

4459

**RCRA PART B PERMIT APPLICATION MARCH  
1993  
SECTION H: PERSONNEL TRAINING  
SECTION I: CLOSURE PLAN**

03/26/93

**DOE-FN/EPA  
100  
PERMIT**

# RCRA PART B PERMIT APPLICATION



March 1993

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**SECTION H: PERSONNEL TRAINING**

**SECTION I: CLOSURE PLAN**

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## **Fernald Environmental Management Project**

U.S. EPA Identification No. OH6890008976  
Ohio EPA Permit No. 05-31-0681

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT  
FERNALD, OHIO  
EPA ID NO. OH6890008976  
SECTION H: PERSONNEL TRAINING

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**SECTION H - PERSONNEL TRAINING**

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SECTION H - PERSONNEL TRAINING

Part B Permit Application  
Fernald Environmental Management Project  
Fernald, Ohio

INTRODUCTION

This chapter describes the personnel training program for the Fernald Environmental Management Project (FEMP) in accordance with the requirements of the Resource Conservation and Recovery Act (RCRA) and Ohio Administrative Code (OAC) 3745-50-44 (A)(12) and OAC 3745-54-16, Title 40 Code of Federal Regulation (CFR) 270.14(b)(12) and 264.16.

The primary objective of the FEMP training program is to prepare personnel to operate the FEMP in a safe and environmentally sound manner. To achieve this objective, the program provides all employees with training relevant to their positions. Every FEMP employee, including those not directly involved in waste handling activities, receives an introduction to RCRA and emergency preparedness. In this way, everyone at the FEMP has, at a minimum, a basic recognition of the regulatory requirements and emergency procedures. Employees in waste management positions receive additional classroom and/or on-the-job training designed specifically to teach them how to perform their duties safely and in conformance with regulatory requirements. Waste management personnel receive the required training before being allowed to work unsupervised and emergency response personnel receive the training before being called upon to respond to real emergencies.

The training requirements apply to all appropriate employees of the U.S. Department of Energy (DOE), the Environmental Remediation Management Contractor, and their contractors who regularly work at the facility and who may come in contact with and/or manage hazardous waste. The FEMP training program is fully described in the FEMP Training Program Manual which is comprehensive and applies

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to all areas of personnel performance and development. This chapter describes the introductory and continuing training provided to personnel who are directly involved with waste management at the FEMP which allows them to operate the facility safely and in compliance with hazardous waste regulations.

H-1      OUTLINE OF THE TRAINING PROGRAM

Employee training at the FEMP is the overall responsibility of the facility general manager (President of FERMCO) with the responsibility for implementation delegated through the administration division to the manager of the training department. Members of the training staff are assigned to technical staff training within the training department with technical staff training responsible for direct implementation of the FEMP RCRA training program.

The FEMP uses a modified version of the Performance-Based Training (PBT) approach to analyze, design, develop, implement, and evaluate training. Training needs are identified through the joint effort of the training department and line management. These groups then identify the appropriate training setting, either classroom instruction or on-the-job training. Specific procedures for identifying training needs are contained in the FEMP Training Program Manual.

All formal training is conducted by instructors qualified by the training department. On-the-job training is conducted by personnel qualified by the training department. Personnel qualified to perform on-the-job training are technically knowledgeable members of line organizations or the training department who have qualified on related equipment or processes and have attended the on-the-job training course.

Classroom instruction is provided by members of the training department and line organizations who are qualified to conduct classroom training in their technical area of expertise. Skills evaluation and needs assessments are performed by members of the training department and line organizations who are trained and experienced in identifying personnel performance requirements. Instructors responsible for developing course materials and presenting classroom instruction are required to attend a train-the-trainer course and periodic refresher training.

All training materials are approved by the training manager and cognizant line manager. All appropriate training materials are reviewed on an annual basis to ensure current and relevant course content.

Following all formal training, trainees must successfully complete examinations to demonstrate competency. These examinations are based on objectives and/or competency statements. Trainees also provide feedback on the content and quality of instruction at this time in the form of course critiques, evaluations and/or verbal input.

Training documentation is maintained by the training department records section located at the FEMP site. These training records may include:

- Course Attendance
- Completed Qualification Cards
- Off-Site Training Documentation
- Lesson Plans
- Test Banks
- Student Handouts

A computer data base maintains records on training qualifications, certifications, and course attendance. The data base is used to identify course refresher and requalification dates. All training records on current personnel are kept in the training department records section training files. Training records on former employees are kept by the training department records section for at least three years from the date of employment termination from the FEMP.

To ensure the safe and efficient operation of the FEMP, certain positions require formal qualification and/or certification. Department managers identify these positions based upon safety, complexity, and involvement with waste handling operations. A document known as a "qualification card" is prepared to identify required training for the applicable position. Successful completion of formal classroom training is verified prior to qualification/certification. When all

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requirements are met, both classroom instruction and on-the-job training, the qualification card is signed by the respective department manager. Qualification cards are included in the training records maintained by the training department records section. Qualification cards are living documents subject to changes as the scope and content of training changes to meet new or revised regulatory requirements or modifications in job scope.

The FEMP training program described in Section H-1b consists of a series of courses designed to ensure that waste management employees at the FEMP receive initial and continuing training relevant to their positions. These courses include instruction on the RCRA and Occupational Safety and Health Administration (OSHA) regulations, emergency procedures, and procedures for handling both hazardous and mixed site-generated waste.

Visitors, temporary personnel, and contractors are trained commensurate with the nature of the visit or duties; specific training requirements are individually prescribed by environmental safety & health personnel for all such entrants.

H-1a      Job Title/Job Description

All FEMP employee's are defined by one of three worker classifications. The classifications are Non-Hazardous Site Worker, Occasional Site Worker and General Site Worker. Each worker classification identifies specific minimum training requirements relative to the individual's involvement at the FEMP. Detailed job descriptions are maintained on site by the human resources department.

The following are brief descriptions of the worker classifications:

Non-Hazardous Site Worker - Personnel who do not require unescorted access to areas of the FEMP site which are restricted due to hazardous waste management concerns.

Occasional Site Worker - These employees occasionally require unescorted

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access to areas of the FEMP site which are restricted due to hazardous waste management concerns for a specific limited task such as observation, water monitoring, land surveying, or geophysical surveying. They are unlikely to be exposed over permissible exposure limits.

General Site Worker - These employees require unescorted access to areas of the FEMP site which are restricted due to hazardous waste management concerns for the majority of their work time. They are equipment operators, general laborers, and others involved in operations with hazardous waste. These employees may routinely perform activities related to hazardous waste activities.

All FEMP employees are required to have a Job Assignment Profile performed by the cognizant department to determine worker classification and initial and recurring training requirements. This employee profile is accomplished by a feature of the Training Records Management System (TRMS) software database used at the FEMP to record and track employee training records. This software function utilizes the information provided on each employee and the records in the database on completed training to establish required training for both initial site access and re-qualification.

The employee profile is a two part process. Part I consists of an interview program. It asks questions about the employee and based on the answers determines the employee's worker classification and corresponding training requirements. The training requirements are listed for the employee at the conclusion of the interview, and are reviewed by appropriate supervision. Part II compares the requirements to completed training, which results in identifying any training the employee needs to take immediately, as well as projecting dates for requalification. The program also provides the ability to generate a list of qualified employees. The interview program and an example of training requirements generated thereby are shown in Attachment H-1.

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## H-1b Training Content, Frequency, and Techniques

The FEMP training program includes a comprehensive program of internal training courses and/or on-the-job training. Each training course is carefully developed and periodically reevaluated to ensure relevancy to the course objectives and to ensure its support of the goal of safe and environmentally sound operations at the FEMP. On-the-job training receives an equivalent amount of attention through the use of qualification cards. Before an employee is considered qualified to operate certain equipment, the person must pass a prescribed set of performance standards to the satisfaction of a qualified instructor.

### H-1b(1) Training Content

All FEMP employees and subcontractors who are not visitors, including those not directly involved with hazardous waste management, receive at a minimum, facility-specific training in the following areas:

#### Non-Hazardous Site Worker

- General description of facility
- Production history
- Regulatory issues
- Policy and procedures
- Site security program description
- Facility Emergency Plan
- Overview of 29 CFR 1910.120
- Safety and health philosophy
- Classification of hazards

All FEMP employees and subcontractors who are not visitors and meet the definition of Occasional Site Worker receive the following in addition to the training received as a Non-Hazardous Site Worker, where applicable:

Occasional Site Worker

- Safety and health information (basic)
- Standard operating procedure
- Engineering controls
- Waste management
- Legal/Regulatory aspects
- Emergencies and RCRA contingency plan
- Field experience
- One day supervised field experience

All FEMP employees and subcontractors who are not visitors and meet the definition of General Site Worker receive the following in addition to the training received as a Non-Hazardous Site Worker, where applicable:

General Site Worker

- Safety and health information (basic and advanced)
- Standard operating procedure
- Engineering controls
- Waste management
- Legal/Regulatory aspects
- Emergencies and RCRA contingency plan
- Field experience
- Three days supervised field experience

Where applicable, all FEMP employees and subcontractors who are not visitors and meet the definition of Occasional Site Worker and General Site Worker, receive additional training which ensures their familiarity with emergency procedures, emergency equipment, and emergency systems, from among, for example:

Procedures for using, inspecting repairing, and replacing facility emergency equipment and monitoring equipment.

Automatic waste feed cut-off systems.

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Communications and alarm systems.  
Response to fires and explosions.  
Response to groundwater contamination incidents.  
Shutdown of operations.

H-1b(2) Training Frequency

Employees do not work unsupervised in waste management positions until they have completed the required initial training identified by the employee profile process described in section H-1a. The human resources department notifies the cognizant manager and training staff when any employee is transferred into or out of a position associated with waste management.

All FEMP employees are required to complete the indicated initial courses initially upon employment and prior to performing unsupervised waste management activities, and to attend annual refresher training per the dates established in each individual employee's profile.

H-1b(3) Training Techniques

A variety of instruction techniques are used at the FEMP depending on the subject matter and the techniques that best suit the learning objectives. Many courses include a combination of lectures, demonstrations, visual aids (such as video tapes, slides, and view graphs, computer based training), and exercises. Most equipment operation courses include hands-on practical instruction.

Written examinations are used as a technique to test the knowledge level of individuals participating in classroom training courses. The length and content of each exam varies according to the objectives. Calculation, multiple choice, true/false and fill-in-the-blank questions may be used.

On-the-job training at the FEMP follows a prescribed set of standards specific to the job to be performed. Typically, to become qualified to operate a piece

of equipment or system, employees must be able to demonstrate the location and purpose of specified controls and gauges, describe proper start-up and shutdown procedures, describe specific safety features and limitations of the equipment, and perform limited maintenance functions. They must also demonstrate the ability to safely operate the equipment or system.

H-1c            Training Director

The technical staff training manager directs the FEMP RCRA training program and is responsible for establishing technical training requirements in cooperation with the line managers. The technical staff training manager is required to have a bachelor's degree, or equivalent training and five years of applicable experience. The incumbent is required to be trained in hazardous waste management procedures and hold current certification in 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response, to be well-versed in all other appropriate sections of 29 CFR 1910, and be knowledgeable in and of the applicable regulations, orders, guidelines, and the specific training process employed at the FEMP.

H-1d            Relevance of Training to Job Position

The FEMP training program provides employees with training relevant to their positions. The performance based training process described in Section H-1 is a systematic method for determining the proper training for each waste management position. It compels managers and training staff to look critically at each position and to determine the necessary training program for each employee to fully develop their necessary expertise.

Equipment, processes or systems unique to a position will be identified by the appropriate line manager and the requirements for safe operation incorporated into the qualification standard for the position.

Several training courses are determined to be so basic to the FEMP mission that

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they are considered relevant for all FEMP employees. The basic philosophy at the FEMP is that, as a RCRA-regulated facility, all employees must recognize the basic regulatory requirements under which the FEMP must operate. Therefore, all FEMP employees receive an introduction to RCRA during their introductory training.

Beyond these "umbrella" courses, training is designed and implemented relevant to the specific job functions being performed. For example, employees who perform key waste management operations (such as material sampling, drum handling, area inspections, equipment operations, etc.) must be trained in the proper operation, maintenance, and inspection of the equipment before being allowed to perform that specific job function. These employees must receive classroom instruction and/or on-the-job training and demonstrate the ability to operate the equipment, as appropriate, before being qualified. This process is controlled and documented by the qualification process described in Section H-1. Descriptions of all required training courses are on file in the training department records section.

Supervisors who have direct responsibility for supervising waste management personnel receive waste management training relevant to their positions identified during the profile process described in Section H-1a. As is the case with all FEMP employees, all managers receive RCRA/OSHA overview training.

#### H-1e Training for Emergency Response

The FEMP training program ensures that personnel are able to respond appropriately and effectively to emergency situations. All FEMP employees receive instruction on hazard awareness, emergency preparedness, spill control, and the FEMP Contingency Plan as appropriately identified in each individual employee's profile described in Section H-1a. This training ensures that every employee recognizes real or potential emergencies and how to report such occurrences to the proper FEMP officials. It also ensures that employees will not endanger themselves or others by taking actions beyond their ability.

The FEMP emergency response organization is described in the FEMP Contingency Plan (see Chapter G for a complete description of the Contingency Plan). Members of this team receive thorough emergency response training before they are called upon to perform in real emergencies. This training includes fire-fighting elements such as rescue, cardiopulmonary resuscitation, first aid, use of self contained breathing apparatus and handling hazardous materials.

The members of the FEMP emergency response team volunteer for this assignment and are profiled to establish the respective training requirements. Training records for these individuals are maintained in each individual's training file in the training department records section.

Waste handling and emergency response personnel receive training which ensures their familiarity with emergency procedures, emergency equipment, and emergency systems where applicable including:

- Procedures for using, inspecting repairing, and replacing facility emergency equipment and monitoring equipment.

- Communications and alarm systems.

- Response to fires and explosions.

- Response to groundwater contamination incidents.

H-2            IMPLEMENTATION OF TRAINING PROGRAM

The FEMP training program is being implemented to ensure that all waste management personnel employed at the FEMP receive the required training described in Section H-1b which is identified by their respective individual employee profiles administered as described in Section H-1a. All recently hired employees and new-hires receive the indicated training within six months of their date of hire or their transfer to a new position. Personnel do not work in unsupervised positions until they successfully complete the indicated training requirements. All waste management personnel attend annual refresher courses that review the initial training received.

Records relating to the FEMP training program for waste management personnel are maintained by the FEMP training department records section located at the FEMP site. These records include the individual employee profiles for all waste management positions; a list of courses required for each position; course descriptions; documentation that each employee has received and completed appropriate training; and all of the backup information regarding certification, qualification, and examination. A software program called the Training Records Management System (TRMS) database is used by the FEMP to record and track employee training records. Training records of current personnel are kept by the training department records section until closure of FEMP. Records of former employees are kept by the training department records section for at least three years from the date the employee last worked at the facility. Records include rosters, exams and test results maintained in hard copy.

## ATTACHMENT H-1

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## QUESTIONS TO DETERMINE REQUIRED TRAINING

NAME: \_\_\_\_\_ BADGE NUMBER: \_\_\_\_\_

EMPLOYED BY: FERMCO DOE Subcontractor VisitorPOSITION:  Staff Level Manager Professional Clerical Support  
 Manager or Supervisor  WageFACILITY OWNER:  Yes  NoDO YOU HAVE A NEED TO ENTER THE PROCESS AREA?  Yes  NoWILL YOU BE WORKING IN A CONTAMINATED AREA?  Yes  NoWILL YOU BE WORKING WITH ASBESTOS OR SUPERVISE THOSE THAT DO?  Yes  No

IF YES, PLEASE SELECT ONE OF THE FOLLOWING CLASSIFICATIONS:

- PIPEFITTER, CARPENTER, OR INDUSTRIAL CLEANER
- ANY OTHER ASBESTOS WORKER
- SUPERVISOR OF ASBESTOS WORKERS

IF YES, DOES THIS EMPLOYEE REMOVE OR REPAIR MORE THAN 50 LINEAR FEET OR 50 SQUARE FEET OF ASBESTOS CONTAINING MATERIAL  Yes  NoDO YOU USE A COMPUTER TO DO YOUR JOB?  Yes  No

DO YOU NEED UNESCORTED ACCESS TO:

- Analytical Lab and/or Trailers 41, 42, 20, 21, 22
- Other Laboratories at the FEMP
- Both of the above
- Neither of the above

DO YOU TRAIN OTHER EMPLOYEES:

- In classroom settings (Technical Instructor)
- On the job (OTJ)
- Both of the above
- Neither of the above

LOCATION IN WHICH YOU DO MOST OF YOUR WORK: \_\_\_\_\_

DO YOU REQUIRE THE USE OF A RESPIRATOR TO PERFORM YOUR JOB?  Yes  NoDO YOU SUPERVISE THOSE WEARING RESPIRATORS?  Yes  NoDO YOU NEED TO WEAR AN EMERGENCY LIFE SUPPORT APPARATUS?  Yes  NoDO YOU NEED TO WEAR A SELF-CONTAINED BREATHING APPARATUS?  Yes  No

## ATTACHMENT H-1

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- DO YOU:
- File Occurrence Reports with DOE through ORPS
  - Do searches and reports on ORPS database
  - Both of the above
  - Have no responsibility for ORPS reporting

DO YOU HAVE ANY DUTIES IN THE EMERGENCY OPERATIONS CENTER (EOC) DURING EMERGENCIES?  Yes  No

IF YES, SELECT UP TO TWO OF THE FOLLOWING:

- Safety and Health Advisor
- Safety and Health Support
- Information Support/Runner
- Administration Support
- Emergency Director
- Emergency Management Advisor
- Deputy Emergency Director
- Operations Advisor
- Environmental Advisor
- EOC Supervisor
- NEXT QUESTION

AND UP TO TWO OF THE FOLLOWING:

- Offsite Notification Officer
- Butler County Liaison
- Hamilton County Liaison
- DOE Liaison
- Public Information Advisor
- Public Information Support
- Security Advisor
- Information Officer
- Plotters
- Transportation Advisor

- DO YOU SERVE AS:
- Emergency Duty Officer (EDO)
  - Utilities Engineer (AEDO)
  - Emergency Chief (Fire and Safety Inspector)
  - Fernald Office EDO (DOE Employees Only)
  - None of the above

DO YOU WORK IN THE CAFETERIA (Including Porters)?  Yes  No

ARE YOU EXPOSED TO HUMAN BODY FLUIDS IN YOUR JOB (Includes Doctors, Nurses, Laundry, ERT, EMT, and Porters)?  Yes  No

- DO YOU PERFORM DUTIES FOR THE ERT:
- Emergency Response Team Member
  - Driver for ERT
  - Fire Inspector for ERT
  - None of the above

- DO YOU:
- Work directly with fissile materials
  - Supervise those who work with fissile materials
  - Work in areas which contain fissile materials
  - Have no involvement with fissile materials

## ATTACHMENT H-1

Name: Test Subject ID Number: 000000  
Date: 03-24-1993

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## TRAINING REQUIRED TO MEET THIS TRAINING PROFILE

File: ORB\*1E\*79 \*\*\*\*\*YPDBF\*BDP\*YFA\*\*

NUMBER	TITLE		DRIVER
001000	New Employee Orientation	(I)	FERMCO Policies
001284	General Employee Training	(A)	DOE Order 5480.20
001347	Site Worker Training	(I)	
001280	Radiation Control II	(B)	DOE Order 5480.11
001001	24 Hour Experience Form FMPC-IRS&T-3233	(I)	29 CFR 1910.120
001034	8-Hour RCRA Refresher Training	(A)	29 CFR 1910.120
001299	Asbestos Respirator Fit Test	(6 MONTHS)	29 CFR 1926.58
000870	Asbestos Competent Person Training	(I)	29 CFR 1926.58
000948	Asbestos Competent Person Refresher	(A)	29 CFR 1926.58
001288	Chemical Hygiene	(I)	29 CFR 1910.
001053	Chemical Hygiene Refresher	(A)	29 CFR 1910.
000427	Technical Instructor Training	(I)	
000432	OJT Instructor Training	(I)	
002510	CBT - Respirator Safety	(A)	29 CFR 1910.134
000919	Respiratory Protection Supervisor		29 CFR 1910.134
000625	ELSA Training		
000278	Self Contained Breathing Apparatus	(A)	
000996	Creating Occurrence Reports	(I)	DOE Order 5000.3A
000992	New EOC Staff Orientation	(I)	
001048	EOC Drill	(I)	
000	Policy Group	(I)	
000998	Operations Group Training	(I)	
000995	Emergency Duty Officer Training	(I)	
000994	OSHA Exposure to Bloodborne Pathogens		OSHA 1910.1030
000990	OSHA Exposure to Bloodborne Pathogens Refresher		OSHA 1910.1030
000981	NFPA Fire Fighter II	(I)	NFPA 1001&1500
	8 Hours per month of continuing education	(A)	NFPA 1001&1500
	NFPA Medical Physical for ERT	(A)	NFPA 1001&1500
	NFPA Physical Agility Test		NFPA 1001&1500

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The following facts were used to create this listing.

This employee...

- is a professional employee
- is a FERMCO employee
- is not a Facility Owner
- needs access to the process area
- needs a TLD from Dosimetry
- works in a contamination area/ Rad Worker II
- is considered a RCRA General Site Worker
- is an Asbestos Group I carpenter, pipefitter or industrial cleaner
- does not use a computer in his/her job
- needs a TLD
- needs access to both analytical lab and/or trailers and other labs at FEMP
- is both a technical instructor and OJT instructor
- is required to wear a respirator to do their job
- supervises employees who wear respirator to do their jobs
- needs an ELSA to do their job
- needs a SCBA to do their job
- creates Occurrence Reports for DOE
- serves in the EOC as the Emergency Director
- serves in the EOC as Deputy Emergency Director
- serves as the Fernald Office EDO
- does not work in the cafeteria

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ATTACHMENT H-1

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- may be exposed to human body fluids
- is a member of the Emergency Response Team
- is expected to respond to emergencies as much as possible
- works with fissile materials
- is an insulator/asbestos craft

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NOTE: Many of these courses may be substituted with other training if approved by Training.  
 This may not represent all mandatory or required training.

Software Version 3.0

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\_\_\_\_\_  
Supervisors signature

\_\_\_\_\_  
Employees signature

Name: Test Subject-2 ID Number: 000000  
Date: 03-24-1993

= 4450

## TRAINING REQUIRED TO MEET THIS TRAINING PROFILE

File: ORBY2D\*81 \*\*\*\*\*YPDBC\*ICW\*YFL\*\*

NUMBER	TITLE		DRIVER
001000	New Employee Orientation	(I)	FERMCO Policies
001284	General Employee Training	(A)	DOE Order 5480.20
000706	Facility Owner Workshop	(I)	29 CFR 1926.58
001347	Site Worker Training	(I)	
001280	Radiation Control II	(B)	DOE Order 5480.11
001001	24 Hour Experience Form FMPC-IRS&T-3233	(I)	29 CFR 1910.120
001034	8-Hour RCRA Refresher Training	(A)	29 CFR 1910.120
001299	Asbestos Respirator Fit Test	(6 MONTHS)	29 CFR 1926.58
000870	Asbestos Competent Person Training	(I)	29 CFR 1926.58
000948	Asbestos Competent Person Refresher	(A)	29 CFR 1926.58
001288	Chemical Hygiene	(I)	29 CFR 1910.
001053	Chemical Hygiene Refresher	(A)	29 CFR 1910.
000427	Technical Instructor Training	(I)	
000432	OJT Instructor Training	(I)	
002510	CBT - Respirator Safety	(A)	29 CFR 1910.134
000919	Respiratory Protection Supervisor		29 CFR 1910.134
000625	ELSA Training		
000278	Self Contained Breathing Apparatus	(A)	
000996	Creating Occurrence Reports	(I)	DOE Order 5000.3A
000992	New EOC Staff Orientation	(I)	
001048	EOC Drill	(I)	
000998	Operations Group Training	(I)	
000998	Operations Group Training	(I)	
000995	Emergency Duty Officer Training	(I)	
000995	OSHA Exposure to Bloodborne Pathogens		OSHA 1910.1030
000995	OSHA Exposure to Bloodborne Pathogens Refresher		OSHA 1910.1030
000981	NFPA Fire Fighter II	(I)	NFPA 1001&1500
	8 Hours per month of continuing education	(A)	NFPA 1001&1500
	NFPA Medical Physical for ERT	(A)	NFPA 1001&1500
	NFPA Physical Agility Test		NFPA 1001&1500
	NFPA Certified Driver/Operator	(I)	NFPA 1002

=====

The following facts were used to create this listing.

This employee...

- is a wage employee
- is a FERMCO employee
- is a Facility Owner
- needs access to the process area
- needs a TLD from Dosimetry
- works in a contamination area/ Rad Worker II
- is considered a RCRA General Site Worker
- is an Asbestos Group II worker exceeding the 50 ft. rule
- does not use a computer in his/her job
- needs a TLD
- needs access to both analytical lab and/or trailers and other labs at FEMP
- is both a technical instructor and OJT instructor
- is required to wear a respirator to do their job
- supervises employees who wear respirator to do their jobs
- needs an ELSA to do their job
- needs a SCBA to do their job
- creates Occurrence Reports for DOE
- serves in the EOC as Environmental Advisor
- serves in the EOC as the Emergency Management Advisor

ATTACHMENT H-1

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- serves as an Emergency Chief
- does not work in the cafeteria
- may be exposed to human body fluids
- is a driver for the Emergency Response Team
- works with fissile materials
- is a laborer craft

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NOTE: Many of these courses may be substituted with other training if approved by Training.  
 This may not represent all mandatory or required training.  
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Supervisors signature

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SECTION I - CLOSURE PLAN INFORMATION, POST-CLOSURE POST-CLOSURE PLAN INFORMATION, AND FINANCIAL REQUIREMENTS

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I-1 CLOSURE PLAN INFORMATION

This section of the permit application is submitted in response to the requirements of OAC 3745-50-44(A)(13), 3745-55-10 through 19, 3745-55-78, and 40 CFR 264.111 through 115, and 264.178 requiring closure plan information, and schedules for closure of operating container storage units.

