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**TECHNOLOGY SPECIFIC WORK PLAN FOR DECONTAMINATION OF  
MIXED WASTE MATERIAL**

05/24/96

DOE-0900-96  
DOE-FN        EPAS  
125  
WORK PLAN



**Department of Energy**

**Ohio Field Office  
Fernald Area Office**  
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**MAY 24 1996**

**DOE-0900-96**

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**Dear Mr. Saric and Mr. Schneider:**

**TECHNOLOGY SPECIFIC WORK PLAN FOR DECONTAMINATION OF MIXED WASTE MATERIAL**

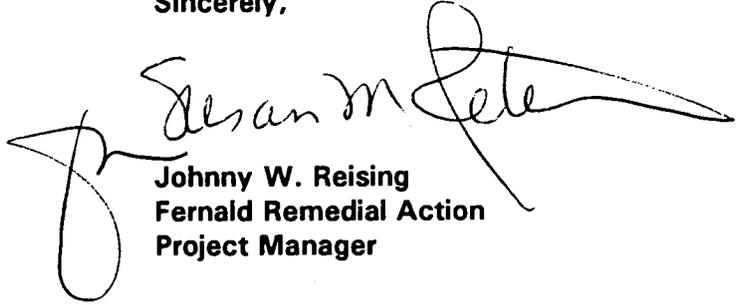
**This letter transmits the U.S. Department of Energy, Fernald Area Office's (DOE-FN) response to comments contained in the Ohio Environmental Protection Agency's (OEPA) March 28, 1996, correspondence and the U.S. Environmental Protection Agency's (U.S. EPA) April 5, 1996, correspondence; both of which granted conditional approval of the Technology Specific Work Plan for the Decontamination of Mixed Waste Material. Conditional approval of the Technology Specific Work Plan was granted pending satisfactory resolution of three comments contained in the OEPA correspondence and 13 comments contained in the U.S. EPA correspondence. Comment, response, and action are provided within Enclosures A and B.**

**Additionally, this letter notifies the OEPA and the U.S. EPA that the Technology Specific Work Plan for the Decontamination of Mixed Waste Material has been revised to reflect a change in the location of the Material Release Facility from Building 78 to Plant 6. All other aspects of the decontamination process described in the Technology Specific Work Plan for the Decontamination of Mixed Waste Material remain the same.**

**000001**

If you should have any questions regarding this matter, please contact John Sattler at (513) 648-3145, or Robert Danner at (513) 648-3167.

Sincerely,



Johnny W. Reising  
Fernald Remedial Action  
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Enclosures: As Stated

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**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT**

**MIXED WASTE CHEMICAL TREATMENT PROJECT**

**TECHNOLOGY SPECIFIC WORK PLAN FOR  
DECONTAMINATION OF MIXED WASTE MATERIAL**

**DOCUMENT #8ADD9-2200-004**

**Rev. 1**

**May 1996**

**Prepared by  
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**Prepared for  
U.S. DEPARTMENT OF ENERGY  
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Contract DE-AC24-92OR21972**

**000003**

**CHEMICAL TREATMENT PROJECT  
DECONTAMINATION OF MIXED WASTE MATERIAL  
OHIO EPA RCRA PART B PERMIT  
SUBSTANTIVE COMPLIANCE DEMONSTRATION**

ITEM	CROSS REFERENCE INDEX
Interim Status: Treatment, Storage, and Disposal Facility General Facility Standards (OAC 3745-65-13 through 16) (40 CFR 265.13 through 265.16)	Section 2.0 & 3.0
Hazardous Waste Determinations (OAC 3745-52-11) & (40 CFR 262.11)	Section 2.0
Container Storage (OAC 3745-52-34, 3745-66-70 through 77) (40 CFR 265.34, 265.170 through 265.177)	Section 4.1
Land Disposal Restrictions (LDR) (OAC 3745-59) (40 CFR 268)	Section 4.2 and Table 5.1
Interim Status: Treatment, Storage, and Disposal Facility Preparedness and Prevention (OAC 3745-65-31 through 35, 3745-65-37) (40 CFR 265.31 through 265.35, 265.37)	Section 3.3, 4.0 & 5.0, Table 5.1
Residue of Hazardous Waste in Empty Containers (OAC 3745-51-07) (40 CFR 261.7)	Section 4.1
Interim Status: Treatment, Storage, and Disposal Facility Contingency Plan and Emergency Procedure (OAC 3745-65-51 through 56) (40 CFR 265.51 through 265.56)	Section 3.3, 4.0 & 5.0, Table 5.1

**NOTE:** Compliance with the applicable or relevant and appropriate requirements (ARARs) is discussed in Section 5.1 and in Table 5-1 of the attached Technology Specific CERCLA Work Plan.

**TECHNOLOGY SPECIFIC WORK PLAN FOR  
DECONTAMINATION OF MIXED WASTE MATERIAL**

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LIST OF ACRONYMS

ACA	Amended Consent Agreement
ALARA	As Low As Reasonably Achievable
ARAR	Applicable or Relevant and Appropriate Requirements
ARC	Anti-Radioactivity Cleaning Compound
CAA	<i>Clean Air Act</i>
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act</i>
CFR	Code of Federal Regulations
CWA	<i>Clean Water Act</i>
D&D	Decontamination and Decommissioning
DOE-FN	U. S. Department of Energy, Fernald Field Office
D/M	Disintegrations per minute
EPA	Environmental Protection Agency
EPCRA	<i>Emergency Planning and Community Right-to-Know Act</i>
FEMP	Fernald Environmental Management Project
FERMCO	Fernald Environmental Restoration Management Corporation
FFCAAct	<i>Federal Facility Compliance Act</i>
FSAR	Final Safety Analysis Report
HEPA	High Efficiency Particulate Air
INEL	Idaho National Engineering Laboratory
LDR	Land Disposal Restrictions
LLRW	Low Level Radioactive Waste
MEF	Material Evaluation Form
MRF	Material Release Facility
NEPA	<i>National Environmental Policy Act</i>
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFS	Nuclear Fuel Services, Inc.
Ni-Cd	Nickel-Cadmium
NPDES	National Pollutant Discharge Elimination System
NTS	Nevada Test Site
OEPA	Ohio Environmental Protection Agency
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyls
PSHSP	Project Specific Health & Safety Plan
QA	Quality Assurance
RA	Removal Action
RCRA	<i>Resource Conservation and Recovery Act</i>
RTR	Real Time Radiography
SA	Safety Assessment
SAP	Sampling and Analysis Plan
SCQ	Site-Wide CERCLA Quality Assurance Project Plan
STP	Site Treatment Plan
TOC	Total Organic Compounds
TSCA	<i>Toxic Substance Control Act</i>
TSDF	Treatment, Storage, and Disposal Facility
WAC	Waste Acceptance Criteria
WWTF	Waste Water Treatment Facility

## TECHNOLOGY SPECIFIC WORK PLAN FOR DECONTAMINATION OF MIXED WASTE MATERIAL

### 1.0 INTRODUCTION

This Technology Specific Work Plan describes the process that will be used to decontaminate regulated hazardous materials including lead bricks, nickel-cadmium (Ni-Cd) and mercury batteries, gas cylinders and any other FEMP materials containing radioactive surface contamination. Decontamination is a process used to remove radioactive contamination from the surface of debris and debris like material. Many of the materials on the Fernald Environmental Management Project (FEMP) site are currently managed as mixed waste due to radioactive surface contamination. Once radioactive surface contamination is removed the material will no longer be regulated as mixed waste and can be recycled, free released or disposed as a hazardous waste. Some material may not be conducive to decontamination. These materials may be treated through alternative technology such as macroencapsulation, shipped to a facility permitted to accept radioactive contaminated hazardous material, or managed by other means.

The Fernald Environmental Management Project (FEMP) will locate a Material Release Facility (MRF), in Plant 6 on the FEMP site, and use it to decontaminate material with surface contamination. The FEMP also conducts decontamination activities in Building 69. Decontamination of mixed waste material will take place at this MRF, but if it becomes unavailable Building 69 can be used. Once material is decontaminated it can be "free-released" according to RP-0009, "Radiological Requirements for the Release of Materials at the Fernald Environmental Management Project" and the guidance contained in the FERMCO Material Release Policy. The FERMCO Material Release Policy is based on DOE Order 5400.5 but may include the requirements of promulgated regulations, guidance documents, or management practices that are more stringent than DOE Order 5400.5.

Decontamination of these materials is being initiated under Removal Action (RA) No. 9, "Removal of Waste Inventories" and Site Procedure EW-0024, "Operating the Material Release Facility (MRF)," which lists the steps necessary to identify and decontaminate materials with radioactive surface contamination. Site Procedure EW-0024 will be used to decontaminate material whether activities take place in the MRF or Building 69. Removal Action No. 9 was identified in the Amended Consent Agreement (ACA), September 1991, to address the removal of Low Level Radioactive Waste (LLRW) inventories. The ACA requires DOE-FN to submit an annual compendium of existing procedures and documentation for the FEMP Site LLRW Management Program, in lieu of Removal Action Work Plans. Additionally, DOE-FN committed to submitting work plans for certain projects in Addendum No. 1 to the RA No. 9 Work Plan. The General CERCLA Work Plan for the Mixed Waste Chemical Treatment Project, submitted November 1995, is intended to satisfy ACA and RA9 driven requirements by incorporating documentation and management of the project under RA9. The Mixed Waste Chemical Treatment Project Work Plan describes multiple treatment processes which will be used to treat listed and characteristic mixed LLRW currently being stored at the FEMP. The Mixed Waste

Chemical Treatment Project requires DOE-FN to prepare Technology Specific Work Plans for each specific treatment process. Development of Technology Specific Work plans is also driven by commitments made by the FEMP in the Site Treatment Plan (STP).

Decontamination will be performed by FERMCO personnel using existing operating procedures. The Technology Specific Work Plan will demonstrate that the decontamination process will be accomplished in compliance with applicable federal, state, and local regulatory requirements, DOE Orders, and site procedures.

This Technology Specific Work Plan is organized in the manner that is consistent with previously submitted and approved Work Plans. This Work Plan provides a description of how and where the decontamination will be performed. The plan identifies requirements to be addressed for storage, handling, decontamination, shipment and disposal, quality assurance, environmental compliance, and health and safety. Section 2.0 of the Work Plan provides a description of waste categories requiring decontamination. Section 3.0 provides a general description of the decontamination processes which will be used to decontaminate the material along with process flow diagrams. Section 4.0 describes options and plans for disposition of decontaminated material, material that could not be decontaminated and secondary waste(s). Section 5.0 describes the Applicable or Relevant and Appropriate Requirements (ARARs) for this project. Section 6.0 lists the site health and safety plans and procedures to be implemented during this project. Section 7.0 outlines the project team, how the work and the project schedule will be managed, and how RM-0012, "FERMCO Quality Assurance Program Plan," will be incorporated into the project. Attachment A is Site Procedure EW-0024, "Operating the Material Release Facility (MRF)" which provides the procedure currently used for identifying, characterizing, decontaminating and dispositioning potentially contaminated material.

## 2.0 WASTE CATEGORY DESCRIPTION

Since October 1991, RCRA closure actions and CERCLA response actions have redirected the central mission of the FEMP towards the implementation of waste management and environmental restoration initiatives. One of these initiatives is to identify, characterize, treat, and dispose of all legacy waste stored at the FEMP site in accordance with applicable federal, state, and local requirements. Some of the legacy waste is regulated as mixed waste because it contains removable uranium surface contamination. When surface contamination is removed the materials are no longer regulated as mixed waste and can be recycled, free-released, or disposed of as a hazardous waste in accordance with RCRA requirements.

The mixed waste is stored in various containers in RCRA storage areas at the FEMP site. All mixed wastes to be decontaminated under the TSWP are currently being managed and stored as hazardous waste in RCRA-permitted storage facilities at the Fernald Site. The wastes have been characterized using process knowledge and/or sampling and analysis in accordance with site procedures EW-0001, "Initializing Waste Characterization Activities Using the Material Evaluation Form". The waste characterization methodologies specified by EW-0001 are consistent with USEPA and OEPA waste regulations.

Mixed wastes that will be decontaminated under the project, will be brought to the MRF in Plant 6 by MC&A personnel. The wastes are currently stored in steel drums or white metal boxes of varying sizes ranging from 30-gallon to 100 cubic feet capacities. Because these containers of mixed waste are currently being managed as hazardous waste, they are already packaged, labeled, marked, and placarded in accordance with the RCRA provisions.

Containers of surface contaminated mixed waste have been grouped and characterized using the Material Evaluation Form (MEF) procedures discussed in Section 2.0 the General CERCLA Work Plan for the Mixed Waste Chemical Treatment Project. The MEFs represent waste streams which have been categorized based on waste matrix, characteristics, and constituents. The waste streams to be treated by decontamination include lead solids such as lead bricks, pipes, hammers, sheeting, flashings, and counter balance weights from forklift trucks, Ni-Cd and mercury batteries, gas cylinders, and other miscellaneous materials that may be added from the Waste Segregation Treatment Project. Real Time Radiography (RTR) which uses x-ray technology to view the contents of a container, visual inspections, and process knowledge were used to categorize the waste streams. Other material identified during future FEMP remedial activities may also be treated by this process. An inventory list of the mixed waste drums to be treated along with their corresponding MEF number, EPA waste code, inventory descriptions, % U and % U<sup>235</sup> readings, and RTR results are shown in Attachment B. The U column represents the percent uranium, by weight, in the waste. The U<sup>235</sup> column represents the percent uranium-235 isotope, by weight, in the uranium. These percentages are determined by the use of process knowledge and/or sampling and analysis to track uranium at the FEMP. Due to the nature of this waste, the uranium would exist as surface contamination. This list represents the inventory of identified waste streams eligible for decontamination. Waste may be added or removed, in accordance with EW-0024, as remediation activities continue.

### 3.0 DECONTAMINATION DESCRIPTION

The MRF, located in Plant 6, will be used to decontaminate lead solids, Ni-Cd and mercury batteries, gas cylinders and other miscellaneous materials with surface contamination. Both facilities are currently used to decontaminate materials. Decontamination activities will take place at the MRF if available. The decontamination buildings were designed to decontaminate metallic items such as equipment, scrap metal, and vehicles and non-porous materials such as batteries and vehicle tires in support of current restoration and remediation activities. This section will provide a description of the decontamination process. A detailed description is provided in Attachment A.

#### 3.1 DECONTAMINATION CATEGORIES

There are currently four mixed waste categories to be treated by this project: lead solids, Ni-Cd batteries, mercury batteries, and gas cylinders. Most of these materials are recyclable and are categorized as mixed waste due to radioactive surface contamination. Additional mixed waste material may be added to the project as a result of the Waste Segregation Treatment Project or remediation activities.

