamination (Radiological) 49
12.10 Weather Limitations/Adverse Conditions 50
12.11 Accident Investigations 50

List of Tables

Table	Title
8-1	Radiological Data - Thorium Oxide
8-2	Radiological Data - Thorium Metal Powder
8-3	Radiological Data - Uranium Compounds
8-4	Radiological Data - Radioactive Sources
8-5	Chemical Data - Laboratory Chemicals
8-6	Hazardous Chemical Surveillance Action Levels

LIST OF FIGURES

Figure	Title
1	FEMP Waste Pit Area WPRAP Rally Point Location FEMP Medical Facility Location
2	Defective Equipment Warning Tag

List of Attachments

Attachment	Title
A	WPRAP Health & Safety Requirements Matrix
B	POHASP Acknowledgment Form

LIST OF ACRONYMS AND ABBREVIATIONS

ACGIH	American Conference of Government Industrial Hygienists
AEDO	Assistant Emergency Duty Officer
ALARA	As Low As Reasonably Achievable
ARARs	Applicable or Relevant and Appropriate Requirements
ASTM	American Society for Testing Materials
BZ	Breathing Zone
°C	Degrees Centigrade
CFR	Code of Federal Regulations
CGI	Combustible Gas Indicator
CO	Carbon Monoxide
CONOPS	Conduct of Operations
D&D	Decontamination & Dismantlement
DOE	U.S. Department of Energy
EMT	Emergency Medical Technician
EPA	U.S. Environmental Protection Agency
ERT	Emergency Response Team
ES&H	Environmental Safety & Health
FDF	Fluor Daniel Fernald, Inc.
FEMP	Fernald Environmental Management Project
FID	Flame Ionization Detector
GA	General Area (air sample)
GCBCTC	Greater Cincinnati Building and Construction Trades Council
GET	General Employee Training
GFCI	Ground Fault Circuit Interrupter
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High Efficiency Particulate Air (filter)
IR	Investigation Report
IT	International Technology Corporation
LEL	Lower Explosive Limit
MSDS	Material Safety Data Sheet
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
OPHASP	Operational Health And Safety Plan
OSHA	Occupational Safety and Health Administration
OU1	Operable Unit 1
PEL	Permissible Exposure Limit
PID	Photo Ionization Detector
POHASP	Pre-Operational Health And Safety Plan
ROD	Record of Decision
Th	Thorium
$Th\ O_2$	Thorium Oxide
TLD	Thermoluminescent Dosimeter
TLV	Threshold Limit Value
TWA	Time Weighted Average
UL	Underwriters Laboratories, Inc.
USCG	United States Coast Guard
WPRAP	Waste Pits Remedial Action Project

WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

PRE-OPERATIONAL HEALTH & SAFETY PLAN (POHASP)

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 Pit 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 Operations 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, blending to achieve a uniform product for loading into railcars or boxes as applicable, and the decontamination and dismantlement (D&D) of the processing facilities. Operational Phase activities are addressed in the Operational Health & Safety Plan.

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 has been prepared to ensure compliance with current regulations and guidelines, FEMP requirements, and FDF Subcontract 98SC000001 requirements. This POHASP is used to ensure the safety of WPRAP personnel during the implementation of on-site pre-operational activities.

3.0 RESPONSIBILITIES

3.1 General

To ensure a safer workplace and in accordance with IT's long-term commitment to safety, all personnel are given the responsibility to work safely and to recognize conditions that compromise safety or that could be potentially adverse to quality. This responsibility includes maintaining individual awareness of conditions that could:

- Jeopardize the health & safety of themselves or others.
- Jeopardize the health & safety of the public.
- Cause damage to facility structures or equipment or place the facilities, equipment, or personnel in imminent danger should unsafe operations continue.
- Violate procedural, regulatory, or FDF Subcontract 98SC000001 requirements, including working to a procedure that is inadequate.

With this affirmative responsibility, each person has the authority to stop work that he/she considers meets one or more of the above conditions. When stop work authority is exercised, the person stopping the work shall notify the IT WPRAP Project Manager and initiate a Stop Work Order in accordance with IT WPRAP Safety Instruction #10 "Stop Work Authority" which is available for review at the on-site IT WPRAP Health & Safety office.

All personnel entering the WPRAP area, as delineated in Figure 1, must be oriented on the contents of this POHASP and must sign an acknowledgment log stating that they have received orientation on this POHASP and understand and will comply with its requirements.

3.2 IT WPRAP Project Manager

The IT WPRAP Project Manager (PM) is responsible for utilizing the resources provided by corporation management to ensure: employees have appropriate and continuing training; safety is implemented in the planning and execution of all work; and safety commitments, regulatory requirements, and site requirements are met.

3.3 IT WPRAP Radiological Control Manager

The IT Radiological Controls Manager (RCM) is responsible for the development of a complete safety program for the WPRAP. The RCM manages the interface with Fluor Daniel Fernald (FDF) Radiological Control personnel to ensure compliance with radiological requirements. The RCM reports directly to the IT National Director of Safety and indirectly to the IT WPRAP Project Manager.

3.4 IT WPRAP Site Safety & Health Representative

The IT WPRAP Site Safety & Health Representative (SSHR) is assigned to the site on a full-time basis and is responsible for development and implementation of the OPSHASP. The IT WPRAP SSHR reviews and, if required, amends the POHASP every six months or sooner if changes in site conditions or events warrant. The IT WPRAP SSHR assures that revisions to the POHASP are reviewed and approved by the IT WPRAP Project Manager, the IT WPRAP Project Engineer and FDF. The IT WPRAP SSHR is responsible for all health and safety documentation. The SSHR reports directly to the IT WPRAP Radiological Control Manager.

3.5 IT WPRAP Health & Safety Representative

IT WPRAP Safety & Health Representatives (SHRs) are assigned to the site on a full-time basis. The IT WPRAP SHR is responsible for implementing the IT WPRAP Health & Safety Program and provides safety guidance to IT WPRAP personnel through participation in daily safety briefings and by performing informal safety audits. The SHR performs the duties associated with an industrial hygiene technician and a fire safety technician. The SHR reports directly to the IT WPRAP Site Safety & Health Representative.

4.0 REGULATIONS AND GUIDELINES

This POHASP and all activities conducted by IT at the WPRAP will be in compliance with the applicable requirements of the following:

This OPSHASP and all activities conducted by IT at the WPRAP will be in compliance with the applicable requirements of the following:

- FDF Subcontract 98SC000001
- 10 CFR 835 - Occupational Radiation Protection
- 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
- DOE/EH-0256T - DOE Radiological Control Manual
- RM-0020 - FDF Radiological Control Requirements Manual
- 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 Corp. - Waste Pits Remedial Action Project Health & Safety Program
- IT Corp. - Environmental Safety & Health Program Implementation Plan
- IT Corp. - Waste Pits Remedial Action Project Preliminary Hazard Assessment
- IT Corp. - Waste Pits Remedial Action Project HAZOPS Analysis
- IT Corp. - Waste Pits Remedial Action Project Description of Operations
- IT Corp. - Waste Pits Remedial Action Construction Safe Work Plan

Note: When multiple requirements cover a safety & health issue, the more protective requirement will be enforced.

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 and 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. These tasks include: (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 WORKPLACE HAZARD ASSESSMENT

This is to certify that, during the period from February 1998 through May 1998, Mr. Thomas A. Bauman (IT Site Safety & Health Representative) performed a workplace hazard assessment of the WPRAP site in accordance with the requirements of 29 CFR 1910.132(d). The workplace hazard assessment was based on visual observation of current site conditions, review of hazard information provided in FDF Subcontract 98SC000001, and review of IT's proposed/planned activities for the IT WPRAP Pre-Operational phase activities described in Section 6.0. As a result of the workplace hazard assessment, IT has identified WPRAP operations activity hazards and has developed the hazard mitigating actions/controls (engineering and administrative) described in Section 8.0 and further detailed in the Health & Safety Requirements Matrix (Attachment A). In addition, the Job Safety Analyses and Activity Hazard Analyses Sections of the IT WPRAP Construction Safe Work Plan (CSWP) address the potential hazards and action taken to protect workers, the public and the environment from those hazards. The CSWP is available for review at the onsite IT WPRAP Health & Safety Office.

A Hazardous Operations analysis (HAZOPS) of the proposed/planned construction of IT WPRAP Operations Systems was conducted during the facility design phase. The purpose of the HAZOPS analysis was to identify potential hazards while they can still be corrected in an early design phase and to provide operating guidelines to ensure safety during process operations. The HAZOPS analysis focussed on all of the WPRAP process systems (e.g., the dryer and air pollution control systems). The HAZOPS analysis was performed in team meetings held February 10-12, 1998 and March 12, 1998 by representatives of IT Engineering. Project Management, Radiological Control, and Health & Safety as well as representatives of FDF Safety Analysis, Industrial Hygiene, Radiation Control, Fire Protection, and Engineering. The findings of this hazard assessment are provided in the IT WPRAP Hazardous Operations Analysis (HAZAOPS during the design. The findings of the HAZOPS analysis are available for review at the onsite IT WPRAP Health & Safety Office.

Concurrent with the HAZOPS analysis and as a precursor to subsequent hazard evaluation

studies, the IT WPRAP Safety staff performed a Preliminary Hazard Assessment (PHA) to identify any major hazards and potential accident scenarios that could result in an undesired consequence. The findings of the PHA are available for review at the onsite IT WPRAP Health & Safety Office.

DOE has acknowledged that Ohio EPA has raised concerns related to environmental protection controls and has referenced the reviewer to individual comment responses on these issues. Protection of the public is principally achieved through mandatory compliance with applicable or relevant and appropriate requirements (ARARs), such as the National Emission Standards for Hazardous Air Pollutants (NESHAPS) and fugitive dust control requirements in the Record of Decision (ROD).

8.0 WPRAP SITE HAZARDS AND HAZARD CONTROL

The potential hazards associated with WPRAP pre-operational activities include possible exposure to radiological hazards, chemical hazards, physical hazards, biological hazards and adverse weather conditions. This section discusses the hazards and hazard controls..

8.1 Radiological Hazards

WPRAP pre-operational activities are being conducted in a Controlled Area where FDF Radiological Control manages access in order to protect individuals from exposure to radiation and/or radioactive material. Individuals who enter only the Controlled Area without entering radiological areas are not expected to receive a total effective dose equivalent of more than 100 millirem in a year.

Contamination above the site background level is not expected to be encountered during the excavation of soils for installation of underground utilities and building footers or when installing haul roads. However, both IT WPRAP management and FDF Radiological Control recognize the potential for encountering radioactive contamination when performing the aforementioned excavation activities and the potential for encountering subsurface contamination when installing haul roads at or near the pit areas Accordingly, if radioactive contamination above background is encountered, FDF Radiological Control will evaluate the hazard and will implement the necessary controls. These controls will be specified on RWPs. All on-site WPRAP personnel are required to comply with these controls.

IT WPRAP preoperational activities are being conducted in areas where the contamination levels are such that neither increased dose to the public nor adverse environmental effects are anticipated from these activities.

The controlling radionuclide for pre-operational activities (e.g. installation of haul roads and underground utilities) is thorium-230. The thorium may be in the form of thorium oxide ($Th\ O_2$) or thorium metal/powder, both of which may be present as contamination in soil and in or on miscellaneous debris. Table 8-1 provides a summary of chemical data for thorium oxide and Table 8-2 provides a summary of chemical data for thorium metal/powder.

Table 8-1
Radiological Data
Thorium Oxide

Chemical	**Thorium Oxide**
Chemical Abstract Service Registry Number	**001314-20-1**
Occupational Exposure Limits: (FDF/DOE) **Air** **Water**	 **3 E-12 microcuries per milliliter (Th-230)** **5 E-13 microcuries per milliliter (Th-232)** **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 3220 ± 50 ° C** **Nonflammable - Does not explode or burn**
OSHA (PEL) ACGIH (TLV)	**OSHA - None ACGIH -None**

Table 8-2
Radiological Data
Thorium Metal/Powder

Chemical	**Thorium Metal/Powder**
Occupational Exposure Limit: (FDF/DOE) **Air** **Water**	 **3 E-12 microcuries per milliliter (Th-230)** **5 E-13 microcuries per milliliter (Th-232)** **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, Greyish-white metal, odorless,** **Melting Point 1500-1750 ° C** **Solid pieces of metal will not burn** **Finely chipped metals or powders can ignite in air**
OSHA (PEL) ACGIH (TLV)	**OSHA 6 E-11 microcuries/milliliter - ACGIH - None**

Uranium is also present at the WPRAP. The uranium may be present as contamination in soils or in or on miscellaneous debris. Table 8-3 provides a summary of chemical data for uranium.

000255

Table 8-3
Radiological Data
Uranium Compounds

Chemical	Uranium Compounds
Chemical ID	G034-86-0
Occupational Exposure Limit: (FDF/DOE) Air Water	 2 E-11 microcuries per milliliter (Uranium-238) 3 E-07 microcuries per milliliter (Uranium-238)
Routes of Exposure	Inhalation and Ingestion
Toxic Properties	Highly Toxic and Radioactive
Target Organs	Lungs, Kidney, Liver
Chemical Properties	Not a significant chemical hazard. May be water reactive. Many uranium compounds are flammable.
OSHA (PEL) ACGIH (TLV)	0.2 mg/m^3 (8 hr TWA - ACGIH) 0.2 mg/m^3 -Insoluble/Soluble (8 hr TWA - OSHA)

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. Only IT WPRAP laboratory personnel, who have been authorized to work with radioactive sources by the IT WPRAP Radiological Controls Manager and who have been trained in the proper storage and handling of radioactive sources, are permitted to use these sources.

FDF Radiological Control uses radioactive sources to ensure that the WPRAP radiation detection instruments are calibrated and functioning properly.

Table 8-4 contains a list of radioactive sources that may be found at the IT WPRAP Analytical Laboratory.

Table 8-4
Radiological Data
Radioactive Sources

RADIONUCLIDE	RADIATION EMITTED	ACTIVITY	PURPOSE
Americium-241 Americium-243	alpha, gamma alpha, gamma	1-5 μCi 1-5 μCi	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	*m*Ci quantities 1-5 μCi 1-5 μCi 1-5 μCi 1-5 μCi	Pre-operational tests and instrument calibration
Radium-226 Tritium Technicium-99 Tin-113	alpha, gamma beta beta gamma	1-5 μCi 1-5 μCi 1-5 μCi 1-5 μCi	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 μCi 1-5 μCi 1-5 μCi 1-5 μCi *m*Ci 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 μCi 1-5 μCi *m*Ci quantities 1-5 μCi	Pre-operational tests and instrument calibration
Strontium/Yitrium-90 Yitrium-88 Cobalt-57 Cobalt-60	beta beta gamma gamma	1-5 μCi 1-5 μCi 1-5 μCi 1-5 μCi	Pre-operational tests and instrument calibration
Carbon-14 Cadmium-109 Cesium-137	beta gamma beta, gamma	1-5 μCi 1-5 μCi 1-5 μCi	Pre-operational tests and instrument calibration
Cerium-139 Mercury-203	gamma beta, gamma	1-5 μCi 1-5 μCi	Pre-operational tests and instrument calibration
Natural Uranium	alpha	*m*Ci quantities	Pre-operational tests and instrument calibration
Depleted Uranium	alpha	*m*Ci quantities	Pre-operational tests and instrument calibration

000257

8.2 Radiological Hazard Controls

IT Corporation and FDF Radiological Engineering will ensure that personnel exposure to radioactive material is maintained ALARA. This will be done by implementing controls which include, but are not limited to, the following:

- 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.