There are seven active Hazardous Waste Management Units to be closed pursuant to this closure plan information. These include six storage warehouses and one 480,000 square foot storage pad. The Hazardous Waste Management Units are listed as follows:

- 1) KC-2 Warehouse (Building 63)
- 2) Plant 9 Warehouse (Building 81)
- 3) Plant 8 Warehouse (Building 80)
- 4) CP Storage Warehouse - Building 56 (Butler Building)
- 5) Plant 6 Warehouse (Building 79)
- 6) Pilot Plant Warehouse (Building 68)
- 7) Plant 1 Pad

This introduction provides an overview of the units to be closed, the proposed closure procedures, schedules for closure and related information. Figure I-1 is a map of the FEMP, which shows the location of each of these hazardous waste management units. A closure subsection has

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been written for each of these hazardous management units and is included in this section. This closure plan information identifies the steps necessary to close each unit at any time. The FEMP's intention is to "clean" close the hazardous waste management units covered by this closure plan information. The FEMP will maintain a copy of the approved closure plan information with any revisions on-site. The FEMP will notify the OEPA at least 45 days prior to initiation of closure.

~~On November 28, 1989, the FEMP was included on the National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The hazardous waste management units discussed in this section are included within one of the facility's operable units. Closure of RCRA units will be consistent with the final closure and remediation of the entire site under the CERCLA program.~~

On July 18, 1986 the U. S. Department of Energy (DOE) and USEPA (Environmental Protection Agency) entered into a Federal Facilities Compliance Agreement (FFCA). Based on the FFCA, the FEMP is conducting a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation and Feasibility Study (RI/FS). On November 21, 1989, the FEMP was added to the National Priority List (NPL) of CERCLA sites. The FFCA for the FEMP was amended on June 29, 1990 and September 20, 1991 to reflect additional CERCLA requirements for NPL sites. Under the ongoing CERCLA program, as required by the Amended Compliance Agreement, the FEMP has been divided into operable units. The final CERCLA remediation of the FEMP will be stipulated by the USEPA through the Records of Decision (ROD) for these operable units.

The hazardous waste management units discussed in this section are included within the facility's operable units. It is the intention of the FEMP that RCRA closure of the seven (7) hazardous waste management units addressed herein be consistent with the final CERCLA remediation at the

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## **FEMP.**

Most hazardous waste generated and stored at the FEMP is also radioactive mixed waste. Mixed waste is defined as waste that contains both a hazardous waste component regulated under RCRA and a radioactive component consisting of source, special nuclear, or by-product material regulated under the Atomic Energy Act. This closure plan information is designed to address only the hazardous waste components of mixed waste. Procedures for handling radioactive wastes will be incorporated into closure activities where appropriate. Any information included in this section on the radioactive portion of mixed waste stored or generated at the FEMP is included for informational purposes only and is not intended to be part of the facility's RCRA permit.

Because of the mixed waste national treatment or disposal capacity limitations, it is anticipated that final closure of the entire facility cannot be completed within 180 days. Therefore, schedule for closure will be extended as discussed in Section I-1d. Due to the treatment or disposal limitations, hazardous waste generated during closure activities will be minimized by using the best available closure and decontamination procedures at the time of closure.

### **I-1a Closure Performance Standard**

This closure plan information is designed to ensure that RCRA storage units will be closed in a manner that minimizes or eliminates further maintenance and controls, and that prevents post-closure escape of hazardous waste, hazardous waste constituents, leachate, runoff, or hazardous waste decomposition products to the ground water, surface water, atmosphere, or soils. To prevent threats to human health and the environment, the FEMP's intent is to utilize best management practices to minimize spills and releases

throughout the life of the facility including closure. Good housekeeping will be continuously emphasized, and thus closure activities will be simplified to the extent possible.

Fugitive dust emissions during closure of the units will be controlled by vacuuming the area using equipment outfitted with High Efficiency Particulate Air (HEPA) filters. No demolition of unit structures is anticipated during closure. Washing and rinsing operations during decontamination will also serve to control particulate emissions. Berms will contain spills of liquid hazardous wastes, and, along with temporary dikes, will prevent the release of wash or rinse waters to the environment. Upon completion of activities, the vacuum units will be cleaned and decontaminated in accordance with discussions in Section I-1e(2)(c) of this document. Since hazardous wastes are containerized waste containers will remain closed during inventory removal, the release of hazardous vapors during closure is not anticipated.

During closure of the units, applicable health and safety requirements and guidelines will be followed, including DOE orders governing management of mixed waste. Proper safety equipment will be worn by personnel engaged in closure activities in accordance with a Project/Task-Specific Health & Safety Plan that will be prepared prior to initiation of closure.

I-1a(1) RCRA Closure Standard

The FEMP's intention is to remove the hazardous wastes and "clean" close the permitted units included in this closure plan information. ~~Clean determinations will be based on samples of rinseate from decontamination of secondary containment structures and samples of soils where releases may~~

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~~have occurred. The FEMP will consider the soils to be clean, if there are no indications of hazardous waste releases based on unit inspections, assessment of secondary containment, and review of operating records as discussed in Section I-1e(2)(b).~~ Clean determinations will be based on analysis of rinseate samples from decontamination of secondary containment structures and samples of soils where releases may have occurred. All sampling and analyses will be conducted in accordance with the Sampling and Analysis Plan (Attachment I-1) and will follow the requirements of the FEMP Sitewide CERCLA Quality Assurance Project Plan (SQ).

The secondary containment structures and equipment used in closure operations for the hazardous waste storage areas will be considered clean for RCRA closure if the final rinseate water samples meet the following criteria (as suggested by the OEPA "Closure Plan Review Guidance" dated May 1, 1991):

- 1) Fifteen times the public drinking water maximum contaminant level (MCL) for hazardous waste constituents as promulgated in OAC 3745-81-11 and 40 CFR 141.11 for inorganics, and OAC 3745-81-12 and 40 CFR 141.12 and for organics;
- 2) If an MCL is not available for a particular contaminant, fifteen times the maximum contaminant level goal (MCLG) as promulgated in 40 CFR 141.50 will be used as the clean standard; or
- 3) If the product of fifteen times the MCL or MCLG exceeds 1 mg/l or if neither an MCL nor an MCLG is available for a particular contaminant, 1 mg/l will be used as the

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standard.

The FEMP will consider the soils to be clean, if there are no indications of hazardous waste releases based on unit area inspections, assessment of secondary containment, and review of operating record as discussed in Section I-1e(2)(b). However, if soil sampling is required during closure of any of the units as discussed in Section I-1e(2)(b), soils associated with the unit will be considered clean for RCRA closure if the soil samples contain:

- concentrations of organic hazardous waste constituents of concern below the Method Detection Limits (MDL) established at the time of analysis, and
- concentrations of each metal, less than or equivalent to the mean background concentration plus two standard deviations 95% upper tolerance level of the mean background concentration.

I-1b Partial Closure and Final Closure Activities

Partial closure of any of the hazardous waste storage units prior to final facility closure will be accomplished according to the procedures outlined in this closure plan information. If the FEMP decide decides to close any of the hazardous waste storage units prior to final facility closure, they will be closed according to the applicable sections of this closure plan information.

~~Closure of any hazardous waste management unit at the FEMP will be integrated into the CERCLA activities scheduled to complete final remediation of the entire site.~~

Closure of any hazardous waste management unit at the FEMP will be consistent with the activities implemented to complete final CERCLA remediation at the FEMP.

I-1b(1) Closure Certification

Upon completion of the closure of each unit, the FEMP will submit to OEPA a certification from both the owner and a qualified, independent, registered Professional Engineer that the hazardous waste management unit has been closed in accordance with the approved closure plan information. The certifying Professional Engineer or his designated representative will be present for significant closure activities, such as decontamination and sampling. The FEMP will submit a closure certification report prepared by the owner and the Professional Engineer within 60 days of completing closure activities. The report will contain:

- a description of the hazardous waste management unit closed;
- owner certification statements;
- Professional Engineer certification;
- a brief description of the closure tasks performed;
- a chronological log of closure activities;
- an assessment of the analytical data; and
- type and volume of hazardous waste removed.

I-1c Maximum Waste Inventory

The determination of the maximum hazardous waste inventory for each storage unit has taken into consideration current operating practices including drum stacking heights, required aisle space, and

unit dimensions. The maximum inventory capacity for each of the seven hazardous waste storage units is presented in Table I-1.

I-1d Schedule for Closure

Specific closure schedules at the FEMP may be impacted by on-site CERCLA activities and on-site storage requirements and capacity limitations for mixed radioactive and hazardous wastes. The storage capacity requirements will be determined by the actual volume of hazardous wastes that will be generated during RCRA closures, on-going site remediation activities and the amount of hazardous wastes that can be shipped to off-site treatment and disposal facilities.

Hazardous wastes removed or generated during remediation or closure of a hazardous waste management unit included in this closure plan information, will be sent to an approved treatment or disposal facility. Currently there is a ~~lack of~~ **insufficient** national capacity for approved treatment or disposal facilities to handle mixed wastes. Since the FEMP cannot predict when there will be an increase in capacity, it is anticipated that extended on-site storage will be required for mixed wastes that are currently stored on-site as well as any additional mixed wastes that will be generated during site remediation and RCRA closures.

Considering the unknown volume of wastes to be managed and the current limitations on approved off-site treatment and disposal options for mixed wastes, the exact timing and sequence for closure of the hazardous waste management units at the FEMP cannot be projected prior to closure. However, it is anticipated that the prioritized sequence of hazardous waste management unit closures will consider the capacity for additional hazardous waste storage in the unit, off-site capacity for treatment or disposal of mixed

waste, and operational limitations and maintenance required on the units. Other considerations that may impact the final closure schedules include CERCLA activities near the units, a shortfall of approved laboratory capacity, and delays in funding approval.

Although the exact closure sequence and overall final facility closure schedule cannot be determined at this time, the FEMP currently anticipates that the Plant 1 Pad will be the last unit to be closed. Detailed schedules for closure activities at each storage unit are provided in Section I-1(e)(4). Each closure schedule assumes adequate alternative storage capacity exists for the hazardous waste being removed from the unit undergoing closure. This anticipated closure scheme allows each unit, except Plant 1 Pad, to be closed within 180 days. Hazardous waste inventory from each unit will be either transported directly off-site for treatment/disposal, if capacity is available, or moved to an approved alternative storage area pending off-site transport.

I-1d(1) Time Allowed for Closure

Pursuant to OAC 3745-55-13 and 40 CFR 264.113, closure of the hazardous waste management units will be initiated within 90 days of the date of final receipt of hazardous wastes. Based on the operational requirements discussed in the previous section, the date of final receipt of hazardous wastes for a given storage unit at the FEMP will be the date on which the following conditions are met:

- The storage capacity is no longer required for storage of hazardous wastes being generated during RCRA closure actions or site remediation activities, and
- All hazardous wastes in the storage unit can be

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transferred to an approved storage area(s) on-site and/or to approved and contracted off-site treatment and disposal facilities.

I-1d(1)(a) Extension for Closure Time

Based on the size of the Plant 1 Pad (480,000 square feet), the large volume of hazardous waste expected to be in storage at the unit, and the possible use of the pad for storage of hazardous waste from other hazardous waste management units undergoing closure, the regulatory requirements for removing the hazardous wastes within 90 days of initiating closure, and completing closure within 180 days after receiving the final volume of hazardous wastes at this unit are not expected to be met. Closure activities for Plant 1 Pad are expected to exceed the time allowed for closure by approximately 400 days.

The FEMP hereby requests an extension of time allowed for closure of the Plant 1 Pad to both exceed the 90 days allowed for removal of hazardous wastes [OAC 3745-55-13(A) and 40 CFR 264.113(a)] and the 180 days allowed to complete final closure of the unit [~~OAC 3745-55(B)~~ **OAC 3745-55-13(B)** and 40 CFR 264.113(b)] This extension, required for closure of the Plant 1 Pad, has been incorporated into the schedule for closure of the unit provided in Section I-1(e)(4)(g). The Plant 1 Pad closure plan information [Section I - 1(e)(4)(g)] describes the steps that will be taken to prevent threats to human health and the environment during the extended closure period.

I-1e Closure Procedures

This section of the closure plan information addresses the procedures to be followed in closing the facility hazardous waste management units. This section addresses inventory removal, disposal or decontamination of secondary containment structures, equipment and residues, soil sampling, and ancillary activities related to closure of the units.

I-1e(1) Inventory Removal

Prior to initiating the procedures described in this closure plan information, an operational protocol will be developed to establish the appropriate hierarchy for closing any one unit or all hazardous waste storage units at the facility. This protocol will identify the sequence in which the units will be closed, and how stored hazardous waste will be managed. This protocol will take into account the availability of both on and off-site treatment, storage and disposal facilities for mixed waste. In devising the operational protocol, the closure manager will consider the operational status of the unit and equipment, identify the type and quantities of hazardous wastes in current and past inventory, obtain spill records for the unit, develop an inventory management plan, and ensure that staff and resources are available to complete closure according to this plan. Inventory removal will be accomplished according to the established protocol.

I-1e(2) Disposal or Decontamination of Structures, Soil,  
Equipment, and Residues

The following sections provide a summary of the methods the FEMP will use to decontaminate structures and equipment, and conduct soil sampling during closure activities. Prior to initiation of closure, an inventory review will be conducted (as part of the operational protocol mentioned above) which will identify the hazardous wastes that have been stored in each unit undergoing closure.

~~With the exception of the Plant 1 Pad, samples~~ **Samples** collected in support of closure operations (including rinseate and soil samples) at the units will be analyzed for the hazardous waste constituents of the waste managed in the unit, as listed in OAC 3745-51 and 40 CFR Part 261 Appendix VII. ~~Due to the large volume and diversity of hazardous wastes managed on the Plant 1 Pad, sampling at this unit will include analysis for hazardous constituents (as listed in Appendix IX from OAC 3745 54 98 and 40 CFR Part 264) associated with hazardous waste managed in the unit.~~ Sampling and analysis, including analysis of tap water used for rinsing, will be conducted according to the Sampling and Analysis Plan (Attachment I-1), the FEMP Waste Analysis Plan, and the FEMP Waste Determination Plan.

The decontamination procedures discussed in this section apply to closure activities for the hazardous waste storage units to be permitted. Detailed decontamination procedures for each unit are discussed in Section I-1e(4). An attempt will be made to decontaminate the secondary containment structures using methods described in this plan. If decontamination of

these structures cannot be achieved, a revision to the closure plan information will be submitted to OEPA for approval. The revision will include alternative methods for decontaminating the secondary containment structures or provide for removal of the structures and disposal in accordance with applicable solid and hazardous waste requirements. The amount of hazardous waste generated will be minimized during decontamination using every practical technique available. However, it is estimated that up to 3,100 fifty-five gallon drums of hazardous waste (or mixed waste) could be generated during decontamination of the storage warehouses and the Plant 1 Pad.

I-1e(2)(a) Decontamination of Secondary Containment Structures

Following removal of the hazardous wastes, a Professional Engineer will inspect the hazardous waste container storage areas for any breaches in the secondary containment system. ~~If a failure is noted or there are indications that hazardous waste may have contacted the soil beneath the concrete, samples will be collected as necessary and analyzed for the hazardous waste constituents associated with the waste stored at the unit to determine the presence and extent of contamination.~~ If the integrity assessment indicates that hazardous waste or hazardous constituents may have migrated out of the unit, directed soil sampling in the area of the breach will be conducted. The samples will be analyzed for the hazardous waste constituents associated with the waste stored at the unit to determine the presence and extent of contamination.

~~Plant 1 Pad analyses will be conducted for hazardous constituents.~~ If analyses indicate no hazardous waste or constituents have escaped from the unit, the breach will be sealed and decontamination activity will continue in accordance with this plan. If the soil analysis results exceed the clean standard for soil verification sampling, the FEMP will notify OEPA of the unexpected event and submit revised closure plan information.

Decontamination will begin with vacuuming of the concrete secondary containment surface. This will be followed by one of the decontamination methods listed on Table I-2, depending upon the nature of the unit to be closed. Following the selected decontamination method, the concrete secondary containment structure will be rinsed with tap water to remove the decontamination residues. A sample will be taken from the final rinseates and analyzed for the hazardous waste constituents listed in OAC 3745-51 and 40 CFR Part 261 for the hazardous waste stored in the unit. The rinseate analyses will be used to demonstrate that decontamination has been accomplished in accordance with the closure performance standard of Section I-1(a)(1). ~~In the case of Plant 1 Pad, rinseate analyses will include hazardous constituents as listed in Appendix IX from OAC 3745-54-98 and 40 CFR Part 264.~~ Attempts at decontamination, followed by rinsing, will continue until either the "clean" closure criteria of Section I-1a(1) are achieved, or it is determined that decontamination cannot be achieved. If decontamination of these structures cannot be achieved, a revision to

the closure plan information will be submitted to OEPA for approval.

Additionally, concrete chip samples will be taken from discolored areas on ~~the~~ concrete secondary containment structures and from any areas where spills have been documented to have occurred. The concrete samples will also be analyzed for the hazardous waste constituents listed in OAC 3745-51 and 40 CFR Part 261 for those hazardous wastes determined from review of inventory records to have been stored in the unit. ~~(Plant 1 Pad analyses will be conducted for those hazardous constituents listed in OAC 3745-54-98 and 40 CFR Part 264 Appendix IX).~~

#### I-1e(2)(b) Soil Sampling

Soil sampling is not anticipated for the six hazardous waste container storage warehouse units (Buildings 63, 81, 80, 56, 79, and 68) since the storage areas are located totally within enclosed buildings and have concrete floors. Because the Plant 1 Pad is partially uncovered, however, the FEMP anticipates that soil sampling will be conducted at this unit as discussed in Section I-1e(4)(g).

At the time of closure, spill records will be reviewed and an engineering assessment of the concrete secondary containment structures in the storage units will be conducted. If spills are documented to have occurred and resulted in potentially contaminated soils, ~~or if the engineering assessment indicates that the secondary~~

~~containment structure has been breached, or if the integrity assessment indicates that hazardous waste or hazardous constituents may have migrated out of the unit through the breach,~~ directed soil sampling will be conducted in areas of known or suspected contamination. The analytical parameters will be based on the hazardous waste constituents, listed in OAC 3745-51 and 40 CFR Part 261, for those hazardous wastes stored in the unit. ~~In the case of Plant 1 Pad, analyses will be for hazardous constituents.~~ If contamination is detected in directed soil sampling efforts, the FEMP will promptly notify the OEPA and submit revised closure plan information.

I-1e(2)(c) Decontamination of Equipment Used During the Closure Process

Equipment decontamination will be conducted on the equipment used in the closure of the hazardous waste management units. Any equipment used in hazardous waste activities and not previously decontaminated will be decontaminated at final facility closure.

~~Types of equipment to be used in performing closure activities which may be required to undergo decontamination include the following: wet and dry sweepers, scrubbers, and vacuums; heavy equipment such as forklifts used to remove inventory; and sampling equipment (including saws, drills, and coring devices used in sampling concrete). A list of equipment expected to be used during sampling is included in Attachment I-1.~~

Table I-2 lists the potential methods of equipment decontamination methods that may be used at the FEMP. The method selected at the time of closure and the setup for equipment decontamination will be designed to contain and minimize the hazardous waste generated, and minimize the potential for release of hazardous waste or constituents to the environment. ~~Decontamination will be conducted over an impervious area located adjacent to the unit undergoing closure.~~ Decontamination of equipment used during closure activities will be conducted either in a temporary decontamination unit constructed adjacent to the unit undergoing closure, or in another approved decontamination unit or area. The temporary decontamination unit will consist of impervious sheeting placed over prepared soils or concrete in close proximity to the unit. The impervious sheeting will consist of Herculite or other suitable compatible material and will extend up and over a boundary dike network consisting of four inch PVC piping with slip-fitted joints to form a non-leaking decontamination basin. Any seams in the plastic sheeting will be either taped or heat sealed to prevent any migration of liquids out of the unit. Decontamination will not be attempted during adverse weather conditions.

Equipment used for closure activities will be cleaned using one of the methods listed on Table I-2 and will be rinsed with tap water. Runoff of liquids during decontamination will be prevented by temporary dikes. Liquids and other residues will be containerized and evaluated to determine if they are hazardous or solid

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waste. The final rinseate will be sampled and analyzed according to the Sampling and Analysis Plan (Attachment I-1), the FEMP Waste Analysis Plan, and the FEMP Waste Determination Plan to determine whether the equipment has been successfully decontaminated. The specific analytical parameters will be determined through a review of the inventory records of hazardous waste stored in the unit and potentially in contact with the equipment. The analytical parameters will be based on the hazardous waste constituents, listed in OAC 3745-51 and 40 CFR Part 261, for the hazardous wastes stored in the unit. ~~For the Plant 1 Pad, analyses will be for hazardous constituents.~~ The acceptable "clean" concentration limits that will apply to the decontamination rinseate are the same as those described in Section I-1a(1).

#### I-1e(2)(d) Disposal of Decontamination Residues

All structures and equipment that cannot be decontaminated and expendable materials used in decontamination (rags, mops, sorbent pads, protective clothing, etc.) will be managed in a manner consistent with FEMP hazardous waste practices pending hazardous waste determinations.

All wash and rinse waters will be collected, managed in a manner consistent with hazardous waste management practices, and evaluated to determine if they are hazardous or solid wastes. If the final rinseate is below "clean" levels, it will be considered non-hazardous and managed as a solid waste. Hazardous

wastes will be managed and disposed in accordance with applicable hazardous waste rules and regulations.

**I-1e(3) Closure of Disposal Units/Contingent Closures**

All container storage units at the FEMP are constructed and operated in a manner to prevent releases of hazardous wastes to the environment. None of the hazardous waste storage units are utilized for disposal of hazardous wastes. Since the units are designed for storage only, contingent post-closure plan information is not required.

**I-1e(4) Closure of Containers ~~Container Storage Units~~**

This section presents the specific closure procedures for each of the hazardous waste container storage units at the FEMP. This section presents the specific closure procedures for each of the hazardous waste container storage units at the FEMP. Each of the following subsections present unit specific information concerning the hazardous waste management unit description, maximum hazardous waste inventory, schedule for closure, inventory removal, decontamination or disposal of structures and equipment, disposal of decontamination residues, and soil sampling, if necessary.

**I-1e(4)(a) KC-2 Warehouse (Building 63) Closure Plan Information**

**Hazardous Waste Management Unit Description**

The KC-2 Warehouse (Building 63) is currently operated as a hazardous waste container storage building for storage of hazardous waste with and without free

liquids. Figure I-1 shows the location of the KC-2 Warehouse. The warehouse is a concrete block and sheet metal enclosed building. The dimensions of the KC-2 Warehouse are 82 feet wide by 346 feet long. Figures I-2A and I-2B present drawings of the KC-2 Warehouse. The interior is subdivided into eight containment areas (Bays 1 through 8). The concrete slab comprising the floor of the bays is approximately eight inches thick. ~~Currently, Bays 5, 6, and 7 have~~ Each bay is equipped with a six inch by six inch containment dikes dike overlaid with an eight foot wide access ramp. The concrete floor and dikes ~~for Bays 5, 6, and 7~~ are coated with a durable epoxy polymer to create an impermeable surface. Each containment structure provides for the retention of at least 10 percent of the total hazardous waste volume being stored within the respective bay. Any spilled material in the containment area is removed, containerized, labeled and stored for disposal. Run-on and runoff is not a concern for this unit since it is completely covered and diked.

~~An abandoned groundwater monitoring well has recently been discovered in Bay 2 of the KC-2 Warehouse. Hazardous waste will not be stored in Bay 2 pending the resolution of this issue. In the future, Bay 2 may be used to store hazardous waste without free liquids.~~

~~Bays 1, 2, 3, 4, and 8 currently have no concrete containment curbing between bays, and will therefore only be used to store hazardous waste without free liquids as determined by process knowledge or visual inspection. Any material spilled in these storage areas~~

~~will be removed, containerized, labeled, and stored for disposal.~~

### Maximum Hazardous Waste Inventory

The maximum capacity of this unit is ~~234,520~~ 200,640 gallons of hazardous wastes. The maximum number of drums that can be stored is ~~4,264~~ 3,648 based on the storage of 55 gallon drums. Hazardous wastes with and without free liquids are stored in the unit. Storage capacities for the eight bays are as follows:

- Bay 1 - ~~49,280~~ 32,120 gallons (~~solids only~~)  
(liquids and solids)
- Bay 2 - ~~49,280~~ 43,560 gallons (solids only)
- Bay 3 - ~~39,600~~ 33,440 gallons (~~solids only~~)  
(liquids and solids)
- Bay 4 - ~~25,520~~ gallons (~~solids only~~) (liquids and solids)
- Bay 5 - ~~25,080~~ 23,760 gallons (liquids and solids)
- Bay 6 - ~~25,520~~ gallons (liquids and solids)
- Bay 7 - ~~13,200~~ 11,440 gallons (liquids and solids)
- Bay 8 - ~~7,040~~ 5,280 gallons (~~solids only~~)  
(liquids and solids)

A complete list of hazardous wastes that have been stored at this unit along with the applicable OAC 3745-51 and 40 CFR Part 261 hazardous waste constituents of each waste, will be submitted to the OEPA following notification of closure.

### Schedule for Closure

The FEMP will notify the OEPA at least 45 days prior to the initiation of closure activities. The FEMP intends to close the KC-2 Warehouse within 180 days of beginning closure. The schedule for closing this unit is detailed in Figure I-3. Meeting this schedule is contingent upon the availability of treatment, storage, or disposal facilities, laboratory capacity, and proper funding, as discussed in Section I-1d. If the closure cannot be completed in 180 days, the FEMP will request an extension of time to complete closure. Any request for extension will be submitted as a modification to the closure plan information. ~~Closure of this unit will be consistent with the final remediation and closure of the entire site under the CERCLA program.~~ Closure of this unit will be consistent with the activities implemented to complete final CERCLA remediation at the FEMP.