#### 3.2 MATERIAL RELEASE FACILITY DESCRIPTION

The Plant 6 MRF for decontaminating lead solids is located in the east side, north center corner of the FEMP site (See Figure 3-1). Plant 6 also contains the waste stabilization process operations area as mentioned in the approved Project Specific Plan for the Fernald Mixed Waste Stabilization Project. The indoor MRF work area totaling approximately 1400 square feet contains areas to receive and disassemble contaminated items, decontaminate these items by various wash methods, and store the items for subsequent transport from the facility (See Figure 3-2). The area has unrestricted overhead clearance of approximately 20 feet above floor level. The concrete floor is capable of supporting the wheel load of a 6,000 pound rated capacity forklift, fully loaded.

Contamination status will be determined prior to and after cleaning. The floors in the MRF area, where the decontamination will take place, are sloped to drain waste water to the trenches in the floor. The trenches collect the water from washing activities and drain to a sump where the water is pumped through bag filters to Plant 8 for further processing in the FEMP Waste Water Treatment Facility (WWTF).

#### 3.3 DECONTAMINATION PROCESS

A variety of decontamination techniques are available to remove radioactive contamination from the surface of lead bricks, Ni-Cd and mercury batteries, and gas cylinders. If these materials can be decontaminated to meet the "free-release" requirements of RP-0009, "Radiological Requirements for the Release of Materials at the FEMP" and the FERMC0 Material Release Policy, they can be recycled, reused or shipped to a Treatment, Storage, and Disposal Facility (TSDF) as a

hazardous waste. Attachment C lists the surface contamination release limits for material that contains surface contamination only. A Material Release Evaluator, designated by the Manager of Radiological Control, will determine if a material has the potential for internal contamination or contamination in areas which are inaccessible for proper survey. All decontamination activities will follow Site Procedure EW-0024, "Operating the Material Release Facility (MRF)" provided in Attachment A whether activities take place at the MRF or Building 69. Site Procedure EW-0024 provides information to identify, characterize, transport, decontaminate, and disposition potentially contaminated material. Any changes to EW-0024 will be submitted with the annual update of Removal Action 9 - Removal of Waste Inventories Work Plan.

An initial radioactive survey will be performed per the requirements of RC-RDA-010, "Radiological Contamination Surveys," on all material to determine if radiological surface contamination exists. If surface contamination exists, material will be moved to the Wash Area. If decontamination is not required the material will be free released and prepared for disposition. Once the material is in the Wash Area, any loose contamination is removed by wiping, hand scraping, vacuuming, or water spraying. Plant-pressure water spray, detergents and steam cleaning are then used to decontaminate the materials. All materials will be monitored for "free release" after decontamination per the requirements of RP-0009 and the FERMCO Material Release Policy. Disposition of decontaminated materials will be according to existing site procedures. If decontamination processes fail to meet "free-release" criteria the waste will be dispositioned according to EW-0024 and returned to storage for evaluation for other treatment processes such as macroencapsulation. Figure 3-2 provides a graphic depiction of the decontamination process description.

Environmental Management activities including waste minimization, spill prevention, and waste management and disposal will be handled according to Section 4.6 of the Mixed Waste Chemical Treatment Project General CERCLA Work Plan. The MRF will undergo decontamination and decommissioning as part of future remediation activities.

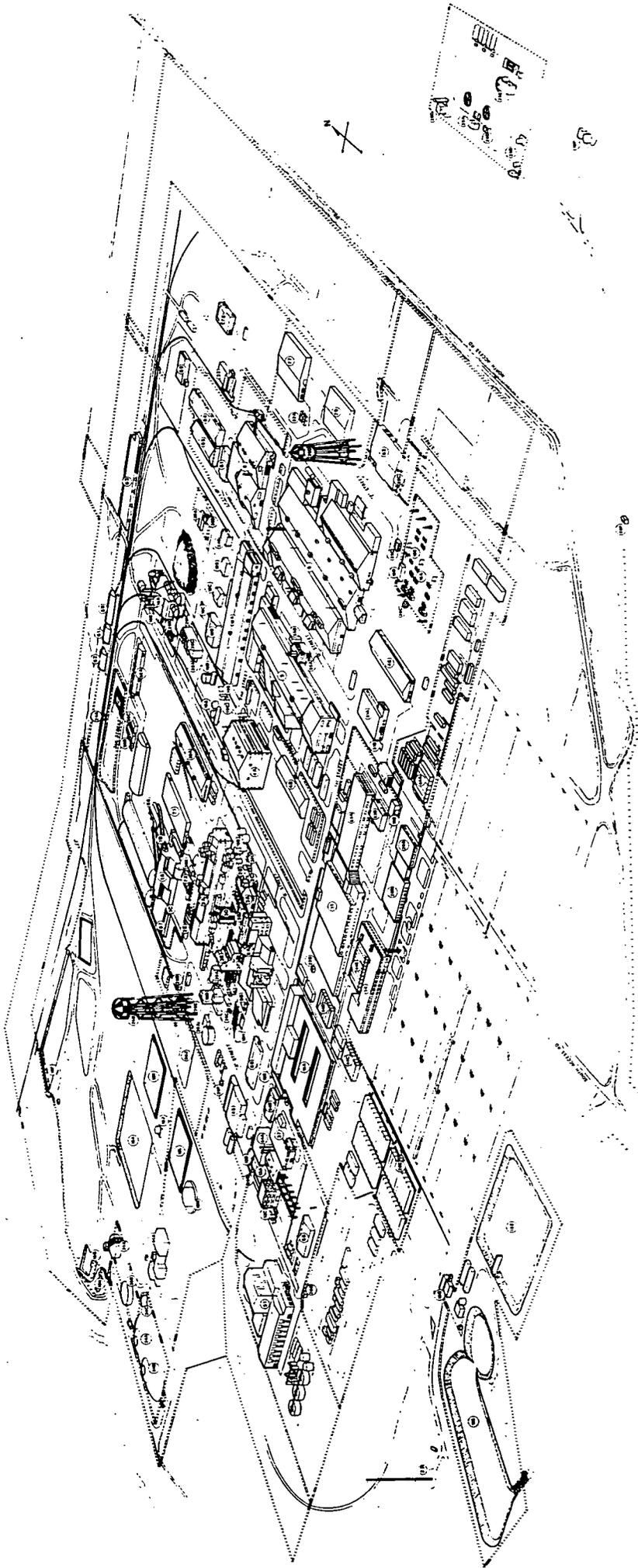


Figure 3-1  
Location of Plant 6  
Material Release Facility at FEMP

PLANT 6 MATERIAL RELEASE FACILITY

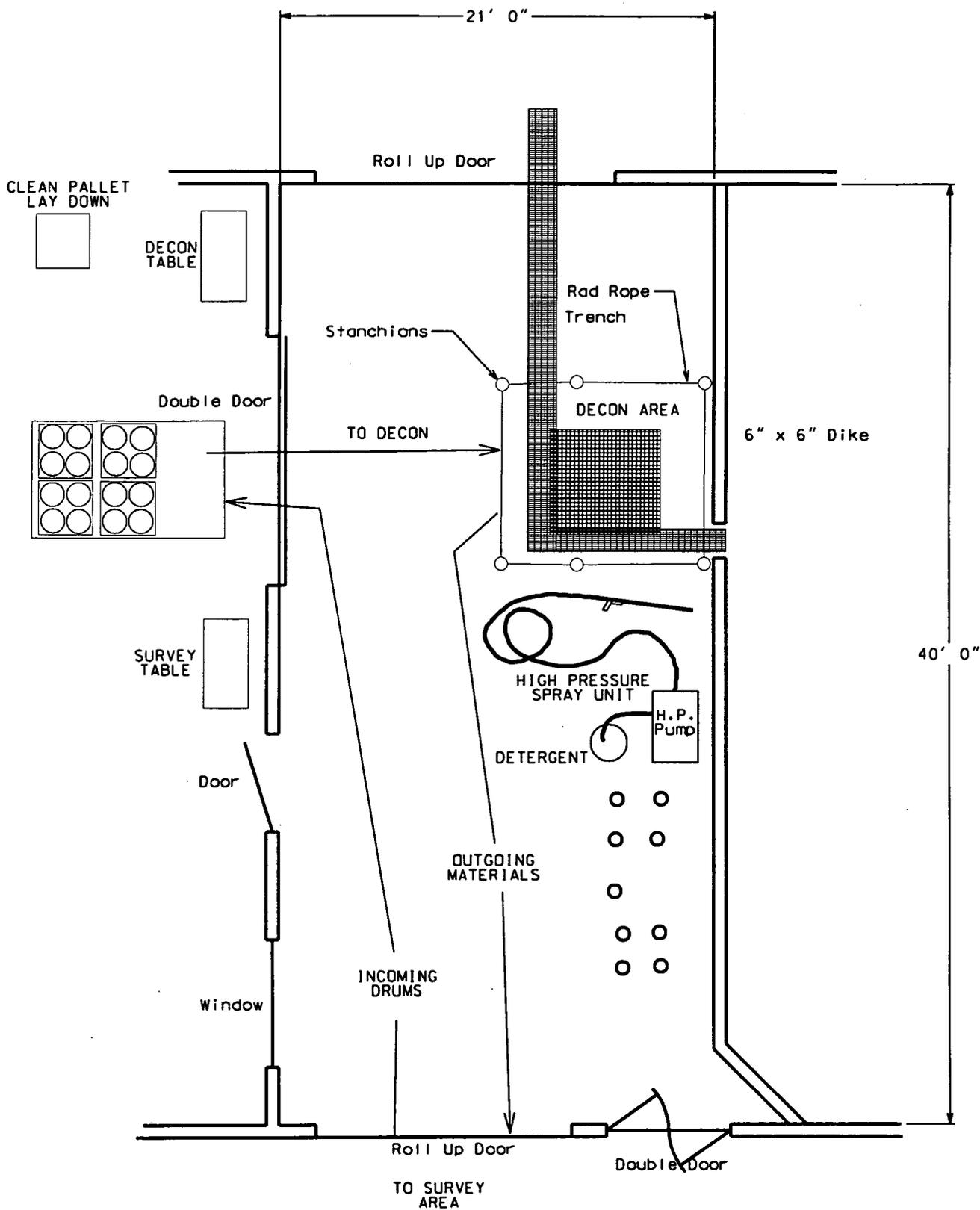
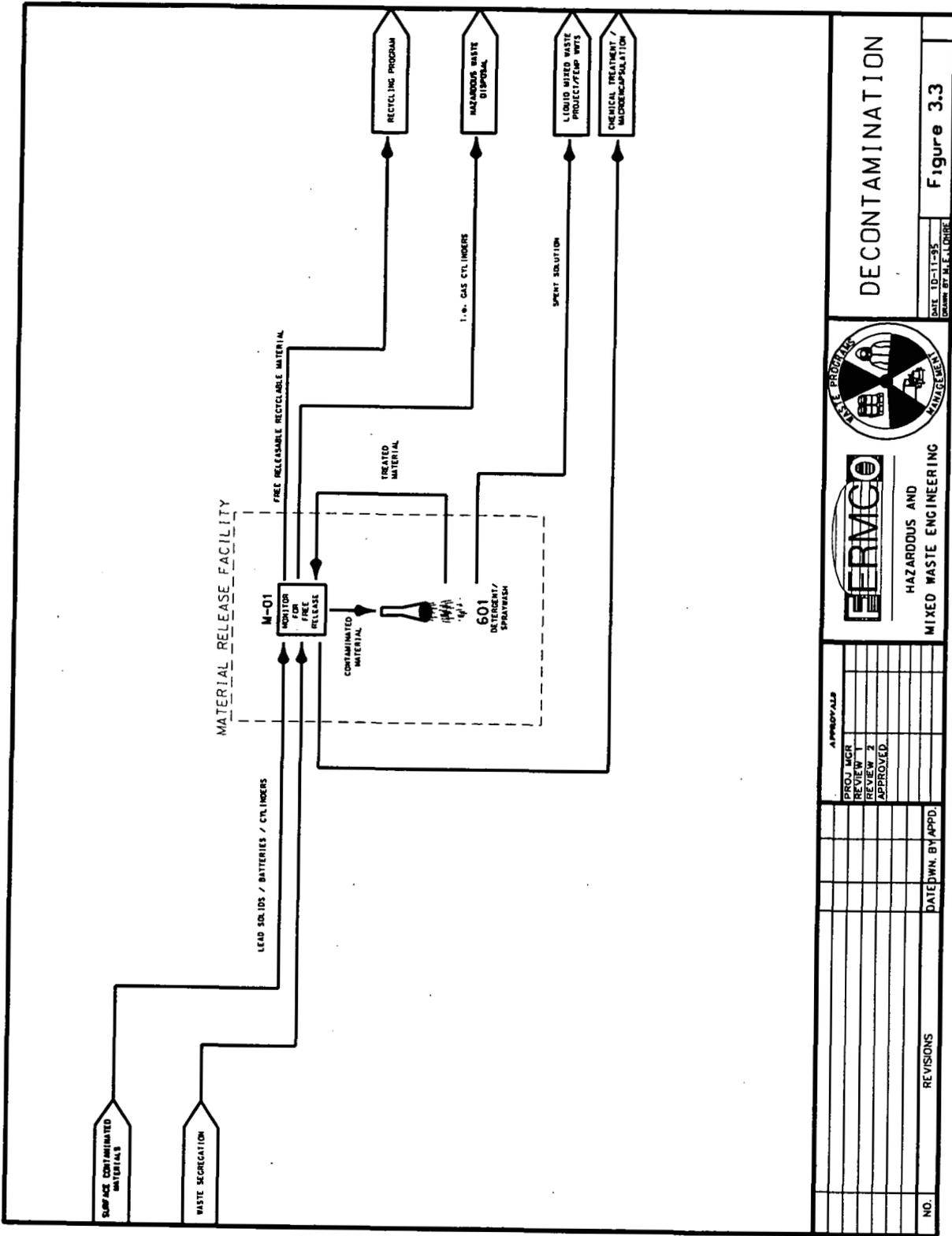


Figure 3-2  
Plant 6 MRF Floor Plan

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DECONTAMINATION		DATE 10-11-95 DRAWN BY M.E. LORRE	Figure 3.3
 HAZARDOUS AND MIXED WASTE ENGINEERING			
NO.	REVISIONS	DATE/DWN. BY/APPD.	

Figure 3-3  
Decontamination Flow Diagram

## 4.0 WASTE DISPOSITION

Materials which meet the "free-release" criteria per RP-0009 and the FERMCO Material Release Policy will be shipped to an approved recycling facility, reused or disposed as a hazardous waste. FERMCO has a contract in place with commercial vendors to recycle decontaminated scrap metals such as lead and Ni-Cd and mercury batteries. Decontaminated gas cylinders will be shipped to an approved TSDF or returned to an approved vendor for reuse. If decontamination efforts fail, alternative treatment processes will be required. Lead solids and batteries that cannot be decontaminated will be macroencapsulated at Envirocare of Utah under the Idaho National Engineering Laboratory (INEL) Cooperative Agreement treatment demonstration. Materials that are not conducive to decontamination may be shipped to a facility permitted to accept radioactive contaminated hazardous material for disposal under the Work Plan for Mixed Waste Disposal (August 1994) or further evaluated under the Chemical Treatment Project.