- As determined by FDF Radiological Control, WPRAP personnel will be 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 Control 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. IT WPRAP management uses this data to verify the effectiveness of engineering and administrative controls.

- All personnel are required to perform a whole-body survey when exiting from Controlled Areas, Contamination Areas, High Contamination Areas, and Airborne Radioactivity Areas at the WPRAP. A whole-body survey is not required for those Controlled Areas established for radiation dose only.

- Unescorted access to the WPRAP Controlled Area requires a minimum of Radiological Worker I training.

- All hand carried items, materials, equipment and vehicles must be surveyed by FDF Radiological Control for contamination prior to removal from the WPRAP Controlled Area. A contamination survey is not required for those Controlled Areas established for radiation dose only.

- All on-site IT 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 on-site IT WPRAP personnel are required to comply with FDF Radiological Work Permits or FDF approved IT WPRAP Safe Work Plans if used in place of RWPs. IT will ensure that workers have been briefed on the contents of each RWP or Safe Work Plan under which that worker will perform. Workers will sign the RWP or the Safe Work Plan applicable to the work they are going to perform prior to entering the work area and will sign out upon exiting these areas.

- All personnel are required to wear thermoluminescent dosimeters (TLDs) when on-site. These TLDs are provided and maintained by FDF Dosimetry support.

- When working with radioactive sources, IT WPRAP personnel shall abide by the following basic rules:

  - Use sources only for their intended purposes.
  - Handle sealed sources in accordance with good radiological control practices.
  - Store sources in their proper storage location when not in use.

000258

- Notify the IT WPRAP Radiological Controls Manager immediately if a source is damaged or lost.

- Excavation or work activities that involve digging in or disturbing the soil require evaluation by FDF Radiological Control before and during the work to ensure that additional radiological hazards are not encountered.

- Whenever personnel may be exposed to sub-grade materials for reasons including but not limited to excavation and installation or removal of fence posts, a FDF Radiological Control Technician (RCT) must be present to perform monitoring for radioactive materials. IT will ensure that FDF RCTs are notified a minimum of 24 hours in advance of such activities.

8.3 Chemical Hazards

Chemical hazards may be encountered at the WPRAP during implementation of pre-operational activities. These chemical hazards are associated with the following activities:

- Handling flammable materials that are used to power equipment and process machinery such as fuel oil used to fuel trucks, excavators, and the drier; propane used to fuel forklifts; and natural gas used to fuel the drier.

- Using flammable gases such as acetylene for hot work activities.

- Using oils and lubricants during routine maintenance on machinery and equipment.

- Using paints, thinners, solvents, etc. to apply protective barriers and to preserve materials.

- Using adhesives such as plumbers glue and primers during installation and repair of utility lines.

- Handling hazardous wastes inherent with using hazardous chemicals.

- Using hazardous chemicals in the onsite IT analytical laboratory for training IT laboratory personnel in safe laboratory procedures for sample preparation, sample preservation and for analyzing samples as required for laboratory certification and testing.

Table 7-5 contains a list of chemicals used at the IT WPRAP on-site laboratory during the pre-operational phase of the WPRAP. These chemicals are used to prepare samples and calibrate analytical instruments during the pre-operational performance testing of the laboratory. 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 attain laboratory certification

Table 8-5
Chemical Data
Laboratory Chemicals

Compound	Quantity	Purpose	Compound	Quantity	Purpose
1,2 Dichloroethane	5 mL	Cal.	Hydrogen	2 Cylinders	Instrument Gas
1,1 Dichloroethylene	5 mL	Cal.	Hydrochloric Acid	1 gal.	Gen'l. Lab Use
1,1 Dichloroethane	5 mL	Cal.	Iso-octane	5 mL	Cal.
1,1,1 Trichloroethane	5 mL	Cal.	Isopropyl Alcohol	1 gal.	Gen'l. Lab Use
1,4 Dichlorobenzene	5 mL	Cal.	Lead	250 mL	Cal.
2,4 Dichlorophenylacetic Acid (DCAA)	5 mL	Cal.	Lindane	5 mL	Cal.
2,4 Dinitro toluene	5 mL	Cal.	m-Cresol	5 mL	Cal.
2,4,5 Tichlorophenol	5 mL	Cal.	Mercury	5 mL	Cal.
2,4 D	5 mL	Cal.	Methanol	1 gal.	Gen'l. Lab Use
2,4,5 TP	5 mL	Cal.	Methoxychlor	5 mL	Cal.
2,4,6 Trichlorophenol	5 mL	Cal.	Methyl Ethyl Ketone	5 mL	Cal.
4,4 Dibromooctafluorobiphenyl (DBOB)	5 mL	Cal.	Methylene Chloride	1 gal.	Gen'l. Lab Use
Acetic Acid	1 gal.	Gen'l. Lab Use	N-methyl-N-nitrso-p-toluene sulfonamide	5 mL	Cal.
Acetone	1 gal.	Gen'l. Lab Use/ Cal.	Nickel	250 mL	Cal.
Antimony	250 mL	Cal.	Nitric Acid	1 gal.	Gen'l. Lab Use
Arsenic	250 mL	Cal.	Nitrobenzene	5 mL	Cal.
Barium	250 mL	Cal.	Nitrogen	2 Cylinders	Instrument Gas
Benzene	5 mL	Cal.	o-Cresol	5 mL	Cal.

002600
1485

Compound	Quantity	Purpose	Compound	Quantity	Purpose
Cadmium	250 mL	Cal.	p-Cresol	5 mL	Cal.
Carbon Tetrachloride	5 mL	Cal.	PCB	5 mL	Cal.
Chlordane	5 mL	Cal.	Pentachloronitrobenze	5 mL	Cal.
Chlorobenzene	5 mL	Cal.	Pentrochlorophenol	5 mL	Cal.
Chloroethane	5 mL	Cal.	Potassium hydroxide	1 gal.	Gen'l. Lab Use
Chloroform	5 mL	Cal.	Pyridine	5 mL	C al.
Chromium	250 mL	Cal.	Selenium	250 mL	Cal.
Copper	250 mL	Cal.	Silver	250 mL	Cal.
Decachlorobiphenyl	5 mL	Cal.	Sodium Sulfate	500 grams	Gen'l. Lab Use
Dethyl ether	500 mL	Gen'l. Lab Use	Sodium hydroxide	1 gal.	Gen'l. Lab Use
Endrin	5 mL	Cal.	Sodium Sulfate, anhydrous	1 gal.	Gen'l. Lab Use
Helium	2 Cylinders	Instrument Gas	Sulfuric Acid	1 gal.	Genl. Lab Use
Heptachlor	5 mL	Cal.	Tetrachloro-m-xylene	5 mL	Cal.
Heptachlor Epoxide	5 mL	Cal.	Tetrachloroethane	5 mL	Cal.
Hexachlorobenzene	5 mL	Cal.	Tetrachloroethylene	5 mL	Cal.
Hexachlorbutadiene	5 mL	Cal.	Tolune	5 mL	Cal.
Hexachloroethane	5 mL	Cal.	Toxaphene	5 mL	Cal.
Hexane	1 gal.	Gen'l. Lab Use	Trichloroethylene	5 mL	Cal.

000261

1485

8.4 Chemical Hazard Control

Material Safety Data Sheets (MSDSs) are obtained by IT and submitted to FDF Industrial Hygiene for review and approval prior to allowing hazardous chemicals to be used on-site at the WPRAP. These MSDSs are maintained in the on-site IT WPRAP Safety & Health office and are available for review by all personnel.

During pre-operational phase activities, hazardous chemicals may be encountered at the WPRAP. However, worker exposure to hazardous chemical environments at or above the applicable Occupational Safety and Health Permissible Exposure Levels (OSHA-PELs) and/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 WPRAP Safety & Health Representative ensures the following:

- Personnel and area air monitoring for hazardous substances is conducted in compliance with 29 CFR 1910.120 (h).
- Monitoring for hazardous environments is conducted during excavations, confined space entries, hot work activities, etc. and the results of this monitoring is compared to the appropriate TLV or PEL and the action levels given in Table 7-6.
- Appropriate measures and controls are implemented to assure worker safety.
- A medical surveillance program is conducted in accordance with 10 CFR 1910.120(f).
- All workers who are monitored are informed of the monitoring results.
- Monitoring results are provided to FDF on a weekly basis.

  Note: In accordance with FDF Subcontract 98SC000001, FDF has the right to conduct personal air monitoring on any person associated with the WPRAP.

All air monitoring, conducted by IT, will meet the sampling protocols set forth by OSHA and NIOSH. All instrumentation, used to perform air monitoring, is calibrated according to the manufacturer's specifications. Records of calibration are maintained in the on-site IT WPRAP Health & Safety office and are available for review upon request.

Personnel are informed of the hazards associated with chemicals at the WPRAP through orientation on Material Safety Data Sheets, orientation on this Pre-Operational Health& Safety Plan, labeling of containers, and through training performed in accordance with the IT WPRAP Hazard Communication Program and IT WPRAP Safety Instruction #1 "Working With Hazardous Chemicals." In addition, workers are informed of chemical hazards at pre-job briefings and daily safety briefings.

When required by OSHA, an IT WPRAP Safe Work Plan or a product MSDS, a safety shower/eyewash shall be located within 100 feet of the hazard.

All fuel handling equipment must be Underwriters Laboratory (UL) listed and/or Factory Mutual (FM) approved. Refueling is permitted only in designated areas and only by

personnel who have been trained in the proper use of refueling equipment.

Areas in which at least five gallons or more of a flammable or combustible liquid is transferred from one tank or container to another must be separated from other operations by a minimum of 25 feet or by a barrier having a fire resistance of at least 1 hour.

All combustible or flammable liquid dispensing units must be protected against collision damage.

Table 8-6
Hazardous Chemical Surveillance
Action Levels

Instrument	Action Levels	Level of Respiratory Protection and Corrective Action
Photoionization Detector (PID) or Flame Ionization Detector (FID)	10 ppm unknowns above background (Bkgd) in the breathing zone (BZ) or 50% of the applicable PEL/TLV for known chemicals	Stop work and evacuate work area. Notify the IT WPRAP Safety & Health Representative immediately.
Combustible Gas Indicator (CGI)	< 5% LEL > 5% LEL > 10% LEL	Normal Monitoring Continuous Monitoring Stop work and evacuate work area. Allow to vent. Eliminate ignition sources. Notify the IT WPRAP Safety & Health Representative immediately.
Carbon Monoxide (CO) Analyzer	Background to 25 ppm >25 ppm <35 ppm > 35 ppm	Continue monitoring Investigate source and correct/ improve ventilation Shut down potential sources. Remove personnel and allow CO to dissipate. Notify the IT WPRAP Safety & Health Representative immediately.

8.5 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 the following:

8.5.1 Noise Hazard associated with personnel exposure to noise sources such heavy equipment and generators.

8.5.2 Noise Hazard Control

Large equipment and machinery, such as the equipment and machinery used at the WPRAP during pre-operational phase activities, often create excessive noise. The effects of excessive noise can include:

000263

- Workers being startled, annoyed or distracted.
- Physical damage to the ear, excessive pain, and temporary or permanent hearing loss.
- Communication interference that might increase potential hazards due to the inability to warn of danger and the proper safety precautions to be taken.

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. The IT WPRAP Safety & Health Representative continuously monitors for excessive noise levels using sound level meters and/or personal noise 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. The IT WPRAP Hearing Conservation Program is available for review at the on-site IT WPRAP Health & Safety office.

8.5.3 Heat and Cold Stress Hazards associated with personnel exposure to hot and cold temperatures at the WPRAP.

8.5.4 Heat Stress Hazard Control

Heat stress is a major hazard at the WPRAP, especially for workers wearing protective clothing. The same protective materials that shield the body from chemical or radiological exposure also limit the dissipation of body heat and moisture. Therefore, personal protective clothing can create a hazardous condition. Depending upon the ambient conditions and the work being performed, heat stress can occur very rapidly (within as little as 15 minutes). Heat stress can pose as great a danger to worker health and safety as chemical exposure. IT Corporation has developed a WPRAP Heat Stress Program to ensure that on-site personnel are made aware of the signs and symptoms of heat stress, as described below, and are provided with the appropriate protection against the heat stress hazards. The IT Corporation WPRAP Heat Stress Program is implemented as necessary to control worker exposure to heat stress. The IT WPRAP Heat Stress Program is available for review at the on-site IT WPRAP Health & Safety office.

IT provides IT WPRAP personnel with training on the hazards associated heat stress. This training includes recognizing the following signs and symptoms of heat stress:

If the body's physiological processes fail to maintain a normal body temperature because if excessive heat, a number of physical reactions can occur ranging from mild to fatal. Heat related physiological problems include:

000264

- **Heat rash** - caused by continuous exposure to heat and humidity and aggravated by chafing clothes. Heat rash decreases the body's ability to tolerate heat as well as being a nuisance.

- **Heat cramps** - caused by profuse perspiration with inadequate fluid intake. Heat cramps cause painful muscle spasms and pain in the abdomen and extremities.

- **Heat exhaustion** - caused by increased stress on various organs to meet increased demand to cool the body. Heat exhaustion causes shallow breathing; pale , cool, moist skin; profuse sweating; and dizziness. Heat exhaustion can be promptly alleviated by moving the effected individual(s) to a cool place, having the individual lie down, and having the individual drink plenty of cool fluids.

- **Heat stroke** - is the most severe form of heat stress. Heat stroke symptoms include hot dry skin, no perspiration, nausea, dizziness, confusion, strong rapid pulse and coma. The body must be cooled immediately to prevent severe injury or death. Relief is possible only by emergency measures which quickly reduce body temperature.

IT also provides IT WPRAP personnel with training on heat stress hazard control. This training includes the following:

- Recognizing predisposing factors, danger signs, and symptoms of heat stress.

- Awareness of first-aid procedures for, and the potential health effects of, heat stroke.

- Employee responsibilities in avoiding heat stress.

- Dangers of using drugs, including therapeutic drugs, and alcohol in hot work environments.

- Use of protective clothing and equipment.

- Purpose and extent of environmental and medical surveillance programs and the advantages of worker participation in such programs.

- Before IT WPRAP activities commence which may expose workers to potential heat stress, on-site IT WPRAP personnel will be provided instruction in the correct methods for counting radial (wrist) pulse and measuring tympanic (ear) temperature.

Physiological monitoring will be used to establish work/rest regimens in

accordance with the IT WPRAP Heat Stress Program.

Cool down areas will be established as necessary to ensure worker safety. IT WPRAP personnel will be informed of the locations of these cool down areas and will be instructed in the proper procedures for entering and leaving these areas.

Optional cooling methods, such as cool suits, may be used to protect workers from heat stress. When selecting an optional cooling method, consideration shall focus on worker safety and comfort.

Adequate fluids will be provided to replace body fluids lost through perspiration. Workers will be instructed to force themselves to drink liquids because, under conditions of heat stress, the normal thirst mechanism is not adequate to bring about a voluntary replacement of lost fluids.

During the months of June through August, physically demanding work, where the worker is required to wear protective clothing, will be conducted during off-shifts. At other times during the year, work will be scheduled during the cooler hours of the day as necessary to protect workers from heat stress.