### Inventory Removal

As part of the operational protocol developed for integrated site wide closures, the closure manager will devise an operational protocol to ensure specific closure activities at the KC-2 Warehouse are accomplished within the closure schedule. The manager will consider the sequence of operations, resources required, and types and quantities of hazardous waste stored. In devising the operational protocol, the manager will develop an inventory reduction plan specifying how, when, and where each hazardous waste will be managed, and ensure that resources are available to complete the closure activities as scheduled.

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At closure, the hazardous waste inventory from the KC-2 Warehouse will be directly transported off-site for treatment/disposal, if off-site capacity is available, or moved to Plant 1 Pad or another approved storage location. Inventory removal may be undertaken at any time, but will be completed within 90 days after the start of closure. Following inventory removal, an engineering assessment will be conducted to determine the condition and integrity of the secondary containment structure and concrete floor slab structures.

#### Decontamination of Structures and Equipment

Following the engineering integrity assessment, the KC-2 Warehouse secondary containment structures will be decontaminated. If decontamination of these structures cannot be achieved, a revision to the closure plan information will be submitted to OEPA for approval. Prior to decontamination, any breaches or structural defects noted in the integrity assessment will be evaluated for potential releases to the environment. If a possibility exists that hazardous waste or waste constituents may have migrated out of the unit through the breach, directed soil sampling in the area of the breach or crack will be conducted prior to attempts at decontamination.

The FEMP's objective is to "clean" close this unit while minimizing the amount of hazardous waste generated from closure activities. Before closing the unit, the FEMP will select an appropriate decontamination method to achieve "clean" closure. The decontamination method that is currently planned for the KC-2 Warehouse

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~~secondary containment structure and bay floors~~  
~~structures~~ is detailed below. The procedures given  
apply separately to individual bays, and may be repeated  
as required.

- 1) ~~The bays and any secondary containment structures~~  
will be vacuumed to remove the surface residue.
- 2) ~~Temporary berms and/or sorbent pads will be~~  
~~placed around the perimeter of Bays 1, 2, 3, 4,~~  
~~and 8 to contain wash and rinse solutions.~~
- 2) An aqueous detergent solution will be used to  
scrub the surface of the concrete containment  
structures. The waste detergent solution will be  
mopped or vacuumed from the containment  
structures.
- 3) The containment structures ~~and bay floors~~ will be  
rinsed with tap water. The rinseate will be  
mopped or vacuumed from each bay, collected in a  
clean sump, or pumped to an appropriate clean  
container and sampled to evaluate and confirm  
decontamination efforts, according to the  
Sampling and Analysis Plan (Attachment I-1), the  
FEMP Waste Analysis Plan and the FEMP Waste  
Determination Plan.

Decontamination will be verified by sampling and  
analyzing the final rinse. These samples will be  
analyzed for the hazardous waste constituents of the  
waste managed in the unit, as listed in OAC 3745-51 and

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40 CFR Part 261. If the final rinse does not achieve the "clean" levels for rinseate as discussed in Section I-1a(1), the decontamination procedures described above will be repeated or a revision to this closure plan information will be submitted to the OEPA.

Disposal of Decontamination Residues

All structures and equipment that cannot be decontaminated and expendable materials used in decontamination (rags, mops, sorbent pads, protective clothing, etc.) will be stored and managed in a manner consistent with FEMP hazardous waste practices pending hazardous waste determinations.

All wash and rinse waters will be collected, stored and managed in a manner consistent with hazardous waste management practices and evaluated to determine if they are hazardous or solid wastes. If the final rinseate is below "clean" levels, it will be considered non-hazardous and managed as a solid waste. Hazardous wastes will be managed and disposed in accordance with applicable hazardous waste regulations.

Soil Sampling

It is not anticipated that soil sampling will be required for the KC-2 Warehouse. The unit is a totally enclosed building, and the containment areas containing free liquids are curbed with curbed containment areas.

An engineering assessment will be performed at the time of closure to determine the integrity of the concrete floor and curbing. Spill records will also be reviewed. If spills are documented to have occurred and resulted

in potentially contaminated soils, or if the engineering assessment indicates that the integrity of containment structures or floors of the bays may have been breached, or if the integrity assessment indicates that hazardous waste or hazardous constituents may have migrated out of the unit through the breach, directed soil sampling will be conducted prior to decontamination to determine if hazardous waste constituents have reached the soil surrounding or underlying the unit. If hazardous waste constituents are detected in the directed soil sampling efforts, a revision to the closure plan information including a revised closure schedule will be submitted to the OEPA.

I-1e(4)(b) Plant 9 Warehouse (Building 81) Closure Plan Information

Hazardous Waste Management Unit Description

The Plant 9 Warehouse (Building 81) is currently operated as a hazardous waste container storage building for wastes with and without free liquids. Figure I-1 shows the location of the Plant 9 Warehouse. The warehouse is a steel framed, sheet metal enclosed building. The dimensions of the Plant 9 Warehouse are 80 feet wide by 100 feet long. Figure I-4 presents a drawing of the Plant 9 Warehouse. The interior is subdivided into three containment areas (Bays A, B, and C) delineated by concrete curbing. The concrete curb height varies, with a minimum curb height of six inches. Each containment structure provides for the retention of at least 10 percent of the total hazardous waste volume being stored within the respective bay. The concrete

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slab comprising the floor of the bays is approximately six inches thick. The surface of the concrete floor and curbs was treated with a sealant. Construction and control joints were sealed with a flexible urethane compound. Any spilled material in the containment storage areas is removed, containerized, labeled, and stored for disposal. Run-on and runoff is not a concern for this unit since it is completely covered and diked.

#### Maximum Hazardous Waste Inventory

The maximum capacity of this unit is ~~83,160~~ ~~86,240~~ gallons of hazardous wastes. The maximum number of drums that can be stored is ~~1,512~~ ~~1,568~~ based on the storage of 55 gallon drums. The unit is used for storage of hazardous wastes with and without free liquids. Bay A has the capacity to store ~~552~~ ~~684~~ fifty-five gallon drums. Bay B has the capacity to store ~~900~~ ~~824~~ fifty-five gallon drums. Bay C has the capacity to store 60 fifty-five gallon drums. A complete list of hazardous wastes that have been stored at this unit, along with the applicable OAC 3745-51 and 40 CFR Part 261 hazardous waste constituents of each waste, will be submitted to the OEPA following notification of closure.

#### Schedule for Closure

The FEMP will notify the OEPA at least 45 days prior to the initiation of closure activities. The FEMP intends to close the Plant 9 Warehouse within 180 days of beginning closure. The schedule for closing this unit is detailed in Figure I-5. Meeting this schedule is contingent upon the availability of treatment, storage, or disposal facilities, laboratory capacity, and proper

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funding as discussed in Section I-1d. If the closure cannot be completed in 180 days, the FEMP will request an extension of time to complete closure. Any request for extension will be submitted as a modification to the closure plan information. ~~Closure of the unit will be consistent with the final closure and remediation of the entire site under CERCLA.~~ Closure of the unit will be consistent with the activities implemented to complete final CERCLA remediation at the FEMP.

Inventory Removal

As part of the operational protocol developed for integrated site wide closures at the FEMP, the closure manager will devise an operational protocol to ensure specific closure activities at the Plant 9 Warehouse are accomplished within the closure schedule. The manager will consider the sequence of operations, resources required, and types and quantities of hazardous waste stored. In devising the operational protocol, the manager will develop an inventory reduction plan specifying how, when, and where each hazardous waste will be managed, and ensure that resources are available to complete closure activities as scheduled.

At closure, the inventory from the Plant 9 Warehouse will be directly transported off-site for treatment/disposal, if off-site capacity is available, or moved to Plant 1 Pad or another approved storage location. Inventory removal may be undertaken at any time, but will be completed within 90 days after the start of closure. Following inventory removal, an engineering assessment will be conducted to determine

the condition and integrity of the secondary containment structure.

Decontamination of Structures and Equipment

Following the engineering integrity assessment, the Plant 9 Warehouse secondary containment structure will be decontaminated. If decontamination of these structures cannot be achieved, a revision to the closure plan information will be submitted to OEPA for approval. Prior to decontamination, any breaches or structural defects noted in the integrity assessment will be evaluated for potential releases to the environment. If hazardous waste or waste constituents may have migrated out of the unit through the breach, directed soil sampling in the area of the breach or crack will be conducted prior to attempts at decontamination.

The FEMP's objective is to "clean" close this unit while minimizing the amount of hazardous waste generated from closure activities. Before closing the unit, the FEMP will select an appropriate decontamination method to achieve "clean" closure. The decontamination method that is currently planned for the Plant 9 Warehouse secondary containment structure is detailed below. The procedures given apply separately to individual bays, and may be repeated as required.

- 1) The secondary containment structures (bays) will be vacuumed to remove surface residue.
- 2) An aqueous detergent solution will be used to scrub the surface of the concrete containment

structures. The waste detergent solution will be mopped or vacuumed from the containment structures.

- 3) The containment structures will be rinsed with tap water. The rinseate will be mopped or vacuumed from the containment structures, collected in a clean sump, or pumped to an appropriate clean container and sampled to evaluate and confirm decontamination efforts, according to the Sampling and Analysis Plan (Attachment I-1), the FEMP Waste Analysis Plan, and the FEMP Waste Determination Plan.

Decontamination will be verified by sampling and analyzing the final rinse. These samples will be analyzed for the hazardous waste constituents of the hazardous waste managed in the unit, as listed in OAC 3745-51 and 40 CFR Part 261. If the final rinse does not achieve the "clean" levels for rinseate as discussed in Section I-1a(1), the decontamination procedures described above will be repeated or a revision to this closure plan information will be submitted to the OEPA.

Disposal of Decontamination Residues

All equipment that cannot be decontaminated and expendable materials used in decontamination (rags, mops, sorbent pads, protective clothing, etc.) will be stored and managed in a manner consistent with FEMP hazardous waste practices pending hazardous waste determinations.

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All wash and rinse waters will be collected, stored and managed in a manner consistent with hazardous waste management practices and evaluated to determine if they are hazardous or solid wastes. If the final rinseate is below "clean" levels, it will be considered non-hazardous and managed as a solid waste. Hazardous wastes will be managed and disposed in accordance with applicable hazardous waste regulations.

Soil Sampling

It is not anticipated that soil sampling will be required for the Plant 9 Warehouse. The unit is a totally enclosed building with curbed containment areas. An engineering assessment will be performed at the time of closure to determine the integrity of the concrete floor and curbing. Spill records will also be reviewed. If spills are documented to have occurred and resulted in potentially contaminated soils, ~~or if the engineering assessment indicates that the integrity of containment structures may have been breached,~~ ~~or if the integrity assessment indicates that hazardous waste or hazardous constituents may have migrated out of the unit through the breach,~~ directed soil sampling will be conducted prior to decontamination to determine if hazardous waste constituents have reached the soil surrounding or underlying the unit. If hazardous waste constituents are detected in the directed soil sampling efforts, a revision to the closure plan information will be submitted to the OEPA for approval. The revision will include a revised closure schedule.

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I-1e(4)(c) Plant 8 Warehouse (Building 80) Closure Plan  
Information

Hazardous Waste Management Unit Description

The Plant 8 Warehouse (Building 80) is currently operated as a hazardous waste container storage building for hazardous wastes without free liquids. Figure I-1 shows the location of the Plant 8 Warehouse. The warehouse is a steel framed, sheet metal enclosed building. The dimensions of the Plant 8 Warehouse are 60 feet wide by 170 feet long. Figure I-6 presents a drawing of the Plant 8 Warehouse storage area. The interior storage area is not subdivided into bays. The concrete slab comprising the floor of the building is approximately 8 inches thick. Since there is no concrete curbing or other berms in the storage area, this warehouse is only used to store hazardous waste without free liquids. Any material spilled in the storage area is removed, containerized, labeled, and stored for disposal. Run-on and runoff is not a concern for this unit since it is completely enclosed.

Maximum Hazardous Waste Inventory

The maximum capacity of this unit is 139,260 gallons of hazardous wastes. The maximum number of drums that can be stored is 2,532 based on the storage of 55 gallon drums. Only hazardous wastes without free liquids are stored in fifty-five gallon drums in this unit. A complete list of hazardous wastes that have been stored at this unit, along with the applicable OAC 3745-51 and 40 CFR Part 261 hazardous waste constituents of each

waste, will be submitted to the OEPA following notification of closure.

Schedule for Closure

The FEMP will notify the OEPA at least 45 days prior to the initiation of closure activities. The FEMP intends to close the Plant 8 Warehouse within 180 days of beginning closure. The schedule for closing this unit is detailed in Figure I-7. Meeting this schedule is contingent upon the availability of treatment, storage, or disposal facilities, laboratory capacity, and proper funding, as discussed in Section I-1d. If the closure cannot be completed in 180 days, the FEMP will request an extension of time to complete closure. Any request for extension will be submitted as a modification to the closure plan information.

Inventory Removal

As part of the operational protocol developed for integrated site wide closures, the closure manager will devise an operational protocol to ensure specific closure activities at the Plant 8 Warehouse are accomplished within the closure schedule. The manager will consider the sequence of operations, resources required, and types and quantities of hazardous waste stored. In devising the operational protocol, the manager will develop an inventory reduction plan specifying how, when, and where each hazardous waste will be managed, and ensure that resources are available to complete closure activities as scheduled.

At closure, the inventory from the Plant 8 Warehouse

will be directly transported off-site for treatment/disposal, if off-site capacity is available, or moved to the Plant 1 Pad or another approved storage location. Inventory removal may be undertaken at any time, but will be completed within 90 days after the start of closure. Following inventory removal, an engineering assessment will be conducted to determine the condition and integrity of the concrete floor slab.

Decontamination of Structures and Equipment

Following the engineering integrity assessment, the Plant 8 Warehouse concrete floor slab will be decontaminated. If decontamination of this structure cannot be achieved, a revision to the closure plan information will be submitted to OEPA for approval. Prior to decontamination, any breaches or structural defects noted in the integrity assessment will be evaluated for potential releases to the environment. If hazardous waste or waste constituents may have migrated out of the unit through the breach, directed soil sampling in the area of the breach or crack will be conducted prior to attempts at decontamination.

The FEMP's objective is to "clean" close this unit while minimizing the amount of hazardous waste generated from closure activities. Before closing the unit, the FEMP will select an appropriate decontamination method to achieve "clean" closure. The decontamination method that is currently planned for the Plant 8 Warehouse area is detailed below. The procedures given may be repeated as required.

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- 1) The warehouse floor will be vacuumed to remove surface residue.
- 2) Temporary berms or sorbent pads will be placed around the perimeter of the storage area to contain wash and rinse solutions.
- 3) An aqueous detergent solution will be used to scrub the surface of the concrete floor. The waste detergent solution will be mopped or vacuumed from the floor of the storage area.
- 4) The storage area will be rinsed with tap water. The rinseate will be mopped or vacuumed from the floor, collected in a clean sump, or pumped to an appropriate clean container and sampled to evaluate and confirm decontamination efforts, according to the Sampling and Analysis Plan (Attachment I-1), the FEMP Waste Analysis Plan, and the FEMP Waste Determination Plan.

Decontamination will be verified by sampling and analyzing the final rinse. These samples will be analyzed for the hazardous waste constituents of the waste managed in the unit, as listed in OAC 3745-51 and 40 CFR Part 261. If the final rinse does not achieve the "clean" levels for rinseate as discussed in Section I-1a(1), a revision to this closure plan information will be submitted to OEPA.

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### Disposal of Decontamination Residues

All equipment that cannot be decontaminated and expendable materials used in decontamination (rags, mops, sorbent pads, protective clothing, etc.) will be stored and managed in a manner consistent with FEMP hazardous waste practices pending hazardous waste determinations.

All wash and rinse waters will be collected, stored and managed in a manner consistent with hazardous waste management practices and evaluated to determine if they are hazardous or solid wastes. If the final rinseate is below "clean" levels, it will be considered non-hazardous and managed as a solid waste. Hazardous wastes will be managed and disposed in accordance with applicable hazardous waste regulations.

### Soil Sampling

It is not anticipated that soil sampling will be required for the Plant 8 Warehouse. The unit is a totally enclosed building that stores hazardous wastes without free liquids. An engineering assessment will be performed at the time of closure to determine the integrity of the concrete floor. ~~and curbing.~~ Spill records will also be reviewed. If spills are documented to have occurred and resulted in potentially contaminated soils, ~~or if the engineering assessment indicates that the integrity of containment structures may have been breached, or if the integrity assessment indicates that hazardous waste or hazardous constituents may have migrated out of the unit through the breach,~~ directed soil sampling will be conducted prior to

decontamination to determine if hazardous waste constituents have reached the soil surrounding or underlying the unit. If hazardous waste constituents are detected in the directed soil sampling efforts, a revision to the closure plan information will be submitted to the OEPA for approval. The revision will include a revised closure schedule.

I-1e(4)(d) CP Storage Warehouse - Building 56 (Butler Building) Closure Plan Information

Hazardous Waste Management Unit Description

The CP Storage Warehouse (Building 56) is currently operated as a hazardous waste container storage building for the FEMP. Figure I-1 shows the location of the CP Storage Warehouse. The warehouse is a steel framed, sheet metal enclosed building. The dimensions of the CP Storage Warehouse are 50 feet wide by 180 feet long. The concrete slab comprising the floor of the building is approximately six inches thick. Figure I-8 presents a drawing of the CP Storage Warehouse. The CP Storage Warehouse has a total storage area of 8,464 square feet. The storage area is not divided into bays. ~~Since there is no concrete curbing or other berms in the building, this warehouse is only used to store hazardous waste without free liquids. Any material spilled in the storage areas is removed, containerized, labeled, and stored for disposal.~~ A six by six inch containment dike has been installed, overlaid with an eight foot wide access ramp. The concrete floor and dike are coated with a durable epoxy polymer to create an impermeable surface. The containment structure provides for the

retention of at least ten percent of the total hazardous waste volume being stored in the unit. Any spilled material in the containment area is removed, containerized, labeled, and stored for disposal. Run-on and runoff is not a concern for this unit since it is completely enclosed.

Maximum Hazardous Waste Inventory

The maximum capacity of this unit is 127,345 116,160 gallons of hazardous wastes. The maximum number of drums that can be stored is 2,317 2,112 based on the storage of 55 gallon drums. Hazardous wastes without free liquids are stored in this unit. A complete list of hazardous wastes that have been stored at this unit, along with the applicable OAC 3745-51 and 40 CFR Part 261 hazardous waste constituents for each waste, will be submitted to the OEPA following notification of closure.

Schedule for Closure

The FEMP will notify the OEPA at least 45 days prior to the initiation of closure activities. ~~The~~ The FEMP intends to close the CP Storage Warehouse within 180 days of beginning closure. The schedule for closing this unit is detailed in Figure I-9. Meeting this schedule is contingent upon the availability of treatment, storage, or disposal facilities, laboratory capacity, and proper funding as discussed in Section I-1d. If the closure cannot be completed in 180 days, the FEMP will request an extension of time to complete closure. Any request for extension will be submitted as a modification to the closure plan information.

### Inventory Removal

As part of the operational protocol developed for integrated site wide closures, the closure manager will devise an operational protocol to ensure specific closure activities at the CP Storage Warehouse are accomplished within the closure schedule. The manager will consider the sequence of operations, resources required, and types and quantities of hazardous waste stored. In devising the operational protocol, the manager will develop an inventory reduction plan specifying how, when, and where each hazardous waste will be managed, and ensure that resources are available to complete closure activities as scheduled.

At closure, the hazardous waste inventory from the CP Storage Warehouse will be directly transported off-site for treatment/disposal, if off-site capacity is available, or moved to Plant 1 Pad or another approved storage location. Inventory removal may be undertaken at any time, but will be completed within 90 days after the start of closure. Following inventory removal, an engineering assessment will be conducted to determine the condition and integrity of the ~~concrete floor slab~~ secondary containment structure.

### Decontamination of Structures and Equipment

Following the engineering integrity assessment, the CP Storage Warehouse ~~concrete floor slab~~ secondary containment structure will be decontaminated. If decontamination of this structure cannot be achieved, a revision to the closure plan information will be submitted to OEPA for approval. Prior to

decontamination, any breaches or structural defects noted in the integrity assessment will be evaluated for potential releases to the environment. If hazardous waste or waste constituents may have migrated out of the unit through the breach, directed soil sampling in the area of the breach or crack will be conducted prior to attempts at decontamination.

The FEMP's objective is to "clean" close this unit while minimizing the amount of hazardous waste generated from closure activities. Before closing the unit, the FEMP will select an appropriate decontamination method to achieve "clean" closure. The decontamination method that is currently planned for the CP Storage Warehouse storage area is detailed below. The procedures may be repeated as required.

- 1) The ~~warehouse floor~~ **secondary containment structure** will be vacuumed to remove surface residue.
- ~~2) Temporary berms and/or sorbent pads will be placed around the perimeter of the storage area to contain wash and rinse solutions.~~
- 2) An aqueous detergent solution will be used to scrub the surface of the ~~storage area floor~~ **concrete containment structure**. The waste detergent solution will be mopped or vacuumed from the ~~floor~~ containment structure.
- 3) The storage area will be rinsed with tap water.

The rinseate will be mopped or vacuumed from the floor ~~containment structure~~, collected in a clean sump, or pumped to an appropriate clean container and sampled to evaluate and confirm decontamination efforts, according to the Sampling and Analysis Plan (Attachment I-1), the FEMP Waste Analysis Plan, and the FEMP Waste Determination Plan.

Decontamination will be verified by sampling and analyzing the final rinse. These samples will be analyzed for the hazardous waste constituents of the waste managed in the unit, as listed in OAC 3745-51 and 40 CFR Part 261. If the final rinse does not achieve the "clean" levels for rinseate as discussed in Section I-1a(1), revised closure plan information will be submitted to OEPA.

#### Disposal of Decontamination Residues

All equipment that cannot be decontaminated and expendable materials used in decontamination (rags, mops, sorbent pads, protective clothing, etc.) will be stored and managed in a manner consistent with FEMP hazardous waste practices pending hazardous waste determinations.

All wash and rinse waters will be collected, stored and managed in a manner consistent with hazardous waste management practices and evaluated to determine if they are hazardous or solid wastes. If the final rinseate is below "clean" levels, it will be considered to be non-hazardous and managed as a solid waste. Hazardous

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wastes will be managed and disposed in accordance with applicable hazardous waste regulations.

#### Soil Sampling

It is not anticipated that soil sampling will be required for the CP Storage Warehouse. The unit is a totally enclosed building ~~for storage of hazardous wastes without free liquids~~ with a curbed containment area. An engineering assessment will be performed at the time of closure to determine the integrity of the concrete floor and curbing. Spill records will also be reviewed. If spills are documented to have occurred and resulted in potentially contaminated soils, ~~or if the engineering assessment indicates that the integrity of the concrete floor has been breached, or if the integrity assessment indicates that hazardous waste or hazardous constituents may have migrated out of the unit through the breach,~~ directed soil sampling will be conducted prior to decontamination to determine if hazardous waste constituents have reached the soil surrounding or underlying the unit. If hazardous waste constituents are detected in the directed soil sampling efforts, a revision to the closure plan information will be submitted to the OEPA for approval. The revision will include a revised closure schedule.

#### I-1e(4)(e) Plant 6 Warehouse (Building 79) Closure Plan Information

##### Hazardous Waste Management Unit Description

The Plant 6 Warehouse (Building 79) is currently operated as a hazardous waste container storage building

for hazardous waste with and without free liquids. Figure I-1 shows the location of the Plant 6 Warehouse. The warehouse is a steel framed, sheet metal enclosed building. The dimensions of the Plant 6 Warehouse are 100 feet wide by 170 feet long. Figure I-10 presents a drawing of the Plant 6 Warehouse. The interior is subdivided into three containment areas (Bays A, B and C) delineated by concrete curbing. The concrete curb height varies, with a minimum curb height of six inches. Each containment structure provides for the retention of at least 10 percent of the total hazardous waste volume being stored within the respective bay. The concrete slab comprising the floor of the bays is approximately 8 inches thick. The surface of the concrete floor and curbs has been treated with a sealant. Construction and control joints were sealed with a flexible urethane compound. Any spilled material in the containment area is removed, containerized, labeled and stored for disposal. Run-on and runoff is not a concern for this unit since it is completely covered and diked.

Maximum Hazardous Waste Inventory

The maximum capacity of this unit is 202,620 230,780 gallons of hazardous wastes. The maximum number of drums that can be stored is 3,684 4,196 based on the storage of 55 gallon drums. Hazardous wastes with and without free liquids can be stored in the unit. Bay A has the capacity to store 1,536 1,492 fifty-five gallon drums. Bay B has the capacity to store 1,104 1,448 fifty-five gallon drums. Bay 3 Bay D has the capacity to store 1,044 1,256 fifty-five gallon drums. A complete list of hazardous wastes that have been stored

at this unit, along with the OAC 3745-51 and 40 CFR Part 261 hazardous waste constituents listed for each waste, will be submitted to the OEPA following notification of closure.

#### Schedule for Closure

The FEMP will notify the OEPA at least 45 days prior to the initiation of closure activities. The FEMP intends to close the Plant 6 Warehouse within 180 days of the beginning of closure. The schedule for closing this unit is detailed in Figure I-11. Meeting this schedule is contingent upon the availability of treatment, storage, or disposal facilities, laboratory capacity, and proper funding as discussed in Section I-1d. If the closure cannot be completed in 180 days, the FEMP will request an extension of time to complete closure. Any request for extension will be submitted as a modification to the closure plan information.

#### Inventory Removal

As part of the operational protocol developed for integrated site wide closures at the FEMP, the closure manager will devise an operational protocol to ensure specific closure activities at the Plant 6 Warehouse are accomplished within the closure schedule. The manager will consider the sequence of operations, resources required, and types and quantities of hazardous waste stored. In devising the operational protocol, the manager will develop an inventory reduction plan specifying how, when, and where each hazardous waste will be managed, and ensure that resources are available to complete closure activities.

