

FEMP- 2517  
PAPER

CONF-9606125--11

Mixed Waste Management Plans at the Fernald Environmental Management Project (FEMP)

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JUN 26 1996  
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For Presentation at the  
89th Annual Meeting & Exhibition  
Air & Waste Management Association  
Nashville, Tennessee  
June 23-28, 1996

\* Fernald Environmental Restoration Management Corporation  
with the U.S. Department of Energy under Contract No. DE-  
AC24-92OR21972.

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## INTRODUCTION

The Fernald Environmental Management Project (FEMP) is a United States Department of Energy (DOE) facility located in southwestern Ohio (Figure 1). The facility began production of uranium metal products in the early 1950's and continued processing of uranium ore concentrates until 1989. The facility used a variety of chemical and metallurgical processes to manufacture uranium metals for use at other DOE sites across the country.

Because of the chemical and metallurgical processes employed at the site, some hazardous wastes as defined by the Resource Conservation and Recovery Act (RCRA)<sup>1</sup> were generated during the manufacture of the uranium metal products. Because of uranium metal's radioactive properties, the hazardous wastes generated at the facility typically contain some radioactivity. Wastes which contain both a hazardous component subject to RCRA regulation and a radioactive component subject to the Atomic Energy Act of 1954<sup>2</sup> are described as mixed waste. In 1989, the FEMP was placed on the National Priorities List (NPL) requiring cleanup of the facility's radioactive and chemical contamination under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

This paper examines the regulatory requirements associated with development of the plan used to manage mixed wastes at the FEMP. In addition, the paper discusses the strategies used to integrate the requirements of the Federal Facility Compliance Act (FFCAct) with CERCLA response actions.

## REGULATORY FRAMEWORK

### **Federal Facility Compliance Act**

The FFCAct signed on October 6, 1992 waived sovereign immunity for fines and penalties for RCRA violations at federal facilities.<sup>3</sup> However, the Act postponed the waiver for three years for Land Disposal Restriction (LDR) requirements pertaining to mixed wastes stored at DOE facilities.<sup>4</sup> The three year postponement period allowed DOE to prepare plans for treatment of the mixed wastes stored at their facilities.

At the FEMP site, the Ohio Environmental Protection Agency (Ohio EPA) approves the treatment plan which is called a site treatment plan (STP) hereafter. The STP includes schedules for treating mixed wastes and schedules for developing treatment technologies for those mixed wastes which presently do not have an identified treatment technology.

## Site Treatment Plan

In a April 6, 1993 Federal Register Notice, DOE committed to providing STPs in three phases with established deliverable dates.<sup>5</sup> The first phase would require completion of a conceptual STP by October 1993. The second phase required a draft STP completed by October 1994. Finally, a proposed STP was to be completed by February 1995 (which was later revised to March 1995). The three phases of the STP development allowed state and stakeholder involvement in the technical and equity issues arising with each phase of the plan.

The conceptual STP submitted to Ohio EPA by the FEMP in October 1993 examined treatment needs, capabilities, and options for the FEMP's mixed waste inventory. The draft STP submitted in August 1994 to Ohio EPA considered the site-specific preferred options for treating the FEMP's mixed waste as well as schedules for constructing treatment trains. The proposed STP submitted to Ohio EPA in October 1995 is the plan which the Ohio EPA approves or disapproves as required by the FFCA.

## Director's Final Findings and Orders

Ohio EPA issued a Director's Final Findings & Order (DFO) in response to the FEMP's proposed STP submittal in October 1995. The DF&O is a regulatory mechanism used by the Director of the Ohio EPA to ensure specific actions relating to environmental protection are followed. The DF&O sets forth both treatment requirements and schedules for the FEMP's mixed wastes.

The DF&O states that the Director of the Ohio EPA has determined that neither public health and safety nor the environment will be adversely affected by the storage of LDR mixed waste at the FEMP provided DOE complies with the requirements set forth in the DF&O. The issuance of the DF&O fulfills the requirement of section 105 (b) of the FFCA, 42 U.S.C. Section 6939c(b) with respect to the FEMP.