### 4.1 CONTAINER MANAGEMENT

The containers of mixed waste will be managed according to Section 4.1.1, "Management of Mixed Wastes in Containers," of the General CERCLA Work Plan for the Mixed Waste Chemical Treatment Project and existing site procedures. Before and after decontamination, if material cannot be decontaminated, material will be packaged, labeled, marked, and managed in accordance with RCRA requirements in permitted facilities on the FEMP site. After decontamination, material that has been "free released" will be packaged and staged in a radiologically clean, secure area for recycling according to site procedures. Containers that previously contained mixed waste materials will be RCRA-emptied and handled according to site procedures. Containers of material that cannot be decontaminated will be closed or the material will be consolidated with similar waste streams and returned to RCRA storage to await further treatment under the Chemical Treatment Project. Disposition of materials that cannot be decontaminated will be dispositioned according to EW-0024 and further evaluated under the Chemical Treatment Project.

### 4.2 SECONDARY WASTE TREATMENT

Secondary wastes generated from the primary treatment processes include waste waters, decontamination solutions, contact waste and bag filters containing solids with metal contamination. The secondary waste streams will be evaluated, characterized, and managed according to site procedures and in compliance with RCRA regulations.

Decontamination water will be collected by floor drains at the location of the Plant 6 MRF and will flow to the Plant 6 Sump, where it will be held pending analysis. Prior to discharge from the Plant 6 Sump, decontamination waters will be analyzed for Total-Uranium and Total-Lead. Results of these analyses will be reviewed in accordance with site procedure EP-0005, "Controlling Aqueous Waste Water Discharges into the Waste Water Treatment System", to determine whether these streams can be discharged to the FEMP Waste Water Treatment System. In the event sampling results for lead exceed the 5.0 mg/L regulatory level, the

decontamination water will be collected and placed into RCRA inventory to await disposition under the Chemical Treatment and/or FEMP Waste Water Treatment Projects.

Secondary wastes that are not eligible for the WWTF may be evaluated for treatment under the Chemical Treatment Project or the Mixed Waste Stabilization Project, which is currently treating waste with metal contaminants.

## 5.0 ENVIRONMENTAL COMPLIANCE AND SPILL RESPONSE

The Decontamination of Mixed Waste Material Technology Specific Work Plan describes the processes that will be used to decontaminate mixed LLRW materials to meet "free-release" criteria. Once decontaminated, these materials will be shipped to off-site vendors to undergo recycling, free released or disposed as hazardous waste. Mixed wastes that can not be decontaminated under the project, will be returned to RCRA storage and managed as mixed waste while awaiting treatment under other projects being initiated under the General CERCLA Work Plan for the Chemical Treatment Project. The following section describes the manner in which activities initiated under this Technology Specific Work Plan will comply with applicable or relevant and appropriate requirements (ARAR) established under federal and state environmental regulations.

### 5.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARAR)

Table 5-1 of this section identifies the ARARs for the Mixed Waste Material Decontamination Project. As part of Removal Action (RA) No. 9, treatment processes established under the Mixed Waste Material Decontamination Project will be exempt from the requirement to obtain administrative permit approval under Section 121(e) of CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) as promulgated in 40 CFR 300.400(e).

Although on-site removal actions are exempt from the requirement to obtain administrative permit approval, Paragraph XIII.B of the Amended Consent Agreement requires DOE-FN to supply specific information regarding the permits that would have been required in absence of the CERCLA permitting exemption described above. To satisfy this Amended Consent Agreement requirement, the following three pieces of information have also been included in Table 6-1:

- Identification of permits that would be required in absence of the CERCLA Section 121(e) exemption.
- Identification of the standards, requirements, criteria, or limitations (ARARs) that would have to be met to obtain the permits.
- An explanation of how the response act will meet the standards, requirements, criteria, or limitations identified above.

Representatives from FERMCO or DOE-FN will conduct inspections during performance of activities addressed in this Technology Specific Work Plan to ensure compliance with these requirements. Inspections will also ensure equipment associated with the project is properly cleaned and decontaminated and wastes resulting from the project are properly stored, labeled, and characterized.

**TABLE 5-1  
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARAR)**

PERMIT THAT WOULD BE REQUIRED	PERMIT REQUIREMENTS (ARAR)	COMPLIANCE PLAN
<p>National Emission Standards for Hazardous Air Pollutants - (NESHAP) - 40 CFR Part 61, Subpart H - Emissions of Radionuclides Other Than Radon From DOE Facilities</p>	<p>40 CFR 61.92: Radiological emissions (except radon-222 and radon-220) to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive in an effective dose equivalent of 10 mrem in any one year.</p> <p>40 CFR 61.07 and 61.96(b): An application for approval does not have to be filed for radionuclide sources if the effective dose equivalent caused by all emissions from the new construction or modification is less than 0.1 mrem per year.</p> <p>40 CFR 61.93(b): Continuous emission monitoring is required for stacks and vents that have the potential, under normal operating conditions, but without emission control devices, to release radionuclides in sufficient quantities to cause any member of the general public to receive an effective dose equivalent of 0.1 mrem/year or greater.</p>	<p>Dose estimates for sub-projects included under the Chemical Treatment Project will be included in the annual FEMP NESHAP Subpart H report. Emissions from the project will not exceed the annual 10 mrem per year standard to off-site members of the general public.</p> <p>Evaluations will be conducted to determine if continuous emission monitoring will be required for stacks and vents associated with the project.</p> <p>Radionuclide emissions from the project are not expected to cause any member of the general public to receive an effective dose equivalent of 0.1 mrem/year or greater.</p>
<p>National Pollutant Discharge Elimination System (NPDES) Permit - OEPA NPDES Permit No. 11000004*ED (OAC 3745-33-05)</p>	<p>Waste water discharges must not cause a violation of effluent limitations or loading rates at NPDES permitted outfalls. Discharges must be conducted in accordance with applicable terms and conditions of the permit. These include compliance with the notification requirements promulgated in 40 CFR 122.42 and OEPA water quality standards established under OAC 3745-1.</p>	<p>Waste water discharges associated with the Decontamination of Mixed Waste Material Project will comply with the current FEMP NPDES permit. All excess water that is generated during the project will be characterized and evaluated in accordance with existing site procedures to ensure these waste waters can be discharged to the FEMP waste water treatment system.</p>
<p>Atomic Energy Act (10 CFR 835)</p>	<p>Radiation doses, levels, and concentrations in restricted and unrestricted areas.</p>	<p>Emissions from the Material Release Facility will not result in the radiation limits being exceeded in restricted and unrestricted areas in accordance with applicable site procedures which will be used in lieu of a Project Specific Health and Safety Plan.</p>

**TABLE 5-1  
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARAR)**

PERMIT THAT WOULD BE REQUIRED	PERMIT REQUIREMENTS (ARAR)	COMPLIANCE PLAN
Safe Drinking Water Act (42 U.S.C. 300G; PL 93-523)	<p>National Primary Drinking Water Regulations (40 CFR 141).</p> <p>National Revised Primary Drinking Water Regulations (40 CFR 141.60 through 141.63)</p> <p>Ohio Primary Drinking Water Regulations (OAC 3745-81)</p>	<p>Compliance will be demonstrated by site-wide environmental monitoring, including air, soil, and groundwater. Reports summarizing the site-wide monitoring results will be submitted to EPA.</p> <p>Surface water discharges will be conducted in accordance with the site NPDES permit and are not expected to impact groundwater quality.</p> <p>Engineering controls and best management practices will be used to mitigate the potential discharge of contaminated waste water to the underlying aquifer. The FEMP will ensure groundwater is not adversely impacted through continued monitoring under its existing Groundwater Monitoring Program.</p>

**TABLE 5-1  
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARAR)**

PERMIT THAT WOULD BE REQUIRED	PERMIT REQUIREMENTS (ARAR)	COMPLIANCE PLAN
Radiation Exposure to the Public	Radiation Dose Limit (40 CFR 192.02(b))  Radiation Dose Limit (Drinking Water Pathway) (10 CFR 834)	The project will be designed and operated to minimize the releases of radionuclides. Compliance will be demonstrated by site-wide environmental monitoring, including air, soil, and groundwater. Reports summarizing the site-wide monitoring results will be submitted to the EPA.
Resource Conservation and Recovery Act (U.S.C. 6901 et. seq.)	Hazardous Waste Determinations (OAC 3745-52-11) (40 CFR 262.11)	Project wastes will be characterized to determine their corresponding EPA waste codes and appropriate LDR treatment standards. Wastes generated from the project will be characterized in accordance with site procedure EW-0001 and the FEMP Waste Analysis Plan.
	Interim Status: Treatment, Storage, and Disposal General Facility Standards (OAC 3745-65-13 through 16) (40 CFR 265.13 through 265.16)	The Decontamination of Mixed Waste Project will be conducted in accordance with RCRA regulations. Existing site security measures will be utilized. Inspections will be conducted in accordance with RCRA regulations and existing site procedures. Personnel will be trained in accordance with FEMP requirements.
	Interim Status: Treatment, Storage, and Disposal Facility Preparedness and Prevention (OAC 3745-65-31 through 35, 3745-65-37) (40 CFR 265.31 through 265.35, 265.37)	Preparedness and prevention equipment, as specified in regulations, will be on-site, available, and in operating condition throughout the duration of the project. The existing FEMP site-wide internal communications/alarm systems will be used. Portable fire extinguishers and spill control equipment will be placed in accessible locations to assist in emergency response. Warning signs will be posted at the entrance to each process area. Containers and equipment will be inspected daily in accordance with existing site procedures.
	Interim Status: Treatment, Storage and Disposal Facility Contingency Plan and Emergency Procedures (OAC 3745-65-51 through 56) (40 CFR 265.51 through 265.56)	The existing RCRA FEMP Contingency Plan and Emergency Procedures will be followed for any hazardous waste emergency associated with the project.
	Container Storage (OAC 3745-52-34, 3745-66-70 through 77) (40 CFR 262.34, 265.170 through 265.177)	Containers of hazardous waste will be managed and inspected in accordance with regulatory requirements. Containers will be handled in a manner to prevent rupture, leakage, or spillage. Containers will be compatible with the material being stored and will remain closed during storage.
	Residue of Hazardous Waste in Empty Containers (OAC 3745-51-07) (40 CFR 261.7)	Containers used for the Decontamination of Mixed Waste Project will be considered empty in accordance with the requirements of this rule.

**TABLE 5-1  
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARAR)**

PERMIT THAT WOULD BE REQUIRED	PERMIT REQUIREMENTS (ARAR)	COMPLIANCE PLAN
Resource Conservation and Recovery Act (U.S.C. 6901 et. seq.)	Land Disposal Restrictions (OAC 3745-59) (40 CFR 268)	Waste will be treated to meet the appropriate LDR treatment standards. A treatability variance may be required for certain types of waste.
	Preparing and Transporting Hazardous Waste Off-site (OAC 3745-53-20 through 33) (OAC 3745-52-40 and 42) (40 CFR 262.20 through 262.33 and 40 CFR 263.20)	Any generator who transports hazardous waste for off-site treatment, storage, or disposal must originate and follow-up the manifest for off-site shipments.  Pre-transporting requirements include appropriate packaging, labeling, marking, and placarding.  Any project waste residues determined to be RCRA hazardous waste that are destined for off-site disposal will be subject to manifest requirements. Manifests will be retained in accordance with these requirements. Exception reports will be prepared if required.
Occupational Worker Protection & Training (29 CFR 1904 & 1910)	All facility personnel will be trained. Employers will develop and implement a written safety and health program for employees involved in hazardous waste operations.	The Decontamination of Mixed Waste Project will be conducted in accordance with the existing site procedures and the requirements of applicable site work permits.
DOT Requirements for Transportation of Hazardous Materials 49 CFR 171-173 and 49 CFR 177-179	No one may transport hazardous materials on public highways except in accordance with these regulations.	Off-site shipment of hazardous wastes will be conducted in accordance with these requirements. Shipping papers, marking, labeling, placarding, and emergency response information will be prepared for off-site shipments.
National Environmental Policy Act (NEPA) (10 CFR 1021)	Ensure that all federal agencies (including DOE) consider environmental impacts in the planning and decision-making phases of their projects.	On June 13, 1994 the DOE issued a revised policy statement on NEPA. The new policy allows DOE to rely on the CERCLA process to satisfy the procedural aspects of NEPA. To achieve the goals of this policy, NEPA values will be incorporated in the project through the CERCLA process.
DOE Orders	To be considered.	All project design activities shall be implemented according to existing site procedures.

## 5.2 SPILL RESPONSE

This section describes environmental management measures for the decontamination process. The following discussion focuses on minimizing waste generation and protecting the environment.

### 5.2.1 Waste Minimization

Waste minimization is an important cost saving activity to all projects. Waste may be minimized in the decontamination process through preventing unnecessary contamination of material, equipment, and site facilities. Site waste minimization controls and procedures will be implemented to ensure waste minimization is realized.

All items used in the MRF have the potential to become radioactively contaminated, therefore, the project team must minimize materials, and equipment brought into the MRF. An aggressive pollution prevention program will be implemented by project personnel to prevent material and equipment contamination associated with the decontamination process. Contaminated equipment will be decontaminated to the extent possible to meet free-release limits.

Another example of waste minimization practices which will be incorporated as part of this project is the reuse of drums. As practicable, the materials will be consolidated back into waste drums in order to avoid contaminating new drums and eliminating the need to dispose of waste drums that are structurally sound.

The process area is likely to have fixed contamination from past uranium processing. It is unlikely the mixed waste segregation process will result in significant additional contamination of the process area. In areas where spills or leaks of liquid waste to the building floor could occur, drip pans and Herculite™, or equivalent floor covering, will be used to provide a contamination barrier.

### 5.2.2 Prevention of Environmental Media Pollution

Potential discharges of pollutants to soil, surface water, groundwater, storm sewer systems, and the atmosphere will be minimized to the extent practical. Section 5.1 of this work plan describes the permitting and regulatory issues regarding emissions to the environment.

To reduce the risk of discharge to soil and groundwater, decontamination activities will be performed within a contained area. The process area will be surveyed to identify any potential points of interface between the building floor and the ground outside the building or the storm sewer system. Handling and storage of incompatible wastes will follow the procedures in the FEMP RCRA Part B Permit Application.

### 5.2.3 Spill Prevention and Emergency Response

Care will be exercised at all times to prevent spills from occurring inside or outside the MRF . When spills or leaks do occur, prompt response action will be taken by the project team to contain and clean-up the spill, with all recovered materials being properly managed as recyclable materials or as wastes. Spill response will be in accordance with the following FEMP site plans and procedures:

*FEMP RCRA Contingency Plan*

*FMPC Spill Prevention Control & Countermeasure Plan (PL-2194)*

*Spill Incident Reporting and Clean Up (EP-0004)*

Spills will be reported to the Area Supervisor and Assistant Emergency Duty Officer (AEDO).