At closure, the inventory from the Plant 6 Warehouse will be directly transported off-site for treatment/disposal, if off-site capacity is available, or moved to Plant 1 Pad or another approved storage location. Inventory removal may be undertaken at any time, but will be completed within 90 days after the start of closure. Following inventory removal, an engineering assessment will be conducted to determine the condition and integrity of the secondary containment structure.

Decontamination of Structures and Equipment

Following the engineering integrity assessment, the Plant 6 Warehouse secondary containment structure will be decontaminated. If decontamination of these structures cannot be achieved, a revision to the closure plan information will be submitted to OEPA for approval. Prior to decontamination, any breaches or structural defects noted in the integrity assessment will be evaluated for potential releases to the environment. If hazardous waste or waste constituents may have migrated out of the unit through the breach, directed soil sampling in the area of the breach will be conducted prior to attempts at decontamination.

The FEMP's objective is to "clean" close this unit while minimizing the amount of hazardous waste generated from closure activities. Before closing the unit, the FEMP will select an appropriate decontamination method to achieve "clean" closure. The decontamination method that is currently planned for the Plant 6 Warehouse secondary containment structure is detailed below. The

procedures given apply separately to individual bays, and may be repeated as required.

- 1) The secondary containment structures (bays) will be vacuumed to remove surface residue.
- 2) An aqueous detergent solution will be used to scrub the surface of the concrete containment structures. The waste detergent solution will be mopped or vacuumed from the containment structures.
- 3) The containment structures will be rinsed with tap water. The rinseate will be mopped or vacuumed from the containment structures, collected in a clean sump, or pumped to an appropriate clean container and sampled to evaluate and confirm decontamination efforts, according to the Sampling and Analysis Plan (Attachment I-1), the FEMP Waste Analysis Plan, and the FEMP Waste Determination Plan.

Decontamination will be verified by sampling and analyzing the final rinse. These samples will be analyzed for the hazardous waste constituents of the waste managed in the unit, as listed in OAC 3745-51 and 40 CFR Part 261. If the final rinse does not achieve the "clean" levels for rinseate [see Section I-1a(1)], a revision to this closure plan information will be submitted to OEPA.

Disposal of Decontamination Residues

All equipment that cannot be decontaminated and expendable materials used in decontamination (rags, mops, sorbent pads, protective clothing, etc.) will be stored and managed in a manner consistent with FEMP hazardous waste practices pending hazardous waste determinations.

All wash and rinse waters will be collected, stored and managed in a manner consistent with hazardous waste management practices and evaluated to determine if they are hazardous or solid wastes. If the final rinseate is below "clean" levels, it will be considered to be non-hazardous and managed as a solid waste. Hazardous wastes will be managed and disposed in accordance with applicable hazardous waste regulations.

Soil Sampling

It is not anticipated that soil sampling will be required for the Plant 6 Warehouse. The unit is a totally enclosed building with curbed containment areas. An engineering assessment will be performed at the time of closure to determine the integrity of the concrete floor and curbing. Spill records will also be reviewed. If spills are documented to have occurred and resulted in potentially contaminated soils, ~~or if the engineering assessment indicates that the integrity of containment structures may have been breached, or if the integrity assessment indicates that hazardous waste or hazardous constituents may have migrated out of the unit through the breach,~~ directed soil sampling will be conducted prior to decontamination to determine if hazardous waste

constituents have reached the soil surrounding or underlying the unit. If hazardous waste constituents are detected in the directed soil sampling efforts, a revision to the closure plan information will be submitted to the OEPA for approval. The revision will include a revised closure schedule.

I-1e(4)(f) Pilot Plant Warehouse (Building 68)  
Closure Plan Information

Hazardous Waste Management Unit Description

The Pilot Plant Warehouse (Building 68) is a pre-engineered metal fabricated building which is totally enclosed and covered by metal roofing. Figure I-1 shows the location of the Pilot Plant Warehouse.

The major portion of the building is used for storage of thorium materials. ~~In addition, drums of hazardous waste without free liquids are stored on Herculite sheeting in a bermed area in the Pilot Plant Warehouse.~~ Due to health and safety concerns regarding radiation dose rates, containers of hazardous waste with and without free liquids which contain thorium are consolidated in this unit. Strict radiological controls are in place and building access is restricted. The containers of hazardous wastes are stored on Herculite sheeting in a bermed area. Storage of these wastes is in accordance with Section 3.1 of the Consent Decree and its Stipulated Amendment which states that the FEMP is not required to comply with federal and Ohio hazardous waste regulations with regard to mixed wastes, where compliance will increase the threat to human

safety and health or the environment.

Figure I-12A presents a drawing of the Pilot Plant Warehouse building. A sketch showing the location of the RCRA storage area is presented in Figure I-12B.

The Pilot Plant Warehouse building is 50 feet wide and 100 feet long. The concrete slab comprising the floor of the building is constructed of a eight inch thick crushed granular sub-base topped with eight inches of steel-bar reinforced class E concrete. The RCRA storage area, for which an operating permit is being sought, comprises an area approximately 75 69 feet by 7 feet. The area is bounded by a ~~four inch by four inch wooden dike~~ U-shaped concrete berm covered with Herculite sheeting to provide an impermeable barrier to contain spills. A 7 feet by 7 feet extension constructed of PVC piping and Herculite sheeting has been added to the open end of the U-shape berm.

~~Since there are no concrete curbs or other berms in the building capable of containing liquids, this warehouse is only used to store hazardous waste without free liquids.~~

Any material spilled in the storage areas is removed, containerized, labeled, and stored pending disposal. Run-on and runoff is not a concern for this unit since it is completely enclosed.

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Maximum Hazardous Waste Inventory

The maximum capacity of this unit is ~~9,900~~ 13,200 gallons of hazardous wastes. The maximum number of drums that can be stored is ~~180~~ 240 based on the storage of 55 gallon drums. ~~Only hazardous wastes without free liquids~~ Hazardous waste with and without free liquids are stored in the unit. A complete list of hazardous wastes that have been stored at this unit, along with the applicable OAC 3745-51 and 40 CFR Part 261 hazardous waste constituents for each waste, will be submitted to the OEPA following notification of final closure.

Schedule for Closure

The FEMP will notify the OEPA at least 45 days prior to the initiation of closure activities. The FEMP intends to close the Pilot Plant Warehouse within 180 days of beginning closure. The schedule for closing this unit is detailed in Figure I-13. Meeting this schedule is contingent upon the availability of treatment, storage, or disposal facilities, laboratory capacity, and proper funding, as discussed in Section I-1d. If the closure cannot be completed in 180 days, the FEMP will request an extension of time to complete closure. Any request for extension will be submitted as a modification to the closure plan information.

Inventory Removal

As part of the operational protocol developed for integrated site wide closures, the closure manager will devise an operational protocol to ensure specific closure activities at the Pilot Plant Warehouse are accomplished within the closure schedule. The manager

will consider the sequence of operations, resources required, and types and quantities of hazardous waste stored. In devising the operational protocol, the manager will develop an inventory reduction plan specifying how, when, and where each hazardous waste will be managed, and ensure that resources are available to complete closure activities as scheduled.

At closure, the hazardous waste inventory from the Pilot Plant Warehouse will be directly transported off-site for treatment/disposal, if off-site capacity is available, or moved to Plant 1 Pad or another approved storage location. The Herculite sheeting and wooden berms PVC piping will also be placed into appropriate containers and managed for disposal as a hazardous waste. Inventory removal may be undertaken at any time, but will be completed within 90 days after the start of closure. Following inventory removal, an engineering assessment will be conducted to determine the condition and integrity of the concrete floor slab and berm.

Decontamination of Structures and Equipment

Following the engineering integrity assessment, the Pilot Plant Warehouse, the concrete floor slab and berm in the hazardous waste storage area will be decontaminated. If decontamination of the floor cannot be achieved, a revision to the closure plan information will be submitted to OEPA for approval. Prior to decontamination, any breaches or structural defects noted in the integrity assessment will be evaluated for potential releases to the environment. If hazardous waste or waste constituents may have migrated out of the

unit through the breach, directed soil sampling in the area of the breach or crack will be conducted.

The FEMP's objective is to "clean" close this unit while minimizing the amount of hazardous waste generated from closure activities. Before closing the unit, the FEMP will select an appropriate decontamination method to achieve "clean" closure. The decontamination method that is currently planned for the Pilot Plant Warehouse hazardous waste storage area is detailed below. The procedures given may be repeated as required.

- 1) The Herculite sheeting and PVC piping will be removed, containerized, and managed as a hazardous waste.
- 2) The warehouse floor will be vacuumed to remove surface residue.
- 3) Temporary berms and/or sorbent pads will be placed around the perimeter of the storage area to contain wash and rinse solutions.
- 4) An aqueous detergent solution will be used to scrub the surface of the storage area floor.
- 5) The storage area will be rinsed with tap water. The rinseate will be mopped or vacuumed from the floor, collected in a clean sump, or pumped to an appropriate clean container and sampled to evaluate and confirm decontamination efforts, according to the Sampling and Analysis Plan

(Attachment I-1), the FEMP Waste Analysis Plan and the FEMP Waste Determination Plan.

Decontamination will be verified by sampling and analyzing the final rinse. These samples will be analyzed for the hazardous waste constituents of the waste managed in the unit, as listed in OAC 3745-51 and 40 CFR Part 261. If the final rinse does not achieve the "clean" levels for rinseate as discussed in Section I-1a(1), a revision to this closure plan information will be submitted to OEPA.

Disposal of Decontamination Residues

All equipment that cannot be decontaminated and expendable materials used in decontamination (rags, mops, sorbent pads, protective clothing, etc.) will be stored and managed in a manner consistent with FEMP hazardous waste practices pending hazardous waste determinations.

All wash and rinse waters will be collected, stored and managed in a manner consistent with hazardous waste management practices and evaluated to determine if they are hazardous or solid wastes. If the final rinseate is below "clean" levels, it will be considered non-hazardous and managed as a solid waste. Hazardous wastes will be managed and disposed in accordance with applicable hazardous waste regulations.

Soil Sampling

It is not anticipated that soil sampling will be required for the Pilot Plant Warehouse, RCRA storage

area. The unit is a totally enclosed building, and stores hazardous wastes without free liquids, with a diked containment area. An engineering assessment will be performed at the time of closure to determine the integrity of the concrete floor. Spill records will also be reviewed. If spills are documented to have occurred and resulted in potentially contaminated soils, or if the engineering assessment indicates that the integrity of containment structure may have been breached, or if the integrity assessment indicates that hazardous waste or hazardous constituents may have migrated out of the unit through the breach, directed soil sampling will be conducted prior to decontamination to determine if hazardous waste constituents have reached the soil surrounding or underlying the unit. If hazardous waste constituents are detected in the directed soil sampling efforts, a revision to the closure plan information will be submitted to the OEPA for approval. The revision will include a revised closure schedule.

#### I-1e(4)(g) Plant 1 Pad Closure Plan Information

[NOTE: This section of the closure plan information describing the closure of the Plant 1 Pad was prepared prior to the actual upgrade of the unit; however, it is written in a tense as if the upgrade had already occurred in accordance with the Plant 1 Pad Continuing Release, Removal Action Work Plan dated June 1991. This approach is consistent with Section D, Process Information, which describes operation of the upgraded unit. The Plant 1 Pad Continuing Release, Removal

Action Work Plan was submitted to comply with the provisions of the Consent Decree and its proposed amendments Stipulated Amendment requesting the submittal of closure plan information, data, and a schedule for the Plant 1 Pad.]

#### Hazardous Waste Management Unit Description

The Plant 1 Pad is located at the northwest corner of the production area. Figure I-1 shows the location of the unit at the FEMP. Figure I-14 shows the original construction of this unit. The original pad comprised approximately 400,000 square feet. This pad was originally designed as a storage area for incoming materials for processing. The materials were sampled to assay their uranium content, then used in the uranium production process. Process residues and waste materials were returned to the Plant 1 Pad to await further processing, or final disposal. Hazardous wastes and mixed wastes have been stored on the Plant 1 Pad.

The original pad was constructed on an eight inch sub-base of crushed stone. The sub-base was topped with eight inches of class "E" concrete that was reinforced with steel bars. Joints were sealed with a bituminous compound. The original pad was an unbermed structure that did not provide roof cover for the drums, or controls for run-on/runoff. Figure I-15 displays the topography of the original Plant 1 Pad area.

In 1953 a large area of concrete had settled, creating numerous cracks. These cracks were repaired using high early strength concrete and hot bitumen to fill joints

between the old and new concrete. Many areas of the pad had deteriorated and were repaired using concrete or asphalt prior to the pad upgrade.

Due to the deteriorating condition of the pad, and since the original pad did not provide controls for run-on/runoff, a major upgrade of the pad was approved in 1991. Figure I-16 is the construction drawing for this upgrade. The upgrade consisted of the following activities:

- A new pad of approximately 100,000 square feet was built adjacent to the northwest corner of the current pad. The new pad area overlays approximately 20,000 square feet of the original pad area. The new pad was constructed with compacted clean granular fill that was covered with a 12 mil polyethylene film vapor barrier, and topped with 8 inches of reinforced class "C" concrete.
- During the upgrade the original pad was capped with a polyethylene barrier and a four inch layer of reinforced class "C" concrete. New wearing surfaces were covered with an 86 mil thickness of chemically resistant polyurethane. A six inch reinforced concrete berm was constructed on the perimeter of the new pad and upgraded pad. A small part of the original pad was not upgraded, and remains outside of the bermed, upgraded area (shown as cross hatched areas in Figure I-16. This outer pad will not be used for management of

liquid hazardous wastes.

- Two 40,000 square foot tension structures and one 22,500 square foot tension structure were constructed on the upgraded pad to provide covered storage for drums.
- Existing storm sewer inlets remained within the former pad area. ~~These catch basins empty into the FEMP waste water treatment plant.~~ Although these catch basins will remain operational and are connected to the storm sewer system, only containers of hazardous waste without free liquids will be stored on the Plant 1 pad area outside of the covered structures. Each tension structure has an interior trench drain to collect spills. These drains are blind sumps, and are not connected to the storm sewer system. In the event of a spill, the trench drain within the building will be pumped to remove any waste that it collects. The waste will be managed in accordance with FEMP procedures and applicable regulations.

The final area of the Plant 1 Pad including the upgraded area will be approximately 480,000 square feet. The upgraded Plant 1 Pad will be operated as a hazardous waste container storage pad for the FEMP.

Maximum Hazardous Waste Inventory

The maximum capacity of this unit, including the three tension structures, is 10,892,200 gallons of hazardous

wastes. The maximum number of drums that can be stored is 198,040 based on the storage of 55 gallon drums. The three tension structures have a maximum capacity to store 825,000 gallons under cover. Therefore, the maximum capacity of uncovered storage on the Plant 1 Pad is 10,067,200 gallons. Hazardous wastes with and without free liquids are stored on the Plant 1 Pad. A complete list of hazardous wastes that have been stored at this unit will be submitted to the OEPA following notification of closure.

Schedule For Closure

The FEMP will notify the OEPA at least 45 days prior to initiation of closure activities. The FEMP has estimated that approximately 580 days will be required to close the Plant 1 Pad. The schedule for closing this unit is detailed in Figure I-17. Meeting this schedule is contingent upon the availability of treatment, storage, or disposal facilities for mixed wastes, laboratory availability, and proper funding as discussed in Section I-1d. If the closure cannot be completed in 580 days, the FEMP will request an extension of time to complete closure. The request for extension will be submitted as a modification to the closure plan information. ~~Closure of this unit will be consistent with the final closure and remediation of the entire site under CERCLA.~~ Closure of this unit will be consistent with the activities implemented to complete final CERCLA remediation at the FEMP.

### Inventory Removal

As part of the operational protocol developed for integrated site wide closures, the closure manager will devise an operational protocol to ensure specific closure activities on the Plant 1 Pad are accomplished within the closure schedule. The manager will consider the sequence of operations, resources required, and types and quantities of hazardous waste stored. In devising the operational protocol, the manager will develop an inventory reduction plan specifying how, when, and where each hazardous waste will be managed, and ensure that resources are available to complete closure activities as scheduled. The inventory from the Plant 1 Pad will be removed from the pad before closure activities commence.

### Closure Procedures

The FEMP's objective is to "clean" close this unit while minimizing the amount of hazardous waste generated from closure activities. If clean closure cannot be achieved, a revision to the closure plan information will be submitted to OEPA for approval. A general description of the closure tasks is detailed below. These closure procedures will be conducted both on the outer, non-upgraded portion of the original pad, and on the upgraded pad and containment structures.

- 1) After removal of final inventory, the secondary containment structures will be dry swept and/or vacuumed to remove surface residue.

- 2) An engineering assessment will be conducted to determine the condition and integrity of the containment structure, storm drains, berms, and sumps. The assessment will include both a review of operational records and a visual inspection of the containment structures (including trenches, sumps, and berms). The assessment will determine the areas where spills may have occurred, and locate any breaches through the containment structure. This information will be used to designate the locations for the directed sampling. The assessment also will review the construction drawings to determine the location of the underground utilities. These will be clearly marked on the pad.
- 3) Grab samples of concrete chips and if necessary, soil from the zero to six inch depth interval will be collected from the directed sample locations according to ~~identified during step (2) above, in accordance with~~ the procedures outlined in the Sampling and Analysis Plan (see Attachment I-1). These samples will be analyzed for the ~~hazardous constituents listed in OAC 3745-54-98 and 40 CFR 264, Appendix IX using appropriate USEPA SW 846 methods. Appendix IX hazardous constituents were selected for analysis for Plant 1 Pad samples because of the large volume and diversity of wastes that have been managed on the pad.~~ ~~hazardous waste constituents listed in OAC 3745-51 and 40 CFR Part 261 associated with the hazardous wastes managed at the unit.~~

- 4) In addition to the directed samples described in step (3) above, a uniform areal distribution of samples of concrete pad and concrete and samples of soil below the pad will be collected and analyzed to determine if any contamination from past operation of the unit has reached the environmental media below the unit.
  
- 5) Sufficient concrete and sub-base will be removed to permit soil sampling to a limited depth under the pad. A grab sample of the soil underlying the pad will be taken from a depth of zero to six inches according to the soil sampling procedures in the Sampling and Analysis Plan.
  
- 6) Samples of the soil surrounding the pad also will be collected approximately five feet from the margins of the pad at the following locations in accordance with the soil sampling procedures in the Sampling and Analysis Plan:
  - North Boundary - every 100 feet
  - East Boundary - every 50 feet
  - West Boundary - every 50 feet
  - South Boundary (where unpaved) - every 100 feet

Soil samples at these locations will be taken from the following depth intervals: 0 - 6 inches, 6 - 18 inches, and 18 - 30 inches in accordance with the Sampling and Analysis Plan.

All soil samples will be analyzed for the ~~hazardous constituents listed in OAC 3745-54-98 and 40 CFR 264, Appendix IX~~ hazardous waste constituents listed in OAC 3745-51 and 40 CFR Part 261 associated with the hazardous wastes managed at the unit, according to the procedures outlined in the Sampling and Analysis Plan, the FEMP Waste Analysis Plan, and the FEMP Waste Determination Plan.

- 7) After the samples have been taken, the holes through the pad will be filled to the top of the pad's surface with ~~cement or concrete~~ bentonite grout.
- 8) The resulting analytical data will be evaluated. If the soil is clean as defined in Section I-1a(1), the pad will be decontaminated following the procedures outlined in the following section. If the concrete, sub-base or soil is determined to be contaminated as discussed in Section I-1a(1), revised closure plan information will be submitted.

Decontamination of Containment Structure

If the soil underlying and surrounding the pad does not indicate the presence of contamination as defined in Section I-1a(1), the surface of the pad and containment structures will be decontaminated. The decontamination method that will be used for the Plant 1 Pad secondary containment structures is detailed below.

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- 1) The secondary containment structures will be dry swept or vacuumed to remove surface residue using a hand or truck mounted sweeper/vacuum.
- 2) Minor structural defects will be sealed, if necessary, to prevent migration of rinseate out of the containment area.
- 3) An aqueous detergent solution will be used to decontaminate the pad and structures. A sweeper will scrub the surface of the pad. The waste detergent solution will be mopped or vacuumed from the pad, containerized, and stored in accordance with applicable regulations pending waste determination.
- 4) Following the detergent wash, the containment structures will be rinsed with tap water. The rinseate will be mopped or vacuumed from the pad, collected in a clean sump, or pumped to an appropriate clean container. A sample of the final rinseate will be collected and analyzed for the hazardous constituents listed in OAC 3745-54-98 and 40 CFR 264, Appendix IX hazardous waste constituents listed in OAC 3745-51 and 40 CFR Part 261 associated with the hazardous wastes managed at the unit, according to the procedures outlined in the Sampling and Analysis Plan in Attachment I-1, the FEMP Waste Analysis Plan, and the FEMP Waste Determination Plan.

If the analytical results of the final rinseate exceed the RCRA closure standard as discussed in Section I-1a(1), the decontamination procedure may be repeated. A revision to the closure plan information will be submitted to the OEPA for approval, if the pad cannot be decontaminated.

#### Disposal of Decontamination Residues

All equipment that cannot be decontaminated and expendable materials used in decontamination (rags, mops, sorbent pads, protective clothing, etc.) will be stored and managed in a manner consistent with FEMP hazardous waste practices pending hazardous waste determinations.

All wash and rinse waters will be collected, stored and managed in a manner consistent with hazardous waste management practices and evaluated to determine if they are hazardous or solid wastes. If the final rinseate is below "clean" levels, it will be considered non-hazardous and managed as a solid waste. Hazardous wastes will be managed and disposed in accordance with applicable hazardous waste regulations.

#### I-1e(5) Closure of Tanks

The FEMP is not seeking a permit for operation of hazardous waste tanks.

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I-1e(6) Closure of Waste Piles

The FEMP is not seeking a permit for operation of hazardous waste piles.

I-1e(7) Closure of Surface Impoundments

The FEMP is not seeking a permit for operation of hazardous waste surface impoundments.

I-1e(8) Closure of Incinerators

The FEMP is not seeking a permit for operation of hazardous waste incinerators.

I-1e(9) Closure of Landfills

The FEMP is not seeking a permit for operation of hazardous waste landfills.

I-1e(10) Closure of Land Treatment Facilities

The FEMP is not seeking a permit for operation of hazardous waste land-treatment facilities.

I-1e(11) Closure of Miscellaneous Units

The FEMP is not seeking a permit for operation of miscellaneous units.

I-2 POST-CLOSURE PLAN INFORMATION/CONTINGENT POST-CLOSURE

All hazardous waste storage units to be permitted are container storage

units intended to attain clean closure, therefore no post closure activities are anticipated. Container storage units at the FEMP are constructed and operated in a manner to prevent releases of hazardous wastes to the environment. Since the units are designed for storage only, contingent post-closure plan information is not required.

~~Since any required post closure activities will be conducted pursuant to final site remediation under the CERCLA program, the FEMP intends to seek an exemption to post closure requirements for the operating units.~~

I-3 NOTICES REQUIRED FOR DISPOSAL FACILITIES

The FEMP is not seeking a permit for operation of hazardous waste disposal facilities.

I-4 CLOSURE COST ESTIMATE

A closure cost estimate is not submitted with this closure plan information because the FEMP is a federal facility owned by the U.S. Department of Energy, and is thereby excluded from financial requirements under ~~OAC 3745-66-40(C)~~ ~~OAC 3745-55-40(C)~~.

I-5 FINANCIAL ASSURANCE MECHANISM FOR CLOSURE

A financial assurance mechanism is not submitted with this closure plan information because the FEMP is a federal facility owned by the U.S. Department of Energy, and is thereby excluded from financial requirements under ~~OAC 3745-66-40(C)~~ ~~OAC 3745-40(C)~~.

I-6 POST CLOSURE COST ESTIMATE

A post-closure cost estimate is not submitted with this closure plan

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~~information because the hazardous waste storage units are expected to attain clean closure because the FEMP is a federal facility owned by the U.S. Department of Energy, and is thereby excluded from financial requirements under OAC 3745-55-40(C).~~

~~Since any required post closure activities will be conducted pursuant to final site remediation under the CERCLA program, the FEMP intends to seek an exemption to post closure requirements for the operating units.~~

#### I-7 FINANCIAL MECHANISM FOR POST CLOSURE CARE

A post-closure financial assurance mechanism is not submitted with this closure plan information because the hazardous waste storage units are expected to attain clean closure.

~~Since any required post closure activities will be conducted pursuant to final site remediation under the CERCLA program, the FEMP intends to seek an exemption to post closure requirements for the operating units.~~

#### I-8 LIABILITY REQUIREMENTS

The FEMP is a federal facility owned by the U.S. Department of Energy, and is thereby excluded from financial and liability requirements under OAC 3745-66-40(C) ~~OAC 3745-55-40(C)~~.

#### I-9 USE OF STATE REQUIRED MECHANISM

Proof of liability coverage by a State required financial mechanism is not submitted with this closure plan information because the FEMP is a federal facility owned by the U.S. Department of Energy, and is thereby excluded

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from financial and liability requirements under ~~OAC 3745-66-40(C)~~ ~~OAC~~  
~~3745-55-40(C)~~.