Workers will be acclimated to heat conditions.

Shade or shelter will be provided during rest periods.

When practical, workers will be rotated to various job duties to minimize their exposure to hot environments.

8.5.5 Cold Stress Hazard Control

Cold stress is an important consideration when planning and conducting WPRAP activities. Low ambient temperatures can result in health effects ranging from reduced mental alertness and reduction of ability to make rational decisions to loss of consciousness with the threat of fatal consequences. IT Corporation has developed a WPRAP Cold Stress Program to ensure that on-site personnel are made aware of the signs and symptoms of cold stress, as described below, and are provided with the appropriate protection against the cold stress hazards. The IT Corporation WPRAP Cold Stress Program will be implemented as necessary to control worker exposure to cold stress. The IT WPRAP Cold Stress Program is available for review at the on-site IT WPRAP Health & Safety office.

IT provides IT WPRAP personnel with training on the hazards associated cold stress. This training includes recognizing the following signs and symptoms of cold stress:

If the body's physiological processes fail to maintain a normal body temperature because if excessive cold, a number of physical reactions can occur ranging from mild to fatal. Cold related physiological problems include:

- **Frost nip or incipient frostbite** - is characterized by sudden whitening or blanching of the skin.

- **Superficial frostbite** - gives the skin a waxy appearance and is firm to the touch, but the tissue beneath is resilient. Superficial frostbite can be treated by covering the cheeks with warm hands, placing frostbitten fingers under the arm pit next to the skin, or placing frostbitten feet beneath the clothing and next to the skin of a companion.

- **Deep frostbite** - is characterized by cold, pale and solid tissue. Deep frostbite is an extremely serious injury and affected individuals must seek medical attention.

- **Systemic hypothermia** - is caused by exposure to freezing and rapidly dropping temperatures. Hypothermia symptoms are visually exhibited in five stages:

  - Shivering
  - Apathy, listlessness, sleepiness, and sometimes rapid cooling of the body to less than 95.5 °F
  - Unconsciousness, glassy stare, slow pulse, and slow respiratory rate
  - Freezing of the extremities
  - Death

IT also provides IT WPRAP personnel training on cold stress hazard control. This training includes the following:

- Instruction in the proper use of warm clothing such as avoiding over dressing and using a layering system.

- Instruction in the recognition of impending frostbite. Including the increased potential for frostbite when wearing a Powered Air Purifying Respirator (PAPR) in cold conditions.

- Proper eating and drinking habits.

- First-aid practices.

- Safe work practices.

- Recognition of the signs and symptoms of impending hypothermia or

000267

excessive cooling of the body even when shivering does not occur.

- Limitations on the use of PAPRs in cold environments

IT will arrange work in such a way as to minimize sitting still or standing for long periods.

IT will establish warm up areas as necessary to ensure worker safety. IT WPRAP personnel will be informed of the locations of these warm up areas and will be instructed in the proper procedures for entering and leaving these areas.

Adequate hot fluids will be provided to replace body fluids lost through perspiration. Workers will be discouraged from drinking coffee because of its diuretic and circulatory effects.

When practical, work will be scheduled during the warmer hours of the day.

When practical, workers will be rotated to various job duties to minimize their exposure to cold environments.

8.5.6 Motorized Vehicle and Mechanized Equipment Hazards associated with using motor vehicles and mechanized equipment such as front-end loaders, cranes and excavators.

8.5.7 Motorized Vehicle and Mechanized Equipment Hazard Control

All motorized vehicles and mechanized equipment will be used in the manner for which it was intended. Operators will operate the vehicle or equipment in accordance with the manufacturer's instructions and within the safe operating parameters as defined by the manufacturer. The following guidelines will be adhered to while operating motorized vehicles or mechanized equipment:

- IT will ensure that qualification records are maintained for all IT WPRAP equipment operators for FDF review. Prior to beginning work on-site, each operator will become familiar with the specific equipment to be operated by reviewing the manufacturer's operating manual and by physically operating the equipment. IT will document this familiarization and will retain a copy in the IT WPRAP Document Control files.

- Motorized vehicles and mechanized equipment will be checked at the beginning of each shift to assure that they are in safe working condition. These checks will be documented on inspection logs in accordance with IT WPRAP Safety Instruction #12 "Operation of Motorized Vehicles and Mechanized Equipment", which is available for review at the on-site IT WPRAP Health & Safety office. All defects must be corrected before the motorized vehicle or mechanized equipment is placed into service.

000268

- Motorized vehicles or mechanized equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.

- Personnel working around heavy equipment are required to wear orange safety vests and are required to make eye contact or radio contact with the equipment operator before approaching the equipment.

- Getting on or off of motorized vehicles or mechanized equipment while it is still moving is prohibited.

- Determinations of road conditions and structures will be made in advance to assure that clearances and load capacities are safe for the passage of the motorized vehicle or mechanized equipment.

- Motorized vehicles or mechanized equipment will be shutdown prior to and during fueling operations. However, closed systems, with automatic shut-off which will prevent spillage if connections are broken, may be used to fuel diesel powered equipment left running

- Each motorized vehicle or mechanized equipment must be equipped with a fully charged dry chemical or carbon dioxide fire extinguisher with a minimum rating of 10-B:C.

- All motorized vehicles and mechanized equipment must be equipped with an audible reverse signal alarm.

- Rollover protective structures and seat belts shall be installed on the following types of motorized vehicles and mechanized equipment:

  - Crawlers and rubber tire tractors including bull dozers, winch tractors and mowers.

  - Off-highway self-propelled pneumatic-tire earth movers such as trucks, scrappers and dumps.

  - Motor graders.

  - Water trucks having a tank height less than the cab.

  - Other self propelled construction equipment such as front-end loaders and backhoes.

- Motorized vehicles and mechanized equipment may only be operated in areas designated for that purpose.

000269

8.5.8 Hot Work Hazards associated with personnel exposure to hot work activities such as welding and thermal cutting.

8.5.9 Hot Work Hazard Control

All safety requirements specified in Hot Work Permits, Safe Work Plans, IT WPRAP Safety Instruction #2 "Hot Work Activities" and other documents approved by IT and FDF will be followed. Hot Work Permits and safe Work Plans for hot work are available at the hot work location. IT WPRAP Safety Instruction #2 is available for review at the on-site Health & Safety office.

Hot work activities (welding, thermal cutting, grinding, etc.) will be performed in a manner that provides for the protection of the workers, the public 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 the IT WPRAP Safety & Health Representative. When preparing the Hot Work Permit, the IT Safety & Health Representative assesses the task to adequately address the following potential hazards:
  - Fire from sparks or spatter. Sparks may travel as much as 35 feet and spatter can bounce on the floor or fall through openings.
  - Fire or explosions from reactions with welding/cutting gases.
  - Asphyxiation and/or inhalation of toxic fumes or gases. Welding and cutting gases create hazardous fumes which can displace oxygen resulting in oxygen deficient atmospheres.
  - Eye hazards from heat radiation and flying objects.
  - Electrical shock.
  - Trip and fall hazards
  - Confined space hazard.
  - Airborne radioactive material hazards.
  - Inadequate ventilation.
  - Appropriate respiratory protection.
- Wearing proper fire retardant protective clothing and appropriate eye protection. This includes helpers and fire watch personnel.

000270

- Removing combustible material and equipment from the work area prior to beginning the hot work activity. Combustible material and equipment that cannot be moved, (e.g. building surfaces and openings in ducts, tanks or other confined spaces) within 20 feet or are below the work, must be covered with fire resistant welding blankets.

- Maintaining a fire watch during hot work activities and continuing the fire watch for a minimum of 30 minutes (60 minutes for roof work) following the suspension of the hot work activity.

- The proper use of portable fire extinguishers.

- Maintaining good housekeeping at all times in accordance with IT WPRAP Safety Instruction #5 "Housekeeping", which is available for review at the on-site IT WPRAP Health & Safety office.

- Using shields, such as welding screens, to protect personnel from heat radiation and flying objects.

- Inspecting hot work equipment including; connections, cables, gas hoses, fluxes, rods, coatings and electrodes prior to use.

- Assuring that oxygen-fuel gas systems are equipped with listed and approved back flow valves and pressure relief devices.

- Medical surveillance requirements.

- Safe handling, use and storage of compressed gas cylinders in accordance with IT WPRAP Safety Instruction #13 "Handling, Use and Storage of Compressed Gas Cylinders", which is available for review at the on-site IT WPRAP Health & Safety office.

8.5.10 Electrical Hazards associated with personnel exposure during installation and maintenance of electrical power.

8.5.11 Electrical Hazard Control

IT WPRAP Safety & Health representatives will verify that electrical equipment is suitable for its intended purpose as evidenced by listing, labeling, or certification for that purpose.

All electrical equipment will be operated in accordance with the manufacturer's instructions.

000271

Unless specifically exempted by OSHA, a Ground Fault Circuit Interrupter (GFCI) will be used on each 15 and 20 ampere, 120 volt circuit at the WPRAP. The GFCI will be placed at the source of the electrical services to protect both the

cord and the devices connected.

IT will not use assured grounding programs at the WPRAP.

All electrical appliances will be UL listed 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 electrical connections will be made through a GFCI.

Fire extinguishers consistent with OSHA 1926.150 will be kept in sufficient number to allow on-site personnel to extinguish incipient fires.

Prior to use, electrical equipment will be inspected for proper insulation, damage, defects, and operability.

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 accordance with the FDF Lockout/Tagout Document SSOP-0719 which is available for review in the on-site IT WPRAP Health & Safety office.

All electrical tools will be inspected frequently and defective tools or tools that are questionable will be removed from service and a warning tag applied. An example of the warning tag is provided as Figure 2.

Personnel using equipment, such as ladders and cranes, will maintain a minimum safe distance of 10 feet from energized overhead lines.

Personnel will wear proper protective equipment in accordance with work permits, safe work plans, or other applicable documents.

8.5.12 Portable Ladder Hazards associated with the use of portable ladders to perform WPRAP activities such as installation of electrical power and maintenance of equipment.

8.5.13 Ladder Hazard Control

Ladders will be inspected by a competent person at least once each quarter. An inspection tag stating who performed the inspection and when re-inspection is due must be affixed to the ladder. Do not use any ladder that does not have an inspection tag attached or has a "Do not use" tag attached.

000272

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 portable ladders must be tagged "Do not use" and withdrawn from service until repaired.

Workers will be instructed to inspect ladders for visible damage (e.g. broken or missing rungs or steps and broken or split rails) before each use. Defective ladders must be tagged "Do not use" and removed from service immediately. Workers shall notify the IT WPRAP Safety & Health Representative whenever a ladder is found to be defective.

IT WPRAP workers will be instructed in recognition of hazards associated with ladder use at the WPRAP and procedures to be followed to minimize these hazards. This training shall be provided to IT WPRAP by a competent in the following areas as applicable:

- The nature of fall hazards in the work area.

- The correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used.

- The proper use, placement, and care of ladders.

- The maximum intended load-carrying capacities of ladders used at the WPRAP.

- The OSHA standards found in 29 CFR 1926, Subpart X. Foundations for portable ladders will be on solid, compacted soils or other solid surface.

Ladders will not be placed in front of doors that open toward the ladder unless the door has been blocked, locked or guarded.

000273

Ladders will not be used in the horizontal position as platforms, runways or scaffolds.

The top of a step ladder 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 or wooden ladders will not be used at the WPRAP.

The minimum extension for two-section ladders shall be as follows:

Size of Ladder (Feet)	Overlap (Feet)
Up to and including 36	3
Over 36 up to and including 48	4
Over 48 up to and including 60	5

Portable ladders shall not be used within ten (10) feet of energized overhead lines.

8.5.14 Excavation and Trenching Hazards associated with installing haul roads, underground utilities and building footers.

8.5.15 Excavation and Trenching Hazard Control

Prior to start of excavation, IT will obtain a FDF Excavation/Penetration Permit with complete mapping/drawings of all hidden utilities or other hazards. The IT WPRAP Project Manager and the IT WPRAP Person In Charge, who's name appears on the permit form, shall ensure that any hazard is clearly marked and communicated to the workers involved in the excavation/penetration.

If the excavation/penetration involves closing any roadway, sidewalk, fire exit, electrical system, or interruption of utility, telephone, fire protection system, or alarm system, a FDF Facility Outage Permit shall be obtained by IT prior to the excavation/penetration. The permit shall specify what will be impacted and what controls are required.

IT will perform excavations in compliance with OSHA 29 CFR Subpart P. Field slope stability determinations will be performed by an OSHA Trenching & Excavation Safety Competent Person as necessary within the OSHA requirements.

Unless otherwise determined by the IT WPRAP OSHA Competent Person, all soils at the WPRAP will be assumed to be type "C". Soil within the Fernald Environmental Management Project (FEMP) shall be assumed to be disturbed.

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 which is available for review in the on-site IT WPRAP Health & Safety office.

Prior to excavation, IT will submit to FDF the names and qualifications of Competent Persons who will oversee excavations.

The IT Competent Person shall:

- Determine protection systems for excavations up to 20 feet deep to protect employees from cave-ins. An IT registered professional engineer shall make all determinations at depths greater than 20 feet.
- Complete the initial inspection.
- Perform soil classification as defined in 29 CFR 1926, Subpart P, Appendix A. A minimum of one visual and one manual classification test is required to determine soil type. The manual test shall be done with a pentrometer or shearvane.
- Inspect the excavation and protection systems using written documentation at the following frequencies:
  - Daily, prior to work beginning and as conditions change.
  - After every measurable rain or other hazard-increasing occurrence (e.g. freezing and thawing conditions).
  - After any other event that may affect the stability of the excavation or protective system.

All inspections shall be documented. At the end of the project, all inspection forms shall be submitted to FDF.

Unattended excavations shall be physically barricaded.

8.5.16 Flammable Material Hazards associated with the use of flammable materials such as the diesel fuel used for heavy equipment, using paints, solvents and thinners.

8.5.17 Flammable Material Hazard Control

Sources of ignition will be excluded from areas where flammable materials are present.

000275

At the WPRAP, fuels will be used stored in accordance with the National Fire

Protection Agency (NFPA) Code 30 "The Flammable & Combustible Liquids" code and with OSHA 29 CFR 1910.106 "Flammable and Combustible Liquids regulations. Storage locations 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 to extinguish fires. Personnel will be trained in the proper use of these fire extinguishers.

8.5.18 Compressed Gas Hazards associated with installing an underground natural gas line to fuel the indirect dryer system and operating the dryer during performance testing, using propane gas cylinders to power fork trucks, and using oxygen and acetylene for hot work activities.

8.5.19 Compressed Gases and System Hazard Control

Handling, storage and utilization of compressed gases in cylinders will be done in accordance with OSHA Standard 29 CFR 1910, Subpart H - Hazardous Materials, OSHA Standard 29 CFR 1926, Subpart J - Welding & Cutting and Compressed Gas Association Pamphlets P-1(handling), C-6 & C-8 (inspection), and S-1.1 & S-1.2 (safety relief devices). These documents are available for review in the on-site IT WPRAP Health & Safety office.

Prior to handling or using compressed gases, the handler or user must review the appropriate Material Safety Data Sheet (MSDS) to ensure that the handler or user has knowledge of the hazardous properties associated with the compressed gas in order to maintain a safe, controlled operation.

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

000276

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.

Precautions 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.