Waste Operations personnel will respond to all spills or releases within the MRF Spill kits, containing dry absorbent granules, pads and booms, will be located in the exclusion zone close to areas of potential spills or leaks. In the event of a large spill, or a spill that causes a condition immediately dangerous to life or health (IDLH), project team personnel will evacuate the exclusion zone, notify the Fernald Emergency Response Team, and stay outside the exclusion zone until the condition is resolved. Portable fire extinguishers will be in accessible locations for emergency response.

## 6.0 HEALTH AND SAFETY

A Project Specific Health and Safety Plan (PSHSP) will not be developed for mixed waste decontamination activities because existing procedures will be used. A Safety Assessment (SA) has been developed to cover the hazards associated with decontamination activities. The SA identified the facility as less than a hazardous category 3 - Radiological Facility.

All work conducted on the FEMP site will comply with the requirements in the documents listed in Table 7-1 and other permits associated with decontamination activities. Personnel involved with the decontamination processes will receive training on the documents as required.

<b>TABLE 6-1 SITE PLANS, MANUALS, AND STANDARD OPERATING PROCEDURES</b>	
NUMERICAL DESIGNATION	TITLE
ESH-1-1000	Comprehensive Environmental Occupational Safety and Health Program; Volume I,II
PL-3020	FMPC Emergency Plan
None Assigned	FEMP RCRA Contingency Plan
RM-0021	Safety Performance Requirements Manual
PL-2194	FMPC Spill Prevention Control & Countermeasure Plan
RM-0007	FMPC Respiratory Protection Program
RM-0012	FERMCO Quality Assurance Program Plan
RM-0016	Management Plan FERMCO Policies and Requirements Manual
FMPC-0516	Control of Permits for Accomplishing Hazardous Work
PT-0001	Receiving, On-Site Movement, and Off-Site Shipment of Nonradioactive Hazardous Materials
RM-0005	FEMP Lot Marking and Color Coding System
FEMP-2304	FEMP Nuclear Criticality Safety Guide
EP-0004	Spill Incident Reporting and Cleanup
EW-0002	Chain of Custody/Request for Analysis Record for Sample Control
SOP 20-C-606	Hazardous Waste Spill Cleanup
SOP 20-C-017	Movement of Hazardous/Mixed Waste
SOP 20-C-630	Receipt, Inspection, and Placement of Hazardous, Mixed, PCB, and Asbestos Wastes into Storage
EW-0017	Management of Hazardous Waste
EW-0001	Initiating Waste Characterization Activities Using the Material Evaluation Form (MEF)
EM-2-013	Environmental On-Site Media Sampling

**TABLE 6-1  
SITE PLANS, MANUALS, AND STANDARD OPERATING PROCEDURES**

RC-RDA-018	Inspection and Performance Testing of Portable Radiation Survey Instruments
EW-0024	Operating the Material Release Facility (MRF)
RC-RDA-010	Radiological Contamination Surveys
RP-0010	Identification and Movement of Radioactive Material
None Assigned	The FERMCO Material Release Policy
RP-0009	Radiological Requirements for the Release of Materials at the FEMP
RM-0020	FERMCO Radiological Control Requirements Manual
SD-ESH-BAS-3014	Decision Basis to Release Materials For Unrestricted Use
SP-P-35-050	Identification of Radioactive Material
RC-RDA-013	Radiological Assessment Records Management
PM-0001	Management of Government Property
PT-0004	Packaging and Loading Radioactive Material for Offsite Shipment
PT-0008	Packaging, On-Site Movement and Off-Site Shipment of Material
SOP 55-C-101	Operation of Steam/Detergent Cleaner in Decontamination & Decommissioning (D&D) Building
SOP 55-C-100	Operation of Sump Pump in Decontamination and Decommissioning (D&D) Building
RTP(SARA):93-0016	FEMP Safety Assessment, Decontamination and Decommissioning Facility, Phase I and II

## 6.1 REPORTING

## 6.1.1 Emergency Numbers

Report all accidents and injuries to the Assistant Emergency Duty Officer (AEDO)

NAME	FEMP TELEPHONE NUMBER	RADIO CONSTRUCTION
Ambulance	648-6511	Control
Hospital		
Fire		
Security		
Emergency Response		
FERMCO HSO	648-4262	394
AEDO	648-4749/4444	202
Accountability	648-4111	Control

## 6.1.2 Site Notification Procedures

All FEMP emergencies shall be reported to the FERMCO Communication Center to ensure rapid response. A means to report an emergency shall be available at all work locations whenever personnel are working. This may be accomplished by one of the following methods:

- Phone 648-6511
- Radio to "Control"

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

## 6.1.3 What to Report

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

- Serious injury
- Injury complicated by contamination
- Chemical/radiation release
- Chemical splash (eye and/or skin)
- Fire
- Major property damage
- Unusual occurrence(s)

When an emergency or abnormal condition is observed, personnel shall contact the FERMCO Communications Center at extension 6511 or via radio (CONTROL) for emergencies/ Stay on the phone line until the dispatcher hangs up.

The following information must be given to the FERMCO Communication Center operator:

- Name and badge number
- Location where the emergency has occurred
- Nature of the emergency
- Number of personnel with injuries
- Unusual conditions (odors, symptoms, vapors, smoke)
- Current status of the emergency

## 6.2 EVACUATION ROUTES/ACCOUNTABILITY

### 6.2.1 Rally Point Accountability

Should a situation require an emergency evacuation of the work area, all equipment should be turned off, (if possible), and left in place. All personnel are to proceed to their assigned rally point. If a situation arises that would require personnel to evacuate a building due to an emergency, personnel shall bypass personnel monitoring.

## 6.3 EMERGENCY EQUIPMENT

The FERMCO site has the capability and equipment to respond to medical, fire, chemical, and radiological emergencies.

## 6.4 EMERGENCY RESPONSE

FEMP Emergency Services will handle all on-site emergencies. Any request for emergency help should be requested by telephone at (648-)6511 or on any FEMP radio frequency by calling "CONTROL."

### 6.4.1 Medical Emergency

Any injury, no matter how minor, shall be reported immediately to the FERMCO Medical Department for evaluation or treatment. The injured employee shall be accompanied to medical for evaluation and treatment by the employee's supervisor.

The FERMCO Medical Department is located at the east end of the first floor of the Safety and Health Building (Building 53). Personnel may enter this building through the rear entry way when reporting an injury that occurred on the process side.

The FERMCO Medical Department and emergency site ambulance shall serve as the first-aid responder.

Monitoring for personnel contamination shall not delay prompt medical attention. Deviation from procedures governing personnel monitoring is permitted under medical emergency situations.

#### 6.4.2 Fire Emergencies

All work sites shall maintain effective communication to summon fire fighting assistance. Access to the work area shall be maintained at all times to permit fire fighting crews to safely approach the fire emergency.

Only trained personnel shall attempt to operate fire fighting equipment and only when the fire is clearly within the capability of the fire fighting equipment.

The FEMP Emergency Response Team (ERT) will also respond to all on-site fire emergencies. For any fire emergency at the FEMP, call (648-)6511 or radio "CONTROL."

#### 6.4.3 Releases

The supervisor-in-charge, AEDO, RCT, and the FERMCO HSO shall be notified of the release.

## 7.0 PROJECT MANAGEMENT AND REPORTING

### 7.1 ORGANIZATION

An organizational structure has been established for oversight of the decontamination process. The structure will be developed to assure all functional areas are covered and will operate as a unit under the leadership and direction of the project manager. The organizational structure is summarized in Figure 7.1.

### 7.2 PROJECT SCHEDULE

A master schedule showing approximate order and time frame for waste segregation is provided in Figure 7.2. The schedule provides a sequence for waste decontamination implementation. Decontamination will commence in March 1996 and will last approximately 4 1/2 months.

### 7.3 WORK BREAKDOWN STRUCTURE

Project management and reporting requirements are covered by procedure EW-0024, "Operating the Material Release Facility (MRF)." Waste Programs Management (WPM) will provide budget, scheduling, and project oversight for the project. FERMCO labor force will perform all container and material movements and decontamination activities according to site procedures. WPM will evaluate other treatment options if any materials cannot be decontaminated. All material that cannot be decontaminated will be managed according to the RCRA requirements and site procedures. WPM will also manage secondary waste generation.

Material will begin to be decontaminated within the time frame defined in the STP. Existing site procedures are in place and the material has been scheduled for decontamination. Contracts are in place to recycle decontaminated material.

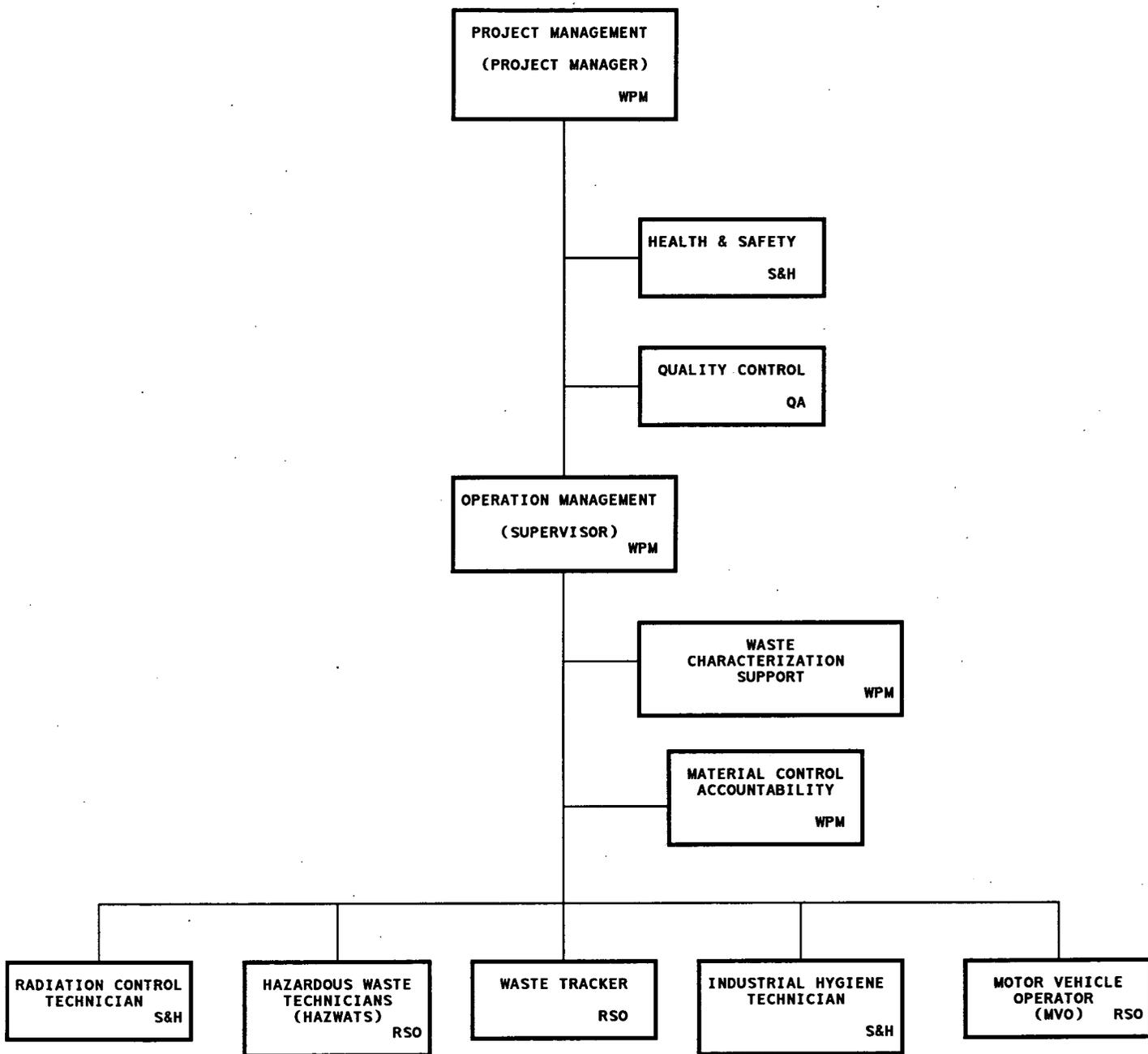


Figure 7-1  
Organizational Structure  
Decontamination Process

FERMCO DIVISION:

- WPM -WASTE PROGRAMS MANAGEMENT
- SH -SAFETY AND HEALTH
- RSO -REMEDIAL SUPPORT OPERATION
- QA -QUALITY ASSURANCE



## 7.4 QUALITY ASSURANCE

The following Quality Assurance Program Criterion will be incorporated, as required, as described by FEMP Quality Assurance Program Description (RM-0012).

### 7.4.1 Criterion 1 - Program

This criterion describes requirements for an organization to develop and maintain an effective management system. The management system shall include methods of managing, performing, and assessing adequacy of work, including work assigned to parties outside the organization.

The quality of items and processes are ensured to an extent consistent with their potential impact on safe and reliable operation of the project. A graded approach, as specified in Appendix D of RM-0012 - Graded Approach for Quality Levels, shall be used to ensure resources applied are commensurate with the importance of the result to the achievement of site goals.

The Project Manager (P.M.) shall identify the responsibility and authority to stop unsatisfactory work and control further processing, delivery, installation, or use of nonconforming items such that planning and schedule considerations do not override safety, quality, or environmental considerations. A readiness review using a graded approach shall be performed prior to restarting work affected by a stop work order.

### 7.4.2 Criterion 2 - Personnel Training and Qualification

This criterion describes project requirements for personnel to be trained and qualified to ensure they are capable of performing their assigned work. Personnel shall be provided continued training to ensure that job proficiency is maintained.

All personnel shall be capable of performing their assigned tasks. Training plans shall be developed for all personnel. Training identified in the plans shall prepare the employee to perform the job, as well as, maintain and promote progressive improvement and employee satisfaction. Qualification requirements (experience, education, and training) shall be documented for each position as required.

### 7.4.3 Criterion 3 - Quality Improvement

This criterion describes the requirements for establishing and implementing processes to detect, control, correct, and prevent quality problems and to promote quality improvement.

### 7.4.4 Criterion 4 - Documents and Records

This criterion describes the requirements for establishing and implementing a system for the control of documents and the handling, collection, storage, and control of records generated at the project.

A document control system has been established and implemented to control preparation, review, approval, issuance, use, and revision of documents that establish policies, prescribe work, specify requirements, or establish design.

Revisions to controlled documents shall be reviewed and approved by the organization that originally reviewed and approved them. An alternative organization may be designated based on technical competence and capability.