SECTION I - CLOSURE PLAN INFORMATION

Table I-1

Hazardous Waste Management Storage Units Maximum Inventory

<u>Hazardous Waste Management Unit</u>	<u>Maximum Capacity (Gal.)</u>
KC-2 Warehouse (Bldg. 63)	234,520 <del>200,640</del>
Plant 9 Warehouse (Bldg. 81)	83,160 <del>86,240</del>
Plant 8 Warehouse (Bldg. 80)	139,260 <del>139,260</del>
CP Storage Warehouse - Bldg. 56 (Butler Bldg)	127,435 <del>116,160</del>
Plant 6 Warehouse (Bldg. 79)	202,640 <del>230,780</del>
Pilot Plant Warehouse (Bldg. 68)	9,900 <del>13,200</del>
Plant 1 Pad	10,892,200

SECTION I - CLOSURE PLAN INFORMATION

TABLE I-2

ALTERNATIVE DECONTAMINATION METHODOLOGIES

Area or

Item to Decontaminate

Methods for Decontamination

Area or Item to Decontaminate	High pressure wash	High pressure wash with steam	Floor Scrubber	Scrub by hand <sup>1</sup>	Wipe with absorbent pads <sup>2</sup>	Detergent Wash	Other <sup>3</sup>
Concrete Pads	X <sup>4</sup>	X	X	X		X	X
Concrete Floors	X	X	X	X	X	X	X
Concrete Walls	X	X		X	X	X	X
Equipment	X	X		X	X	X	X

<sup>1</sup> Using a non-phosphate soap with brushes and/or brooms and mops.

<sup>2</sup> Pads may be saturated with an approved solvent to aid in the removal of contaminants. If solvent pads are used, the item will also be wiped with dry pads to remove solvent.

<sup>3</sup> Other methodologies may be considered and used during closure, based on technologies available at the time of closure. These methods include, but are not limited to: vacuum sweeping, dry ice blasting, mechanical surface abrasion, etc.

<sup>4</sup> X denotes that this area/item may be decontaminated using the method listed above.

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**ATTACHMENT I-1**  
**SAMPLING AND ANALYSIS PLAN**  
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**1.0 INTRODUCTION**

Hazardous waste rules and regulations, under OAC 3745-55-12(B)(4) and 40 CFR 264.112(b)(4), require that closure plan information establish closure performance standards. The performance standards must define clean up goals and decontamination or removal requirements for completion of partial and final closure of Hazardous Waste Management Units (HWMUs). The closure plan information must also provide detailed descriptions of how the established performance standards will be met.

The sample types, sample locations, and number of samples to be collected during HWMU closures are identified in Section I-1(e)(4) of the RCRA Part B Permit Application. ~~All closure sampling and analyses will follow the procedures discussed in this Sampling and Analysis Plan and the requirements of the FEMP Site-wide CERCLA Quality Assurance Project Plan (SQP).~~ This Sampling and Analysis Plan (SAP) describes the sample collection procedures ~~identifies analytical methods,~~ and specifies the quality assurance/quality control procedures required to obtain valid analytical results. ~~All closure sampling and analyses will follow the procedures discussed in this Sampling and Analysis Plan.~~ The analytical results from closure sampling will be used to evaluate closure performance, as discussed in Section I-1(e)(2) of the RCRA Part B Permit Application.

**1.1 Sampling Objectives and Types of Samples**

Sampling in support of RCRA closure actions will be performed to:

- 1) Confirm decontamination and/or removal of contaminated materials.
- 2) Identify environmental contamination resulting from hazardous waste management practices associated with the HWMU being

closed.

- 3) Characterize waste materials generated during RCRA closures.

Waste characterizations and determinations referenced in this Sampling and Analysis Plan will be conducted in accordance with the Fernald Environmental Management Project (FEMP) Waste Analysis Plan and Waste Determination Plan approved by the Ohio EPA.

All wastes and materials being held for RCRA determinations will be managed in a manner consistent with hazardous waste management practices. Wastes determined to be hazardous waste will be managed and disposed in accordance with applicable hazardous waste rules and regulations.

The RCRA Part B Permit Application Section I-1(e)(4) specifies the sampling required to identify contamination and/or confirm decontamination or removal of contaminated surfaces and materials. All closure sampling activities will be conducted according to this SAP Sampling and Analysis Plan.

1.2 Sample Analyses

When closure of a HWMU is initiated, a hazardous waste inventory and record review will be conducted to identify and confirm hazardous wastes that have been managed in the unit. To evaluate HWMU closure performance, samples collected during RCRA closures will be analyzed for selected target analytes. ~~With the exception of the Plant 1 Pad, which will use the hazardous constituent list from 40 CFR 264 Appendix IX, the~~ selected target analytes for each HWMU will be the RCRA 40 CFR 261 Appendix VII hazardous waste constituents (and their degradation products) associated with the hazardous wastes

that were managed in the HWMU. The analyses will be conducted based on the ~~SW 846 analytical methods, as applicable, §CQ specified analytical methods~~ for analyses of target analytes identified during the hazardous waste inventory review. ~~Radiological analyses to evaluate and/or determine radioactive characteristics will follow the methods listed in Table I-1.~~

**2.0 SAMPLE COLLECTION PROCEDURES**

The following sections discuss the procedures that will be used for sampling in support of RCRA closures as specified in Section I-1(e)(4) of the RCRA Part B Permit Application.

Prior to sampling, the laboratory(ies) identified to conduct the analyses will be contacted to confirm their availability to provide analyses within the holding times required by the analytical method(s) for analytical parameters specified.

**2.1 Sampling Equipment**

The following equipment may be used for collection of closure samples at the FEMP:

- Bucket or hand auger (stainless steel)
- Jackhammer, concrete saw, or concrete coring device
- Chisel
- Hand driven core sampler (stainless steel)
- Soil core sample cylinders (6 or 12 inch stainless steel)
- Bowls or pans (stainless steel)
- Scoops or trowels (stainless steel or other suitable material)
- Coliwas samplers (glass)
- Weighted bottle samplers (glass)
- Glass tubes
- Plastic ground cloths

- Pipettes and aspirators
- Spatulas (stainless steel, glass)
- Sample bottles for liquid and solid samples
- Thermal coolers and freezer packs
- Portable pumps
- Tygon tubing
- Sample labels
- Waterproof marking pen
- Field sampling log book and field data forms
- Chemical resistant gloves
- Polyethylene or Teflon sheeting

This list is not comprehensive and may be modified as judged appropriate by a trained, qualified sampling supervisor or manager.

## 2.2 Soil and Concrete Sampling

Soil samples will be taken to evaluate potential hazardous waste releases whenever:

- ~~The secondary containment floor, berms, or dikes for storage areas are suspected or found to have been breached, or~~
- ~~An engineering integrity assessment indicates that hazardous waste or hazardous constituents may have migrated out of the unit through a breach in the secondary containment floor, berms, or dikes, or~~
- there are records, reports, or indications of hazardous waste spills outside of the containment area.

Before initiating any soil sampling or any related concrete coring operations, site blueprints will be reviewed with the facility engineer to determine if there are any known underground utilities, pipes, wires or other similar structures. Areas where sampling is

restricted because of underground structures will be identified and marked at the unit.

### 2.2.1 Soil Sampling Procedures

Where required, soil borings will be made for collection of samples in accordance with the following procedures:

- 1) Clean polyethylene or Teflon sheeting will be placed on the ground to protect sampling equipment from potential contamination.
- 2) A clean stainless steel bucket auger or soil core sampler will be used to advance the soil boring to extract a six inch soil sample.
- 3) As necessary, a spatula (stainless steel or other suitable material), will be used to remove the soils from the auger and place them into a stainless steel bowl. If using a soil auger, divide the sample volume into four quarters within the pan. Mix opposite quarters together, then mix resulting halves together into a single volume. Repeat this step.

If a soil core sampler is used, remove the soil core cylinder. A clean plastic, Teflon or other suitable cover will be placed over the bowl (or unused soil core sample cylinders) to minimize potential contamination while extracting soils.

- 4) The spatula will be used to transfer a grab sample from the bowl into the appropriate sample containers (or, if using a soil core sampler, cap the sample cylinder).

See Table I-2 ~~I-1~~ to identify the appropriate type of sample containers, preservation methods, and holding times applicable for the sample analyses required.

- 5) The container management procedures in Section 2.4 will be followed after the sample has been collected.
- 6) Sampling equipment will be decontaminated (see Section 2.5) or clean sampling equipment (e.g., bowl, augers, and soil core sampler) will be selected prior to advancing the hole for additional sampling.
- 7) Steps 3, 4, and 5, respectively, will be repeated to collect a second sample from a soil sample depth of six to eighteen inches.
- 8) Steps 6 and 3, 4, and 5, respectively, will be repeated for collection of a third sample from a soil sample depth of 18 inches to ~~thirty~~ 30 inches.
- 9) A minimum of one duplicate sample will be collected for every 20 samples collected. If less than 20 samples are taken, at least one duplicate will be collected for each sampling event.
- 10) Upon completion of sampling at a location, all sampling equipment that was used will be decontaminated. Equipment that cannot be decontaminated will be managed in a manner consistent with FEMP hazardous waste management practices pending RCRA determination.

NOTE: Characterization and disposal of waste will be conducted in accordance with the FEMP Waste Analysis Plan and

### Waste Determination Plan.

- 11) Sample coolers will be sealed and transferred to the designated FEMP sample receiving/shipping area.

### 2.2.2 Concrete Coring and Sampling Procedures

Where concrete chip sampling is used to evaluate potential contamination of the secondary containment surface, samples will be collected using a hammer and chisel. Approximately one cup of concrete will be collected for each sample. A stainless steel spatula will be used to place samples into the appropriate containers. The samples will be managed in accordance with approved sample handling procedures. The sample will be analyzed for the target analytes identified for the HWMU being closed [see Section I-1e(4) of the RCRA Part B Permit Application].

When required to sample both the containment structures and the soils below the reinforced concrete pads or floors, the FEMP proposes to use a jack hammer, concrete coring machine, concrete saw, drill rig or other approved ~~appropriate~~ method to core through the concrete as discussed in the following procedures:

- 1) A hole will be cut through the concrete, cutting through reinforcement bars and obstructions in the concrete.
- 2) The concrete will be cored until the sub-base gravel is reached (the gravel below the concrete but above the underlying soil).
- 3) Once the sub-base is reached, all concrete chips will be

- removed from the hole. Where possible, scoops or trowels (stainless steel or other suitable material) will be used to remove all material from the hole.
- 4) A grab sample of the concrete chips will be collected from each bore hole into a stainless steel bowl for distribution into individual sample containers.
  - 5) A spatula will be used to transfer samples from the bowl into the appropriate sample containers. See Table 1-2 I to identify the appropriate sample containers, preservation methods, and holding times applicable for the sample analyses required.
  - 6) The container management procedures in Section 2.4 will be followed after the sample has been collected.
  - 7) A minimum of one duplicate sample of the concrete chips will be collected for every 20 samples. If less than 20 samples are taken, at least one duplicate sample will be collected for each sampling event.
  - 8) The remaining concrete chips and other materials produced as a result of the coring operation will be collected for characterization and disposal following the FEMP Waste Analysis Plan and Waste Determination Plan.
  - 9) Loose concrete and sub-base materials will be completely removed from the hole through the concrete to expose the underlying soils.
  - 10) A soil sample will be collected following soil sampling

procedures in steps 1 through 4 from Section 2.2.1.

- 11) The container management procedures in Section 2.4 will be followed after the sample has been collected.
- 12) A minimum of one duplicate sample will be collected for every 20 samples collected. If less than 20 samples taken, at least one duplicate sample will be collected for each sampling event.
- 13) Upon completion of sampling at a location, all sampling equipment that was used will be decontaminated. Equipment that cannot be decontaminated will be managed in a manner consistent with FEMP hazardous waste management practices pending RCRA determination.
- 14) Sample coolers will be sealed and transferred to the designated FEMP sample receiving/shipping area.

### 2.3 HWMU Decontamination Rinseate Sampling Procedures

Sampling of decontamination rinseates is used to confirm decontamination of the secondary containment surfaces and ancillary structures and equipment in a HWMU. Decontamination rinseate evaluations require collection and sampling of the final rinse after cleaning by an appropriate method. Section I-1(e)(4) of the RCRA Part B Permit Application discusses decontamination methods applicable to each HWMU.

The final rinse water will be collected in a clean sump or pumped to an appropriate clean container and sampled using the following procedures:

- 1) A sampler (Collwasa, bailer, or glass tube) will be slowly lowered into the liquid to the desired depth. Parts of the sampler that are in contact with the liquid will not be handled.
- 2) The sampler will be slowly withdrawn from the liquid and put into the appropriate sample container. See Table I-2 to identify the appropriate sample containers, preservation methods, and holding times applicable for the sample analyses required.
- 3) At a minimum, two grab samples will be collected from the final rinse of the area or equipment being decontaminated.
- 4) The sample container management procedures in Section 2.4 will be followed after the sample is collected.
- 5) Upon completion of sampling at a location, sampling equipment will be decontaminated using the procedures discussed in Section 2.5. Equipment that cannot be decontaminated will be managed in a manner consistent with FEMP hazardous waste management practices pending RCRA determination.

**NOTE:** Characterization and disposal of waste will be conducted following the FEMP Waste Analysis Plan and Waste Determination Plan.

- 6) Sample coolers will be sealed and transferred to the designated FEMP sample receiving/shipping area.

**2.4 Sample Container Management**

Once a sample has been placed inside a sample container it should be

managed as follows:

- 1) Each sample will be preserved as required (see Table I-2), closed, and labelled (see Figure I-1).
- 2) Sample and container information will be recorded in the field sampling logbook and on a ~~Sample Analysis Request/Custody Record form~~ **Laboratory Custody Transfer and Analysis Request Record form** (see example Figure I-2).
- 3) Sample containers will be immediately placed into a sample cooler that has been chilled to 4° C.
- 4) All transfers of sample custody will be recorded on the ~~Analysis Request/Custody Record form~~ **Laboratory Custody Transfer and Analysis Request Record form** (see example Figure I-2).
- 5) To maintain chain-of-custody, access to all samples will be controlled. This requires the sample collector or designated sample custodian to:
  - have constant direct physical control,
  - use a locked limited access area under his/her control, or
  - affix signed container custody seals on samples or sample coolers.

## 2.5 Sampling Equipment Decontamination

All sampling equipment used must be clean. Before beginning any decontamination procedures, all personnel will inspect their clothing to insure that clean clothing or clean disposable outer coveralls are used. Clean chemical resistant gloves will be used

during the decontamination process, and when handling any clean equipment. Sampling equipment decontamination procedures are discussed in the following sections.

### 2.5.1 Decontamination Supplies

Decontamination supplies will vary based on the media being sampled and the type of contamination encountered. The following list of supplies may be modified, as necessary, by a trained, qualified supervisor or manager:

- Laboratory grade non-phosphate detergent solutions
- Long-handled scrapers (stainless steel, glass)
- Long-handled, soft bristled brushes
- Portable low-pressure water sprayers
- Potable tap water
- Deionized water
- Polyethylene, Teflon, or other suitable sheeting
- Drums, cans, and heavy duty plastic bags
- Absorbent materials, socks, and pads
- Wash/Rinse tubs, buckets, or other suitable containers

### 2.5.2 Decontamination Procedures

All reusable sampling equipment will be decontaminated after each use. If decontamination is not practical, the sampling equipment will be managed in a manner consistent with FEMP hazardous waste management practices pending RCRA determination. The following procedures will be used to decontaminate sampling equipment:

- 1) A decontamination area will be established in a location that is protected from potential contamination. A double thickness of 6-mil polyethylene or other suitable

sheeting will be used to line the decontamination area, including containment dikes or berms for control of run on and run off.

- 2) Appropriate containers for containment, handling, and collection of wastes will be provided. Wastes with ~~without~~ free liquids will be collected in a heavy duty plastic bag, 55-gallon drum, or other suitable container. ~~Liquid wastes~~ ~~Wastes with free liquids~~ will be collected in buckets and/or placed into 55-gallon drums or other suitable liquid storage containers.

NOTE: All wastes and materials being held for RCRA determinations will be managed in a manner consistent with hazardous waste management practices. Wastes determined to be hazardous waste will be managed and disposed in accordance with applicable hazardous waste rules and regulations.

- 3) Visible residues and stains will be removed by scraping, scrubbing, and washing with an aqueous detergent solution.
- 4) The equipment will be rinsed three times with deionized water.
- 5) When applicable, the procedures in Section 4.1 will be followed to collect a deionized water QC rinse sample after the final rinse. ~~A water QC rinse sample will be collected at random, at least one per day.~~
- 6) After the equipment has been properly decontaminated, it will be placed on a clean sheet of plastic, Teflon or

other suitable material to air dry. While air drying, the equipment will be loosely covered with another clean piece of sheeting to minimize the potential for contamination.

**2.5.3 Sampling Equipment Decontamination Wastes**

Wastes without free liquids and waste waters collected during sampling equipment decontamination and miscellaneous wastes such as plastic sheeting, brushes, and disposable protective clothing, ~~and etc.~~ will be managed in a manner consistent with FEMP hazardous waste practices pending RCRA determinations.

Waste characterizations and determinations will be conducted for the materials following the FEMP Waste Analysis Plan and Waste Determination Plan approved by the Ohio EPA.

Based on the RCRA determinations wastes will be managed and disposed of in accordance with all applicable hazardous and solid waste rules and regulations.

**3.0 FIELD SAMPLE DOCUMENTATION AND HANDLING PROCEDURES**

Sample documentation and handling procedures will conform to FEMP procedures applicable when closure actions are initiated. The information in the following sections presents basic elements to be included in any field sample handling procedures developed.

**3.1 Field Logbook**

An up-to-date field logbook will document all information pertinent to the RCRA closure sampling activities. The logbook will be bound

with consecutively numbered pages. At a minimum, the entries in the logbook will include the following information:

- Name of supervisor(s) responsible for HWMU management
- Name of the FEMP closure project manager
- Maps, drawings, or photographs of the sampling site
- Purpose of sampling such as verification of decontamination
- Description and location of sampling points
- Documentation of deviations from approved closure requirements (specified in Section I-1(e)(4) of the RCRA Part B Permit Application)
- Description of sampling methods and field sampling activities such as containers, types of samples, etc.
- Documentation of any deviations from this Sampling and Analysis Plan.
- Weather conditions at the time samples are collected
- Number, type, and volume of sample taken
- Date and time of collection
- Collector's sample identification number(s)
- Names of sampling personnel
- Date and time of transfer to sample receiving/shipping area
- Field observations such as spills or other activities nearby
- Any field measurements made such as pH, specific conductance
- Signatures of persons responsible for maintaining the logbook

The logbook will record sufficient information so anyone can reconstruct the sampling without reliance on the collector's memory. Also, the logbook will be stored in accordance with FEMP document control procedures.

### 3.2 On-Site Handling/Processing Procedures

Sample coolers, along with the signed and completed Sample Analysis

~~Request/Custody Record form~~ ~~Laboratory Custody Transfer and Analysis Request Record~~ will be taken to the designated FEMP sample receiving/shipping area. Each person who takes possession of the samples or sample coolers will sign the Custody Record and record the date and time of transfer.

The FEMP will characterize radiation levels to determine where, when, and how samples will be sent for analyses.

### 3.3 Shipping Procedures

Samples that are to be shipped will be packaged and labeled at the designated FEMP sample receiving/shipping area. Samples will be shipped using the following procedures:

- 1) All samples will be prepared for shipment following Department of Transportation (DOT) packaging and shipping procedures.
- 2) If samples are to be delivered by a carrier service, the carrier will be contacted to confirm pick up can be made within 24 hours.
- 3) The name of the carrier and date of shipment will be indicated on the accompanying ~~sample Analysis Request/Custody Record form~~ ~~Laboratory Custody Transfer and Analysis Request Record form~~ (see example Figure I-2). Before packaging for shipment, the form will be sealed inside a waterproof plastic bag and taped to the inside lid of the sample shipping containers. All shipping papers (e.g., bill of lading and carrier shipping forms) become part of the Custody Record. The FEMP will instruct the laboratory to attach the signed shipping papers to the ~~sample Analysis Request/Custody Record form~~ ~~Laboratory Custody Transfer and Analysis Request Record form~~.

- 4) Sample shipping container lids and openings will be sealed with a custody seal. All custody seals will be signed and dated.
- 5) Sample shipments, along with all required paper work, will be placed in a designated carrier pick up area.
- 6) The off-site analytical laboratory will contact the manager of the designated FEMP sample receiving/shipping area to confirm receipt of the shipment. If the off-site analytical laboratory does not call, a representative from the designated FEMP sample receiving/shipping area will call and confirm receipt of shipment.

#### 4.0 QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

All sampling and analyses to be conducted will follow the requirements of the FEMP Sitewide Quality Assurance Project Plan (SQAP). Quality Assurance/Quality Control (QA/QC) procedures are required to identify, evaluate, and control conditions and activities that can affect the quality and validity of the analytical data obtained from sampling and analyses. Validation of data collection requires accurate records to document activities and conditions. At a minimum, QA/QC procedures will include:

- a field sampling logbook,
- sample labels,
- collection of field and laboratory QA/QC samples, and
- completed Sample Analysis Request/Custody Record forms ~~Laboratory Custody Transfer and Analysis Request Record form~~

The field sampling logbook is discussed in Section 3.1. An example of the sample labels to be used is provided in Figure I-1. Sampling activities conducted during RCRA closures will be consistent with applicable FEMP

~~QA/QC procedures~~ ~~the QA/QC requirements in the SCQ~~ The following sections discuss field QA/QC, laboratory QA/QC, and ~~sample Analysis Request/Custody Record forms~~ ~~Laboratory Custody Transfer and Analysis Request Record forms~~.

#### 4.1 Field QA/QC Procedures

To prevent cross-contamination between samples and locations only clean sampling equipment will be used for sample collection. When sampling equipment is decontaminated, grab samples of the deionized equipment rinseates will be collected to confirm that decontamination is effective and to evaluate the potential for cross-contamination. For every media being sampled, at least one rinseate sample of sampling equipment rinseate will be collected per day using the following procedure:

- 1) Deionized water will be poured over a piece of sampling equipment that has been decontaminated following the procedures in Section 2.5.2. ~~The deionized water rinse will be collected in a clean glass or stainless steel beaker or bowl.~~
- ~~2) Using a clean pair of chemical resistant gloves, the deionized water rinse will be poured into a clean glass or stainless steel beaker or bowl.~~
- 3) ~~2~~ A glass pipette will be used to transfer samples to the appropriate sample containers. See Table I-2 ~~3~~ to identify the appropriate sample containers, preservation methods, and holding times applicable for the sample analyses required.
- 4) ~~3~~ The container management procedures in Section 2.4 will be followed after the sample has been collected.

Solutions used to preserve samples or clean sampling equipment in the field will also be evaluated as a source of potential contamination. At a minimum, the following QC samples will be collected for each sampling event:

- one field trip blank (obtained from the designated FEMP sample receiving/shipping area) for each sample shipment to be sent to the off-site analytical laboratory.
- one grab sample of the clean water/detergent solution used.
- one grab sample of the deionized rinse water supply.
- one grab sample from the supply of each lot of the different reagent/solutions used to preserve samples.

To evaluate the impact of field sampling activities on analytical precision (i.e., repeatability of results), field duplicate samples will be collected. A minimum of one duplicate sample will be collected for every 20 samples collected from each media. If less than 20 samples are collected, then a minimum of one duplicate will be taken for each sampling event. If requested, additional duplicate samples will be collected for QC confirmation by an independent laboratory.

Quality assurance procedures will include:

- 1) Only clean sample containers will be used.
- 2) ~~Clean chemical resistant gloves will be used whenever contact is made with a sample or the sampling equipment.~~
- 3) Sampling containers and collection equipment will be handled, stored, and maintained in a manner that prevents cross-contamination.
- 4) Any field conditions, events, or activities that may affect

analytical results will be documented in the field sampling log book (see Section 3.1).

4.2 Laboratory QA/QC Procedures

~~The laboratory(ies) used by the FEMP for analyses of closure samples will use approved USEPA SW 846 methods. Analytical methods proposed for radiological analyses are listed in Table I-1.~~ The laboratory(ies) used by the FEMP for analyses of closure samples will follow the requirements and methods specified in the FEMP SCQ. In addition, the laboratory will demonstrate that it has a quality assurance/quality control plan for all parameters, consistent with ~~SW 846 guidance~~ SCQ guidance.

The laboratory conducting the analyses will document the use and results of laboratory quality control samples and analyses (to be included in the laboratory analytical report). Laboratory samples for quality control (QC) include:

- laboratory equipment blanks to detect residual contamination of analytical equipment that may affect results,
- matrix spike, matrix spike duplicates and method surrogate compounds to evaluate the accuracy (i.e., the efficiency of the methods used to recover and detect analytes) and precision,
- duplicate samples prepared in the laboratory to evaluate the ~~precision (i.e., the ability to reproduce analytical results)~~ achieved by the methods used.

All pertinent information concerning problems and conditions which may affect the validity of the analytical data must be clearly identified for each sample. In addition to laboratory QC sample and analyses, information to be provided by the laboratory conducting the analyses includes:

- Name of person receiving the sample
- Date and time of sample receipt
- Laboratory sample number
- Date and time of sample analyses
- Signature of the laboratory supervisor

Conditions outside the control of the laboratory which could affect sample quality and validity of laboratory analyses will also be documented. These conditions may include:

- Discrepancies between sample shipping records, sample analytical requests, custody records and the sample shipments as received by the laboratory.
- Sample containers and packaging problems, such as broken containers, loose lids, and broken custody seals.

To reduce any laboratory bias, field duplicate samples will not be identifiable from labels or sample numbering. Field sample duplicates will be noted in the field book for use in FEMP QA/QC review of analytical reports.

**4.3 Sample Analyses Request/Chain-Of-Custody Procedures**

~~An Analysis Request/Custody Record form~~ **Laboratory Custody Transfer and Analysis Request Record Form** will be filled out and accompany every sample and shipment (see example Figure I-2). The ~~Custody Record (including any shipping papers)~~ will document sample possession from the time of collection through receipt by the off-site analytical lab conducting the analyses.

Each sample container will be labeled (see example Figure I-1) with the sample number and identification that is consistent with the ~~sample Analysis Request/Custody Record form~~ **Laboratory Custody Transfer and Analysis Request Record form** (see example Figure I-2).

A sample ~~Request/Custody Record form~~ Laboratory Custody Transfer and Analysis Request Record form and sample label will accompany all samples throughout the sample handling and process.