Oxygen cylinders shall be stored a minimum distance of 20 feet from any other fuel gas cylinders or combustible materials (especially oil and 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.

Compressed gas cylinders shall be secured and stored in an upright position.

All empty cylinders must be labeled "Empty".

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.

000277

8.5.20 Concrete and Masonry Construction Hazards associated with the installation of footers and other concrete structures for the WPRAP processing facilities.

8.5.21 Concrete and Masonry Construction Hazard Control

Concrete and masonry construction will be performed in compliance with OSHA Standard 29 CFR 1926, Subpart Q - Concrete and Masonry Construction, which is available for review in the on-site IT WPRAP Health & Safety office.

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 is 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 form work.

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:

000278

- 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 not be scaffolded.

- 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 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.

- Jacking equipment will be inspected per FDF procedure as specified in Sections E and H of the Subcontract 98SC000001.

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.
- If you notice shifting or movement of form work, notify personnel working in the area to immediately leave the area. Notify IT WPRAP Supervision and the IT WPRAP Safety & Health Representative immediately.

8.5.22 Steel Erection Hazards such as fall hazards, overhead hazards and lifting and rigging hazards associated with the construction of WPRAP processing facilities.

8.5.23 Steel Erection Hazard Control

Only qualified steel erectors, riggers, and crane operators will be used to perform steel erection activities at the WPRAP.

Riggers and operators shall meet the qualifications specified in FDF Subcontract 98SC000001.

Steel shall be erected in accordance with OSHA Steel Erection Standards (29 CFR 1926, Subpart R).

All lifts shall be performed in accordance with approved lift plans.

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.

Pre-assemble sections of frames or shed-type buildings on the ground and then lift by crane into position. Use tag lines to control swing of materials being lifted.

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.

8.5.24 Underground Hazards such as excavation in areas where there is or may be existing underground utilities.

8.5.25 Underground Hazard Control

Prior to start of excavation, IT will obtain a FDF Excavation/Penetration Permit with complete mapping/drawings of all hidden utilities or other hazards. The IT WPRAP Project Manager and the IT WPRAP Person In Charge, who's name appears on the permit form, shall ensure that any hazard is clearly marked and communicated to the workers involved in the excavation/penetration.

IT will take the following steps to ensure that all underground utilities are located and neutralized prior to beginning excavation for facility construction:

- Contact the FDF Facilities Engineer
- Conduct a magnetometer survey.
- Stop excavation or construction if unexpected materials are found.

All open manholes or other entrances to below ground areas shall be marked with paint, or other marking identification.

8.5.26 Confined Space Hazards such as those created during the construction of trenches, greater than 4 feet in depth, for installing underground utilities, excavations for installing building foundations and accessing the internal components of the indirect dryer system.

8.5.27 Confined Space Hazard Control

The IT WPRAP Safety & Health Representative will evaluate the workplace to determine if spaces are permit-required. If permit-required spaces exist, personnel will be informed as to the existence, location, and danger posed by the spaces. Warning signs will be posted as follows:

DANGER - PERMIT REQUIRED CONFINED SPACE
AUTHORIZED ENTRANTS ONLY

All confined space entry shall be performed in accordance with the IT Corporation WPRAP Confined Space Entry Program which is available for review at the on-site Health & Safety office..

All workers who enter confined spaces will receive training on confined 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.

000281

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 IT WPRAP Safety & Health 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.

8.5.28 Traffic Hazards associated with personnel exposure to heavy equipment operations such as during the installation of the haul roads.

8.5.29 Traffic Hazard Control

Vehicle and/or equipment operators will adhere to Project and Site 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.

000282

Ground personnel should always make eye contact or radio contact and wait for a

signal from the operator 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.

8.5.30 Housekeeping Hazards associated with poor housekeeping practices such as not maintaining means of personnel access ways free of obstructions and failure to maintain the work area free of such items as scrap lumber with protruding nails and combustible scrap and debris.

8.5.31 Housekeeping Hazard Control

All IT WPRAP personnel, including subcontracted personnel, visitors and FDF personnel, are required to maintain high housekeeping standards at the WPRAP at all times. High housekeeping standards include but are not limited to the following:

- Maintain clean sanitary facilities.
- Daily jobsite cleanup.
- Remove all nails from scrap lumber.
- Keeping stairways, passageways, access ways free of materials, supplies, and obstructions at all times.

8.5.32 Hand and Power Tool Hazards such as cuts and abrasions from unguarded points of operation, eye hazard from flying debris, ergonomic hazard from poor design or improper use, and electrical shock from defective components.

8.5.33 Hand and Power Tool Hazard Control

Prior to placing hand and power tools into service at the WPRAP, the IT WPRAP Safety & Health Representative will perform an inspection to assure that the tool is not defective and is in safe working condition in accordance with the manufacturer's specifications.

All hand and power tools shall be maintained in a safe condition.

When power operated tools are designed to accommodate guards, they shall be quipped with such guards. Manufacturer installed guards shall not be removed while working with the tool.

Rotating or moving parts of equipment, that are exposed to contact by workers or otherwise create a hazard, shall be guarded.

000283

Workers shall inspect tools prior to use. Defective tools shall be removed from service and shall not be reused until repaired and confirmed to be in safe working condition via inspection by the IT WPRAP Safety & Health Representative. Some examples of defective tools are as follows:

- Wrenches with sprung jaws that will permit slippage.
- Mushroomed heads on impact tools such as hammers and chisels.
- Wooden handles that are loose, cracked or splintered.
- Electrical cords that are frayed, cut, or have the ground pin removed.
- Tools with guards removed.
- Hydraulic tools with leaking cylinders.

Workers shall not wear loose fitting clothing, neckties, or jewelry when working with power tools.

Power tools shall be stored at assigned locations. These locations must be selected, such that, tools cannot be inadvertently activated and cannot fall on unsuspecting workers.

When not in use, power tools shall be disconnected from the power source.

Electric cords shall be kept off of the floor and away from possible snagging hazards.

8.5.34 Slip, trip and fall hazards such as those that are inherent with uneven terrain, adverse weather conditions and poor housekeeping techniques.

8.5.35 Slip, trip and fall hazard control

The floor or ground surface of work areas shall be kept free of ice, snow, debris and, so far as possible, in a dry condition.

Aisles and passageways shall be kept free of debris.

Electric cords shall be kept off of the floor to prevent creating a tripping hazard.

Openings to trenches or other excavations shall be barricaded and posted with signs to alert personnel to the fall hazard.

8.5.36 Overhead hazards associated with steel erection activities such as lifting loads overhead and operating cranes in proximity to electrical lines.

8.5.37 Overhead hazard control

Personnel using equipment, such as ladders and cranes, will maintain a minimum safe distance of 10 feet from energized overhead lines.

Scaffolds will not be erected within 10 feet of power lines.

The operating radius of cranes shall be roped off and signs posted to alert personnel to the overhead hazard.

Personnel who are working at elevations shall be instructed to secure tools and equipment to prevent them from falling to lower levels.

Personnel shall be instructed to avoid walking in areas where overhead work is performed.

8.6 Biological

IT Corporation uses the following controls to protect on-site personnel from the biological hazards associated with WPRAP pre-operational activities:

8.6.1 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.

8.6.2 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.

8.6.3 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.

8.7 Adverse Weather

In the event of adverse weather conditions, the IT WPRAP Safety & Health Representative and FDF will determine if operations may continue without the potential for injury to personnel.

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.

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.

9.0 GENERAL SITE HAZARD CONTROL

At the WPRAP, IT 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. Although the ALARA concept was originally developed as the preferred methodology for controlling radiological exposure, ALARA principles can and should be applied to the control of industrial/construction hazards as well. Accordingly, the ALARA concept will be implemented as follows:

9.1 Engineering Controls

To the extent feasible engineering controls are used to prevent or otherwise control personnel exposure to the radiological and industrial hazards associated with WPRAP pre-operational activities. These engineering controls include, but are not limited to, the following:

- Installing flame scanners on the dryer. These scanners monitor the flame and automatically shut off the natural gas supply should an abnormality be detected.
- Use of high and low pressure gauges to alert personnel should undesired pressures occur.
- Use of hooded enclosures with High Efficiency Particulate Air (HEPA) filtration and/or a scrubbing system in the laboratory to protect personnel and the environment from radiological and chemical hazards.
- Use of HEPA filtration and/or scrubbing systems for cleaning gaseous and liquid effluents prior to release to the environment (gaseous)or to FDF (liquids).
- Use of catalytic converters on equipment to reduce carbon monoxide emissions.

9.2 Administrative Controls

The following administrative controls are used to control the radiological and industrial hazards associated with WPRAP pre-operational activities:

000286

- A copy of this POHASP will be maintained at the job site at all times. Personnel requiring access to the WPRAP Construction Zone as defined by orange fencing and signs, shall be oriented on the contents of this POHASP and shall acknowledge orientation by signing the Acknowledgment Form (Attachment B) prior to access. In addition to orientation on the POHASP, visitors will be orientated on current site conditions and activities.

- Personnel requiring access to the WPRAP shall be protected from the hazards by complying with the following requirements:

  - All personnel are required to wear a thermoluminescent dosimeter.

  - FDF will generate a Radiological Work Permit (RWP) for each IT Safe Work Plan and for each Work Permit. Work may not begin until the appropriate RWP is in place.

  - All personnel are required to wear head protection (hard hat) when inside the Construction Zone as defined by the orange fencing and signs. Hard hats must meet the requirements of American National Standards Institute (ANSI) Z89.1- "Safety Requirements for Industrial Head Protection". IT will provide hard hats for IT personnel and visitors. FDF will provide hard hats for FDF WPRAP oversight personnel and for Fernald Atomic Trades & Labor Council (FAT&LC) personnel.

  - All personnel are required to wear eye protection (safety glasses) when inside the Construction Zone. Eye protection must comply with ANSI Z87.1- "Practice for Occupational and educational Eye and Face Protection". IT will provide safety glasses for IT personnel and visitors. FDF will provide safety glasses for FDF WPRAP oversight personnel and for FAT&LC personnel.

    Note: If full-face respiratory protection is required to perform a pre-operational activity, the respirator shall serve as the required eye protection.

  - All personnel shall wear personal protective equipment (PPE) as specified in Radiological Work Permits, Safe Work Plans, or other documents that are used to perform pre-operational activities.

  - All personnel shall wear ANSI Z41.1- "American National Standard for Mens Safety-Toe Footwear" boots when working in all areas associated with the WPRAP. IT will provide safety- toe boots for IT personnel and visitors. FDF will provide safety-toe boots for FDF WPRAP oversight personnel and for FAT&LC personnel.

    Where chemical resistant boots are required, they will be ANSI Z41.1 listed or worn over ANSI Z41.1 listed boots.

000287

- IT uses FDF approved Safe Work Plans, FDF Radiological Work Permits, IT WPRAP Hot Work Permits, and other documentation to ensure that work is performed safely. In addition, IT and FDF conduct oversight audits and inspections to ensure compliance with regulatory, site-specific, and FDF Subcontract 98SC000001 requirements.

- Prior to the start of work each day, personnel receive safety briefings which address the scope of work to be performed and the radiological hazards and industrial/construction hazards associated with the work.. IT WPRAP personnel, including FDF Radiological Control personnel are invited to participate in safety briefings. All personnel attending the safety briefings are encouraged to play an active role by discussing their concerns/questions regarding their safety and by providing suggestions on how to improve safety at the WPRAP. In addition, IT WPRAP personnel receive formal safety training weekly. This formal safety training covers specific safety topics such as hazard communication, fall protection, and hearing conservation.

- 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 program 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 or gum, dipping tobacco and applying makeup are permitted only in areas designated by FDF Radiological Engineering. Not withstanding the following medical exceptions, at no time are these activities permitted within Contaminated Areas, High Contamination Areas or Airborne Radioactivity Areas:

  Medical exceptions:

  1. Non-prescription medicine may not be taken into Controlled Areas with the single exception of Glucose Tablets which may be taken by diabetics. Candy is not recognized by FDF as a medicine and shall not be taken into a Controlled Area.

  2. Prescription medicine will only be recognized by FDF after the worker, to whom the medicine is prescribed, registers the medicine with the FDF Medical Department. Workers who need Glucose Tablets must also register with the FDF Medical Department.

000288

3. Workers who must take prescription medicine on a schedule should first try to coordinate their schedule so that they may take their medicine on the administrative (a.k.a, "clean" or "uncontrolled") side of the WPRAP. If this is not possible, prescription medicine shall only be taken in a designated drinking water area or designated break room.

4. In the event of an emergency, when prescription medication is needed right away, a worker may take the medicine on the spot, regardless of the area in which he or she is standing. The concern for human life comes before that of a possible contamination. It is stressed, however, that if medicine must be taken under these conditions, that the worker should contact a Radiological Control Technician (RCT) to determine what action, if any, will be required of the worker in regards to dosimetry (e.g., leaving a urine sample). There will be no administrative consequences for workers that become contaminated during emergency self-administration of registered prescription medicine or Glucose Tablets. The calling of a RCT is a safety precaution and is in the best interest of the worker.

- IT WPRAP personnel receiving medical treatment with radio pharmaceuticals will be restricted from entering Controlled Areas until such time as the radiopharmaceutical has cleared sufficiently from his or her system to the point where frisking through a Personal Contamination Monitor (PCM) at the control point does not trigger the alarms. IT WPRAP personnel who have received treatment with radiopharmaceuticals must report to FDF Medical immediately upon returning to work.

- IT WPRAP personnel, who are pregnant, may "Declare Pregnancy" in accordance with 10 CFR 835 - "Occupational Radiation Protection". The pregnant person should report to FDF Medical, where she will be informed of the risks related to her pregnancy as a result of working at the WPRAP. If declared, FDF will ensure that the person's thermoluminescent dosimeter is read monthly as apposed to quarterly. The FDF administration control limit is 50 millirem/month or 400 millirem/gestation period.

10.0 TASK-SPECIFIC HAZARDS AND CONTROLS

Five major tasks have been identified for the pre-operational phase of the WPRAP. 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 requirements for controlling the hazards.