7.4.5 Criterion 5 - Work Processes

This criterion describes the requirements for the control of processes affecting all work processes of this project. A work process includes all activities involved in performing defined tasks to achieve an objective. Work processes may include activities as planning, scheduling, accounting, project management, design, analysis, fabrication, procurement, construction, installation, testing, operation, modification, maintenance, and decommissioning.

The purpose of work process control is to ensure that standard processes and special processes are accomplished under controlled conditions. These standard processes and special processes include, but are not limited to: waste handling, packaging or environmental data operations.

Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, and deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained.

Work-related instructions, procedures, and safety assessments have been developed, verified, validated and approved by technically competent personnel, and have been provided to employees doing the work.

Work shall be performed to established technical standards and administrative controls. Work shall be planned, authorized and accomplished under controlled conditions using technical standards, instructions, procedures, or other appropriate means of detail commensurate with the complexity and importance of the work.

7.4.6 Criterion 8 - Inspection and Acceptance Testing

This criterion describes requirements for performing inspection and acceptance testing. Inspection and acceptance testing of specified items and processes shall use established acceptance and performance criteria and require calibration and maintenance of equipment used for inspections and tests.

Inspections and tests shall be conducted according to a graded approach. Results of these activities shall be documented and retained as project records.

A program has been established and implemented to specify when and what type of inspections are required. Administrative controls and status indicators are used to preclude inadvertent bypassing of required inspections and to prevent inadvertent operation of the items.

A program has been established to control the calibration, maintenance, accountability, and use of equipment. Inspection/test results shall be evaluated and verified by authorized personnel to document that all requirements have been satisfied.

#### 7.4.7 Criterion 9 - Management Assessment

This criterion describes the requirements for regularly assessing and documenting the adequacy and effectiveness of the QA program in providing the framework for FERMCO's achieving its mission and objectives.

Management at all levels are required to periodically assess the integrated QA Program and its performance, and to identify and correct problems that hinder the organization from achieving its quality objectives. These management assessments should focus on whether the integrated QA management system is accomplishing the goal of continuous improvement of the safety and reliability of products and services to effectively meet the expectations of external and internal customers.

A program of planned and periodic management assessments shall be established and implemented. Implementation of the program is to focus on how well the integrated QA Program is working by identifying barriers which hinder the organization from achieving its objectives in accordance with quality, safety, and environmental requirements.

#### 7.4.8 Criterion 10 - Independent Assessment

This criterion describes the requirements for the implementation of an independent assessment program. The FERMCO independent assessment program evaluates the adequacy and effectiveness of activities for compliance with applicable requirements.

The independent assessment process should use a performance-based approach with emphasis on results and with compliance viewed as the baseline. Assessments should be conducted on activities that most directly relate to final objectives and should emphasize safety, reliability, and product performance. Independent assessments may include such methods as inspections, peer and technical reviews, audits, surveillances, or combinations thereof.

Independent assessments shall be conducted using criteria that address environmental, safety and health, and remediation requirements. The assessments shall also describe acceptable work performance and promote improvement. They shall include an evaluation to determine whether technical requirements, not just procedural compliance, are being met.

Scheduling of assessments and allocation of resources shall be based on status, risk, and complexity of the item or process being assessed. Scheduling shall be flexible and additional attention shall be given to areas of questionable performance.

**ATTACHMENT A**

7667

CONTROL NUMBER:                       
SITE PROCEDURE EW-0024  
REVISION NO. 0

# OPERATING THE MATERIAL RELEASE FACILITY (MRF)

NON-CONTROLLED COPY

Effective Date: 07-07-95

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Originator (Subject Expert): Robert W. Selton 6-27-95  
Date

Checker Concurrence: Alan D. Zykun 6-29-95  
Date

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APPROVED BY: [Signature] 6/30/95  
Date  
FAM of Environmental Restoration & Waste Mgmt.

## FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Fernald Environmental Restoration Management Corporation  
P. O. Box 538704  
Cincinnati, Ohio 45253-8704

000037

<b>Title: OPERATING THE MATERIAL RELEASE FACILITY (MRF)</b>  <i>COMPLIANCE WITH THIS PROCEDURE IS MANDATORY WHILE PERFORMING THE ACTIVITIES WITHIN ITS SCOPE</i>	DOCUMENT NO: EW-0024	
	Date: 07-07-95	Revision No. 0
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ISSUE AND REVISION SUMMARY

Revision	Date	Description of Issue or Revision
0	07-07-95	New procedure requested by B. Lehrter for operating the Material Release Facility (MRF).

Title: OPERATING THE MATERIAL RELEASE FACILITY (MRF)  COMPLIANCE WITH THIS PROCEDURE IS MANDATORY WHILE PERFORMING THE ACTIVITIES WITHIN ITS SCOPE	DOCUMENT NO: EW-0024	
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1.0 PURPOSE

- 1.1 This procedure provides the information necessary to operate the Material Release Facility (MRF) to decontaminate and survey potentially contaminated material taken from the Fernald Environmental Management Project (FEMP) process area for unrestricted offsite dispositioning (free release).
- 1.2 Specifically excluded are nuclear materials, as defined in DOE Order 5633.3B, "Control and Accountability of Nuclear Materials" (09-07-94).

2.0 SCOPE

- 2.1 This procedure applies to all Fernald Environmental Restoration Management Corporation (FERMCO) employees and subcontractors who are involved in material identification, characterization, transport, decontamination, documentation, verification, and disposition activities. (See Attachment A for the MRF Process Flow Diagram.)

3.0 REFERENCES

- 3.1 DOE Order 5633.3B, "Control and Accountability of Nuclear Materials"
- 3.2 DOE Order 5400.5, Radiation Protection of the Public and the Environment
- 3.3 EW-0001, Completing the Material Evaluation Form
- 3.4 PT-0001, Receiving, On-Site Movement and Off-Site Shipment of Non-Radioactive Hazardous Material
- 3.5 PT-0004, Packaging and Loading Radioactive Material for Offsite Shipment
- 3.6 PT-0005, Packaging Low-Level Radioactive Waste (LLRW) in Drums for Offsite Shipment to NTS or DOE-NV
- 3.7 PT-0006, Packaging Low-Level Radioactive Waste (LLRW) in ISO Containers for Shipment to NTS or DOE-NV
- 3.8 PT-0007, Packaging Low-Level Radioactive Waste (LLRW) in Metal Boxes for Shipment to NTS or DOE-NV
- 3.9 PM-0001, Management of Government Property
- 3.10 RC-DPT-019, Release of Materials From the FEMP
- 3.11 RC-RDA-010, Radiological Contamination Surveys
- 3.12 SP-P-35-027, Radiological Requirements for the On-Site Movement of Radioactive Material

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- 3.13 OP-0005, Disposition of Safe Shutdown Excess Personal Property
- 3.14 PT-0008, Packaging, On-Site Movement, and Off-Site Shipment of Material
- 3.15 PT-0012, Shipment of Low Level Radioactive Waste Requirements
- 3.16 EW-0017, Management of Hazardous Waste
- 3.17 EW-0018, Management of Low-Level Waste (LLW)
- 3.18 PT-0011, Evaluating Low Level Radioactive Waste (LLRW) Bulk Waste Streams for Shipment
- 3.19 SOP 20-C-100, Moving and Storing Depleted, Normal, and Enriched Uranium Materials <20% and Thorium Metal Materials
- 3.20 SOP 55-C-101, Operation of Steam/Detergent Cleaner in Decontamination & Decommissioning (D&D) Building
- 3.21 SOP 55-C-100, Operation of Sump Pump in Decontamination and Decommissioning (D&D) Building
- 3.22 SOP 55-C-107, Operating the LTC-1072 Vacuum Grit-Blaster
- 3.23 The FERMCO Material Release Policy
- 3.24 FERMCO-FEMP Safety Assessment, Decontamination and Decommissioning Facility, Phase I and II, FERMCO:RTP(SARA):93-0016, dated April 5, 1993
- 3.25 FERMCO-FEMP Auditable Safety Analysis (95-0035) for Operation of the LTC-1072 Vacuum Grit-Blaster
- 3.26 FEMP-2304 (Internal Special), FEMP Nuclear Criticality Safety Guide
- 3.27 Permit to Install (PTI) 05-3390, Decontamination and Decommissioning Facility, effective November 8, 1988
- 3.28 RM-0016, Management Plan FERMCO Policies and Requirements Manual

#### 4.0 RESPONSIBILITIES

- 4.1 Waste Programs Management (WPM) - Enters appropriate documents (e.g., MEF/VF) into the Resource Conservation and Recovery Act (RCRA) Operating Record. Identifies candidate materials from CRUs, WPM, or support operation projects for processing through the MRF for RP. Provides guidance on ways to minimize secondary waste generated by activities in this procedure. Completes a "Material Evaluation Form (MEF)/Verification Form," commonly called an MEF/VF or an FS-F-4203 (see Attachment B), per EW-0001.

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- 4.2 Recycling Programs (RP) - Identifies lots of material that are candidates for recycling. Verifies that candidate materials are not prohibited by the Phase I Safety Assessment of the "FERMCO-FEMP Safety Assessment, Decontamination and Decommissioning Facility, Phase I and II;" FERMCO:RTP(SARA):93-0016, dated April 5, 1993. Initiates an MRF-100 Material Release form, commonly referred to as an MRF-100 form, an MRF-100, or FS-F-4199 (see Attachment C). Initiates an MEF/VF. Controls the labelling, tracking, inventory, and database system, utilizing bar coding equipment (if available). Requests a radiological survey during preliminary characterization activities. Oversees, coordinates, and integrates the tasks and activities for the MRF process.
- 4.3 Performance/Quality Assurance (P/QA) - Verifies that an independent radiological assessment is performed, as required. Reviews applicable procedures. Verifies that weekly sampling and analysis of sump material and sump filtrate are performed in accordance with the Phase I Safety Assessment and the PTI. Verifies the completeness of the documentation package. Certifies the material to verify the information in the documentation package. Issues a written report to certify that all applicable requirements for disposition were met. Performs periodic, independent assessments for all performing organizations in this procedure and their responsibilities.
- 4.4 Property Management (PM) - Processes the FS-F-0563, "Property Disposal Request," initiated by the MRF Supervisor, for government screening and approval. Dispositions materials per PM-0001.
- 4.5 Radiological Control (RC) - Completes a representative radiological survey upon request, during preliminary characterization activities. Completes a comprehensive radiological characterization of material after it is processed through the MRF and prior to material release. Completes the Disposition Evaluation, including ALARA considerations, per the FERMCO Material Release Policy (dated November 24, 1993, and subsequent revisions) prior to release of material.
- 4.6 Environmental Compliance (EC) - Enters appropriate documents into the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Administrative Record. The responsibilities delegated to EC for environmental protection, restoration, and waste management are documented in SRIDs numbers 5 and 17.
- 4.7 Safety Analysis (SA) reviews analytical data of sump samples per the guidelines in SOP 20-C-100. Evaluates requests to handle process equipment (as defined in the Safety Assessment) in the MRF and issues approval or disapproval.

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- 4.8 RSO/Facility Program Projects - Transports materials from the process area to the MRF and from the MRF to the disposition staging area. Operates the MRF. Initiates an FS-F-0563, "Property Disposal Request" form (see Attachment D) if none is already on file for the material, which includes obtaining the appropriate Property Account Custodian (PAC) approval. Initiates the FS-F-1372, "FEMP Radiological Work Permit" (RWP) (see Attachment E) for operating the MRF. Ensures materials in the Building 78 sump and sump filtrate are sampled weekly [as required by the Phase I Safety Assessment and PTI 05-3390] during weeks in which decontamination activities occur. Ensures that analytical results for Total Uranium and %U-235 are reported to Safety Analysis (SA) within one week of sampling. Ensures that the sump filtration system is checked for proper operation and that Air and Water Quality Support is notified immediately if the Total Suspended Solids (TSS) result exceeds 60 mg/L.

**NOTE:** Materials covered by this procedure will be released according to the guidance contained in the FERMCO Material Release Policy. The policy is based on DOE Order 5400.5 but may include the requirements of promulgated regulations, guidance documents, or management practices that are more stringent than DOE Order 5400.5.

## 5.0 GENERAL

- 5.1 Materials intended for MRF processing are predominantly metallic and include excess, surplus, salvage, and scrap items from the FEMP process area. Non-metallic materials may be processed for free-release under this procedure, provided they are non-porous and all surfaces with the potential to be radiologically contaminated are accessible for surveying. Also included are non-porous items such as lead/acid batteries (automobile type) and vehicle tires, for which routine, commercial recycling outlets exist. Waste generated that are categorized as RCRA, TSCA, or MW (such as grit-blast residue) shall be managed according to established FERMCO procedures for those types.
- 5.2 Items defined as Safe Shutdown Excess Personal Property (as described in OP-0005, "Disposition of Safe Shutdown Excess Personal Property") are not included. Materials described in large scale projects administered through "turn-key" procurement actions with commercial vendors (such as the 700 tons of structural steel from Plant 7 demolition) are not included either.

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5.3 The surface contamination guidelines cited in DOE Order 5400.5, "Radiation Protection of the Public and the Environment," and implemented in FERMCO procedure RC-DPT-019, "Release of Materials from the FEMP," shall be used as the radiological control criteria for release of materials processed under this procedure. For the primary radionuclides of concern at the FEMP (U-natural, U-235, and U-238), the limits are 5,000 disintegrations per minute (dpm) per 100 sq cm on average and 15,000 dpm per 100 sq cm maximum for fixed plus removable surface contamination, 1,000 dpm per 100 sq cm for removable surface contamination (using a swipe sample), as well as ALARA considerations. Applicable limits for other radionuclides that may be encountered at the FEMP (such as Th-230) are listed in RC-DPT-019.

5.4 Activities performed under this procedure are identified in Standards/Requirements Identification Documents (S/RIDs) Number 10, "Occupational Safety and Health (SH);" Number 12, "Packaging and Transportation (PT);" Number 13, "Quality Assurance (QA);" Number 14, "Radiological Protection (RP);" Number 17, "Environmental Restoration/Waste Management (EW);" and Number 23, "Public Involvement (PI)." (See RM-0016, Management Plan FERMCO Policies and Requirements Manual.)

## 6.0 PREREQUISITES

None.

## 7.0 PROCEDURE

### 7.1 IDENTIFYING MATERIAL

**NOTE:** The MRF-100 form is not necessarily intended to be filled out sequentially. It is designed to provide a framework for assembling the documentation package for each material lot. Steps may be completed out of sequence or simultaneously. MRF-100 signature blocks are not intended to be P/QA hold points.

Recycling Programs (RP)

7.1.1 Initiate an MRF-100 form (see Attachment C, FS-F-4199) for each lot of targeted material.

7.1.2 Enter the sequential form number in block 1.

7.1.3 Enter the date in block 2.

**NOTE:** Extra sheets of paper may be used, if necessary. If extra sheets are used, it must be indicated in block 3 and the extra sheets must be attached to the MRF-100.

