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CONSOLIDATED CONSENT AGREEMENT/FEDERAL COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT PERIOD ENDING NOVEMBER 30, 1993

12/17/93

DOE-FN/EPA
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REPORT

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

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Introduction

The Consent Agreement (CA) As Amended under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 120 and 106(a), the Federal Facility Compliance Agreement (FFCA), and the Federal Facility Agreement for Control and Abatement of Radon-222 Emissions (FFA-CARE) between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (U.S. EPA) signed September 20, 1991, July 18, 1986, and November 19, 1991, respectively, require that monthly reports be submitted to the U.S. EPA regarding progress made to meet the provisions of those agreements. This report fulfills those requirements by describing actions undertaken at the Fernald Environmental Management Project (FEMP) during the period November 1 through November 30, 1993, and planned actions for the period December 1 through December 31, 1993.

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WORK ASSIGNMENTS AND PROGRESS

Descriptions of work progress are presented in the following sections and/or enclosures to this report:

- o CA Section IX - Removal Actions.
- o CA Section X - Remedial Investigation/Feasibility Study.
- o Enclosure A - Wastewater Flows and Radionuclide Concentrations under CA Section XXIII.B.
- o Enclosure B - FFCA: Initial Remedial Measures and Other Open Actions.
- o Enclosure C - FFA: Control and Abatement of Radon-222 Emissions.
- o Enclosure D - Drilling/Boring Logs
- o Enclosure E - Effluent Radiation Discharges to the Great Miami River

CA Section IX. Removal Actions

This section provides an update of activities associated with the implementation of Removal Actions (RAs) at the FEMP during November, 1993. Information is presented for each of the Removal Actions identified in the Consent Agreement As Amended.

Phase I Removal Actions

- o RA No. 1, Contaminated Water Under FEMP Buildings.
- o RA No. 2, Waste Pit Area Run-off Control.
- o RA No. 3, South Groundwater Contamination Plume.
- o RA No. 4, Silos 1 and 2.
- o RA No. 5, Decant Sump Tank.
- o RA No. 6, Waste Pit 6 Residues.
- o RA No. 7, Plant 1 Pad Continuing Release.

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Phase II Removal Actions

- RA No. 8, Inactive Flyash Pile Control.
- RA No. 9, Removal of Waste Inventories.
- RA No. 10, Active Flyash Pile Controls.
- RA No. 11, Pit 5 Experimental Treatment Facility.
- RA No. 12, Safe Shutdown.
- RA No. 13, Plant 1 Ore Silos.
- RA No. 14, Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator.
- RA No. 15, Scrap Metal Piles.
- RA No. 16, Collect Uncontrolled Production Area Runoff--Northeast.
- RA No. 17, Improved Storage of Soil and Debris.
- RA No. 18, Control Exposed Material in Pit 5.

Phase III Removal Actions

- RA No. 19, Plant 7 Dismantling.
- RA No. 20, Stabilization of UNH Inventories.
- RA No. 21, Expedited Silo 3.
- RA No. 22, Waste Pit Area Containment Improvement.
- RA No. 23, Inactive Flyash Pile.
- RA No. 24, Pilot Plant Sump.

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CA Section IX. Removal Actions (continued)

- RA No. 25, Nitric Acid Tank Car and Area.
- RA No. 26, Asbestos Removals (Asbestos Program).
- RA No. 27, Management of Contaminated Structures at the FEMP.
- RA No. 28, Contamination at the Fire Training Facility
- RA No. 29, Erosion Control at Inactive Flyash Pile

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Removal Actions

RA No. 1, Contaminated Water Under FEMP Buildings

Based on perched groundwater sampling in 1988 and 1989, which identified uranium contamination underneath FEMP Plants 2/3, 6, 8 and 9, CERCLA Removal Action No. 1 was initiated to pump water from piezometers and extraction wells underneath these plants. These extracted waters were treated for uranium removal at the Plant 8 sump and routed through existing FEMP wastewater treatment facilities before discharge from the FEMP.

In 1990, further analysis of the perched groundwater indicated the presence of volatile organic compounds (VOCs). The U.S. and Ohio Environmental Protection Agencies subsequently approved the proposed option of VOC removal by carbon absorption for all extracted contaminated perched groundwater. In 1991, the Plant 8 VOC Treatment System construction was completed and treatment of VOC contaminated perched groundwater was initiated.