Records of any custody seals used on shipping containers will also be maintained. The laboratory will be instructed to document in writing the condition of any custody seals on containers that they receive.

The completed sample ~~Request/Custody Record form~~ Laboratory Custody Transfer and Analysis Request Record form will be signed by the laboratory and returned with the analytical report for the samples identified on the form(s).

Sample analyses results and reports will be returned to the attention of the FEMP Project Manager identified on the Laboratory Custody Transfer and Analysis Request Record form at the following address:

FEMP RCRA Programs  
FEMP  
Post Office Box 398704  
Cincinnati, Ohio 45239-8704

4.4 Disposition of Analytical Samples

Where applicable, the FEMP will instruct the laboratory to retain samples for further reference or use. The FEMP reserves the right to have the samples shipped to another laboratory (with the proper chain-of-custody) for confirmation analyses. Prior to final disposal/disposition of samples, the analytical laboratory will contact the FEMP for concurrence with waste disposal or treatment methods and facilities to be used. Samples for which acceptable

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disposal and treatment alternatives are unavailable will be returned to the FEMP.

## 5.0 HEALTH AND SAFETY

As discussed in Section I-1(a) of the RCRA Part B Permit Application, a Project/Task Specific Health and Safety Plan will be prepared to reflect site and area conditions and health and safety requirements at the time of closure. All sampling activities will be conducted in accordance with the Project/Task Specific Health and Safety Plan.

TABLE I-1: SUMMARY OF SAMPLE CONTAINER, PRESERVATION, AND HOLDING TIME LIMITS

Parameter	Container Type <sup>1</sup>	Matrix <sup>2</sup>	Preservation Methods	Holding Time
Total Metals	8-oz. widemouth glass with Teflon-lined closure.	Solids <sup>3</sup>	Cool to 2°-6° C	6 months <sup>4</sup>
Total Metals	1-liter polyethylene with polyethylene-lined closure.	Rinse Water	50% HNO <sub>3</sub> to <2 pH (preserve in-field)	6 months <sup>4</sup>
VOAs	4-oz. (120 mL) widemouth glass with Teflon liner.	Solids <sup>3</sup>	Cool to 2°-6° C. Minimize Headspace.	14/40 days <sup>4</sup>
VOAs	Glass with Teflon-lined septum caps	Rinse - Tap Water	Cool to 2°-6° C. No Headspace.	7 days
VOAs	Glass with Teflon-lined septum caps	Rinse - Delonized	4 Drops conc. HCl, Cool 2°-6° C. No Headspace	14 days
Semi-VOAs	8-oz. widemouth glass with Teflon liner.	Solids <sup>3</sup>	Cool to 2°-6° C	14/40 days <sup>4</sup>
Semi-VOAs	1 or 2 1/2 gal amber glass with Teflon liner.	Rinse - Tap Water	Cool to 2°-6° C. Add 3 mL 10% Na <sub>2</sub> S <sub>2</sub> O <sub>5</sub> /gal	7/40 days <sup>4</sup>
Semi-VOAs	1 or 2 1/2 gal amber glass with Teflon liner.	Rinse - Delonized	Cool to 2°-6° C	7/40 days <sup>4</sup>

<sup>1</sup> Sample volume and number of containers will depend upon parameters and methods for analysis.

<sup>2</sup> Anticipate Low to Medium Concentration of Targeted Constituents in Samples.

<sup>3</sup> Solids - Soil, Sediment, or Sludge Samples.

<sup>4</sup> Holding time for Mercury is 28 days. Holding time for Hexavalent Chromium is 24 hours.

<sup>5</sup> For holding times listed as xx/yy days, the first number is the allowed holding time for extraction or preparation of the sample for analysis and the second is the allowed holding time for analysis of the extract.

~~TABLE I 1: RADIOLOGICAL ANALYTICAL TEST METHODS~~

<del>Analytical Parameter</del>	<del>Measurement Technique</del>	<del>Method No.</del> <sup>1</sup>
<b>RADIOACTIVITY:</b>		
<del>Gross Alpha and</del>	<del>Tennelac low background</del>	<del>RSL 308</del>
<del>Gross Beta</del>	<del>Alpha/Beta counting system</del>	
<del>Gross Gamma</del>	<del>To be determined</del>	
<del>Total Uranium and</del>	<del>Alpha Spectrometer</del>	<del>RSL 304 and</del>
<del>Isotopic Uranium 235</del>	<del>and</del>	<del>RSL 201</del>
	<del>Nuclear data computer based</del>	
	<del>Gamma Spectrometer Model</del>	
	<del>ND9900 (Data Systems Only)</del>	
<del>Total Thorium &amp;</del>	<del>Alpha Spectrometer</del>	<del>RSL 304 and</del>
<del>Isotopic Thorium 228</del>	<del>and</del>	<del>RSL 201</del>
	<del>Nuclear data computer based</del>	
	<del>Gamma Spectrometer Model</del>	
	<del>ND9900 (Data Systems Only)</del>	
<del>Radium 226</del>	<del>Alpha Spectrometer</del>	<del>RSL 309</del>
	<del>and/or</del>	<del>RSL 201</del>
	<del>Nuclear data computer based</del>	
	<del>Gamma Spectrometer Model</del>	
	<del>ND9900 (Data Systems Only)</del>	
<del>Radium 228</del>	<del>Tennelac low background</del>	<del>RSL 309 and</del>
	<del>Alpha/Beta counting system</del>	<del>RSL 201</del>

~~TABLE I 2: SUMMARY OF SAMPLE CONTAINER, PRESERVATION, AND HOLDING TIME LIMITS~~

<sup>1</sup> Methods as referenced in the Remedial Investigation and Feasibility Study, Feed Materials Production Center Volume V: Quality Assurance Project Plan.

4250

TABLE I-2: SUMMARY OF SAMPLE CONTAINER, PRESERVATION, AND HOLDING TIME LIMITS

Parameters	Container Type <sup>1</sup> (Glass or Polyethylene)	Matrix	Preservation Methods	Holding Times
Total Metals	Glass	Solids	Cool to 4°C	6 months <sup>2</sup>
Total Metals	Glass or Polyethylene	Liquid	Cool to 4°C, HNO <sub>3</sub> , to <2 pH	6 months <sup>2</sup>
Volatile Organics	Widemouth glass with Teflon liner	Solids	Cool to 4°C Minimize Headspace	14 days
Volatile Organics	Glass with Teflon lined septum caps	Liquid	Cool to 4°C, Zero Headspace	14 days
Semi Volatile Organics	Widemouth glass Teflon lined cap	Solids	Cool to 4°C	14 days
Semi Volatile Organics	Glass with Teflon liner	Liquid	Cool to 4°C;	14 days
Radiological	Glass or Polyethylene	Liquid	N. A.	6 months
Radiological	Glass or Polyethylene	Solids	N. A.	6 months

<sup>1</sup> Sample volume and number of containers will depend upon parameters and methods for analysis.

<sup>2</sup> Holding time for Mercury is 28 days.  
Holding time for Hexavalent Chromium is 24 hours.

Fernald Environmental Restoration Management Corporation

RSO - ANALYTICAL LABORATORY SERVICES

OFF-SITE LABORATORY CUSTODY TRANSFER AND ANALYSIS REQUEST RECORD (OCTR)

REFERENCE DOCUMENT NO:

SAR/CR:

Page of

PURCHASE ORDER NO:

OFF-SITE LAB CONTACT:

REPORT TO:

RELEASE NO:

FERMCO CONTACT/PHONE:

FERMCO  
P.O. BOX 398704  
CINCINNATI, OH 45239-8704

SAMPLE SHIPMENT DATE:

REQUIRED REPORT DATE:

RECEIVING LAB NAME:

SAMPLE SHIPPER:

SAMPLE TEAM:

RECEIVING LAB ADDRESS:

SAMPLE NUMBER	SAMPLE DESCRIPTION/TYPE/CODE	DATE/TIME COLLECTED	CONTAINER TYPE	SAMPLE VOLUME	PRESERVATION	ANALYSIS REQUESTED	CONDITION UPON RECEIPT
1							
2							
3							
4							
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9							
10							
11							

SPECIAL INSTRUCTIONS:

SAMPLE PLAN NUMBER:

PROJECT NAME:

CHARGE NUMBER:

CAN NO.:	SEAL NO.:								
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2.			2.					
3.			3.					

DISTRIBUTION OF COPIES

- 1 WHITE REMAIN WITH SAMPLES
- 2 YELLOW OFF-SITE LAB
- 3 PINK CO DATA REVIEW AND REPORTING
- 4 BLUE MANITOR

\*IF SEALS ARE BROKEN CONTACT THE FERMCO CONTACT LISTED ABOVE IMMEDIATELY.

**FEMP ON-SITE ENVIRONMENTAL MEDIA  
CHARACTERIZATION & SURVEILLANCE**

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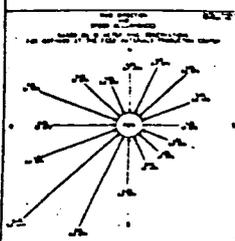
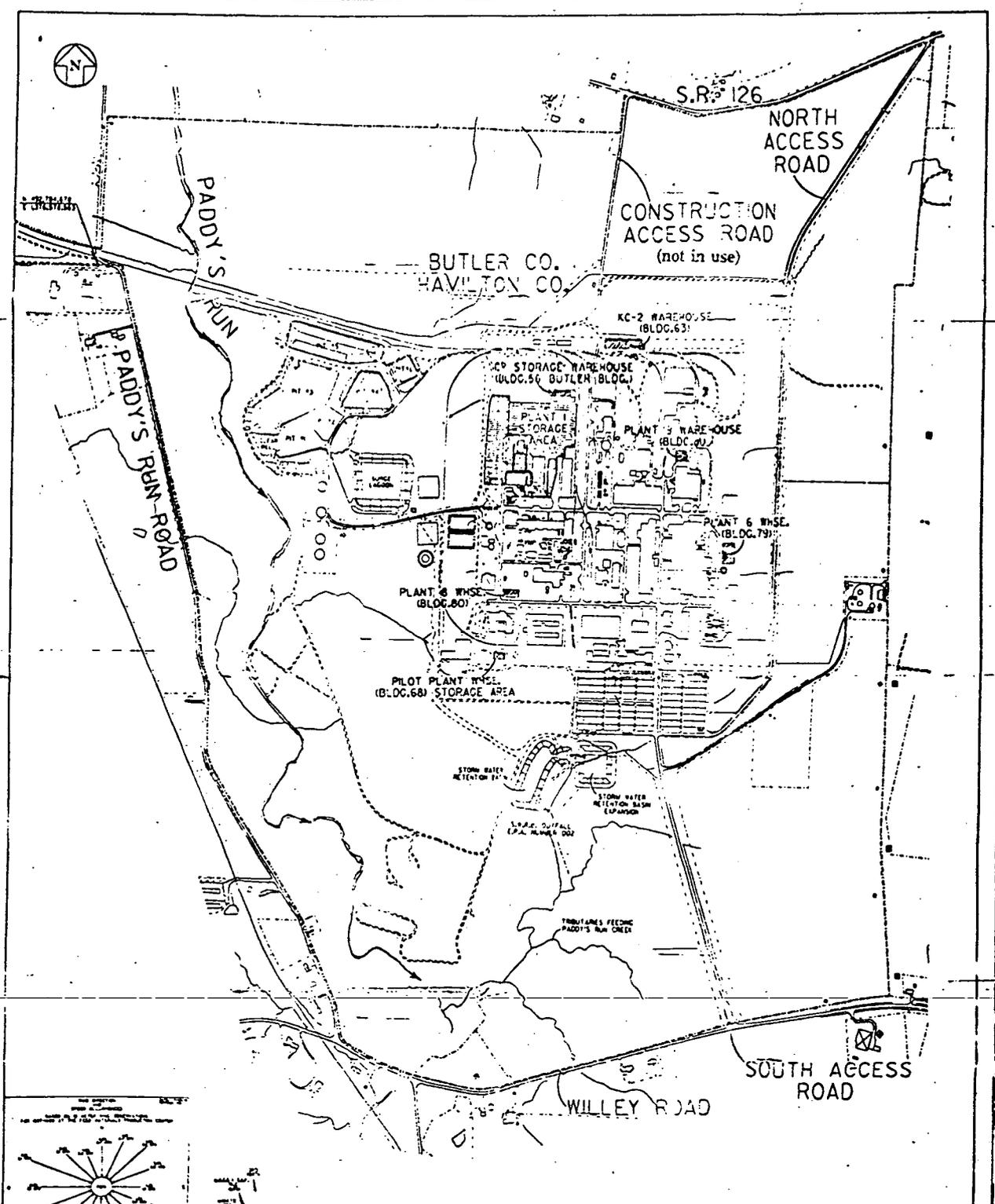
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DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_

SAMPLE POINT: \_\_\_\_\_

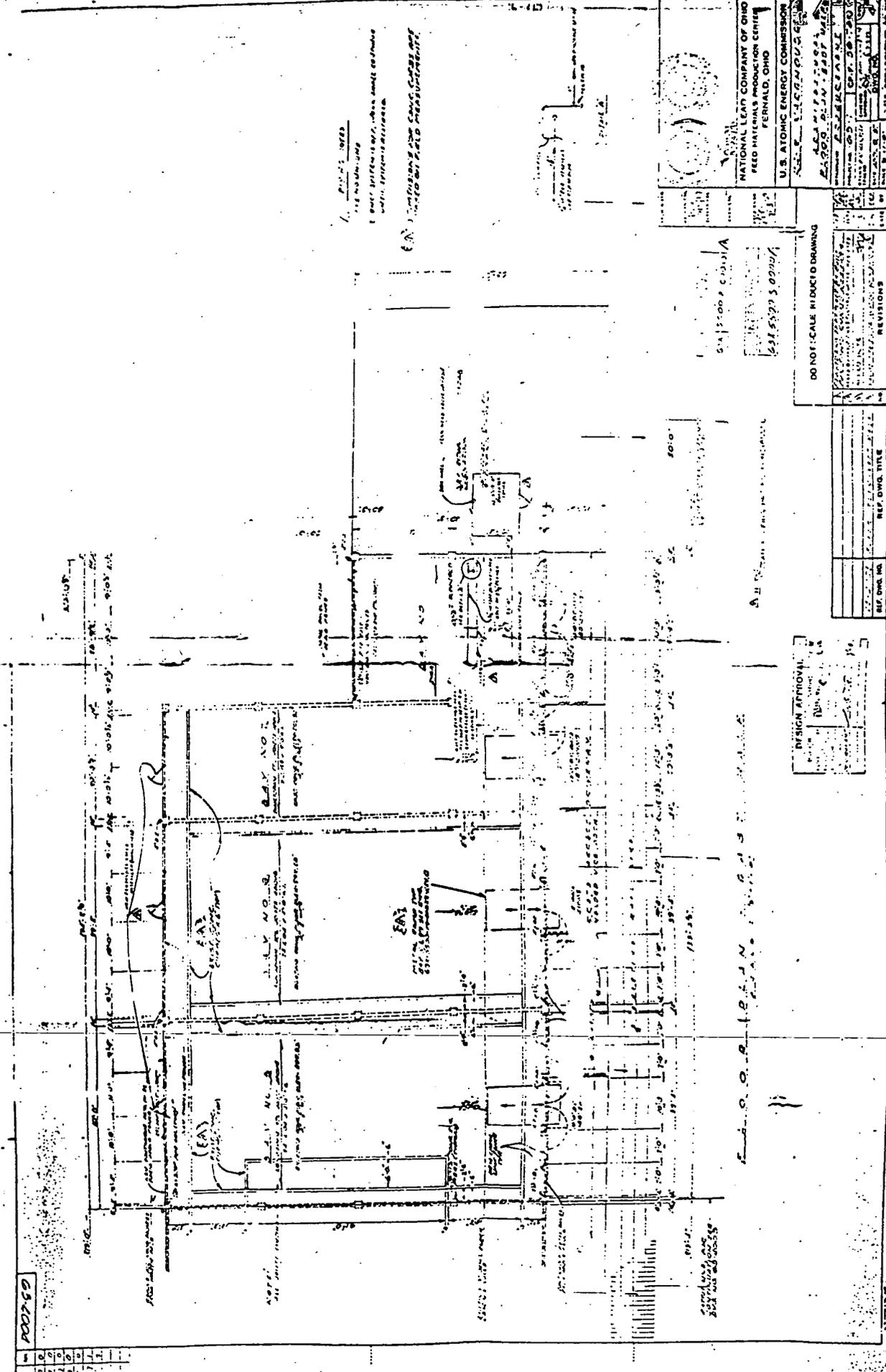
FIGURE I-1: EXAMPLE OF SAMPLE LABEL



U.S. DEPARTMENT OF ENERGY	SITE PLAN
FIGURE 1-1	RCRA PART B PERMITTED RCRA STORAGE UNITS
FERNALD, OHIO	SCALE: 1" = 300'
	FILE NAME: 21-01-2001-001-001.DWG



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1. FIELD NOTES  
 2. FIELD MEASUREMENTS  
 3. FIELD SURVEYING  
 4. FIELD DATA  
 5. FIELD RECORDS  
 6. FIELD DRAWINGS  
 7. FIELD PHOTOGRAPHS  
 8. FIELD SKETCHES  
 9. FIELD NOTES  
 10. FIELD MEASUREMENTS  
 11. FIELD SURVEYING  
 12. FIELD DATA  
 13. FIELD RECORDS  
 14. FIELD DRAWINGS  
 15. FIELD PHOTOGRAPHS  
 16. FIELD SKETCHES

**FIGURE 1-2B**  
 NATIONAL LEAD COMPANY OF OHIO  
 FERRIS, OHIO  
 U.S. ATOMIC ENERGY COMMISSION  
 DIVISION OF RESEARCH AND DEVELOPMENT  
 U.S. DEPARTMENT OF ENERGY

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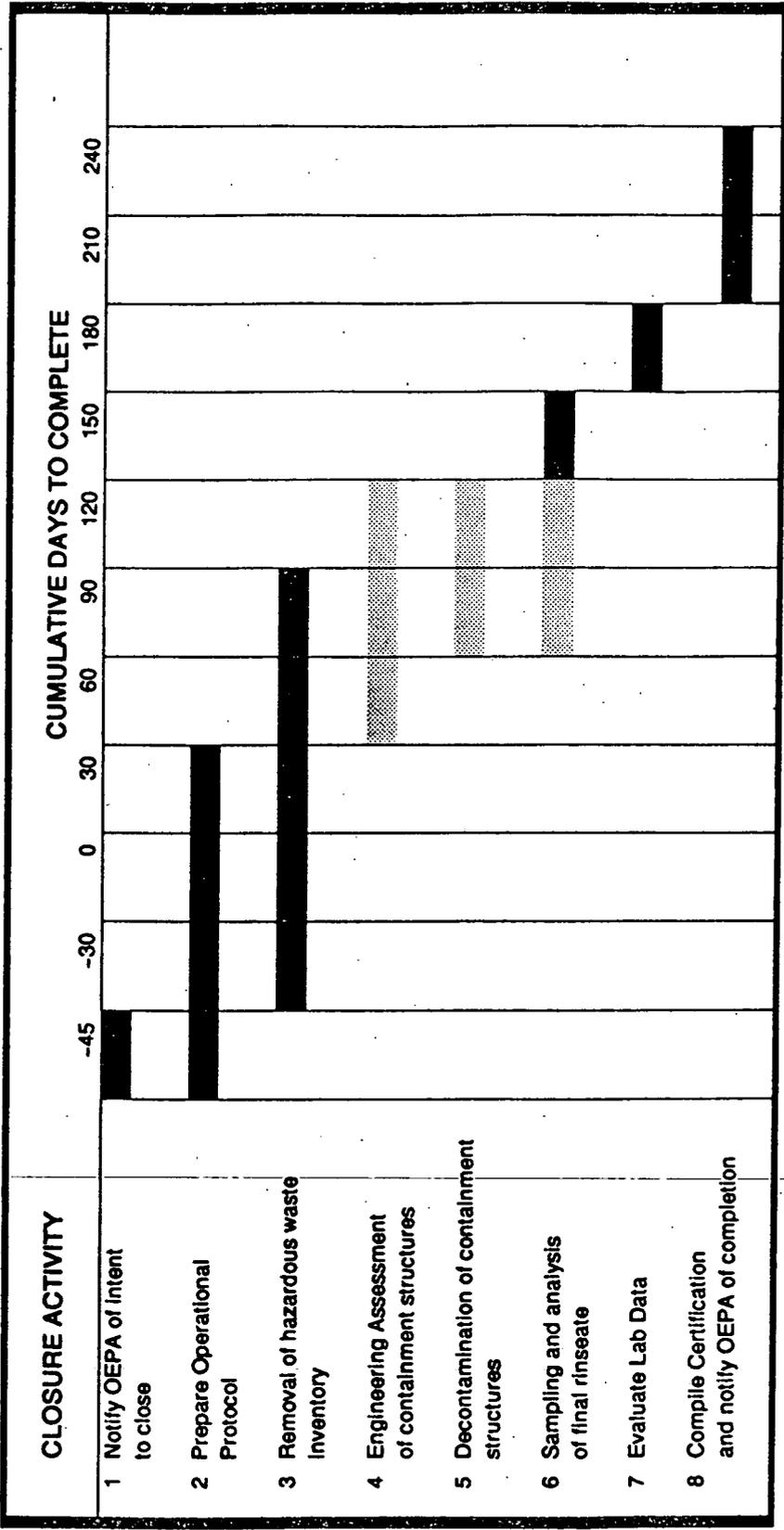
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SECTION I - CLOSURE PLAN INFORMATION



Notes:

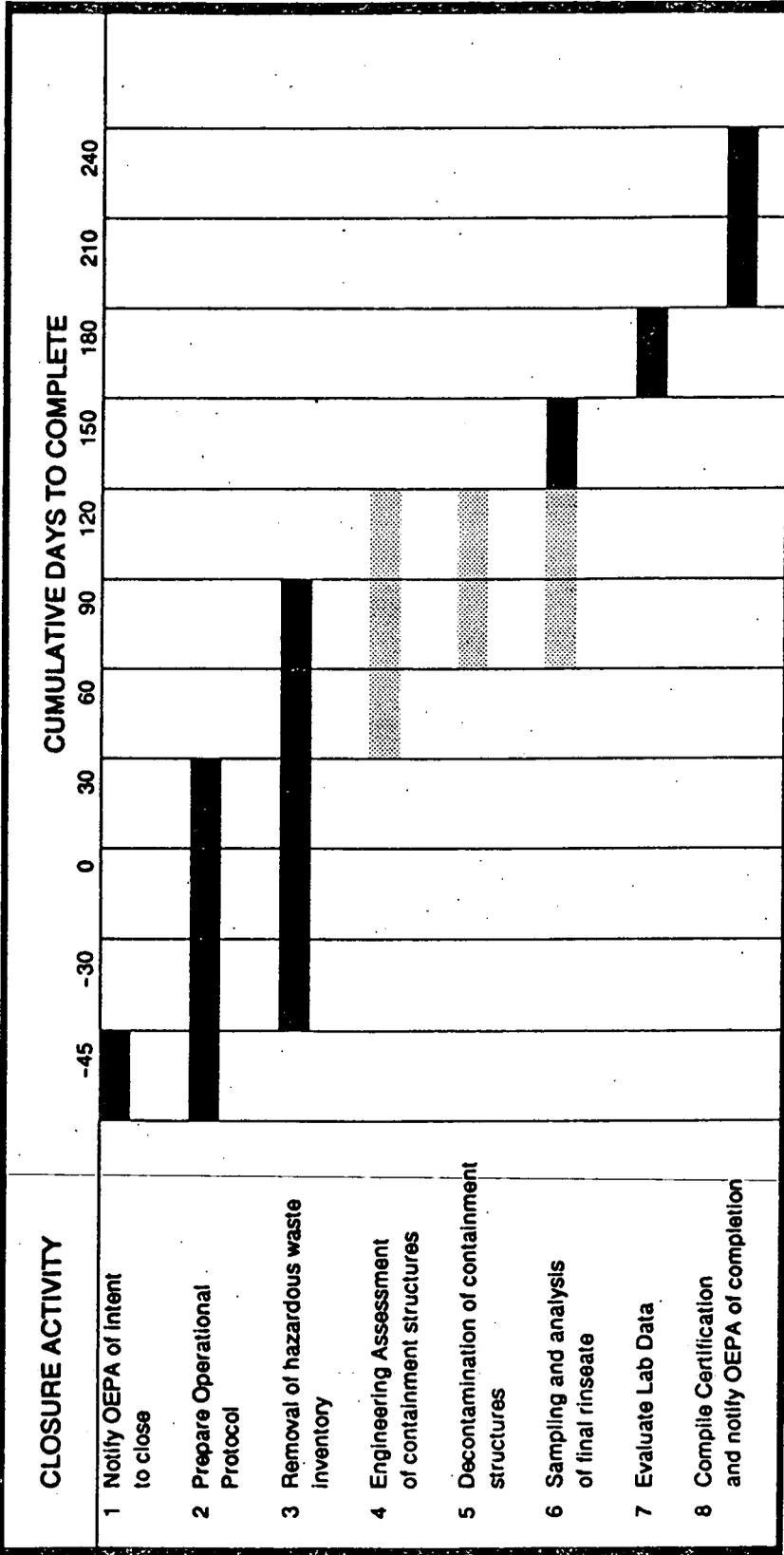
Indicates critical activity when an independent, qualified, registered, professional engineer or his representative should be present on site.

FIGURE I-3

KC-2 WAREHOUSE SCHEDULE FOR CLOSURE



SECTION I - CLOSURE PLAN INFORMATION



Notes:

Indicates critical activity when an independent, qualified, registered, professional engineer or his representative should be present on site.

FIGURE I-5

PLANT 9 WAREHOUSE SCHEDULE FOR CLOSURE

ALL WORK SHOWN IS TO BE PERFORMED BY PERMITTED CONTRACTOR.  
 THE DESIGNER IS NOT RESPONSIBLE FOR THE CONSTRUCTION OF THE WORK SHOWN ON THIS DRAWING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES AND STRUCTURES TO REMAIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES AND STRUCTURES TO REMAIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES AND STRUCTURES TO REMAIN.