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- 7.1.4 Enter a physical description for the material in block 3, including the number of items in the lot, location, estimated weight, dimensions, appearance, and any other available information that may be useful such as existing labels or markings.

**NOTE:** Process equipment, as defined by the Safety Assessment (see Section 3.2.4), may only be handled in the MRF on a case-by-case basis and requires written approval from the Safety Analysis Department. Approval shall be based on the U-235 enrichment level of the material associated with the process equipment and criticality safety guidelines.

- 7.1.5 Verify that the material is not prohibited per the Phase I Safety Assessment.

A. If it is not prohibited, check "No" in block 4 of the MRF-100 form.

OR

B. If it is prohibited, check "Yes" in block 4a of the MRF-100.

- 7.1.6 Obtain an approval/disapproval letter signed by the SA Manager.

A. If approval is granted, do the following:

(1) Check "Yes" in block 4b of the MRF-100.

(2) Attach a copy of the letter to the MRF-100.

OR

B. If approval is not granted, check "No" in block 4b and terminate procedure.

- 7.1.7 Determine the owner of the material [i.e., Facility Owner or Property Account Custodian (PAC)].

- 7.1.8 Obtain the signatures of the material owner and the RP representative in block 5 of the MRF-100 form to transfer material responsibility to RP.

- 7.1.9 Do one of the following:

A. If the material is not capital, sensitive, or administratively controlled, do the following:

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- (1) Assign a General Identification (I.D.) Number, common to the material lot.
- (2) Enter General I.D. Number on each label or directly onto the material with a marking pen or other means acceptable to RP and P/QA.
- (3) Assign sequential item-specific I.D. numbers to all items in the lot.
- (4) Enter sequential item-specific I.D. numbers for all items in the lot on each label or apply directly to the material.

**NOTE:** Some lots, due to material size or configuration may not be amenable to attaching labels; some items may already contain unique identification numbers.

- (5) Attach one durable, removable label to each item in the lot in a conspicuous location, if possible.

**OR**

B. If the material is capital, sensitive, and administratively controlled, do the following:

- (1) Attach property bar code label (with the numbers that are already attached) to each item in the lot.
- (2) Return to steps 7.1.9.A.(1) through 7.1.9.A.(4) above before proceeding to step 7.1.10.

**NOTE:** For some items, particularly when size reduction is required, lot and item I.D. numbers may not be applied until Sections 7.5 or 7.6 have been completed. In these cases, it must be noted in block 6 of the MRF-100 form.

7.1.10 Transcribe the lot I.D. number and the range of sequential item I.D. numbers onto block 6 of the MRF-100 form.

7.1.11 Contact P/QA to verify the material identification.

**Performance/Quality Assurance (P/QA)**

7.1.12 Verify the activities in steps 7.1.1 through 7.1.10 have been completed.

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A. If completed, sign and date block 7 of the MRF-100.

OR

B. If not complete, return the unsigned form to RP for correction or completion and resubmission.

## 7.2 PRELIMINARY CHARACTERIZATION

### Recycling Programs (RP)

7.2.1 Ensure that all external surfaces are accessible to RC for surveying.

A. If external surfaces are inaccessible, call RSO/Facility Program Projects to rearrange items for accessibility.

OR

B. If external surfaces are accessible or internal, inaccessible surfaces have no potential for radiological contamination (e.g., motor vehicles), continue procedure.

7.2.2 Request a representative radiological survey of the material from RC.

### Radiological Control (RC)

7.2.3 Perform the representative radiological survey per the requirements of RC-RDA-010, "Radiological Contamination Surveys."

7.2.4 Provide RP with a copy of the survey report, including whether the material has inaccessible surfaces.

### Recycling Programs (RP)

7.2.5 Attach the survey report to the MRF-100 form.

7.2.6 Indicate that the survey report was attached to the MRF-100 form in block 8 of the MRF-100.

NOTE: MEF N 2494 should be referenced in block B.1. of the MEF/VF for "Metals for Recycle." For all other cases, consult Waste Characterization (WC).

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- 7.2.7 Initiate an MEF/VF per the requirements of EW-0001. "Completing the Material Evaluation Form," to address RCRA concerns and document process knowledge.

#### Waste Programs Management (WPM)

- 7.2.8 Complete an MEF/VF, including MEF number.
- 7.2.9 Deliver a copy of the completed MEF/VF to the RP.

#### Recycling Programs (RP)

- 7.2.10 Attach the completed MEF/VF to the MRF-100 form.
- 7.2.11 Indicate that the MEF/VF was attached to the MRF-100 form in block 9 of the MRF-100.

**NOTE:** Block 10 information will be supplied to Transportation and other RSO workers for safe handling of the material in later process steps.

- 7.2.12 Complete the Material Handling Safety Assessment portion (block 10) of the MRF-100 form to identify special safety concerns resulting from any unusual material characteristics such as shape, weight, configuration, or material type.

#### Performance/Quality Assurance (P/QA)

- 7.2.13 Verify the activities in steps 7.2.1 through 7.2.12.
- A. If acceptable, sign and date block 11 of the MRF-100 form.

OR

- B. If not acceptable, return the unsigned form to RP for correction or completion and resubmission.

### 7.3 DETERMINING DISPOSITION

#### Recycling Programs (RP)

- 7.3.1 Select the appropriate disposition scenario.
- A. If classification as LLW or Mixed Waste and subsequent disposal or storage is selected, do the following:
- (1) Transfer responsibility for the material to WPM via FERMCO letter with concurrence signatures of the managers of RP and WPM.

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**NOTE:** This terminates activities under the material release program regarding this material lot and activates the appropriate WPM procedure(s) (e.g., PT-0001, PT-0004, PT-0005, PT-0006, PT-0007, PT-0008, PT-0011, PT-0012, EW-0017, EW-0018, and SP-P-35-027).

- (2) Record the selected disposition in block 12 of the MRF-100 form and end this procedure.

OR

- B. If processing through the MRF is selected, record this selection in block 12 of the MRF-100 form and continue procedure.

**NOTE:** RP will draw on the entire body of information accumulated thus far, as well as the applicability of surface contamination limits, the amenability of existing MRF decontamination technologies, and the "marketability" of the material.

7.3.2 Complete block 13 of the MRF-100 form.

**Performance/Quality Assurance (P/QA)**

7.3.3 Verify the activities in steps 7.3.1 and 7.3.2.

- A. If acceptable, sign and date block 14 of the MRF-100 form.

OR

- B. If not acceptable, return the unsigned form to RP for correction or completion and resubmission.

**7.4 TRANSPORTING MATERIAL TO THE MRF**

**Recycling Programs (RP)**

7.4.1 Contact Transportation to schedule their support.

7.4.2 Supply Transportation with a copy of the Material Handling Safety Assessment portion of the MRF-100 form.

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### Transportation

- 7.4.3 Cover or package the material to prevent the spread of contamination from or onto the material per the requirements of SP-P-35-027, "Radiological Requirements for the On-Site Movement of Radioactive Material."

NOTE: The Material may be delivered to the MRF covered porch or staging room via the south entrance or to the breakdown area or wash bay via the north entrance depending on the extent of contamination and the size and configuration of the material.

- 7.4.4 Deliver the material to the MRF receiving area and unload per PP-0314, "Packaging, On-Site Movement, and Off-Site Shipment of Material."

- 7.4.5 Notify RP that the material has been delivered to the MRF.

### Recycling Programs (RP)

- 7.4.6 Sign and secure the signature of the MRF Supervisor in block 15 of the MRF-100 form to transfer material responsibility to the MRF Supervisor.

## 7.5 DECONTAMINATING THE MATERIAL

NOTE: Process equipment, as defined by the Safety Assessment (see Section 3.2.3), may only be handled in the MRF on a case-by-case basis and requires written approval from the Safety Analysis Department. Approval shall be based on the U-235 enrichment level of the material associated with the process equipment and criticality safety guidelines.

NOTE: No person shall undertake any activity to move or disturb radiological material without first obtaining and then complying with an RWP, unless exempted according to the FEMP Occupational Safety and Health Program Manual (SPR 3-1).

### Material Release Facility (MRF) Staff

- 7.5.1 Check to see if existing radiological surveys demonstrate that contamination levels are below the specified radiological control criteria and ALARA requirements have been met.

A. If contamination levels are below the specified radiological control criteria and ALARA requirements have been met, proceed to Section 7.6.

OR

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B. If contamination levels are not below the specified radiological control criteria or ALARA requirements have not been met, continue procedure.

7.5.2 Contact RC to initiate an FS-F-1372, "FEMP Radiological Work Permit" (RWP).

**Material Release Facility (MRF) Supervisor and Radiological Control**

7.5.3 Complete the RWP including all necessary signatures.

7.5.4 Post the completed RWP at the MRF.

**Material Release Facility (MRF) Staff**

**NOTE:** This may involve moving the material to the Breakdown Area.

7.5.5 Unpack the material.

**NOTE:** This may involve moving the material to the Vehicle Wash Area, if necessary.

**NOTE:** Processing bulk quantities of uranium product material violates the Safety Basis.

7.5.6 Inspect the material to be processed for the presence of uranium product material (e.g., green salt or orange oxide)

A. If uranium product material is present, stop process and notify supervisor for disposition.

OR

B. If uranium product material is not present, continue procedure.

7.5.7 Remove any loose contamination by wiping, hand scraping, house or portable vacuuming, or plant-pressure water spraying.

7.5.8 Decontaminate items using detergent, steam cleaning, and plant-pressure water spraying per SOP 55-C-101, or use the LTC-1072 Vacuum Grit-Blaster per SOP 55-C-107.

7.5.9 Periodically perform radiological surveys (when appropriate) to gauge the effectiveness of decontamination efforts.

A. If radiological survey reveals contamination, return to step 6 of Section 7.5.

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OR

- B. If radiological survey does not reveal contamination, continue procedure.

**Material Release Facility (MRF) Supervisor**

- 7.5.10 Request that Analytical Laboratory Services (ALS) analyze the weekly sump sample for Total Uranium g/L and % U-235.

**Safety Analysis (SA)**

- 7.5.11 Review the results from the sump sample analysis.
- 7.5.12 Report the criticality safety status of the sump to the MRF Supervisor per the guidelines in SOP 20-C-100.

**Material Release Facility (MRF) Supervisor**

- 7.5.13 Request that ALS analyze the weekly sump filtrate for TSS mg/L.
- A. If TSS exceeds 60 mg/L, do the following:
- (1) Notify Air and Water Quality Support immediately.

**Material Release Facility (MRF) Staff**

- (2) Check the sump filtration system for proper operation.

OR

- B. If TSS is  $\leq$  60 mg/L, continue procedure.

**NOTE:** Logbook entries should include recommendations from MRF Staff concerning ways to improve the process.

- 7.5.14 Make daily logbook entries documenting waste water, sludge, solids, and other wastes pumped, packaged, or transported from the MRF to other facilities for treatment, storage, or disposal per SOP 55-C-100, "Operation of Sump Pump in D&D Building," and EW-0018, "Management of Low Level Waste."

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## 7.6 COMPREHENSIVE RADIOLOGICAL CHARACTERIZATION

### Material Release Facility (MRF) Supervisor

- 7.6.1 Determine if an FS-F-0563, Property Disposal Request (see Attachment D) has been completed.

**NOTE:** Instructions for completing the FS-F-0563 appear at the bottom of the form and in PM-0001.

- A. If an FS-F-0563 has not been completed for the material, initiate and facilitate the completion of an FS-F-0563 including all necessary signatures.

OR

- B. If an FS-F-0563 has been completed for the material, continue procedure.

- 7.6.2 Transcribe the material Physical Classification and Disposition Condition Code from the FS-F-0563 to block 16 of the MRF-100 form.
- 7.6.3 Request the services of a Radiological Control Technician (RCT) to perform a comprehensive radiological survey.
- 7.6.4 Ensure material is staged in Outgoing Staging Area (or other appropriate low radiological background area) and that all surfaces are accessible to the RCT, as required in RC-DPT-019 and RC-RDA-010.

### Radiological Control Technician (RCT)

- 7.6.5 Conduct and document comprehensive radiological survey, including direct monitoring and removable contamination surveys per the requirements of RC-RDA-010.
- 7.6.6 Supply a copy of the comprehensive radiological survey data to the MRF Supervisor.

### Material Release Facility (MRF) Supervisor

- A. If further decontamination is required, do the following:
- (1) Attach a "Rework" tag to the material.
  - (2) Return to step 7.5.6.

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**NOTE:** If repeated decontamination efforts prove to be unsuccessful, it may be necessary to return to Section 7.3.

OR

- B. If further decontamination is not required, continue procedure.

**NOTE:** All survey data generated must be maintained for the project data package (even if the data indicate that rework or disposal is required).

- 7.6.7 Attach the comprehensive radiological survey report to the MRF-100 form.
- 7.6.8 Indicate in block 17 of the MRF-100 form that the comprehensive radiological survey report was attached to the MRF-100.

**NOTE:** Materials covered by this procedure will be released according to the guidance contained in the FERMCO Material Release Policy. The policy is based on DOE Order 5400.5 but may include the requirements of promulgated regulations, guidance documents, or management practices that are more stringent than DOE Order 5400.5.

- 7.6.9 Request a written, qualitative Disposition Evaluation, which includes ALARA considerations, from RC (as defined in the FERMCO Material Release Policy).
- A. If there are any differences between the proposed disposition from the MRF-100 form and the Disposition Evaluation, do the following:
- (1) Resolve the differences.
  - (2) Modify either the MRF-100 form or the Disposition Evaluation.

OR

- B. If there are no differences between the proposed disposition from the MRF-100 form and the Disposition Evaluation, continue procedure.
- 7.6.10 Attach the Disposition Evaluation to the MRF-100 form.
- 7.6.11 Indicate that the Disposition Evaluation was attached to the MRF-100 form in block 18 of the MRF-100.

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**MRF Supervisor, Radiological Control, and Recycling Programs (RP)**

- 7.6.12 Review data package (including comprehensive radiological survey report and Disposition Evaluation) to ensure the radiological characteristics of the material are consistent with ALARA requirements and radiological control criteria.

**Performance/Quality Assurance (P/QA)**

- 7.6.13 Certify the activities in steps 7.6.1 through 7.6.12.
- A. If complete and accurate, sign and date block 19 of the MRF-100 form.

OR

- B. If not complete and/or accurate, return the unsigned form to RP for correction or completion and resubmission.

**7.7 COMPILING THE DOCUMENTATION PACKAGE**

**Material Release Facility (MRF) Supervisor**

- 7.7.1 Assemble the documentation package, which consists of the FS-F-0563, the MRF-100 form, and all required attachments and supporting forms and/or records.

- 7.7.2 Review each required form and check for the appropriate signatures as well as consistency and completeness.

- A. If complete and accurate, continue procedure.

OR

- B. If not complete and accurate, rectify any omissions or discrepancies.