The DF&O also recognized that the FEMP is following a Consent Agreement signed by both U.S. EPA and DOE on June 29, 1990 and amended on September 20, 1991. The Amended Consent Agreement (ACA) required that certain mixed waste treatments occur at the FEMP.

The DF&O grouped mixed wastes at the FEMP into two categories. The first category includes future generated wastes or remediation wastes which are similar in composition to past generated wastes. The remediation wastes are anticipated to be generated through the implementation of the ACA. The second category includes past generated wastes or legacy wastes. The DF&O anticipates that DOE will utilize treatment systems identified in the PSTP as a treatment methodology for remediation wastes which are similar in composition to legacy mixed wastes present at the FEMP. New types of remediation wastes (i.e., remediation wastes which are not similar in composition to legacy mixed wastes) will be handled in accordance with the ACA and documented in future amendments to the approved STP. The ACA requires information pertaining to the generation of remediation mixed wastes be identified in the FEMP's Record of Decision, Remedial Design Work Plans, and Remedial Action Work Plans for the appropriate Operable Unit.

During the DF&O discussions between DOE and Ohio EPA, both agencies agreed that cleanup work conducted at the FEMP under either CERCLA response actions or RCRA closure activities should continue.

Consequently, work involving mixed waste treatments in mid-1995 under an approved RCRA closure plan continued as scheduled. Similarly, work conducted as part of CERCLA removal actions also continued during the year prior to the issuance of the DF&O on October 6, 1995.

### Future Plans

The FEMP intends to continue cleanup of the site using CERCLA removal actions for certain mixed waste treatments. The CERCLA removal action process allows for the threat of a release or a release of a hazardous substance to be mitigated.<sup>6</sup> The time frame under which the removal action is planned and implemented is based on the threat potential. The removal action process requires substantive regulatory requirements to be met. However, administrative requirements (e.g., permits) are not necessary for removal actions conducted on-site.<sup>7</sup>

At the FEMP, one CERCLA removal action will encompass the removal and treatment of numerous mixed wastes. Under this one removal action, a project specific work plan will be written for each type of treatment process planned for the mixed waste. The project specific work plans are submitted to both Ohio EPA and U.S. EPA for review and approval. To date under this removal action, two project specific plans have been approved and implemented.

Also in 1995, two other CERCLA removal actions conducted at the FEMP involved the treatment of mixed wastes. Both removal actions were successfully completed thereby reducing the inventory of mixed waste at the FEMP.

In 1996, several more project specific work plans developed under one removal action are anticipated to be approved by the regulatory agencies. Depending upon the type of waste generated during the remediation process, the FEMP anticipates either using an existing treatment technology as specified in the STP or providing an alternative technology through the CERCLA remedial design/action process. If the latter process is utilized, the STP will be amended to account for the treatment of the mixed wastes.

## Conclusions

The FEMP attempted to satisfy the FFCAct requirements cognizant of the ongoing CERCLA activities at the site. Discussions with the Ohio EPA during the drafting of the STP considered the stage of the CERCLA process that the FEMP was presently at and where the site was moving towards. Consequently, the DF&O signed by U. S. DOE allows the FEMP to continue CERCLA activities while still satisfying the FFCA requirements.

## Acknowledgments

This paper was prepared as an account of work sponsored by an agency of the United States Government. Reference herein to any specific commercial product, process, or service by trade name, trade mark, manufacturer, or otherwise does not constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government, or any agency thereof or Fernald Environmental Restoration Management Corporation, its affiliates or its parent companies.

DOE-FERMCO PRIME CONTRACT NO. IS DE-AC24-92OR21972.