10.1 Earthwork and Road Construction

- Radiological Hazards (See Section 7.1 and Section 7.2)

- Chemical Hazards (See Section 7.3 and Section 7.4)

000289

- Physical Hazards (Section 7.5)
  - Noise (Section 7.5.1-Section 7.5.2)
  - Excavation and Trenching (Section 7.5.14-Section 7.5.15)
  - Heavy Equipment (Section 7.5.6-Section 7.5.7)
  - Confined Spaces (Section 7.5.26-Section 7.5.27)
  - Flammable Materials (Section 7.5.16-Section 7.5.17)
  - Underground Hazards (Section 7.5.24-Section 7.5.25)
  - Overhead Hazards (Section 7.5.36-Section 7.5.37)
  - Heat Stress/Cold Stress (Section 7.5.3-Section 7.5.4-Section 7.5.5)
  - Traffic (Section 7.5.28-Section 7.5.29)
- Adverse Weather Conditions (Section 7.6)
- Biological Hazards (See Section 7.6-Section 7.6.1-Section 7.6.2 and Section 7.6.3)

10.2 Facility Construction

- Radiological Hazards (See Section 7.1 and Section 7.2)
- Chemical Hazards (See Section 7.3 and Section 7.4)
- Physical Hazards (Section 7.5)
  - Noise (Section 7.5.1-Section 7.5.2)
  - Excavation and Trenching (Section 7.5.14-Section 7.5.15)
  - Heavy Equipment (Section 7.5.6-Section 7.5.7)
  - Confined Spaces (Section 7.5.26-Section 7.5.27)
  - Flammable Materials (Section 7.5.16-Section 7.5.17)
  - Underground Hazards (Section 7.5.24-Section 7.5.25)
  - Overhead Hazards (Section 7.5.36-Section 7.5.37)
  - Heat Stress/Cold Stress (Section 7.5.3-Section 7.5.4-Section 7.5.5)
  - Traffic (Section 7.5.28-Section 7.5.29)
  - Concrete Forming (Section 7.5.20-Section 7.5.21)
  - Electrical Equipment (Section 7.5.10-Section 7.5.11)
  - Hot Work (Section 7.5.8-Section 7.5.9)
  - Portable Ladders (Section 7.5.12-Section 7.5.13)
  - Compressed Gas (Section 7.5.18-Section 7.5.19)
  - Steel Erection (Section 7.5.31-Section 7.5.32)
- Adverse Weather Conditions (Section 7.6)
- Biological Hazards (See Section 7.6-Section 7.6.1-Section 7.6.2 and Section 7.6.3)

10.3 Installation of Utilities

- Radiological Hazards (See Section 7.1 and Section 7.2)
- Chemical Hazards (See Section 7.3 and Section 7.4)
- Physical Hazards (Section 7.5)
  - Noise (Section 7.5.1-Section 7.5.2)
  - Excavation and Trenching (Section 7.5.14-Section 7.5.15)
  - Heavy Equipment (Section 7.5.6-Section 7.5.7)
  - Confined Spaces (Section 7.5.26-Section 7.5.27)
  - Flammable Materials (Section 7.5.16-Section 7.5.17)
  - Underground Hazards (Section 7.5.24-Section 7.5.25)
  - Overhead Hazards (Section 7.5.36-Section 7.5.37)
  - Heat Stress/Cold Stress (Section 7.5.3-Section 7.5.4-Section 7.5.5)
  - Traffic (Section 7.5.28-Section 7.5.29)
  - Electrical Equipment (Section 7.5.10-Section 7.5.11)
  - Hot Work (Section 7.5.8-Section 7.5.9)
  - Portable Ladders (Section 7.5.12-Section 7.5.13)
  - Compressed Gas (Section 7.5.18-Section 7.5.19)
- Adverse Weather Conditions (Section 7.6)
- Biological Hazards (See Section 7.6-Section 7.6.1-Section 7.6.2 and Section 7.6.3)

10.4 Drier Performance Testing

- Radiological Hazards (See Section 7.1 and Section 7.2)
- Chemical Hazards (See Section 7.3 and Section 7.4)
- Physical Hazards (Section 7.5)
  - Noise (Section 7.5.1-Section 7.5.2)
  - Heavy Equipment (Section 7.5.6-Section 7.5.7)
  - Confined Spaces (Section 7.5.26-Section 7.5.27)
  - Flammable Materials (Section 7.5.16-Section 7.5.17)
  - Overhead Hazards (Section 7.5.36-Section 7.5.37)
  - Traffic (Section 7.5.28-Section 7.5.29)
  - Electrical Equipment (Section 7.5.10-Section 7.5.11)
  - Hot Work (Section 7.5.8-Section 7.5.9)
  - Portable Ladders (Section 7.5.12-Section 7.5.13)
  - Compressed Gas (Section 7.5.18-Section 7.5.19)
  - Heat Stress/Cold Stress (Section 7.5.3-Section 7.5.4-Section 7.5.5)

000291

- Adverse Weather Conditions (Section 7.6)

- Biological Hazards (See Section 7.6-Section 7.6.1-Section 7.6.2 and Section 7.6.3)

10.5 Laboratory Performance Testing

- Radiological Hazards (See Section 7.1 and Section 7.2)

- Chemical Hazards (See Section 7.3 and Section 7.4)

- Physical Hazards (Section 7.5)

  - Flammable Materials (Section 7.5.16-Section 7.5.17)
  - Electrical Equipment (Section 7.5.10-Section 7.5.11)

- Biological Hazards (See Section 7.6-Section 7.6.1-Section 7.6.2 and Section 7.6.3)

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 up to date previous training, (Hazardous Waste Operations and Emergency Response (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.

- 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 up to date 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

000292

- 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/ 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:

12.1.1 Emergency Numbers

NAME	FEMP TELEPHONE EXTENSION	RADIO
Ambulance	6511	Control
Hospital	6511	Control
Fire	6511	Control
Security	6511	Control
Emergency Response	6511	Control
Assistant Emergency Duty Manager (AEDO)	4749 4444	202/Control

12.1.2 Site Notification Procedures

All emergencies shall be reported to the FDF "Communications Center" to ensure

000293

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 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.

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 2nd 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 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 1.

12.4 Emergency Response

The FEMP Emergency Services will handle all emergencies. Any request for emergency help should be requested by telephone (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 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 4298.

12.7 Explosion Emergency

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

- Activate the closest 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.
- Report to your supervisor for accountability.

12.8 Chemical Emergencies

12.8.1 Splashes

Flush the affected area for 15 minutes and report to FDF Medical Services.

12.8.2 Personal Contamination (Chemical)

000296

When contaminated with a corrosive or caustic material, flush the affected area with clean water for 15 minutes. Report to FDF Medical Services. 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.

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 chemical 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), which is available at the urine sampling station, 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.

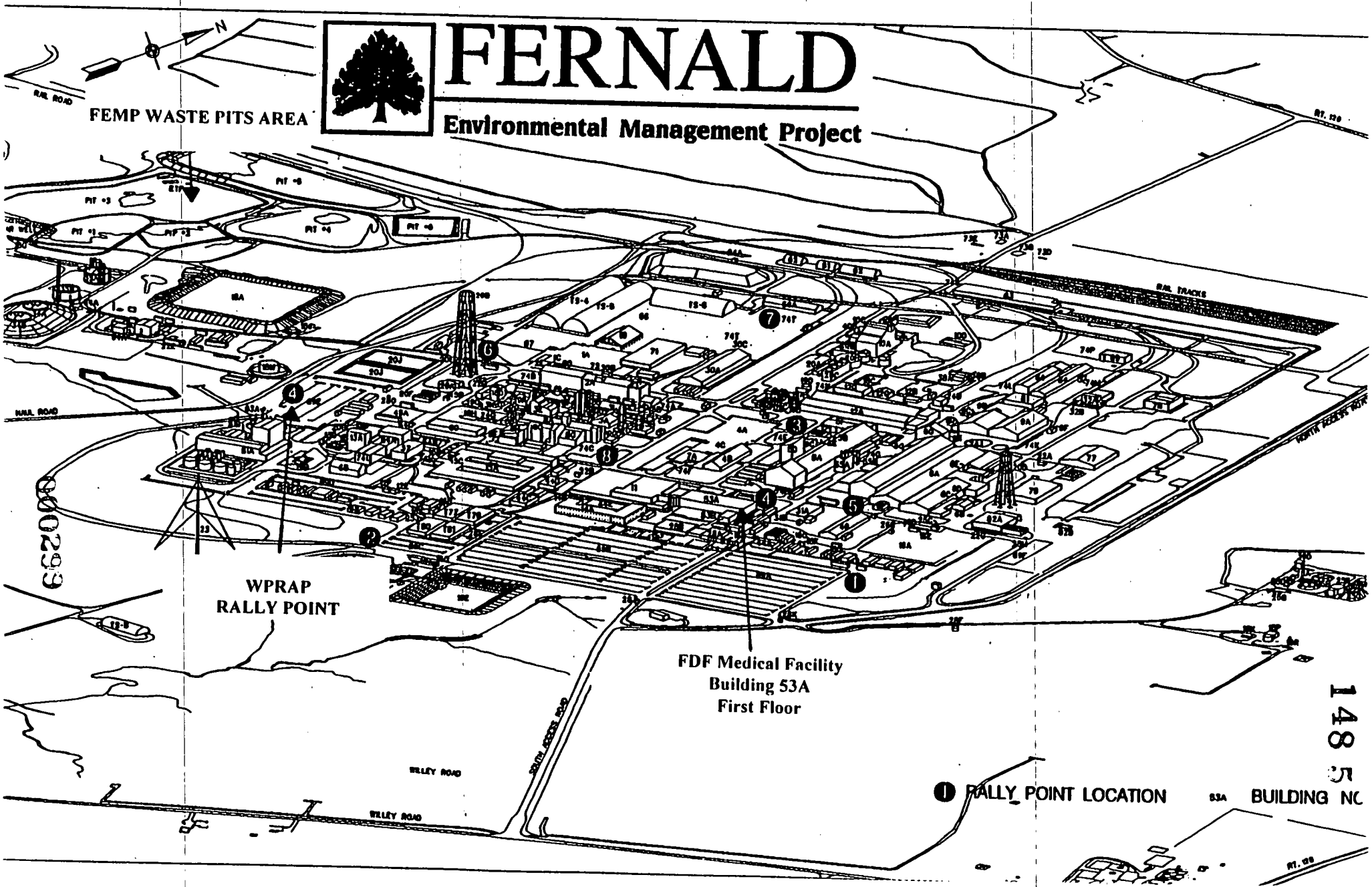
Work on elevated steel (walking) will be suspended during rain, lightning, high winds or when icy conditions exist.

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 FDF 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.

Plan Figures

WPRA
PRE-OPERATIONAL
HASP
FIGURE 1



IT WPRAP
POHASP

DEFECTIVE EQUIPMENT
WARNING TAG

FIGURE 2

WARNING

DO NOT USE! THIS PIECE OF EQUIPMENT IS IN UNSAFE OR INOPERABLE CONDITION.

EXPLAIN: _____

_____

SIGNED BY _____ DATE _____

Attachment A

ATTACHMENT A
WPRAP PRE-OPERATIONAL PHASE

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 1.0 General Site Access Note: These requirements apply to all sections of this matrix	Slip & trip hazards due to uneven surfaces and/or adverse weather conditions. Fall to same level resulting from a trip or slip hazard. Biological hazards: Insects: Bees, wasps, hornets and mosquitoes. Wild animals: Stray cats & dogs, racoons, snakes, mice, etc. Poisonous plants: Poison ivy and poison oak. Adverse weather: Heavy rain, lightning, snow, sleet, ice, etc.	Thermoluminescent dosimetry (TLD) A whole body survey for radioactivity is required when exiting the Controlled Area.	Steel toed leather safety shoes. Hard hat. Safety glases with side shields.	Site Worker: FDF General Employee Training (GET) 40 hr HAZWOPER or the FDF Site Worker Training. FDF RAD Worker I training. Orientation on the IT WPRAP Pre-Operational Health & Safety Plan (POHASP). Daily "Tool Box" Safety Meetings. Weekly formal safety training. Visitors: GET or have an escort with all required training. Orientation on POHASP. Orientation on current site conditions.	Site worker: Physical: Baseline, annual, and at termination Urine sampling: Baseline, annual and at termination. Lung count: Baseline, annual and at termination. All injuries/illnesses must be reported to FDF Medical, IT WPRAP Safety & Health and IT WPRAP Supervision.	Daily specific task review of relevant Sections of this IT WPRAP Health & Safety Requirements Matrix. Daily Tool Box Safety Meeting. Weekly Formal Safety Meeting. Compliance with the IT WPRAP Health & Safety Program. Compliance with the IT WPRAP Safe Work Plans. Compliance with the POHASP requirements.	FDF Site Work Permit.	Prior to removal from the WPRAP Controlled Area, all equipment and materials, including trash and debris, must be monitored for radioactive contamination by FDF Radiological Control. No equipment or materials, including trash and debris, may be removed from the Controlled Area without prior approval from FDF Radiological Control.

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the IT WPRAP Pre-Operational Health and Safety Plan (POHASP) to assist the workers in understanding the safety requirements of the project.

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 Site Preparation Subtask A: Site Clearing	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: •Noise hazard •Flammable material hazard •Heat stress hazard •Heavy equipment hazards •Hand & power tool hazards •Fire hazard	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination is present during site clearing activities. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Clothing suitable for ambient conditions.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress.	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. All utilities shall be located, identified and protected from damage. Existing structures shall be protected from damage or displacement. Dust control measures, such as watering roadways, will be implemented as necessary. Outdoor activities will be suspended when one or more of the following conditions occur: ▪ Lightning ▪ Heavy persistent rain ▪ Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit FDF Penetration Permit FDF Radiological Work Permit may be required if contamination is uncovered during excavation or other earth work.	All procedures identified in Section 1.0 Vegetation and debris from the "Site Clearing Activity" shall be stockpiled in the area designated by FDF.

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

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 Procedure
Section 2.0 Site Preparation Subtask B: Excavation & Backfill for Utilities and Appertenances	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: •Noise hazard •Flammable material hazard •Chemical hazards •Heat stress hazard •Heavy equipment hazards •Hand & power tools hazards •Excavation and trenching hazards •Confined space hazards •Underground utility hazards •Overhead utility hazard •Traffic hazard •Ladder hazards •Fire hazard	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination is uncovered during excavation. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F. The IT WPRAP Safety & Health Representative will perform testing for hazardous environments prior to confined space entry. Magnetometer surveys will be performed prior to excavation to determine the location of underground utilities.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. Chemical resistant gloves when working with hazardous chemicals. Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Clothing suitable for ambient conditions.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress If entry into a permit-required confined space is necessary, confined space entry training is required and shall be given in accordance with the IT WPRAP Confined Space Entry Program.	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. All utilities shall be located, identified and protected from damage. Existing structures shall be protected from damage or displacement. Dust control measures, such as watering roadways, will be implemented as necessary. The swing radius of cranes and excavators shall be marked with a physical barrier and signs. Entry to these areas requires radio or visual contact with the equipment operators. Cranes and ladders will not be used within 10 feet of electrical lines. Open excavations shall be marked with a physical barrier and signs. Ladders extended more than 6 feet shall be secured prior to use: All ladders shall be inspected in accordance with the IT WPRAP Portable Ladder Safety Program. Outdoor activities will be suspended when one or more of the following conditions occur: • Lightning • Heavy persistent rain • Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit FDF Excavation/ Penetration Permit FDFFacility Outage Permit may be required if utilities are interrupted or if a roadway, side-walk or fire exit must be closed. IT WPRAP Confined Space Entry Permit is required if entry into a Permit-Required Confined Space is necessary FDF Radiological Work Permit may be required if contamination is uncovered during excavation or other earth work.	All procedures identified in Section 1.0 Stockpiles of satisfactory and unsatisfactory materials will be located as directed by FDF.