**FIGURE 1-6**

DESIGNED BY: [Signature]

DATE: [Date]

PROJECT: [Project Name]

UNITED STATES DEPARTMENT OF ENERGY  
 FEDERAL ENERGY TECHNOLOGY CENTER

ENVIRONMENTAL HEALTH & SAFETY ADMINISTRATION  
 AIRBORNE PLANT # [Number]  
 FOUNDATION PLAN & DETAILS

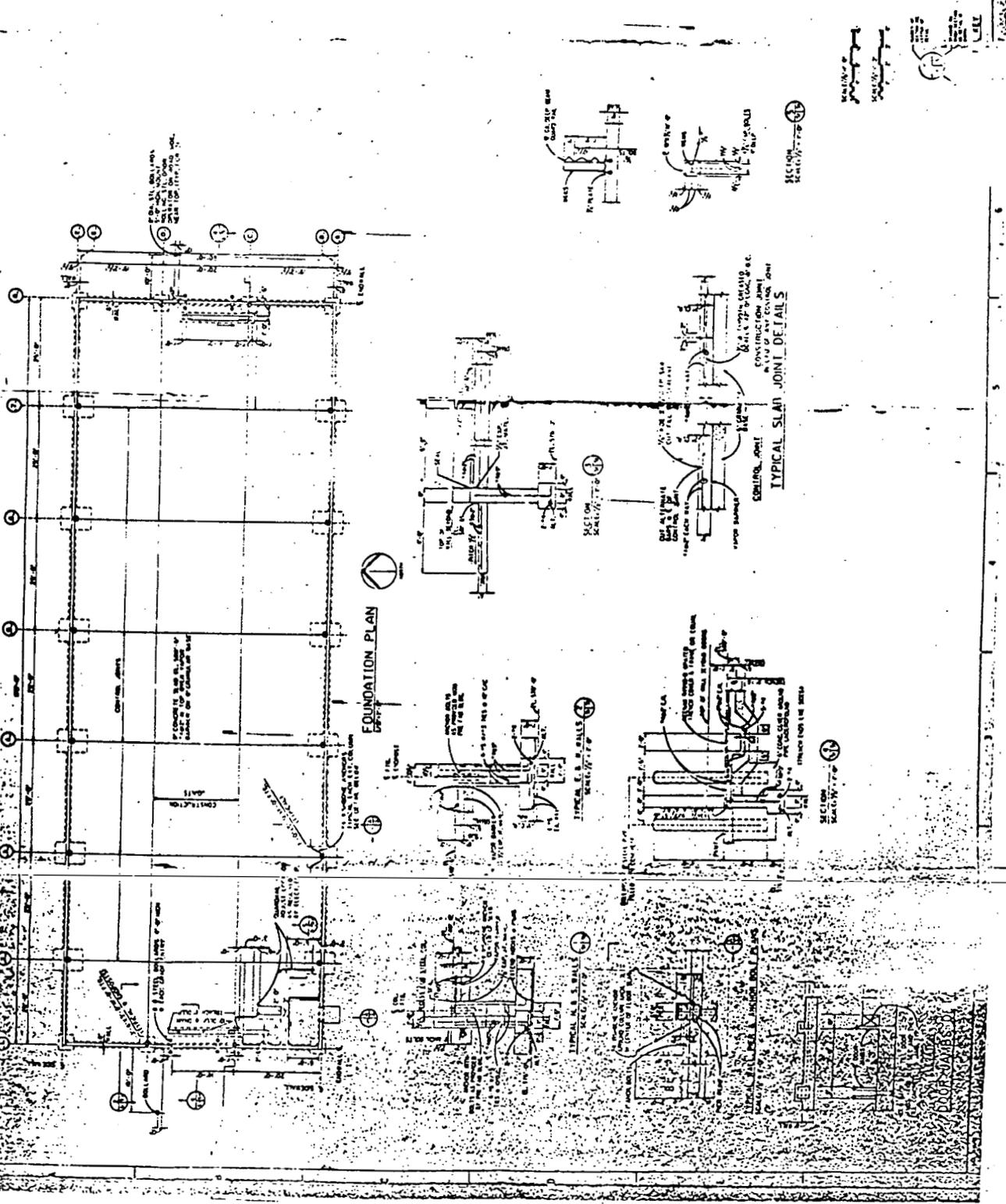
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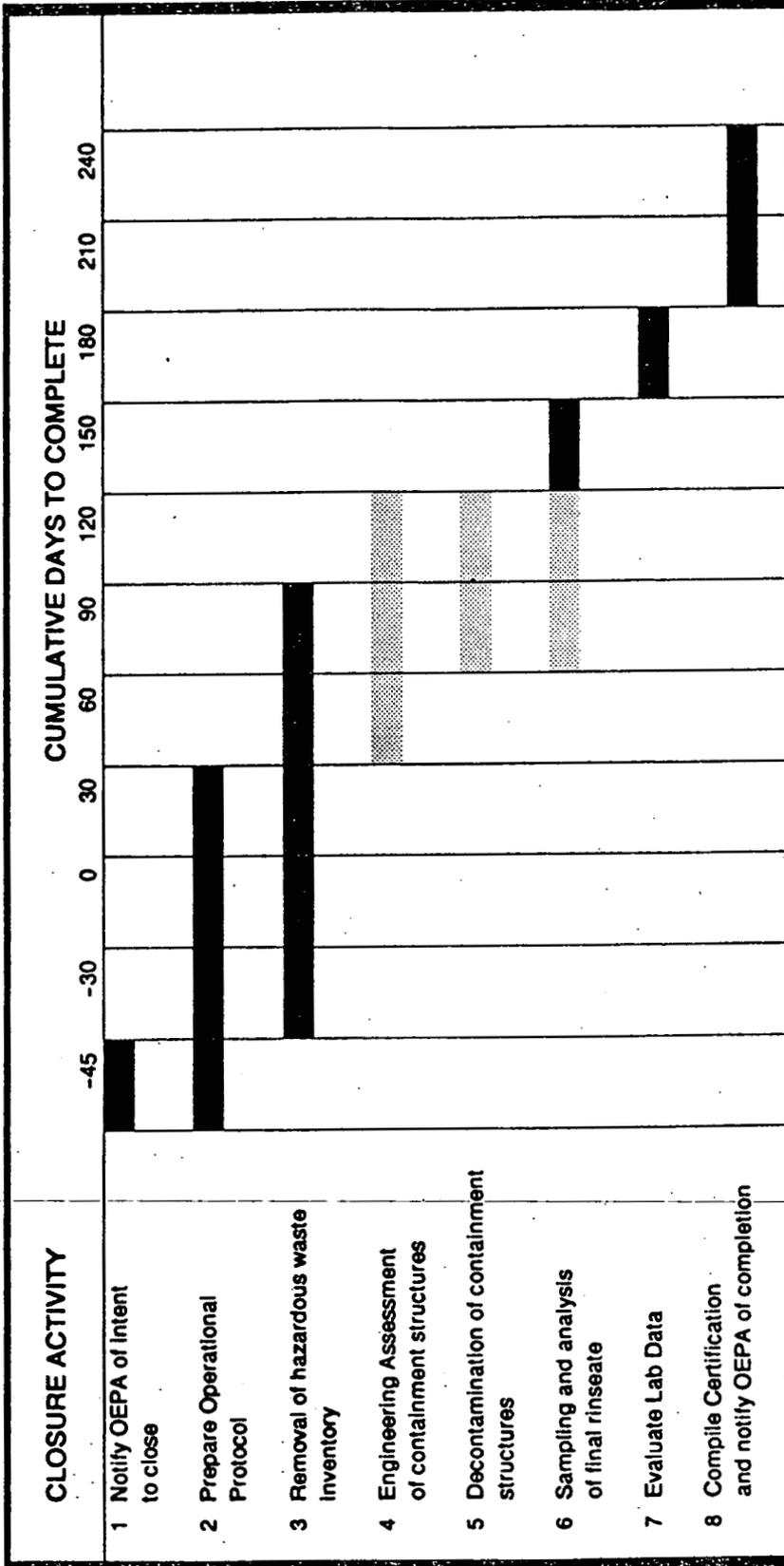
BY: [Name]

CHECKED BY: [Name]

APPROVED BY: [Name]



SECTION I - CLOSURE PLAN INFORMATION

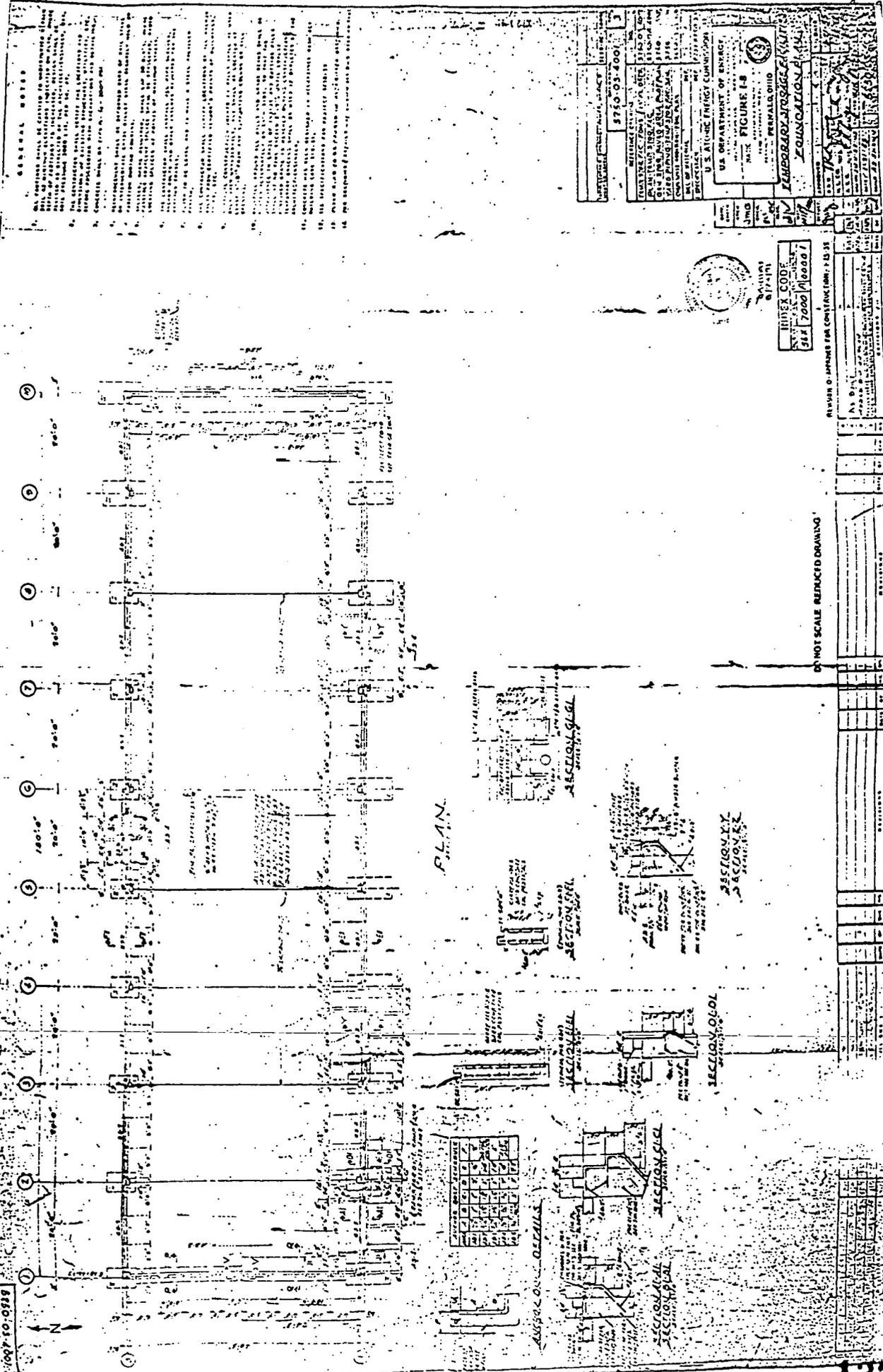


Notes:

Indicates critical activity when an independent, qualified, registered, professional engineer or his representative should be present on site.

FIGURE I-7

PLANT 8 WAREHOUSE SCHEDULE FOR CLOSURE



**GENERAL NOTES**

1. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
2. ALL MATERIALS TO BE USED SHALL BE OF THE BEST QUALITY AVAILABLE.
3. ALL CONCRETE SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR READY MIXED CONCRETE.
4. ALL STEEL SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR STRUCTURAL STEEL.
5. ALL WELDS SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATIONS FOR WELDED CONNECTIONS.
6. ALL ROOFING SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR ROOFING.
7. ALL FINISHES SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR FINISHES.
8. ALL UTILITIES SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR UTILITIES.
9. ALL MECHANICAL AND ELECTRICAL SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR MECHANICAL AND ELECTRICAL.
10. ALL PAINTS SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR PAINTS.
11. ALL MATERIALS SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR MATERIALS.
12. ALL WORK SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR WORK.
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18. ALL MATERIALS SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR MATERIALS.
19. ALL WORK SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR WORK.
20. ALL DIMENSIONS SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE SPECIFICATIONS FOR DIMENSIONS.

U.S. DEPARTMENT OF ENERGY  
LABORATORY SERVICES DIVISION  
PERVALLA, OHIO  
FIGURE 1-8  
FOUNDATION PLAN

U.S. ATOMIC ENERGY COMMISSION

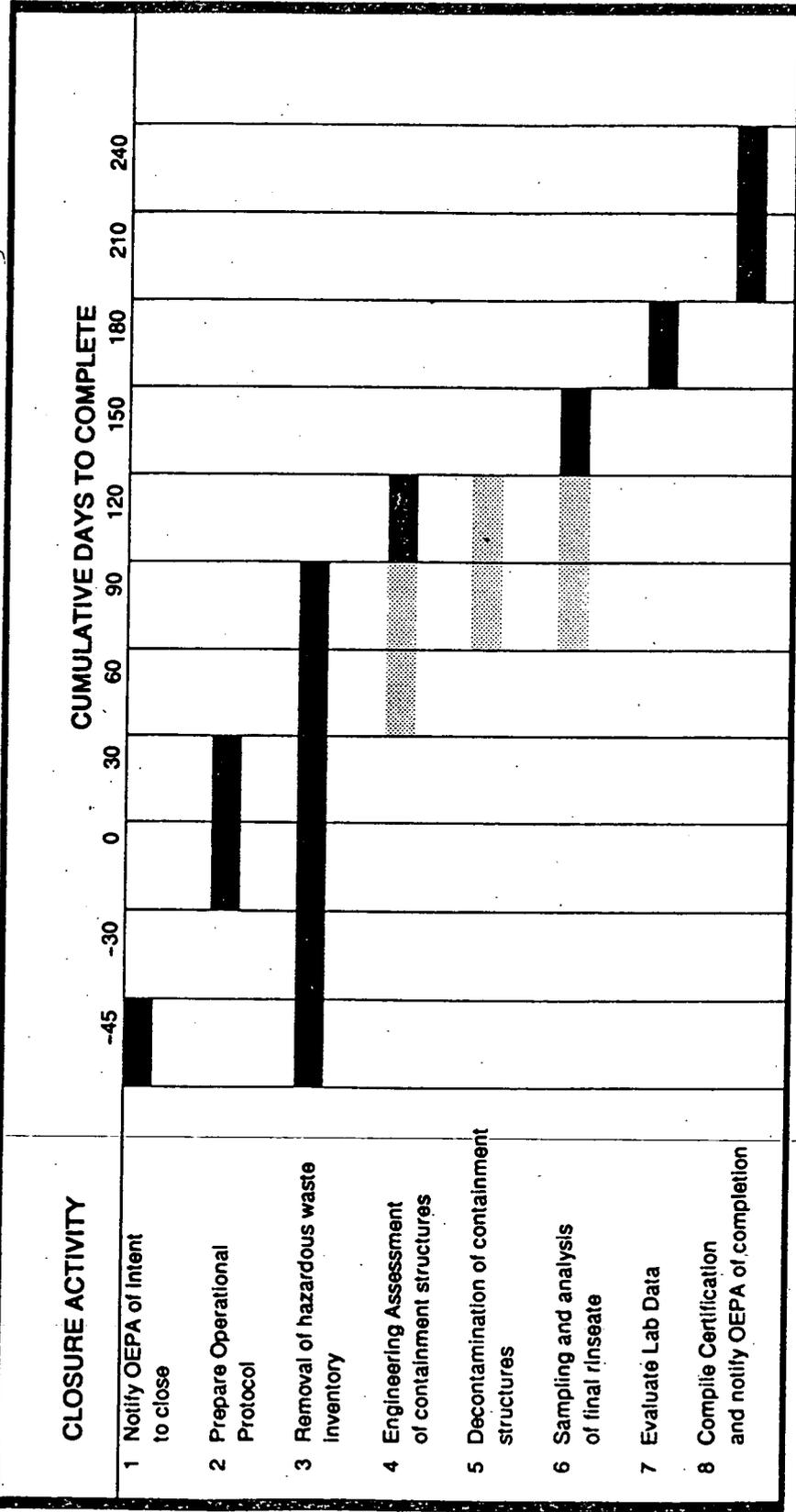
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BY: J. W. BROWN  
CHECKED: J. W. BROWN  
APPROVED: J. W. BROWN

INDEX CODE  
SERIAL 7000/10000/1

REVISION 0 - IMPROVE FOR CONTRACT UNIT 13-38

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SECTION I - CLOSURE PLAN INFORMATION

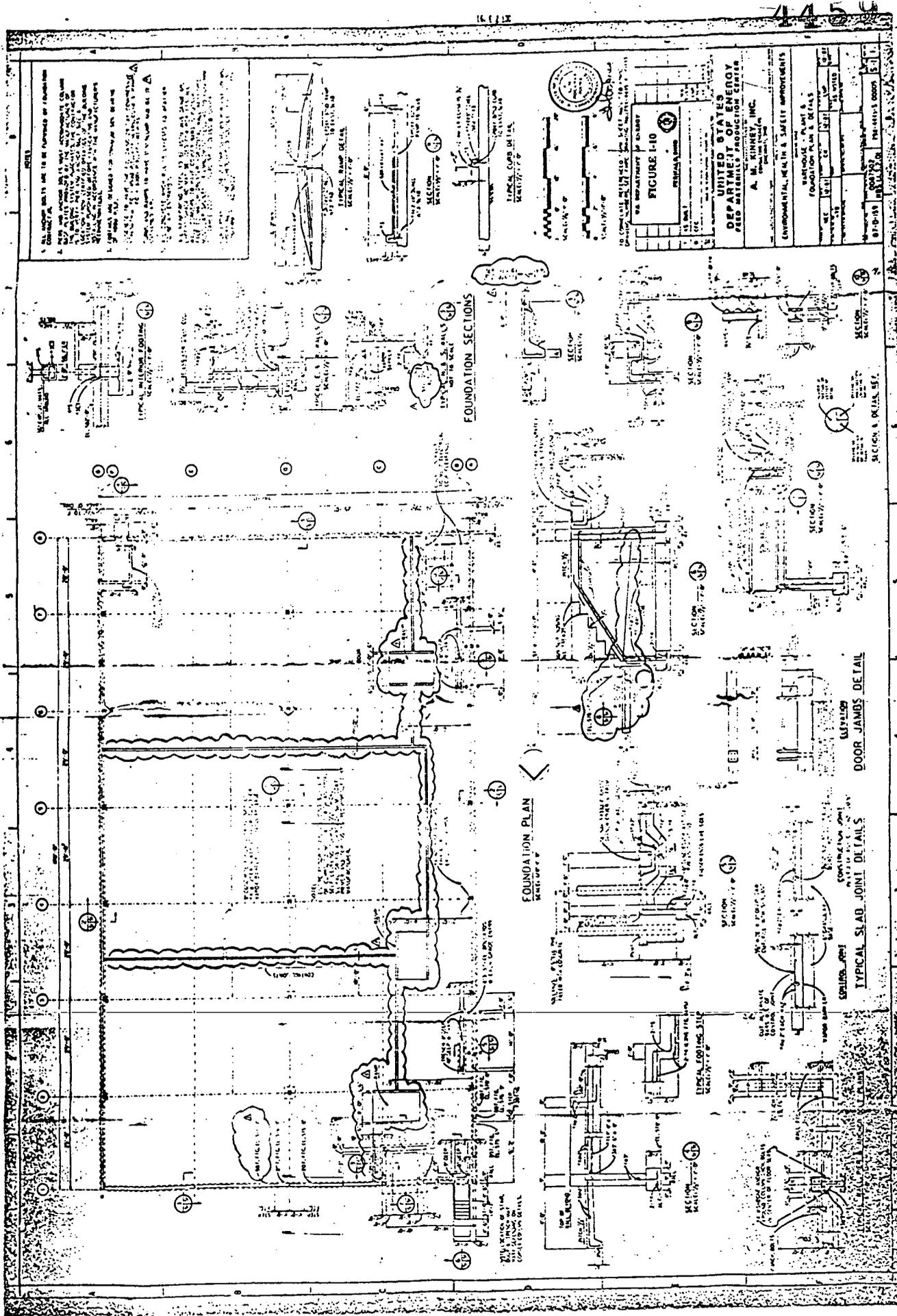


Notes:

Indicates critical activity when an independent, qualified, registered, professional engineer or his representative should be present on site.

FIGURE I-9

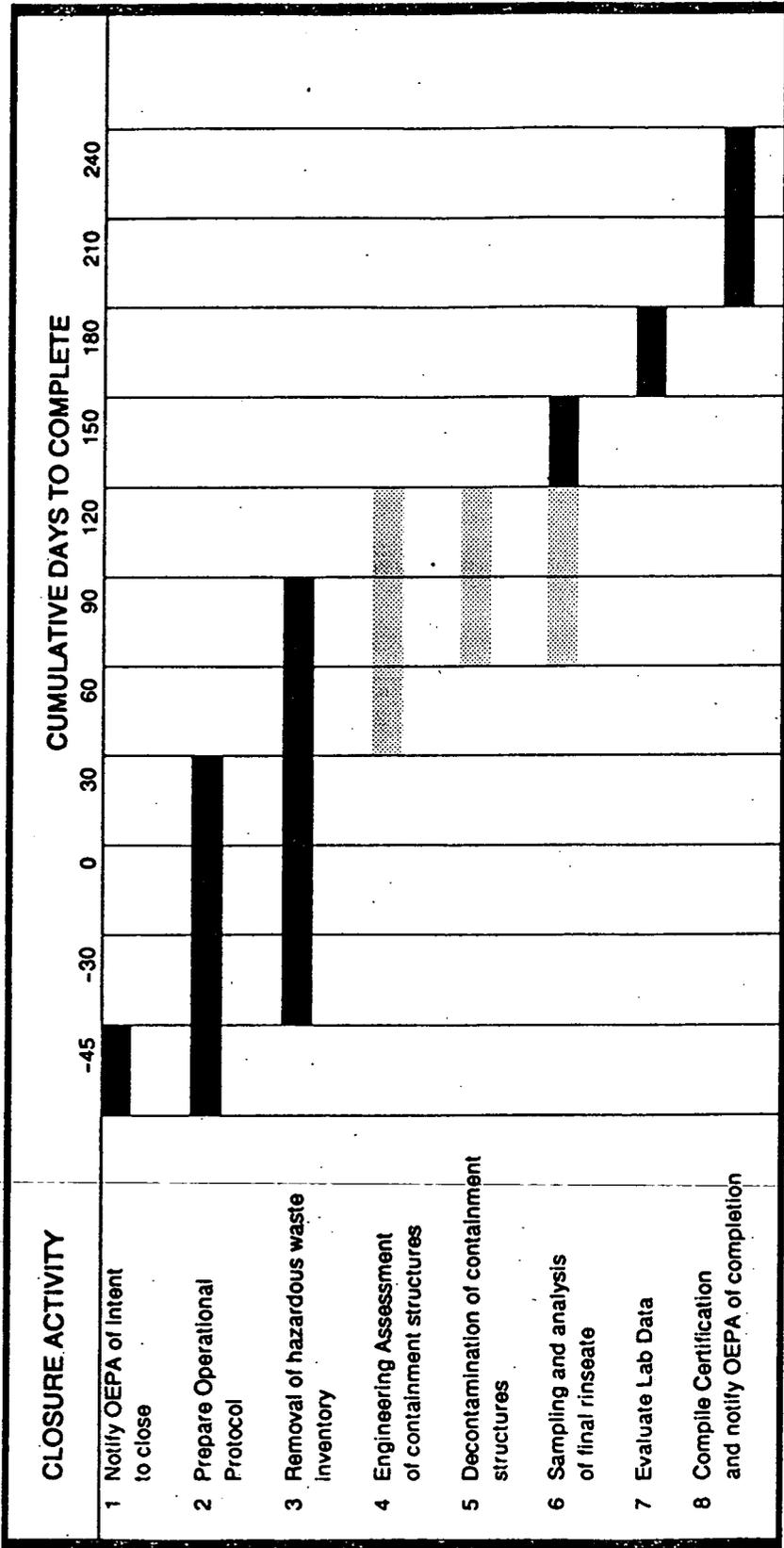
CP STORAGE WAREHOUSE - BUILDING 56 (BUTLER BUILDING) SCHEDULE FOR CLOSURE



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<b>FIGURE 1-10</b> FOUNDATION PLAN & DETAILS	
DEPARTMENT OF ENERGY FIELD MATERIALS PRODUCTION CENTER	ENVIRONMENTAL HEALTH & SAFETY IMPROVEMENTS BARBOURVILLE PLANT & FOUNDATION PLAN & DETAILS
A. H. HARRIS & ASSOCIATES, INC. ENGINEERS	DATE: 11/11/81 DRAWN BY: J. H. HARRIS CHECKED BY: J. H. HARRIS APPROVED BY: J. H. HARRIS
8120-101 11/11/81	11/11/81

SECTION I - CLOSURE PLAN INFORMATION



Notes:

Indicates critical activity when an independent, qualified, registered, professional engineer or his representative should be present on site.