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**REFERENCES**

- (1) Resource Conservation and Recovery Act of 1976, 42 U.S.C. Section 6901 et seq, as amended
- (2) Atomic Energy Act of 1954, 42 U.S.C. Section 2011 et seq, as amended
- (3) Federal Facility Compliance Act of 1992, Section 102(a)
- (4) Federal Facility Compliance Act of 1992, Section 102(c)
- (5) Federal Register Notice (58 FR 17875), April 6, 1993
- (6) 40 CFR 300.415
- (7) Comprehensive Environmental Response, Compensation, and Liability Act, Section 121 (e) (1)

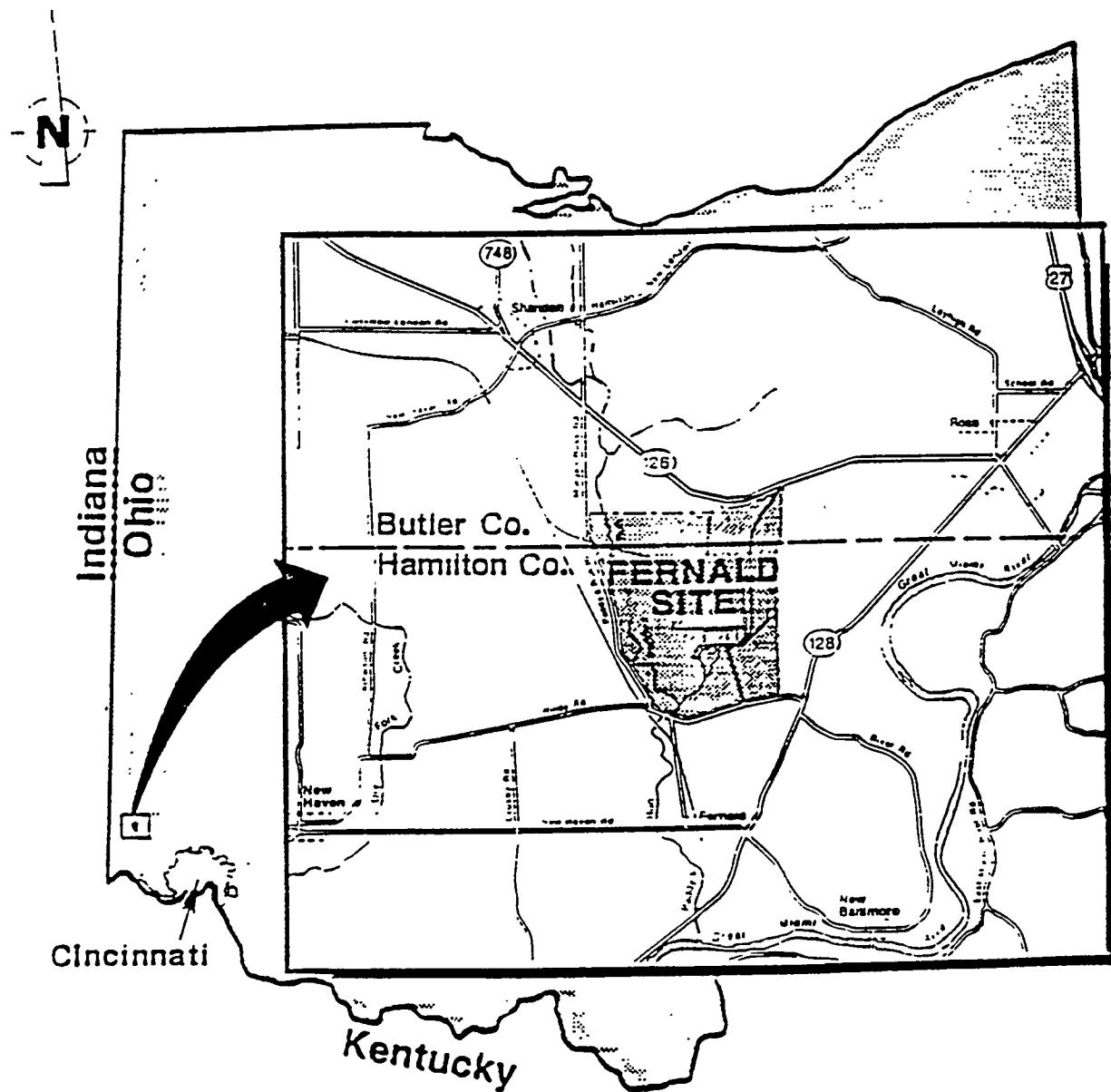


Figure 1. Fernald Site and Vicinity.