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

000303

1485

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 Site Preparation Subtask C: Installation of Appurtenances (catch basins, manholes, etc.)	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: •Noise hazard •Flammable material hazard •Chemical hazards •Heat stress hazard •Heavy equipment hazards •Hand & power tool hazards •Excavation and trenching hazards •Confined space hazards •Underground utility hazards •Overhead utility hazards •Traffic hazard •Concrete forming hazards •Hot work hazards •Fire hazard	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination is present during installation of appurtenances. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F. The IT WPRAP Safety & Health Representative will perform testing for hazardous environments prior to confined space entry.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. Chemical resistant gloves when working with hazardous chemicals. UL listed and FM approved flame retardant gloves when performing hot work. UL listed and FM approved flame retardant clothing. Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Clothing suitable for ambient conditions.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress If entry into a permit-required confined space is necessary, confined space entry training is required and shall be given in accordance with the IT WPRAP Confined Space Entry Program. Personnel shall be oriented on any unique lift plans	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. All utilities shall be located, identified and protected from damage. Existing structures shall be protected from damage or displacement. Dust control measures, such as watering roadways, will be implemented as necessary. The swing radius of cranes and excavators shall be marked with a physical barrier and signs. Entry to these areas requires radio or visual contact with the equipment operators. Cranes and ladders will not be used within 10 feet of electrical lines. Open excavations shall be marked with a physical barrier and signs. Ladders extended more than 6 feet shall be secured prior to use: All ladders shall be inspected in accordance with the IT WPRAP Portable Ladder Safety Program. Compliance with all lift plans. Verification of all operator and rigger qualifications. Outdoor activities will be suspended when one or more of the following conditions occur: ▪ Lightning ▪ Heavy persistent rain ▪ Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit FDF Facility Outage Permit may be required if utilities are interrupted or if a roadway, side-walk or fire exit must be closed. IT WPRAP Confined Space Entry Permit is required if entry into a Permit-Required Confined Space is necessary FDF Radiological Work Permit may be required if contamination is encountered during installation activities. FDF approved Lift Plans IT WPRAP Hot Work Permit	All procedures identified in Section 1.0 Stockpiles of satisfactory and unsatisfactory materials will be located as directed by FDF.

The requirements of this document are based upon current conditions and or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

000304

1485

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 Site Preparation Subtask D: Installation of Utilities (gas, water, elec.), including boring and jacking	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: •Noise hazard •Flammable material hazards •Chemical hazards •Heat stress hazard •Heavy equipment hazards •Hand & power tool hazards •Excavation and trenching hazards •Confined space hazards •Underground utility hazards •Overhead utility hazards •Traffic hazard •Hot work hazards •Electrical hazards •Compressed gas hazards •Fall hazards •Fire hazard	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination is present during utility installation activities. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F. The IT WPRAP Safety & Health Representative will perform testing for hazardous environments prior to confined space entry.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. Chemical resistant gloves when working with hazardous chemicals. UL listed and FM approved flame retardant gloves when performing hot work. UL listed and FM approved flame retardant clothing. Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Fall protection (full body harness and lanyard) required when exposed to fall hazards. Clothing suitable for ambient conditions.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress If entry into a permit-required confined space is necessary, confined space entry training is required and shall be given in accordance with the IT WPRAP Confined Space Entry Program. Personnel shall be oriented on any unique lift plans Personnel who are exposed to fall hazards shall be trained in accordance with the IT WPRAP Fall Protection Program.	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. All utilities shall be located, identified and protected from damage. Existing structures shall be protected from damage or displacement. Dust control measures, such as watering roadways, will be implemented as necessary. The swing radius of cranes and excavators shall be marked with a physical barrier and signs. Entry to these areas requires radio or visual contact with the equipment operators. Cranes and ladders will not be used within 10 feet of electrical lines. Open excavations shall be marked with a physical barrier and signs. Ladders extended more than 6 feet shall be secured prior to use: All ladders shall be inspected in accordance with the IT WPRAP Portable Ladder Safety Program. Compliance with all lift plans. Verification of all operator and rigger qualifications. Outdoor activities will be suspended when one or more of the following conditions occur: ▪ Lightning ▪ Heavy persistent rain ▪ Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit FDF Facility Outage Permit may be required if utilities are interrupted or if a roadway, sidewalk or fire exit must be closed. IT WPRAP Confined Space Entry Permit is required if entry into a Permit-Required Confined Space is necessary FDF Radiological Work Permit may be required if contamination is encountered during installation activities. FDF approved Lift Plans IT WPRAP Hot Work Permit	All procedures identified in Section 1.0 Stockpiles of satisfactory and unsatisfactory materials will be located as directed by FDF.

The requirements of this document are based upon current conditions and or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the in understanding the safety requirements of the project

000305

148

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 Site Preparation Subtask E: Installation of roads	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: • Noise hazard • Flammable material hazards • Hazardous chemicals • Heat stress hazard • Heavy equipment hazards • Hand & power tool hazards • Excavation hazards • Underground utility hazards • Overhead utility hazards • Traffic hazard • Fire hazard	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination is present during utility installation activities. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. Chemical resistant gloves when working with hazardous chemicals. Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Clothing suitable for ambient conditions.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. All utilities shall be located, identified and protected from damage. Existing structures shall be protected from damage or displacement. Dust control measures, such as watering roadways, will be implemented as necessary. Open excavations shall be marked with a physical barrier and signs. Verification of all operator qualifications. Outdoor activities will be suspended when one or more of the following conditions occur: • Lightning • Heavy persistent rain • Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit FDF Facility Outage Permit may be required if utilities are interrupted or if a roadway, side-walk or fire exit must be closed. FDF Radiological Work Permit may be required if contamination is encountered during road installation activities.	All procedures identified in Section 1.0 Removed in-place materials that are unsuitable for the base course that is removed for the required correction of defective areas, and waste material and debris, shall be disposed of as directed by FDF.

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

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 3.0 Process Facilities Construction Subtask A: Excavation for installation of building footers floor slabs and other concrete structures	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: •Noise hazard •Flammable material hazards •Hazardous chemicals •Heat stress hazards •Heavy equipment hazards •Hand & power tool hazards •Excavation and trenching hazards •Confined space hazards •Underground utility hazards •Overhead utility hazards •Traffic hazard •Ladder hazards •Fire hazard	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination is uncovered during excavation. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F. The IT WPRAP Safety & Health Representative will perform testing for hazardous environments prior to confined space entry. Magnetometer surveys will be performed prior to excavation to determine the location of underground utilities.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. Chemical resistant gloves when working with hazardous chemicals. Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Clothing suitable for ambient conditions.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress If entry into a permit-required confined space is necessary, confined space entry training is required and shall be given in accordance with the IT WPRAP Confined Space Entry Program.	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. All utilities shall be located, identified and protected from damage. Existing structures shall be protected from damage or displacement. Dust control measures, such as watering roadways, will be implemented as necessary. The swing radius of excavators shall be marked with a physical barrier and signs. Entry to these areas requires radio or visual contact with the equipment operators. Ladders will not be used within 10 feet of electrical lines. Open excavations shall bemarked with a physical barrier and signs. Ladders extended more than 6 feet shall be secured prior to use: All ladders shall be inspected in accordance with the IT WPRAP Portable Ladder Safety Program. Outdoor activities will be suspended when one or more of the following conditions occur: • Lightning • Heavy persistent rain • Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit FDF Excavation/ Penetration Permit FDFFacility Outage Permit may be required if utilities are interrupted or if a roadway, side-walk or fire exit must be closed. IT WPRAP Confined Space Entry Permit is required if entry into a Permit-Required Confined Space is necessary FDF Radiological Work Permit may be required if contamination is uncovered during excavation or other earth work.	All procedures identified in Section 1.0 Stockpiles of satisfactory and unsatisfactory materials will be located as directed by FDF.

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

000307

1485

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 3.0 Process Facilities Construction Subtask B: Concrete forming	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: •Noise hazard •Flammable material hazards •Chemical hazards •Heat stress hazards •Heavy equipment hazards •Concrete forming hazards •Hand & power tool hazards •Excavation and trenching hazards •Confined space hazards •Traffic hazard •Ladder hazards •Fire hazard	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination is uncovered during excavation. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F. The IT WPRAP Safety & Health Representative will perform testing for hazardous environments prior to confined space entry.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. Chemical resistant gloves when working with hazardous chemicals. Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Clothing suitable for ambient conditions.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress If entry into a permit-required confined space is necessary, confined space entry training is required and shall be given in accordance with the IT WPRAP Confined Space Entry Program	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. Existing structures shall be protected from damage or displacement. Dust control measures, such as watering roadways, will be implemented as necessary. Ladders will not be used within 10 feet of electrical lines. Open excavations shall bemarked with a physical barrier and signs. Ladders extended more than 6 feet shall be secured prior to use: All ladders shall be inspected in accordance with the IT WPRAP Portable Ladder Safety Program. Outdoor activities will be suspended when one or more of the following conditions occur: • Lightning • Heavy persistent rain • Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit IT WPRAP Confined Space Entry Permit is required if entry into a Permit-Required Confined Space is necessary	All procedures identified in Section 1.0 Stockpiles of satisfactory and unsatisfactory materials will be located as directed by FDF.

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

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 3.0 Process Facilities Construction Subtask C: Steel Erection	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: •Noise hazard •Flammable material hazards •Heat stress hazards •Heavy equipment hazards •Hand & power tool hazards •Overhead hazards •Traffic hazard •Hot work hazards •Electrical hazards •Fall hazards •Fire hazard •Rigging and lifting hazards	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination is uncovered during excavation. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. UL listed and FM approved gloves when performing hot work Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Fall protection (full body harness and lanyard) required when exposed to fall hazards. Clothing suitable for ambient conditions.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress Personnel who are exposed to fall hazards shall be trained in accordance with the IT WPRAP Fall Protection Program. Personnel shall be oriented on therequirements specified in FDF approved lift plans, prior to implementing such plans.	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) Compliance with FDF approved lift plans. The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. Existing structures shall be protected from damage or displacement. Dust control measures, such as watering roadways, will be implemented as necessary. Ladders will not be used within 10 feet of electrical lines. Open excavations shall bemarked with a physical barrier and signs. Ladders extended more than 6 feet shall be secured prior to use: All ladders shall be inspected in accordance with the IT WPRAP Portable Ladder Safety Program. Outdoor activities will be suspended when one or more of the following conditions occur: • Lightning • Heavy persistent rain • Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit IT WPRAP Hot Work Permit FDF approved Lift Plans	All procedures identified in Section 1.0 Stockpiles of satisfactory and unsatisfactory materials will be located as directed by FDF.

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

000309

1485

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 3.0 Process Facilities Construction Subtask D: Installation of Utilities	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: •Noise hazard •Flammable material hazards •Chemical hazards •Heat stress hazards •Heavy equipment hazards •Hand & power tool hazards •Overhead hazard •Traffic hazard •Hot work hazards •Electrical hazards •Compressed gas hazards •Fall hazards •Fire hazard •Ladder hazards	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination is uncovered during excavation. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. UL listed and FM approved gloves when performing hot work Chemical resistant gloves when working with hazardous chemicals. Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Fall protection (full body harness and lanyard) required when exposed to fall hazards. Clothing suitable for ambient conditions.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress Personnel who are exposed to fall hazards shall be trained in accordance with the IT WPRAP Fall Protection Program.	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. Existing structures shall be protected from damage or displacement. Ladders will not be used within 10 feet of electrical lines. Open excavations shall bemarked with a physical barrier and signs. Ladders extended more than 6 feet shall be secured prior to use: All ladders shall be inspected in accordance with the IT WPRAP Portable Ladder Safety Program. Outdoor activities will be suspended when one or more of the following conditions occur: ▪ Lightning ▪ Heavy persistent rain ▪ Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit IT WPRAP Hot Work Permit	All procedures identified in Section 1.0 Stockpiles of satisfactory and unsatisfactory materials will be located as directed by FDF.

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

000316

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 4.0 Construction of Portable Structures (Laundry, Respirator wash, Admin. Offices. Subtask A: Installation of Portable Structures	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: •Noise hazard •Flammable material hazards •Hazardous chemicals •Heat stress hazards •Hand & power tool hazards •Traffic hazard •Hot work hazards •Electrical hazards •Fall hazards •Fire hazard •Ladder hazards	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination is uncovered during excavation. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. UL listed and FM approved gloves when performing hot work Chemical resistant gloves when working with hazardous chemicals. Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Use of a Safety Monitoring System or full body harness and lanyard are required when exposed to fall hazards. Clothing suitable for ambient conditions.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress Personnel who are exposed to fall hazards shall be trained in accordance with the IT WPRAP Fall Protection Program.	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. Existing structures shall be protected from damage or displacement. Ladders will not be used within 10 feet of electrical lines. Ladders extended more than 6 feet shall be secured prior to use: All ladders shall be inspected in accordance with the IT WPRAP Portable Ladder Safety Program. Outdoor activities will be suspended when one or more of the following conditions occur: • Lightning • Heavy persistent rain • Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit IT WPRAP Hot Work Permit	All procedures identified in Section 1.0 Stockpiles of satisfactory and unsatisfactory materials will be located as directed by FDF.

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

000311

185

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 4.0 Construction of Portable Structures (Laundry, Respirator wash, Admin. Offices. Subtask B: Installation of Utilities	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: •Noise hazard •Flammable material hazards •Hazardous chemicals •Heat stress hazards •Hand & power tool hazards •Traffic hazard •Hot work hazards •Electrical hazards •Fall hazards •Fire hazard •Ladder hazards	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination is uncovered during excavation. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. Chemical resistant gloves when working with hazardous chemicals. UL listed and FM approved gloves when performing hot work Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Use of a Safety Monitoring System or full body harness and lanyard are required when exposed to fall hazards. Clothing suitable for ambient conditions	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress Personnel who are exposed to fall hazards shall be trained in accordance with the IT WPRAP Fall Protection Program.	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. Existing structures shall be protected from damage or displacement. Ladders will not be used within 10 feet of electrical lines. Ladders extended more than 6 feet shall be secured prior to use: All ladders shall be inspected in accordance with the IT WPRAP Portable Ladder Safety Program. Outdoor activities will be suspended when one or more of the following conditions occur: ▪ Lightning ▪ Heavy persistent rain ▪ Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit IT WPRAP Hot Work Permit	All procedures identified in Section 1.0 Stockpiles of satisfactory and unsatisfactory materials will be located as directed by FDF.