- 7.7.3 Forward the entire documentation package to Waste Program Quality Assurance.

- 7.7.4 Schedule a P/QA Certification.

**7.8 PERFORMANCE/QUALITY ASSURANCE VERIFICATION**

**Material Release Facility (MRF) Supervisor**

- 7.8.1 Ensure that P/QA has access to all required materials and documentation for certification.

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### Performance/Quality Assurance (P/QA)

- 7.8.2 Read the documentation package thoroughly.
- 7.8.3 Physically review the material to assess the degree of agreement between the observed condition and the documented condition.
- 7.8.4 Determine if more information is necessary:
- A. If more information is needed, do the following:
- (1) Direct an independent RCT (selected by P/QA) to perform representative radiological surveys.
  - (2) Issue a surveillance report for the material (including findings, observations, discrepancies, and problems, as well as accounts of how problems were resolved to P/QA's satisfaction) to the MRF Supervisor and RP.

### Recycling Programs (RP)

- a. If the P/QA surveillance report indicates that modifications to the disposition are required, do the following:
- i. Specify them in a FERMC0 letter to P/QA with the concurrence signatures of the managers of RP and Property Management.
  - ii. Attach the letter to the surveillance report and return both to P/QA.

### Performance/Quality Assurance (P/QA)

- iii. Add the surveillance report and letter to the documentation package.

or

### Recycling Programs (RP)

- b. If the P/QA surveillance report indicates that modifications to the disposition scenario are not required, do the following:

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- i. File a copy of the surveillance report.
- ii. Return the original to P/QA.

**Performance/Quality Assurance (P/QA)**

- iii. Add the surveillance report to the documentation package.

OR

- B. If more information is not necessary, continue procedure.

7.8.5 Deliver documentation package to RP.

**Recycling Programs (RP) and Performance/Quality Assurance (P/QA)**

7.8.6 Sign block 20 of the MRF-100 form to certify that the material and documentation meet all requirements necessary for dispositioning by the proposed scenario.

**7.9 TRANSPORTING MATERIAL FOR DISPOSITION STAGING**

**Material Release Facility (MRF) Staff**

7.9.1 Package the material and stage it in a radiologically clean, secure area per PT-0008, RC-DPT-019, and PT-0004 to ensure that additional radiological contamination does not occur.

**Material Release Facility (MRF) Supervisor**

7.9.2 Select the appropriate disposition staging scenario from the following options.

- Transporting to an area designated by Property Management for sales and auctions.
- Loading the material onto a Disposition Staging Vehicle (DSV).

7.9.3 Notify Transportation of the need for service.

**Transportation**

**NOTE:** If the DSV is used, Transportation will return the DSV to the MRF for future loads when it has been emptied.

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7.9.4 Load and transport the material per the disposition staging scenario specified by the MRF Supervisor, following the requirements of SP-P-35-027, PT-0001, PT-0004, and PT-0008.

7.9.5 Notify RP when the material has been delivered to the disposition staging area.

**Recycling Programs (RP)**

**NOTE:** The following action completes the MRF-100 form.

7.9.6 Obtain the signatures of the MRF Supervisor and Property Management in block 21 of the MRF-100 form to transfer responsibility for the material to Property Management.

7.9.7 Forward the completed MRF-100 form and the entire documentation package to the MRF Supervisor.

**7.10 DISPOSITIONING MATERIAL**

**Property Management**

7.10.1 Ensure that radiological controls specified in RC-DPT-019 have been met.

A. If inadequate radiological controls have been established on previously surveyed items awaiting release (see RC-DPT-019), do the following:

- (1) Request a final radiological survey.

**Radiological Control (RC)**

- (2) Perform a final radiological survey.
- (3) Provide PM with completed Radiological Survey Report.

**Property Management**

- (4) Resolve issue, if applicable.
- (5) Forward the Radiological Survey Report to the MRF Supervisor for inclusion in the documentation package.

**OR**

B. If adequate radiological controls have been established on previously surveyed items awaiting release, continue procedure.

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7.10.2 Disposition material per PM-0001.

7.10.3 Contact P/QA for certification.

**Performance/Quality Assurance (P/QA)**

7.10.4 Certify the activities in steps 7.10.1 through 7.10.2.

A. If complete and accurate, sign and date shipping documentation.

OR

B. If not complete and/or accurate, do the following:

(1) Rectify any omissions or discrepancies.

(2) Sign and date shipping documentation.

**Property Management**

**NOTE:** The material documentation package should include the final Radiological Survey Report, the destination, the shipper, the end use, the shipping documentation, and any other appropriate information.

7.10.5 Forward copies of final disposition records to the MRF Supervisor for inclusion in the material documentation package.

**7.11 MANAGING RECORDS**

**Material Release Facility (MRF) Supervisor**

7.11.1 Make three copies of the completed, original documentation package.

7.11.2 Forward completed, original documentation package to WPM for official records retention and entry into the CERCLA Administrative Record, if appropriate.

7.11.3 Forward a copy of the completed documentation package to RP.

7.11.4 Forward a copy of the completed documentation package to Waste Programs Quality Assurance.

7.11.5 File a copy of the completed documentation package for MRF records.

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8.0 DRIVERS

- 8.1 DOE Order 5400.5, Radiation Protection of the Public and the Environment, dated February 8, 1990
- 8.2 RM-0016, Management Plan FERMC0 Policies and Requirements Manual, Revision 0, Standards/Requirements Identification Documents (S/RIDs) Numbers 10, 12, 13, 14, 17, and 23.
- 8.3 FEMP Site CERCLA Quality Assurance Project Plan (SCQ)

9.0 DEFINITIONS

- 9.1 As Low As Reasonably Achievable (ALARA) - Per DOE Order 5400.5, the process to control or manage exposures to workers and the public and releases to the environment. ALARA is not a dose limit, but a process to keep dose levels as far below the applicable limits as possible, considering social, technical, economic, practical, and public policy factors.
- 9.2 Comprehensive Radiological Survey - For the purposes of this procedure, a detailed, extensive, radiological survey utilizing direct monitoring and removable contamination measurement techniques, intended to demonstrate whether material meets applicable surface radiological control criteria.
- 9.3 Disposition Staging Vehicle (DSV) - Dedicated, controlled, and reusable transport vehicles in which materials can be guarded from contamination and can be stored, transported, and staged for sale or auction.
- 9.4 Excess - Government property no longer required for the performance of the prime contract.
- 9.5 Free Release - Release of material from administrative control after confirming that residual radioactivity meets the guidelines of DOE Order 5400.5.
- 9.6 Low-Level Waste (LLW) - Waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel or 11e(2) byproduct material, as defined in DOE Order 5820.2A "Radioactive Waste Management."
- 9.7 Material Release Facility (MRF) - A group of facilities consisting primarily of Buildings 78 and 69 and adjacent areas where materials are decontaminated and stored. (The term "MRF" only applies to facilities that are used to support the decontamination and free release of contaminated items from the FEMP process area. Other Decontamination and Decommissioning (D&D) activities occur at facilities that are not part of the MRF program; and therefore, are not subject to this procedure.)

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- 9.8 Representative Radiological Survey - For the purposes of this procedure, a field screening or spot-check radiological survey, less detailed and less intensive than a Comprehensive Radiological Survey (see above).
- 9.9 Salvage - Property that, because of its worn, damaged, deteriorated, or incomplete condition or specialized nature, has no reasonable prospect of sale or use as serviceable property without major repairs or alterations but has some value in excess of its scrap content.
- 9.10 Scrap - Property that has no reasonable prospect of being sold, except for the recovery value of its basic material content.
- 9.11 Surplus - Contractor inventory not required by any federal agency.

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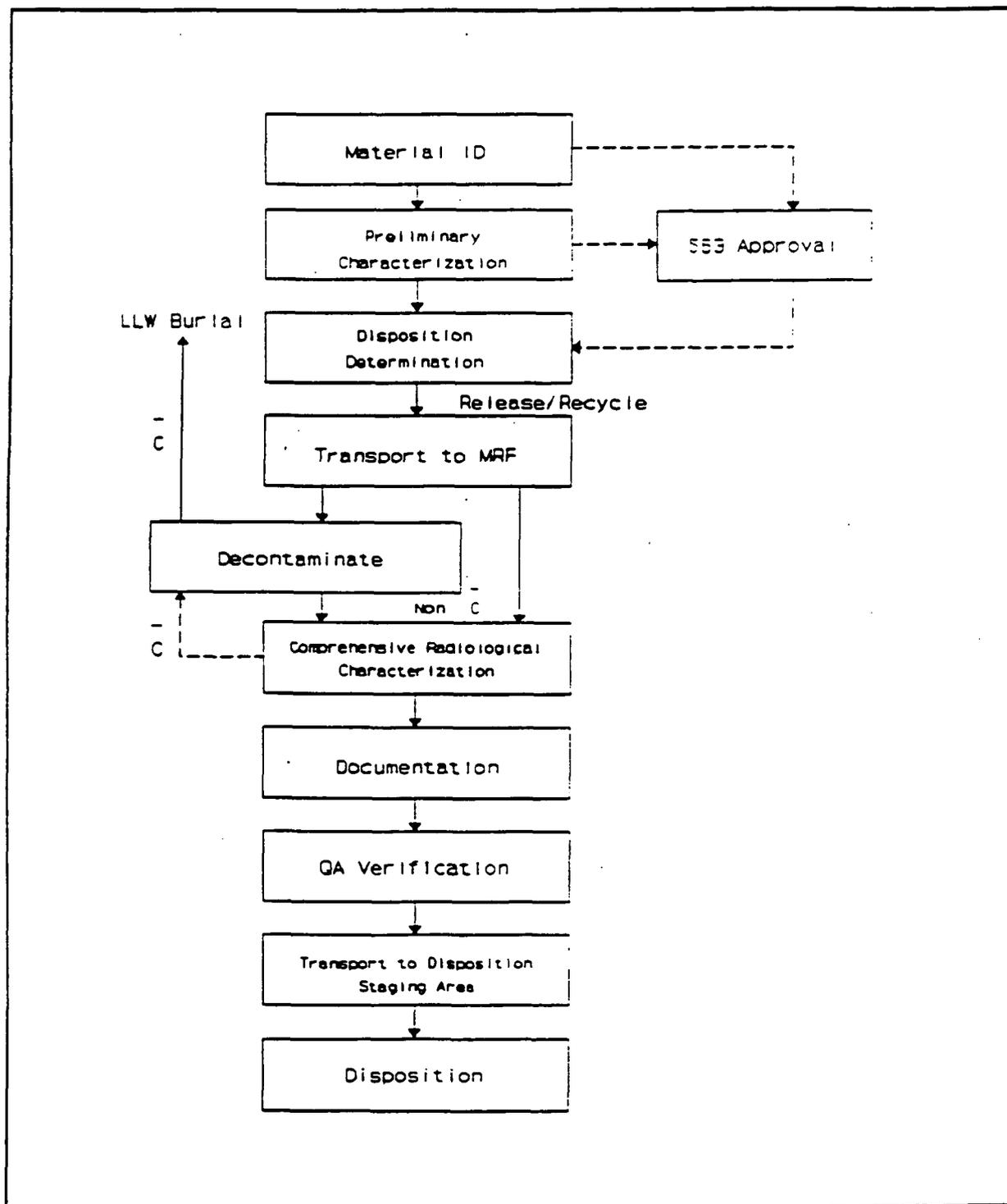
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ATTACHMENT A - MRF PROCESS FLOW DIAGRAM



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**ATTACHMENT B - MATERIAL EVALUATION FORM (MEF)/VERIFICATION FORM**

<b>A. WASTE STREAM IDENTIFICATION</b>		
1. Requestor:	2. Phone:	3. Serial Number:
4. Generation Event:	<input type="checkbox"/> Original Generation <input type="checkbox"/> Additional Generation <input type="checkbox"/> Safe Shutdown Generation <input type="checkbox"/> Other (Describe):	5. Date Submitted: (see instruction note!)
6. Material Description:		
7. Process Description: <input type="checkbox"/> Documentation Attached		
8. Generation Location:		
<b>B. WASTE STREAM TO VERIFY AGAINST</b>		
1. MEF#:	2. Material Description:	
3. Determination Date:	4. Determination:	5. Hazardous Waste No(s).
6. Rationale: <input type="checkbox"/> Extra page(s) attached		

**Evaluation Section**

<b>C. MATERIAL STATUS</b>	
1. Evaluator:	2. Date:
3. Summary	Material Determination:
<input type="checkbox"/> Material is characterized by MEF # _____. Inventory is revised to include the inventory shown on the associated inventory attachment.	<input type="checkbox"/> RCRA Solid Waste (a.k.a Non-RCRA) <input type="checkbox"/> RCRA Hazardous Waste Hazardous Waste No(s):
<input type="checkbox"/> This material does not match the characterization of the referenced MEF. Submit a new MEF for this material immediately.	
Rationale:	
Waste Characterization Approval Signature: _____ Date: _____	

<b>D. DISTRIBUTION</b>	
Requestor:	Waste Characterization Files:

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**ATTACHMENT C - MRF-100 MATERIAL RELEASE FORM  
(Sheet 1 of 2)**

<b>MRF-100 (Rev. 07/11/95)</b>  <b>MATERIAL RELEASE</b>	1) FORM NO.:
	2) DATE:
3) PHYSICAL DESCRIPTION:	
4) MATERIAL PROHIBITED BY SAFETY ASSESSMENT?	
a. <input type="checkbox"/> Yes <input type="checkbox"/> No      b. If yes, has SA issued an approval letter to handle this material in the MRF? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5) OWNERSHIP AND RESPONSIBILITY TRANSFER:	
FROM: Material Owner      Signature: _____      Date: _____  TO: MRT Facilitator      Signature: _____      Date: _____	
6) LOT I.D. NO.:	ITEM I.D. NO.:
7) QA VERIFICATION (ITEMS 1-6):	
Signature: _____      Date: _____	
8) RADIOLOGICAL SURVEY ATTACHED?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
9) MATERIAL EVALUATION FORM / VERIFICATION FORM ATTACHED?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
10) MATERIAL HANDLING SAFETY ASSESSMENT: LIST AND EXPLAIN ANY SPECIAL SAFETY CONCERNS REGARDING THE HANDLING OR TRANSPORT OF THIS MATERIAL. (PAY PARTICULAR ATTENTION TO CHARACTERISTICS SUCH AS SHAPE, WEIGHT, CONFIGURATION, SHARP EDGES, AND MATERIAL TYPE.)	
_____ _____	
11) QA VERIFICATION (ITEMS 8-10):	
Signature: _____      Date: _____	

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ATTACHMENT C - MRF-100 MATERIAL RELEASE FORM  
(Sheet 2 of 2)