FIGURE I-11

PLANT 6 WAREHOUSE SCHEDULE FOR CLOSURE

44  
FIGURE 1-12A  
PERMALS 0000

**ENRICHED MATERIAL WAREHOUSE LAYOUT AND DETAILS**

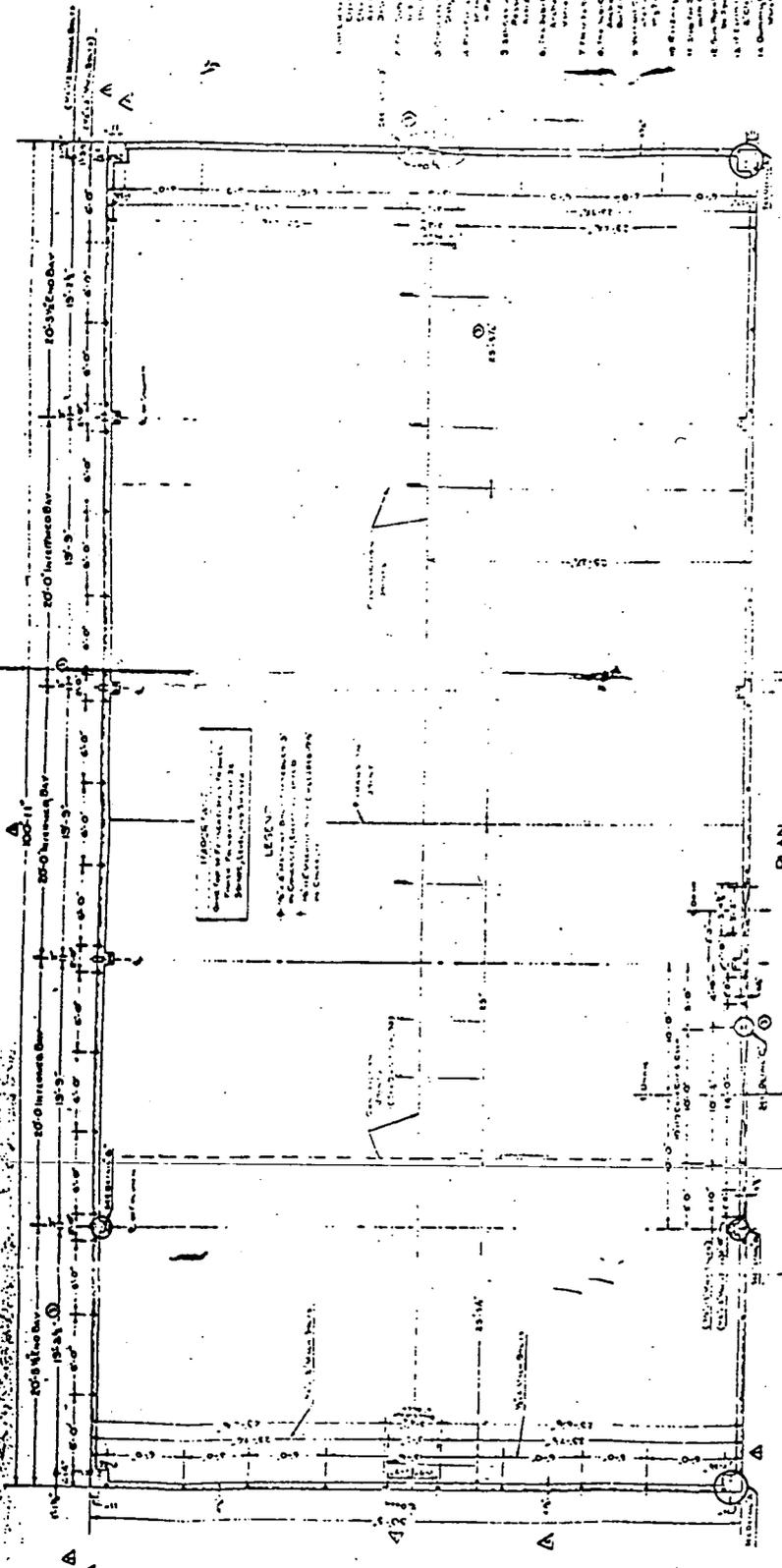
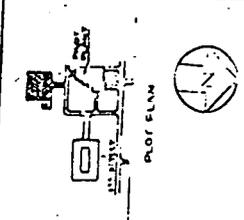
NATIONAL LEAD COMPANY OF OHIO  
P&O MATERIALS PRODUCTION CENTER  
P&O PLANT, OHIO

U.S. ATOMIC ENERGY COMMISSION

DATE: 10/15/54  
BY: [Signature]  
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APPROVED BY: [Signature]

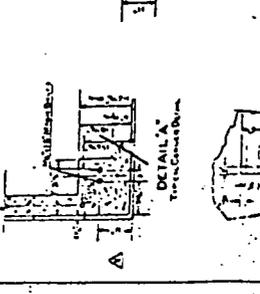
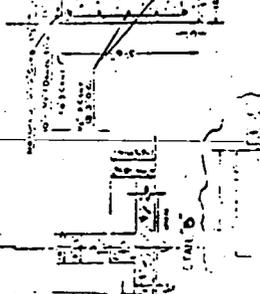
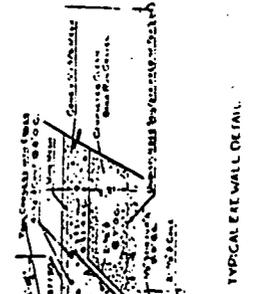
**GENERAL NOTES:**

1. See General Notes for Facilities with this Project.
2. This drawing is for the Enriched Material Warehouse.
3. The building shall be constructed of concrete and steel.
4. The building shall be constructed on a concrete slab on grade.
5. The building shall be constructed on a concrete slab on grade.
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STANDARD  
[Signature]



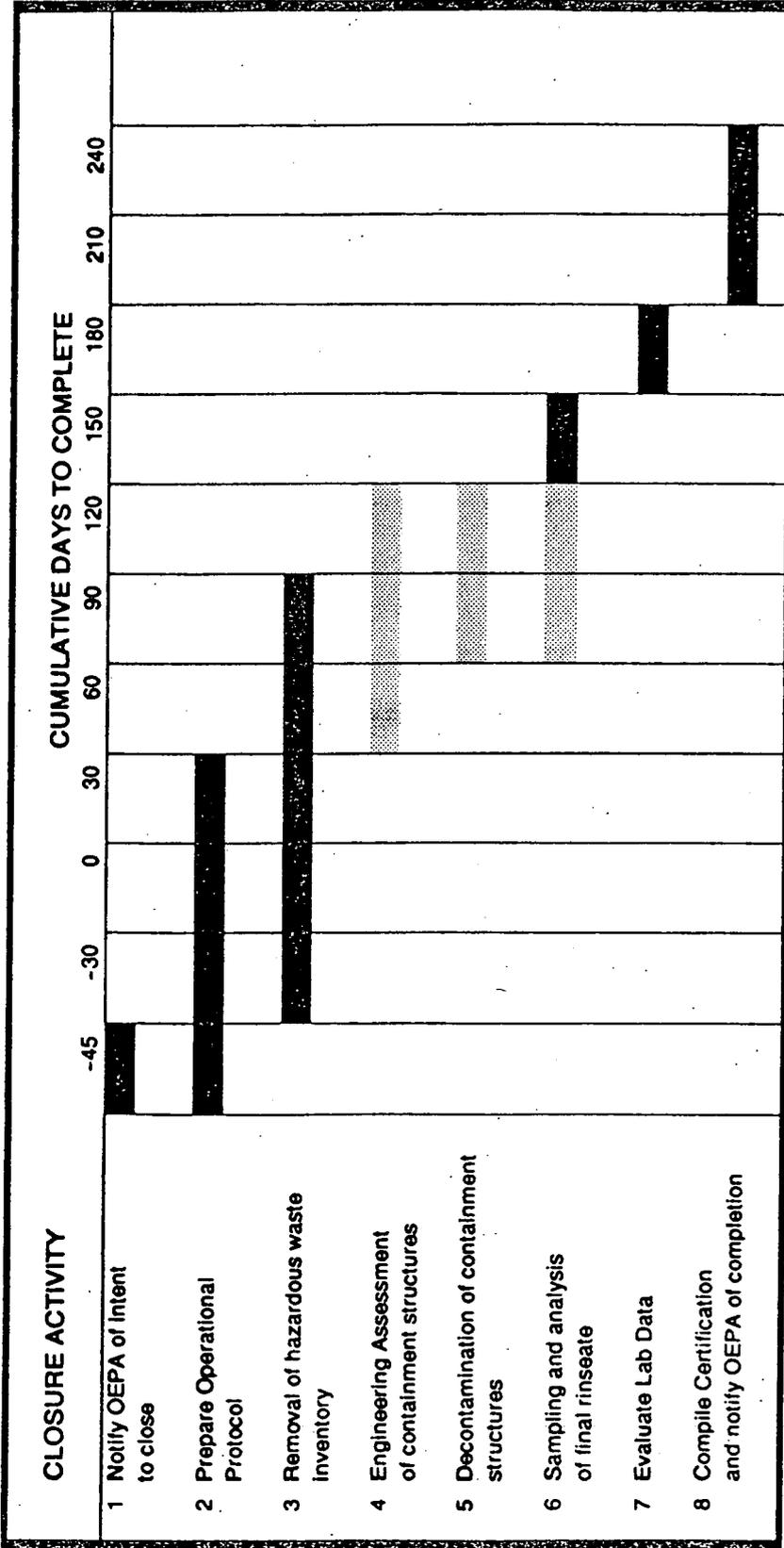
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SECTION I - CLOSURE PLAN INFORMATION.



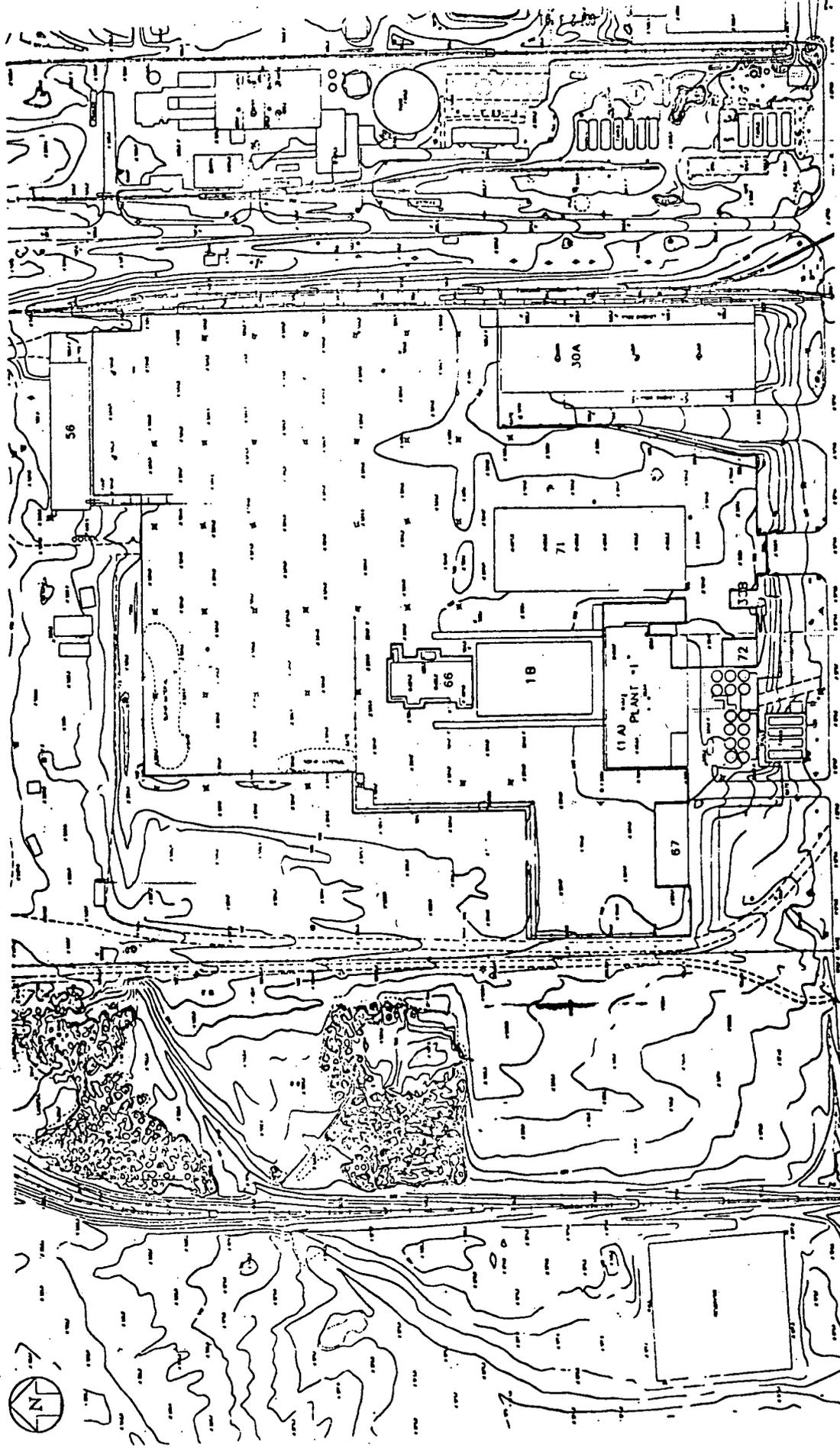
Notes:

Indicates critical activity when an independent, qualified, registered, professional engineer or his representative should be present on site.

FIGURE I-13

PILOT PLANT WAREHOUSE SCHEDULE FOR CLOSURE





U.S. DEPARTMENT OF ENERGY

PLANT 1

TOPOGRAPHIC CONTOUR M  
OF THE PLANT 1 PAD AREA

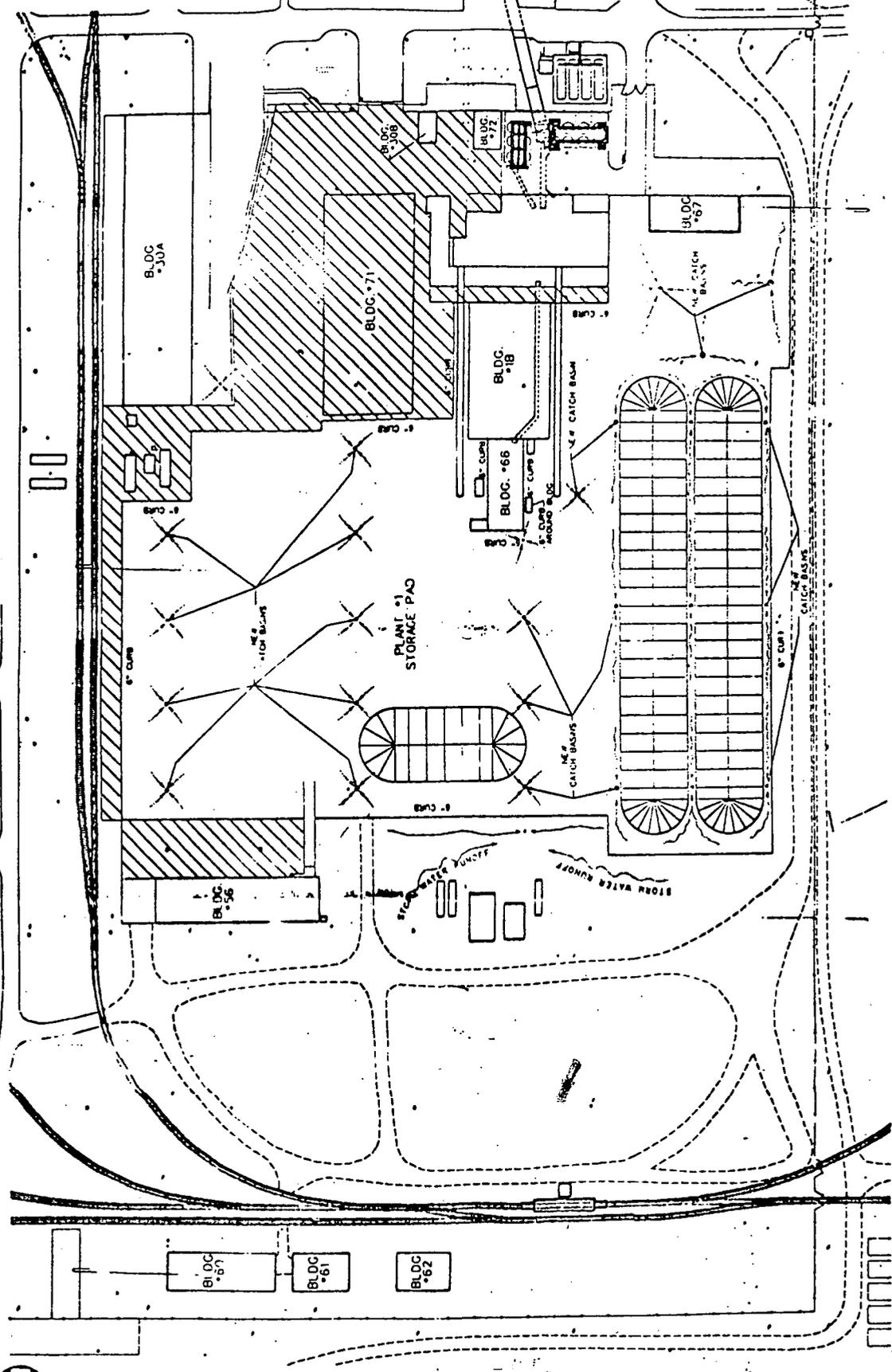
FIGURE 1-15

3

PERNALS, OHIO

FILE NAME: 1001/1001/1001/1001/1001

LEGEND  
ORIGINAL PAD  
NOT PART OF  
UPGRADE

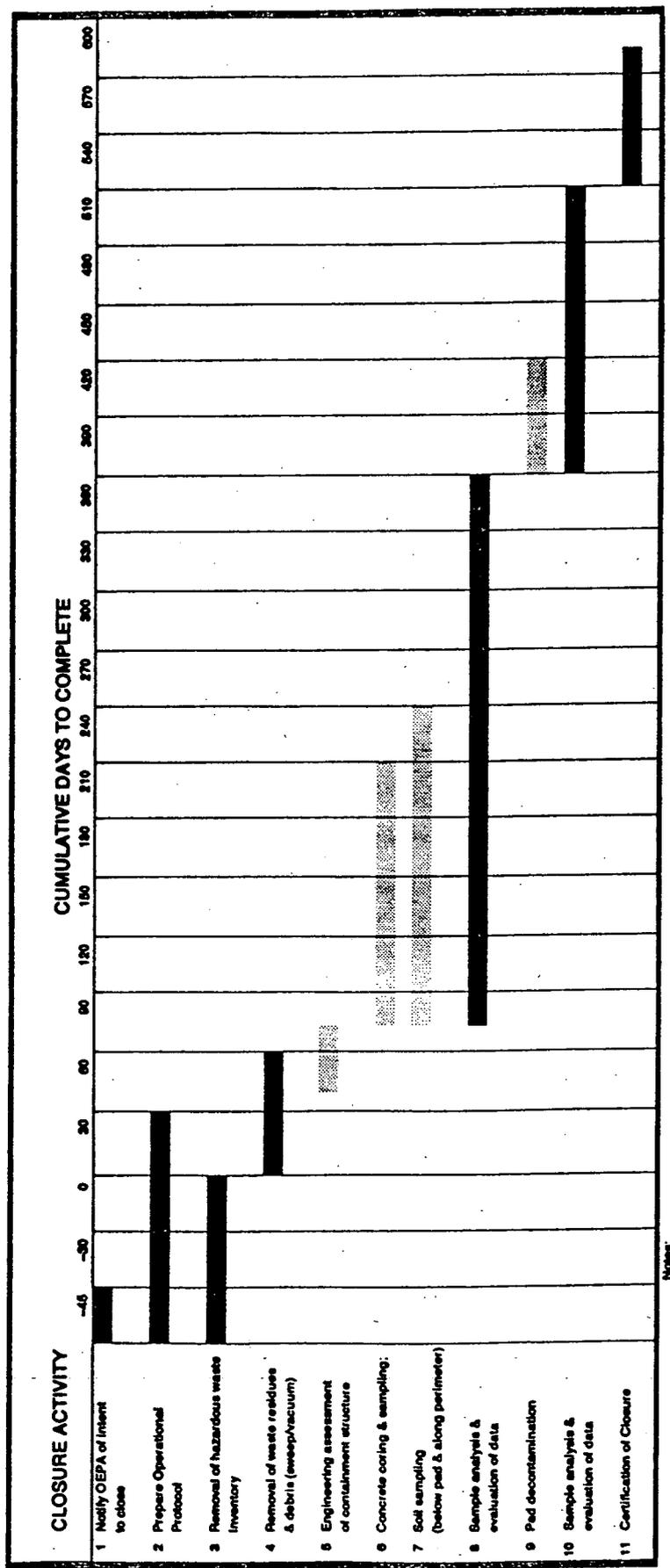


U.S. DEPARTMENT OF ENERGY  
FIGURE 1-16  
PENNA. OHIO

STORAGE AREA  
PLANT 1  
PLANT 1 STORAGE PAD LAYOUT  
AFTER UPGRADE  
SCALE - 1" = 50'-0"

FILE NAME: 16E2130.DWG

SECTION I - CLOSURE PLAN INFORMATION



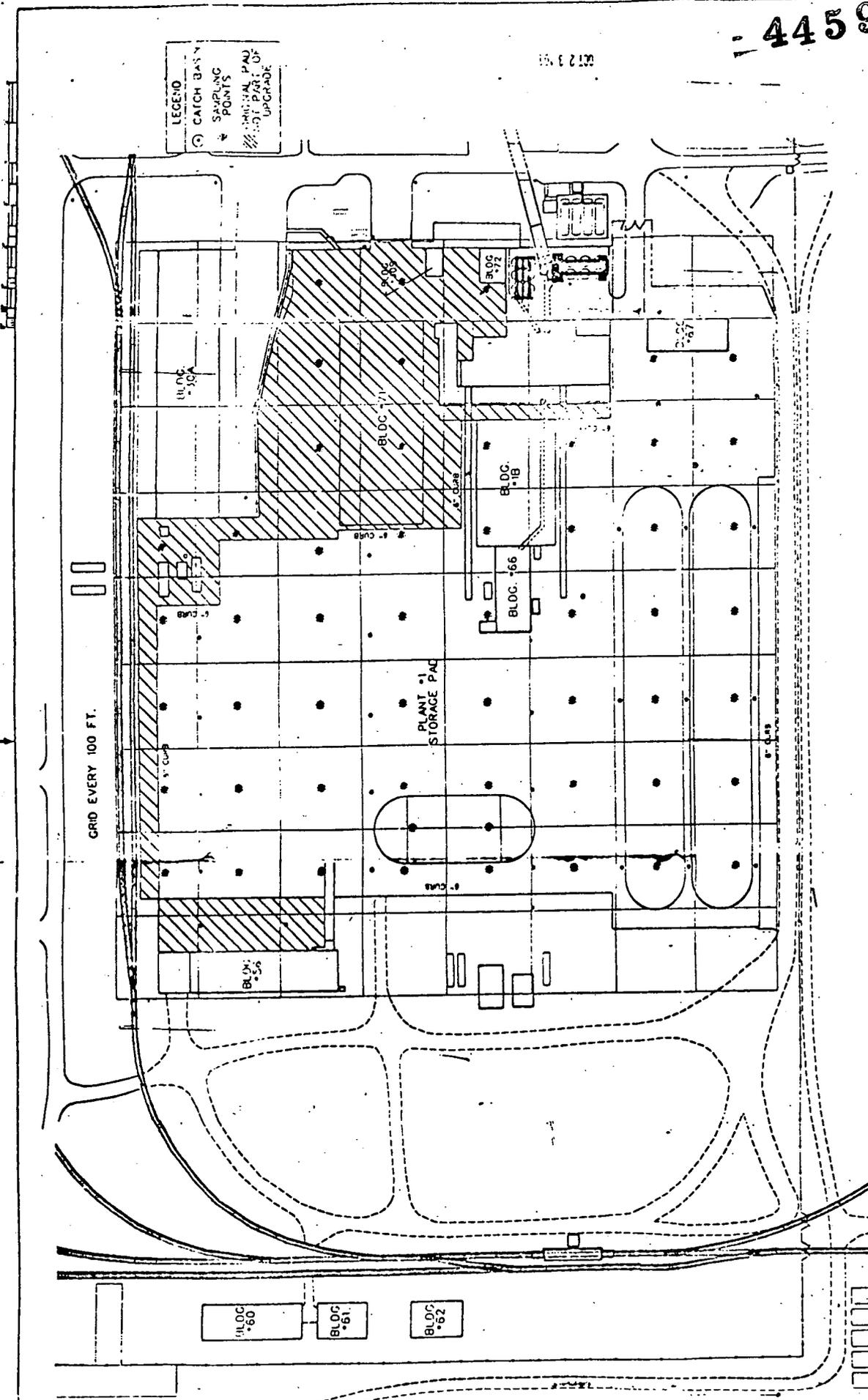
Notes:

Indicates critical activity when an independent, qualified, registered, professional engineer or his representative should be present on site.

FIGURE I-17

PLANT 1 PAD SCHEDULE FOR CLOSURE

4459



LEGEND  
 ○ CATCH BASIN  
 ▲ SAMPLING POINTS  
 ▨ ORIGINAL PAD PART OF UPGRADE

GRID EVERY 100 FT.

U.S. DEPARTMENT OF ENERGY

FIGURE 1-18



FERNALD, OHIO

PLANT 1 PAO

SAMPLING LOCATIONS

100' GRID

SCALE - 1" = 50'-0"

FILE NAME: 604111001/13112001.PLT