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

000312

148 5

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 5.0 Process Facility Tests Subtask A: Dryer Testing	All hazards identified in Section 1.0 Radiological Hazards: Possible radiological contamination when performing work in a Controlled Area. Physical Hazards: •Noise hazard •Flammable material hazard •Chemical hazards •Heat stress hazard •Hand & power tool hazards •Electrical hazards •Fall hazards •Fire hazard •Ladder hazards •Confined space hazard	All monitoring identified in Section 1.0 Radiological monitoring will be performed by FDF Radiological Control in order to show whether or not contamination present at the jobsite. The IT WPRAP Safety & Health Representative will use a sound level meter to determine noise levels in the work area(s). Wet Bulb Globe Temperature (WBGT) measurements will be performed routinely during hot weather. Physiological monitoring (pulse & temperature) will begin when WBGT exceeds 78°F. As determined by regulatory requirementsder The IT WPRAP Safety & Health Representaive will test to ensure that workers are not exposed to a hazardous concentrations of carbon monoxide while operating and working around heavy equipment inside of the Soil Preparation Building.	All PPE identified in Section 1.0 Hearing protection where noise levels exceed an 8 hr TWA of 85 decibels. Leather gloves when working with sharp tools. Chemical resistant gloves when working with hazardous chemicals. Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control. Orange safety vest is required when working around heavy equipment. Full body harness and lanyard are required when exposed to fall hazards. Clothing suitable for ambient conditions.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training. Rad Worker II training will be required if radioactive contamination above Controlled Area limits is encountered. Safety training on the signs and symptoms of heat stress Personnel who are exposed to fall hazards shall be trained in accordance with the IT WPRAP Fall Protection Program	All requirements identified in Section 1.0 Medical surveillance in accordance with the IT WPRAP Heat Stress Program. Medical surveillance in accordance with the IT WPRAP Hearing Conservation Program.	All measures identified in Section 1.0 Compliance with FDF Radiological Work Permits. (If used) The IT WPRAP Heat Stress Program will be implemented when the WBGT temperature exceeds 78°F. The IT WPRAP Hearing Conservation Program will be implemented when the noise level exceeds an 8 hour Time Weighted Average (TWA) of 85 decibels. Dust control measures, such as misting dryer discharges. Ladders will not be used within 10 feet of electrical lines. Ladders extended more than 6 feet shall be secured prior to use: All ladders shall be inspected in accordance with the IT WPRAP Portable Ladder Safety Program. Outdoor activities will be suspended when one or more of the following conditions occur: ▪ Lightning ▪ Heavy persistent rain ▪ Wind gusts of 25 mph or greater will stop elevated work and crane work.	FDF Site Work Permit	All procedures identified in Section 1.0

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

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 5.0 Process Facility Tests Subtask B: Laboratory Performance Testing	All hazards identified in Section 1.0 Radiological Hazards: Work with radioactive sources. Physical Hazards: • Flammable material hazard • Chemical hazards • Hand & power tool hazards • Electrical hazards • Fall hazards • Fire hazard	All monitoring identified in Section 1.0 Radiological monitoring may be performed by FDF Radiological Control in order to show whether or not contamination present at the jobsite. The IT WPRAP Safety & Health Representative will conduct surveys as necessary to ensure that workers are not exposed to hazardous chemicals at levels which exceed 50% of the applicable TLV, PEL or other action level.	Steel toed leather safety shoes. Safety glases with side shields. Leather gloves when working with sharp tools. Chemical resistant gloves when working with hazardous chemicals. Other PPE as specified in Material Safety Data Sheets, Safe Work Plans, Radiological Work Permits, or other work documents. Anti-contamination clothing, if required by FDF Radiological Control.	All training identified in Section 1.0 Review of Material Safety Data Sheet (MSDS) prior to using hazardous chemicals. Portable fire extinguisher training.	All requirements identified in Section 1.0	All measures identified in Section 1.0	FDF Site Work Permit	All procedures identified in Section 1.0

The requirements of this document are based upon current conditions and/or operations in areas near the planned construction zone. This document is to be used as an aid in conjunction with the Project Specific Health and Safety Plan to assist the workers in understanding the safety requirements of the project.

Attachment B

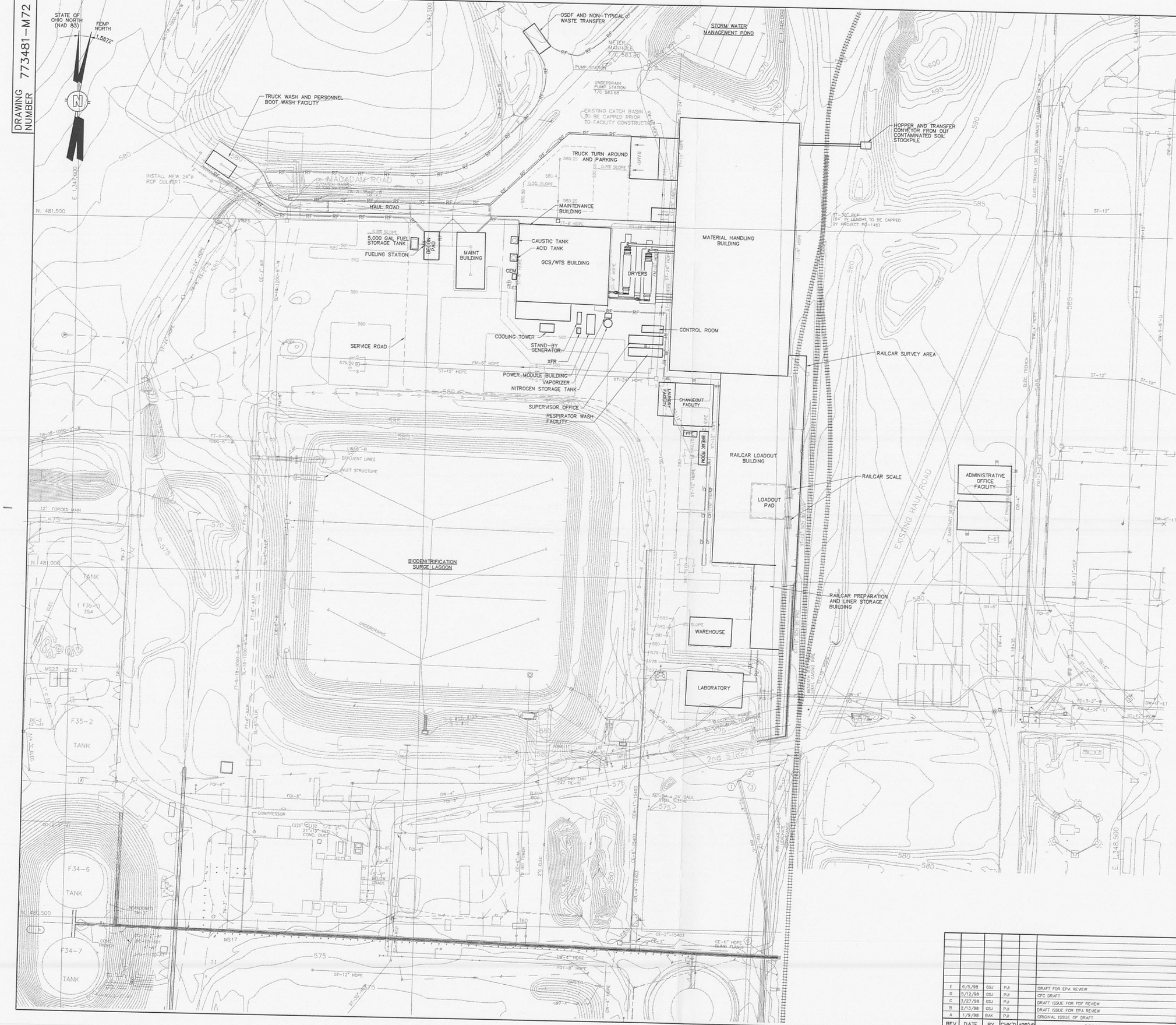
ACKNOWLEDGEMENT FORM
PRE-OPERATIONALHEALTH & SAFETY PLAN

WASTE PITS REMEDIAL ACTION PROGRAM

The undersigned individuals have been oriented on the requirements of the Pre-operational Health & Safety Program for the Waste Pits Remedial Action Project and understand and agree to abide by the provisions of the Plan.

NAME (PRINT)	SIGNATURE	DATE	SSN OR BADGE NO.

DRAWING NUMBER 773481-M72



148 5

000031

DRAFT

FIGURE 2-1

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
D	5/12/98	GSJ	PJI		CFC DRAFT
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

FLUOR DANIEL FERNALD

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

PROJECT NAME: WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE: SITE FACILITIES LAYOUT

INTERNATIONAL TECHNOLOGY CORPORATION

... Creating a Safer Tomorrow

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			E
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'		
IT PROJECT NO.	773481	DRAWING NO.	M-90-02-001		

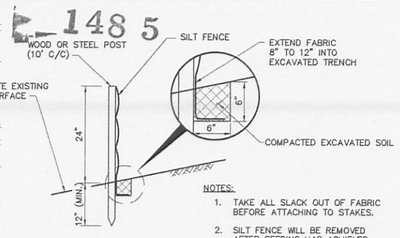
3-24-98
GSJ
XREF: NEWTOPO

246292-1

DRAWING NUMBER 773481-M26

STATE OF OHIO NORTH (NAD 83)
FEMP NORTH
1.5672°

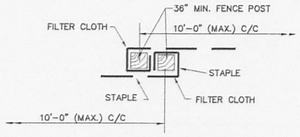
STORM WATER MANAGEMENT POND
METER MANHOLE T/C 583.80
PUMP STATION
UNDERDRAIN PUMP STATION T/C 583.68
EXISTING CATCH BASIN TO BE CAPPED PRIOR TO FACILITY CONSTRUCTION
REMOVE EXISTING 24"ø RCP CULVERT SEE ENLARGED PLAN DRAWING NO. M-00-80-114
HAUL ROAD COLLECTION SYSTEM
TRUCK TURN AROUND COLLECTION SYSTEM
TRUCK TURN AROUND AND PARKING
0.5% SLOPE
10% SLOPE
INSTALL NEW 24"ø RCP CULVERT SEE ENLARGED PLAN DRAWING NO. M-00-80-114
T/CATCH BASIN EL.580.58 (TYP.)
MACADAM ROAD
HAUL ROAD
HAUL ROAD LIFT STATION
LIFT STATION
STORM SEWER
MH-2
SERVICE ROAD
BIODENITRIFICATION SURGE LAGOON
UNDERDRAINS
EFFLUENT LINES
INLET STRUCTURE
12" FORCED MAIN
TANK
F35-2
F34-6
F34-7
COMPRESSOR
2nd STREET
EXISTING HAUL ROAD
ADMINISTRATIVE OFFICE FACILITY
ELEC. TRENCH
83% SLOPE
ST-30" RCP (64' IN LENGTH TO BE CAPPED BY PROJECT PQ-145)
ST-10" SCH 80 PVC
ST-12" SCH 80 PVC
N. 481,500
N. 481,000
E. 1,347,000
E. 1,348,500
E. 1,349,500



SECTION

NOTES:

1. TAKE ALL SLACK OUT OF FABRIC BEFORE ATTACHING TO STAKES.
2. SILT FENCE WILL BE REMOVED AFTER SEEDING HAS ACHIEVED ADEQUATE GROWTH TO PREVENT EROSION OR AS OTHERWISE DIRECTED BY FDF.
3. FOLLOW ADDITIONAL PROCEDURES CONTAINED IN THE TECHNICAL SPECIFICATIONS.



JOINING TWO ADJACENT SILT FENCE SECTIONS

TYPICAL SILT FENCE INSTALLATION DETAILS

NOT TO SCALE

000034

LEGEND:

—ST— PROPOSED STORM WATER LINE

DRAFT FIGURE 3-1

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	QSJ	PJI		DRAFT FOR EPA REVIEW
D	5/12/98	QSJ	PJI		CFC DRAFT
C	3/27/98	QSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	QSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

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

PROJECT NAME: WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE: SITE GRADING PLAN

INTERNATIONAL TECHNOLOGY CORPORATION
... Creating a Safer Tomorrow

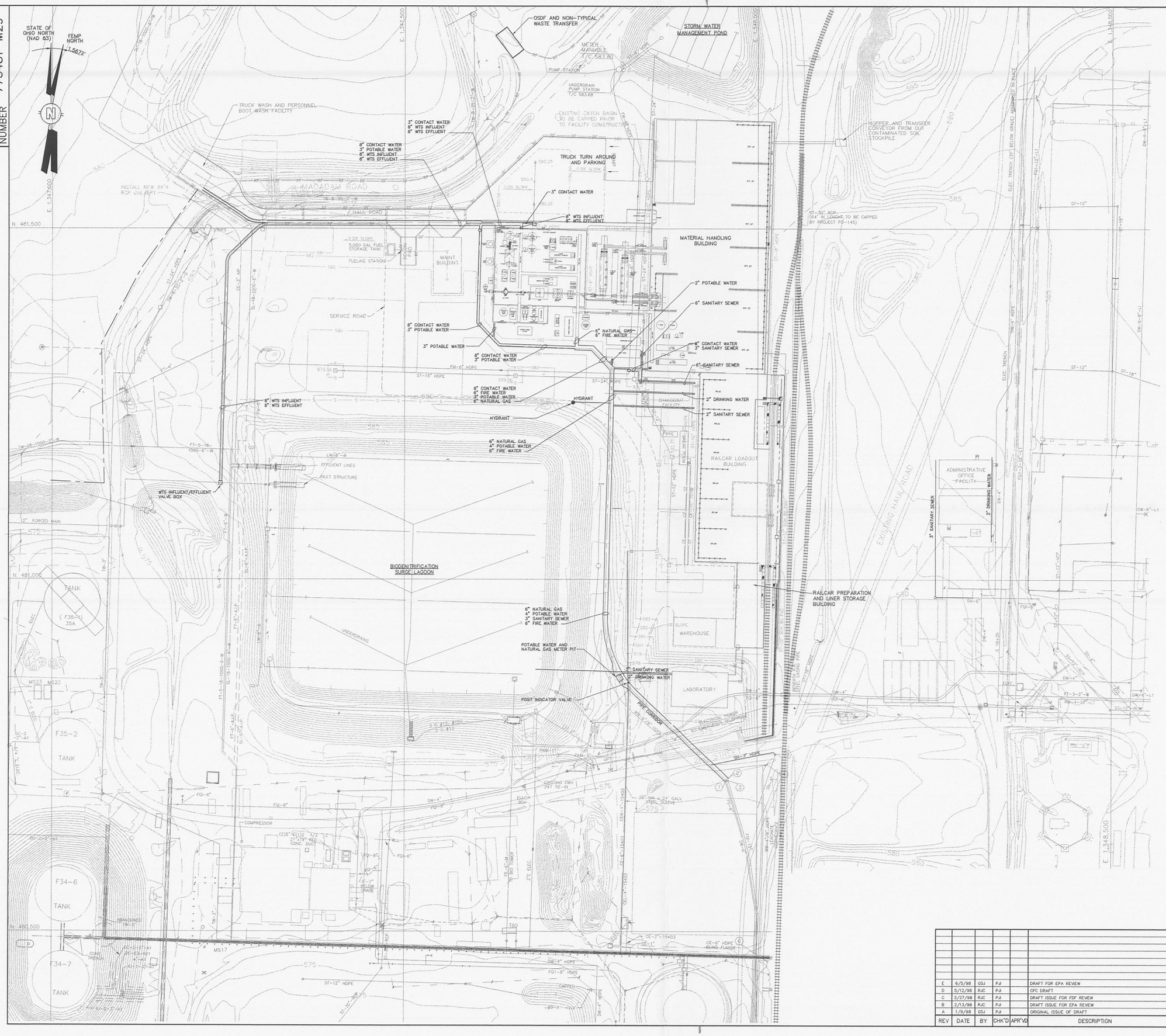
DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			E
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'		
IT PROJECT NO.	773481	DRAWING NO.	M-90-80-001		

3-24-98 3:30 PM WPDT: EXISTING

246282-2

DRAWING NUMBER 773481-M29

148 5



LEGEND:

PROPOSED PIPE CORRIDOR

000041

SCALE

0 50 100 150 FEET

DRAFT

FIGURE 5-1

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
D	5/12/98	RJC	PJI		CFC DRAFT
C	3/27/98	RJC	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	RJC	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	GSJ	PJI		ORIGINAL ISSUE OF DRAFT

FLUOR DANIEL FERNALD

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

PROJECT NAME
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE
SITE UTILITIES PLAN