12) DISPOSITION SCENARIO (Check One):		
<input type="checkbox"/> LLW/MW or <input type="checkbox"/> MRF		
13) MRF PROCESSING STRATEGY / PROPOSED END USE:		
14) QA VERIFICATION (Items 12-13):		
Signature: _____		Date: _____
15) OWNERSHIP AND RESPONSIBILITY TRANSFER:		
FROM: MRT Facilitator	Signature: _____	Date: _____
TO: MRF Supervisor	Signature: _____	Date: _____
16) (FROM 562 FORM) PHYSICAL CLASSIFICATION / DISPOSITION CONDITION CODE:		
17) COMPREHENSIVE RADIOLOGICAL SURVEY ATTACHED?		
<input type="checkbox"/> Yes <input type="checkbox"/> No		
18) DISPOSITION EVALUATION ATTACHED?		
<input type="checkbox"/> Yes <input type="checkbox"/> No		
19) QA VERIFICATION (Items 16-18):		
Signature: _____		Date: _____
20) CERTIFICATION THAT MATERIAL MEETS ALARA CRITERIA AND RADIOLOGICAL CONTROL CRITERIA:		
QA	Signature: _____	Date: _____
MRT Facilitator	Signature: _____	Date: _____
21) OWNERSHIP AND RESPONSIBILITY TRANSFER:		
FROM: MRF Supervisor	Signature: _____	Date: _____
TO: Property Management	Signature: _____	Date: _____

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**ATTACHMENT D - PROPERTY DISPOSAL REQUEST**

**I - EQUIPMENT DESCRIPTION**

<b>DESCRIPTION:</b>		<b>CONTROL NO:</b>			
<b>MANUFACTURER:</b>		<b>FEC CODE:</b>			
<b>LOCATION:</b>		<b>UPSET PRICE:</b>			
<b>MODEL:</b>	<b>BAR CODE NO:</b>	<b>CHECK ONE</b>			
		<b>IF</b>	<b>YES</b>	<b>NO</b>	<b>NA</b>
		<b>ARE SPARE PARTS AVAILABLE ?</b>			
<b>SERIAL NO.</b>	<b>CMMS STOCK NO.</b>	<b>ARE MANUALS AVAILABLE ?</b>			
		<b>ARE SPARE PARTS TO BE EXCESSED</b>			
<b>ACQUISITION COST:</b>	<b>SIZE &amp; CAPACITY:</b>	<b>MATERIAL EVALUATION FORM REQUIRED ?</b>			
<b>DOES UNIT CONTAIN PRECIOUS OR CRITICAL MATERIALS ?</b> <input type="checkbox"/> YES <input type="checkbox"/> NO..... IF YES, TYPE:		<b>MATERIAL SAFETY DATA SHEET(S) REQUIRED ?</b>			

**II - EQUIPMENT CLASSIFICATION AND CONDITION**

<b>R/EXPORT CONTROL CLASSIFICATION:</b> YES <input type="checkbox"/> NO <input type="checkbox"/> <small>See High Risk Certification:</small>		<b>RADIOLOGICALLY CONTAMINATED:</b> YES <input type="checkbox"/> NO <input type="checkbox"/> <small>(See Attached Radiological Survey)</small>												
<b>EQUIPMENT CONDITION CODE</b>											<b>1 = UNUSED - GOOD    4 = USED - GOOD    7 = REPAIRS REQUIRED - GOOD</b> <b>2 = UNUSED - FAIR    5 = USED - FAIR    8 = REPAIRS REQUIRED - FAIR</b> <b>3 = UNUSED - POOR    6 = USED - POOR    9 = REPAIRS REQUIRED - POOR</b> <b>H = UNSERVICEABLE OR CONDEMNED - RADIOACTIVE CONTAMINATION</b> <b>S = SCRAP - NO VALUE EXCEPT FOR BASIC MATERIAL CONTENT</b>			
1	2	3	4	5	6	7	8	9	H	S				
<b>IM RELEASE SIGNATURE FOR APDE DISPOSAL:</b>											<b>DATE:</b>			

**III - PROPERTY OWNER APPROVALS**

<b>ORIGINATOR: PRINT/TYPE</b>	<b>PAC APPROVAL: PRINT/TYPE</b>	<b>LEVEL IV MANAGER OR ABOVE: PRINT/TYPE</b>
<b>SIGNATURE:</b>	<b>SIGNATURE:</b>	<b>SIGNATURE:</b>

**IV - CERTIFICATION FOR RELEASE OF PERSONAL PROPERTY**

<b>RADIOLOGICAL ENGINEERING: (REQUIRED)</b> <b>SIGNATURE:</b>	<b>HIGH RISK/EXPORT CONTROL OFFICER (REQUIRED)</b> <b>SIGNATURE:</b>
<b>INDUSTRIAL HYGIENE: (REQUIRED FOR ITEMS THAT MAY CONTAIN LEAD OR ASBESTOS) TO RELEASE FROM SITE</b> <b>SIGNATURE:</b>	<b>WASTE MANAGEMENT: (REQUIRED FOR DISPOSITION OF RADIOLOGICAL CONTAMINATED SCRAP)</b> <b>SIGNATURE:</b>
<b>CPPM SECURITY/IM: (REQUIRED FOR SOFTWARE)</b> <b>SIGNATURE:</b>	

**V - EXCESS APPROVALS**

<b>RECEIVED BY EXCESS SECTION:</b> <b>SIGNATURE &amp; DATE:</b>	<b>ACCEPTED BY EXCESS MGR.:</b> <b>SIGNATURE &amp; DATE:</b>
<b>PM SECURITY/IM: (REQUIRED APDE ONLY)</b> <b>SIGNATURE &amp; DATE:</b>	<b>APPROVED BY DOE OPMO:</b> <b>SIGNATURE &amp; DATE:</b>

APDE:  OPERABLE     INOPERABLE     SANITIZED     HD REMOVED



**ATTACHMENT B**

# Mixed Waste to be Decontaminated

MEF	INV	GRPNM	NT WEIGHT DRUMSIZE	INVDSCRIPTION	RTR COMMENT	VISUAL INSPECTION	U	U235	EPA CODE
547	W51461	LEAD SOLIDS	600 030	LEAD & DEBRIS	3/4 FULL LEAD HAMMERS HAMMERS	NONE AVAILABLE	0.01	0.500	D008
547	W51468	LEAD SOLIDS	166 030	LEAD & DEBRIS	3/4 FULL LEAD PIPES PIPES	NONE AVAILABLE	0.01	0.500	D008
547	W51468	LEAD SOLIDS	208 030	LEAD & DEBRIS	3/4 FULL LEAD PIPES PIPES	NONE AVAILABLE	0.01	0.500	D008
547	W51486	LEAD SOLIDS	221 055	LEAD & DEBRIS	FURNACE SALTS AND METALS METAL	FILTERED CAKE/SOLIDIFIED MATERI	0.01	0.500	D008
547	W51500	LEAD SOLIDS	145 055	LEAD & DEBRIS	GLASS	NONE AVAILABLE	0.01	0.500	D008
547	W51500	LEAD SOLIDS	156 055	LEAD & DEBRIS	BOLTS, SHARP EDGES, PVC PIPES	NONE AVAILABLE	0.01	0.500	D008
874	W51483	LEAD SOLIDS	330 085	HAMMER, LEAD BRICKS & LEAD WINDOW SASHING	LOOKS LIKE MATERIAL TYPE, GEOMETRIC SHAPES	COPPER WIRE	0.01	0.500	D008
874	W51483	LEAD SOLIDS	242 085	HAMMER, LEAD BRICKS & LEAD WINDOW SASHING	LOOKS LIKE MATERIAL TYPE, GEOMETRIC SHAPES	LEAD PIPE, STRIPS & SHEETS	0.01	0.500	D008
1271	W51479	LEAD SOLIDS	283 085	LEAD SOLDER JOINTS	1/2 FULL LEAD PIPES PIPES	LEAD BRICKS/SHOT	0.01	0.500	D008
1281	W13431	LEAD SOLIDS	6090 301	LEAD BRICKS	METAL, PLASTIC, LEAD BLOCKS, WOOD	NONE AVAILABLE	0.01	0.500	D008
1281	W13431	LEAD SOLIDS	6870 301	LEAD BRICKS	NO RTR INFORMATION AVAILABLE	NONE AVAILABLE	0.01	0.500	D008
1281	W51435	LEAD SOLIDS	139 055	LEAD BRICKS	JARS	2X5 GAL W/ LEAD SHOT	0.01	0.500	D008
1281	W51435	LEAD SOLIDS	409 055	LEAD BRICKS	METAL	SHEET OF LEAD	0.01	0.500	D008
1281	W51435	LEAD SOLIDS	206 055	LEAD BRICKS	LEAD SHEET	NONE AVAILABLE	0.01	0.500	D008
1281	W51435	LEAD SOLIDS	168 055	LEAD	METAL	NONE AVAILABLE	0.01	0.710	D008
1987	W51428	LEAD SOLIDS	4433 306	LEAD AND LEAD-CONTAMINATED MATERIALS	NO RTR INFORMATION AVAILABLE	NONE AVAILABLE	0.01	0.711	D008
1987	W13231	LEAD SOLIDS	5340 306	LEAD AND LEAD-CONTAMINATED MATERIALS	NO RTR INFORMATION AVAILABLE	NONE AVAILABLE	0.01	0.711	D008
1987	W13231	LEAD SOLIDS	5223 306	LEAD AND LEAD-CONTAMINATED MATERIALS	NO RTR INFORMATION AVAILABLE	NONE AVAILABLE	0.01	0.500	D008
1987	W13430	LEAD SOLIDS	527 055	LEAD & DEBRIS	LEAD SHEETING INSERT PIECES METAL	NONE AVAILABLE	0.01	0.500	D008
1987	W51472	LEAD SOLIDS	988 055	LEAD & DEBRIS	7 PLATES OF LEAD AT THE BOTTOM	LEAD BLOCK	0.01	0.500	D008
1987	W51472	LEAD SOLIDS	1024 055	LEAD & DEBRIS	LOOKS LIKE ONE SOLID LEAD BLOCK	LEAD BLOCK	0.01	0.500	D008
1987	W51473	LEAD SOLIDS	1027 055	LEAD & DEBRIS	LEAD BLOCKS	LEAD BLOCK	0.01	0.500	D008
1987	W51473	LEAD SOLIDS	1076 055	LEAD & DEBRIS	VARIOUS SIZES OF LEAD BLOCKS AND PIPE	2 LEAD BLOCKS	0.01	0.500	D008
1987	W51473	LEAD SOLIDS	981 055	LEAD & DEBRIS	LEAD PLATES	2 LEAD BLOCKS	0.01	0.500	D008
1987	W51473	LEAD SOLIDS	983 055	LEAD & DEBRIS	LEAD PLATES	1 LEAD BLOCK, 1 PLATE	0.01	0.500	D008
1987	W51473	LEAD SOLIDS	987 055	LEAD & DEBRIS	LEAD PLATES	1 LEAD BLOCK, 3 PLATES	0.01	0.500	D008
1987	W51473	LEAD SOLIDS	315 055	LEAD & DEBRIS	LEAD PLATES	2 PLATES, 1 HAMMER	0.01	0.500	D008
1987	W51473	LEAD SOLIDS	3491 301	LEAD & DEBRIS	COUNTER BALANCE WEIGHTS IN WMB THREE WEIGHTS	COUNTER BALANCE FORKLIFT TRUC	0.01	0.500	D008
1987	W51492	LEAD SOLIDS	3501 301	LEAD & DEBRIS	COUNTER BALANCE WEIGHTS IN WMB THREE WEIGHTS	COUNTER BALANCE FORKLIFT TRUC	0.01	0.500	D008
1987	W51492	LEAD SOLIDS	2519 301	LEAD & DEBRIS	METAL	NONE AVAILABLE	0.01	0.500	D008
1987	W51492	LEAD SOLIDS	6117 301	LEAD & DEBRIS	COUNTER BALANCE WEIGHTS IN WMB THREE WEIGHTS	COUNTER BALANCE FORKLIFT TRUC	0.01	0.500	D008
1987	W51492	LEAD SOLIDS	3904 301	LEAD & DEBRIS	COUNTER BALANCE WEIGHTS IN WMB THREE WEIGHTS	COUNTER BALANCE FORKLIFT TRUC	0.01	0.500	D008
854	W51432	NI-CD BATTERIES	296 055	NI-CD BATTERIES	LOOKS LIKE MATERIAL TYPE, GEOMETRIC SHAPES, PLAST	NONE AVAILABLE	0.01	0.500	D006
855	W51429	MERCURY WASTES	427 055	DRY CELL/MERCURY BATTERIES	MERCURY BATTERIES, LEAD BATTERIES, GLASS, METAL	NONE AVAILABLE	0.01	0.500	D009
855	W51429	MERCURY WASTES	535 055	DRY CELL/MERCURY BATTERIES	MERCURY BATTERIES, LEAD BATTERIES, GLASS, METAL	NONE AVAILABLE	0.01	0.500	D009
855	W51432	MERCURY WASTES	507 055	DRY CELL/MERCURY BATTERIES	MERCURY BATTERIES, LEAD BATTERIES, GLASS, METAL	NONE AVAILABLE	0.01	0.500	D009
2675	W51515	COMPRESSED GASES	78 055	NON-RECOVERABLE TRASH	PROPANE, TANK HALF FULL	NONE AVAILABLE	0.00	0.000	D001

00000

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**ATTACHMENT C**

## ATTACHMENT C

SURFACE CONTAMINATION LIMITS <sup>(1)</sup>			
Nuclide <sup>(2)</sup>	Fixed Plus Removable		Removable <sup>(3,4)</sup>
	Average <sup>(5)</sup>	Maximum <sup>(6)</sup>	
U-nat. U-235, U-238, and associated decay products, alpha emitters.	5,000 dpm/100 cm <sup>2</sup>	15,000 dpm/100 cm <sup>2</sup>	1,000 dpm/100 cm <sup>2</sup>
Transuranics. Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm <sup>2</sup>	300 dpm/100 cm <sup>2</sup>	20 dpm/100 cm <sup>2</sup>
Th-nat. Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000 dpm/100 cm <sup>2</sup>	3,000 dpm/100 cm <sup>2</sup>	200 dpm/100 cm <sup>2</sup>
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and other noted above.	5,000 dpm/100 cm <sup>2</sup>	15,000 dpm/100 cm <sup>2</sup>	1,000 dpm/100 cm <sup>2</sup>

(1) Where surface contamination by both alpha and beta-gamma nuclides exists, the limits established for alpha and beta-gamma emitting nuclides should apply independently.

(2) The limits presented for transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, and Ac-227, may be adjusted on a case by case basis. Consult with Radiological Compliance when required to apply these limits for unrestricted release.

(3) As used in this table, dpm (disintegrations per minute), means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

(4) The amount of removable radioactive material per 100 cm<sup>2</sup> of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

(5) Measurements of average containment should not be averaged over more than one square meter. For objects of less surface area, the average should be derived for each object.

(6) The maximum contamination level applied to an area of not more than 100 cm<sup>2</sup>.

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