INTERNATIONAL TECHNOLOGY CORPORATION

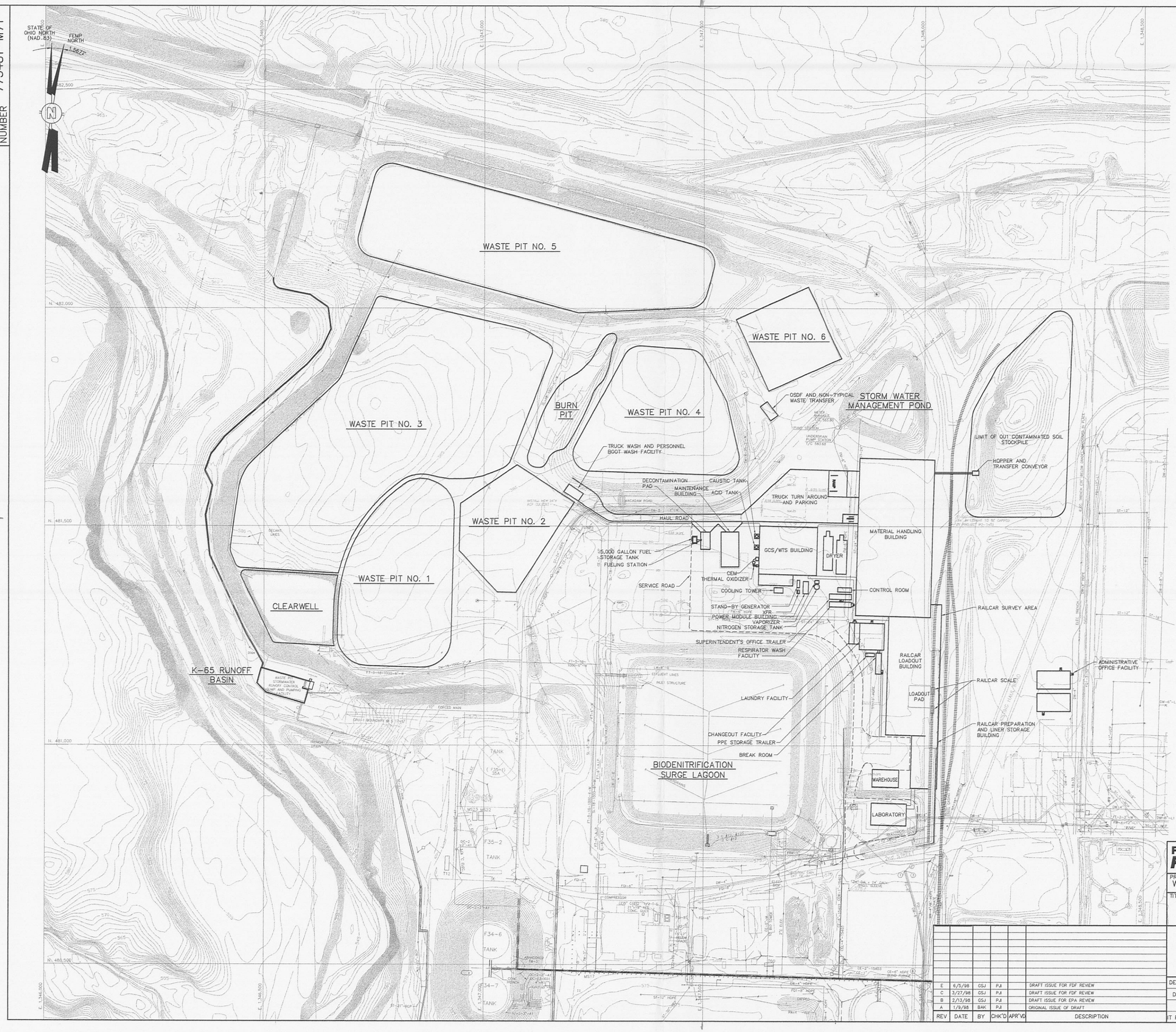
... Creating a Safer Tomorrow

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			E
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'		
IT PROJECT NO.	773481	DRAWING NO.	M-70-02-001		

6/2/98
XREF: EXISTING

246252-3

DRAWING NUMBER 773481-M71



148 5

000119

SCALE
0 80 160 240 FEET

DRAFT FIGURE 1-1

FLUOR DANIEL FERNALD

WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)
FERNALD, OHIO
FDF SUBCONTRACT NO. 9BSC000001

PROJECT NAME
WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE
OVERALL SITE FACILITIES MAP

INTERNATIONAL TECHNOLOGY CORPORATION
... Creating a Safer Tomorrow

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	CSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
C	3/27/98	CSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	CSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			E
DATE	29 DECEMBER 97	DWG. SCALE	1"=80'		
IT PROJECT NO.	773481	DRAWING NO.	M-00-02-001		

29 MAY 98
10:24
XREF: SITECOND

246222-4

DRAWING NUMBER 773481-M60

148 5

000120

LEGEND:

DIRECTION OF FLOW

SCALE

0 80 160 240 FEET

DRAFT

FIGURE 1-2

FLUOR DANIEL FERNALD

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

INTERNATIONAL TECHNOLOGY CORPORATION

... Creating a Safer Tomorrow

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/23/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98
DRAWN BY	B. A. KUMPF	APPROVED BY		
DATE	29 DECEMBER 97	DWG. SCALE	1"=80'	
IT PROJECT NO	773481	DRAWING NO.	M-00-80-001	

REVISION E

246292_5

29 MAR 98
DGN: M60
XREF: SITECOND

DRAWING NUMBER 773481-M27

148 5

STATE OF OHIO NORTH (NAD 83)
FEMP NORTH
1.5672°

OSDF AND NON-TYPICAL WASTE TRANSFER
STORM WATER MANAGEMENT POND
METER MANHOLE T/C 583.80
PUMP STATION
UNDERDRAIN PUMP STATION T/C 583.68
EXISTING CATCH BASIN TO BE CAPPED PRIOR TO FACILITY CONSTRUCTION
TRUCK WASH AND PERSONNEL BOOT WASH FACILITY
HOPPER AND TRANSFER CONVEYOR FROM OUT CONTAMINATED SOIL STOCKPILE
TRUCK TURN AROUND AND PARKING
INSTALL NEW 24" RCP CULVERT
HAUL ROAD
MAINTENANCE BUILDING
5,000 GAL FUEL STORAGE TANK
FUELING STATION
MAINT BUILDING
CAUSTIC TANK
ACID TANK
GCS/WTS BUILDING
DRYERS
MATERIAL HANDLING BUILDING
ST-50" RCP (64' IN LENGHT, TO BE CAPPED BY PROJECT FO-145)
CONTROL ROOM
COOLING TOWER
STAND-BY GENERATOR
XFR
POWER MODULE BUILDING
VAPORIZER
NITROGEN STORAGE TANK
SUPERVISOR OFFICE
RESPIRATOR WASH FACILITY
SERVICE ROAD
RAILCAR SURVEY AREA
LAUNDRY FACILITY
CHANGEOUT FACILITY
PPE
RAILCAR LOADOUT BUILDING
LOADOUT PAD
RAILCAR SCALE
ADMINISTRATIVE OFFICE FACILITY
EXISTING HAUL ROAD
EFFLUENT LINES
INLET STRUCTURE
12" FORCED MAIN
BIODENITRIFICATION SURGE LAGOON
UNDERDRAINS
TANK (F35-35A)
RAILCAR PREPARATION AND LINER STORAGE BUILDING
WAREHOUSE
LABORATORY
2nd STREET
F35-2 TANK
F34-6 TANK
F34-7 TANK
COMPRESSOR
CONC. TRENCH
ELEC. TRENCH (36" BELOW GRADE) SACRIFICIAL IN-PLACE
N. 481,500
N. 481,000
N. 480,500
E. 1,347,500
E. 1,347,000
E. 1,348,500
E. 1,349,500

000121

LEGEND:
— CF — CONSTRUCTION FENCE
— RF — RADIOLOGICAL FENCE

SCALE 0 50 100 150 FEET

DRAFT

FIGURE 1-3

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

PROJECT NAME: WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE: SITE FACILITIES LAYOUT

INTERNATIONAL TECHNOLOGY CORPORATION
... Creating a Safer Tomorrow

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
D	5/12/98	GSJ	PJI		CFC DRAFT
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98
DRAWN BY	B. A. KUMPF	APPROVED BY		
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'	
IT PROJECT NO.	773481	DRAWING NO.	M-90-02-001	

REVISION E

4/30/98 0500 WEF EXISTING

246292 6

DRAWING NUMBER 773481-M51

E. 1485

000122

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.

SCALE 50 0 50 100 FEET

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

INTERNATIONAL TECHNOLOGY CORPORATION

... Creating a Safer Tomorrow

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98
DRAWN BY	B. A. KUMPF	APPROVED BY		
DATE	23 DECEMBER 97	DWG. SCALE	1"=50'	
IT PROJECT NO	773481	DRAWING NO.	M-90-80-010	

REVISION: E

5-29-98
10:04 AM
XREF: EXISTING

2462927

DRAWING NUMBER 773481-M52

148 5

000123

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
- CF — CONSTRUCTION FENCE
- RF — RADIOLOGICAL FENCE

NOTE:

RUNOFF VOLUMES ARE BASED ON 25-YEAR, 24-HOUR STORM EVENT OF 4.8 INCHES.

DRAFT FIGURE 3-2

FLUOR DANIEL FERNALD

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

PROJECT NAME: WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE: POSTCONSTRUCTION STORM WATER MANAGEMENT

INTERNATIONAL TECHNOLOGY CORPORATION

... Creating a Safer Tomorrow

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	RJC	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

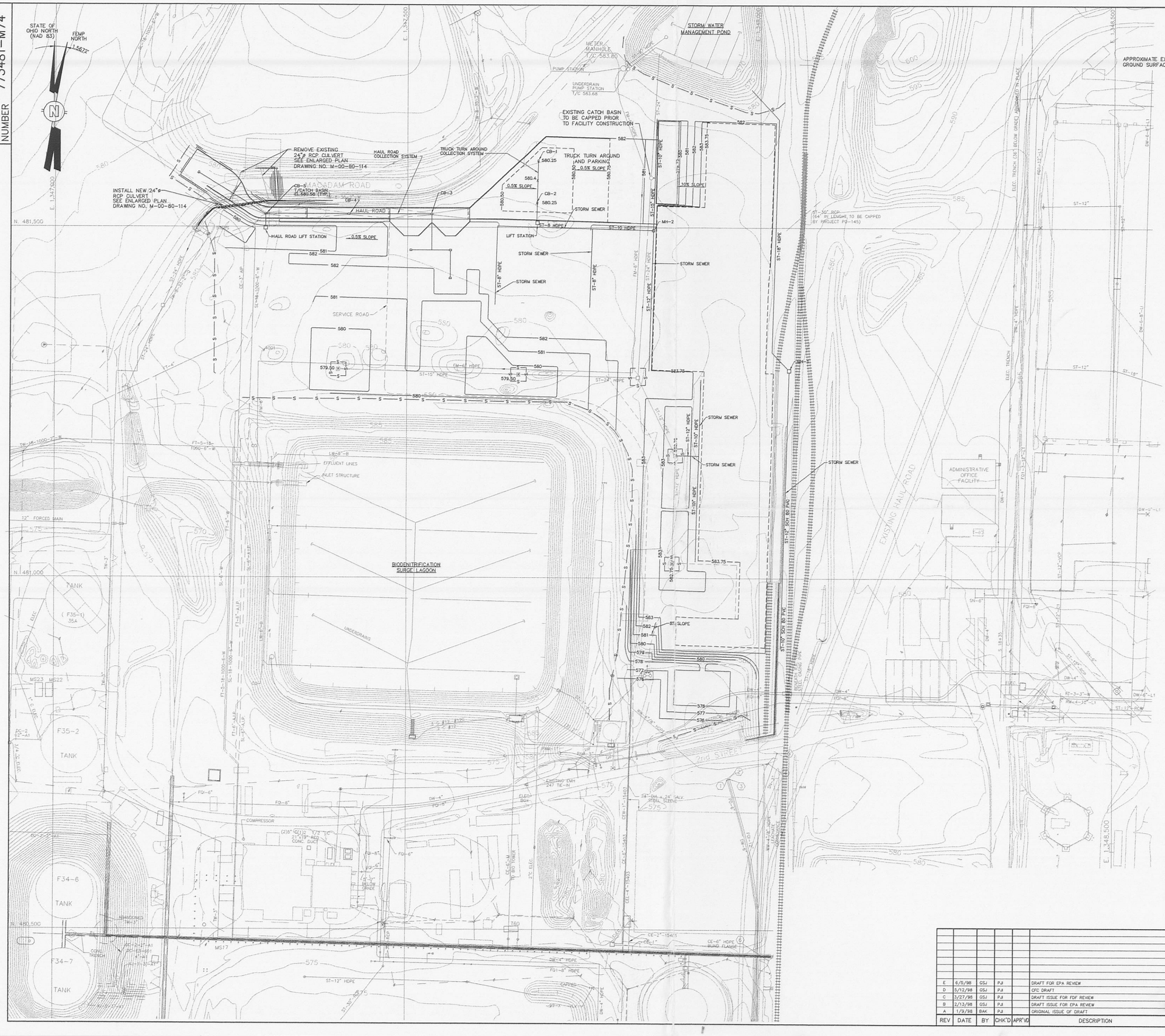
DESIGNED BY	PJI	CHECKED BY	PJI 1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY		E
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'	
IT PROJECT NO	773481	DRAWING NO.	M-90-80-011	

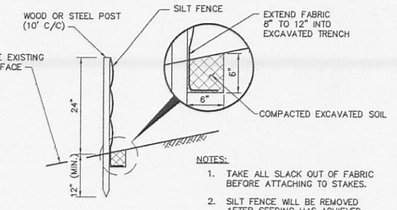
246292_8

5-29-98
9:46 AM
XREF: NEWTOPO

148 5

DRAWING NUMBER 773481-M74

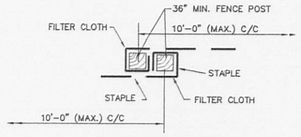




SECTION

NOTES:

1. TAKE ALL SLACK OUT OF FABRIC BEFORE ATTACHING TO STAKES.
2. SILT FENCE WILL BE REMOVED AFTER SEEDING HAS ACHIEVED ADEQUATE GROWTH TO PREVENT EROSION OR AS OTHERWISE DIRECTED BY FDF.
3. FOLLOW ADDITIONAL PROCEDURES CONTAINED IN THE TECHNICAL SPECIFICATIONS.



JOINING TWO ADJACENT SILT FENCE SECTIONS

TYPICAL SILT FENCE INSTALLATION DETAILS

NOT TO SCALE

000124

LEGEND:

— — ST — — PROPOSED STORM WATER LINE

DRAFT FIGURE 4-1

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
E	6/5/98	GSJ	PJI		DRAFT FOR EPA REVIEW
D	5/12/98	GSJ	PJI		CFC DRAFT
C	3/27/98	GSJ	PJI		DRAFT ISSUE FOR FDF REVIEW
B	2/13/98	GSJ	PJI		DRAFT ISSUE FOR EPA REVIEW
A	1/9/98	BAK	PJI		ORIGINAL ISSUE OF DRAFT

FLUOR DANIEL FERNALD

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

PROJECT NAME: WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

TITLE: SITE GRADING PLAN

INTERNATIONAL TECHNOLOGY CORPORATION

... Creating a Safer Tomorrow

DESIGNED BY	PJI	CHECKED BY	PJI	1/9/98	REVISION
DRAWN BY	B. A. KUMPF	APPROVED BY			E
DATE	19 DECEMBER 97	DWG. SCALE	1"=50'		
IT PROJECT NO.	773481	DRAWING NO.	M-90-80-001		

246292-9

6-2-98
3:50 PM
WIDT, EXISTING