Plant 8 has been restarted and accumulated waste waters are being systematically reduced at the VOC Treatment System. Restart of the removal action extraction well pumping was initiated in November 1993. Full operations will be resumed in December 1993. The Plant 8 VOC treatment system was restarted October 19, 1993. Approximately 12,500 gallons of stored perched water were treated as of November 30, 1993. CRU5 conducted a RI/FS pump test at one perched water extraction well at Plant 8 with the treatment system dedicated to the treatment of water from this test. Treatment of other accumulated perched water began November 1993, to be followed by restart of the other extraction wells by December 31, 1993.

RA No. 2, Waste Pit Area Runoff Control

This removal action was completed on August 30, 1992.

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Removal Actions

RA No. 3, South Groundwater Contamination Plume

Part 1 - Alternate Water Supply

On January 31, 1991, the U.S. EPA approved the Work Plan for Part 1, Alternate Water Supply for two industrial users, Albright & Wilson Americas and Delta Steel. Subsequently, the U.S. EPA and Ohio EPA approved deleting Delta Steel from the current scope of the project. The Delta Steel hookup will be delayed until the planned public water supply can service the facility. The FEMP prepared a revised Work Plan (Revision 1) and issued it to the EPAs to reflect this and other changes that occurred. A summary of the most recent and on-going activities for Part 1 are listed below:

> The well system became operational on December 7, 1992; however, the continuous testing was not started until the OEPA approved the system. Plan approval was obtained in March 1993 and FEMP completed the 60-day continuous testing on May 24, 1993. The system continues to operate satisfactorily.
>
> The U.S. EPA agreed to delay provisions of Delta Steel's water supply contingent upon the Hamilton County public water supply being installed and operating by March 1, 1994. Hamilton County's present schedule indicates completion and operation of the Public Water Supply will not occur until mid- to late summer of 1994. This was discussed with Jim Saric (U.S. EPA) by Pete Yerace (DOE-FN) and it was agreed that this delay did not necessitate a modification to the South Plume Removal Action Engineering Evaluation/Cost Analysis (EE/CA) document.
>
> March 1, 1994 date was used to provide a target for completion as compared to a "drop dead" date. A confirmatory letter on the discussion and agreement is being sent by DOE.

Part 2 - Pumping and Discharge System

Part 2 consists of recovery wells, piping, and associated facilities to pump contaminated groundwater from the south groundwater contamination plume to the Great Miami River via routing through the FEMP. This project was divided into five construction bid packages. These include: 2A - groundwater discharge pipeline (pressure flow) and outfall pipeline (gravity flow) from south of Willey Road to and including Manhole 183B; 2B1 - Manhole 183B to Great Miami River; 2B2 - Aeration Facility; 2C - recovery well field; and 2D - test well installation and pump test. The following is the status of the Part 2 activities:

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Removal Actions

RA No. 3, South Groundwater Contamination Plume (continued)

The outfall pipeline section of Part 2A and 2B1 portions of the projects were operational on May 1, 1993. Accordingly, the existing outfall pipeline was removed from service.

The well field pumping began on August 27, 1993. Pumping and discharge systems remained in operation at 2,000 gallons per minutes (gpm) (400 gpm from each of five recovery wells) through the end of November 1993. However, on December 1, 1993 FERMCO received preliminary laboratory results (unvalidated) for fifteen of the monitoring wells that are sampled regularly as part of the Design, Monitoring, Evaluation Program Plan (DMEPP). The DMEPP is the EPA approved plan for monitoring the Part 2 operation. The wells were sampled for select organics, inorganics, and total uranium. A review of the results of the analyses indicated that three of the wells (2128, 2548, and 2900) had shown an increase in the concentration of arsenic since the September 1993 sampling events while Wells 2128, 2636, and 2900 showed an increase in total phosphorous (both known Paddys Run Road site contaminants). The revised flow rate will be monitored during the second quarter of operation.

Because of the increased levels of arsenic and total phosphorus in some wells, the potential exists that the recovery wells may be causing the Paddys Run Road site plume to be pulled northward. In order to address this potential concern FERMCO, after discussion with DOE and OEPA, reduced the existing 400 gpm extraction well pumping rate to 300 gpm at 3:00 p.m. on December 2, 1993. This rate was selected based on previous groundwater model predictions of particle tracking and drawdown.

In order to reassess the optimal pumping rates for the recovery wells, pressure transducers with data loggers have been installed to record water levels in Monitoring Wells 2002, 2128, 2548, 2549, 2625, 2636, 2899, and 2900. This was accomplished before adjusting the pumping rates in the recovery wells. In addition, the sampling program will be temporarily revised so that Recovery Wells 1 and 2, monitoring wells south of the recovery wells, and the cumulative discharge from the recovery system will be sampled on a weekly basis for total and dissolved arsenic. These samples will be analyzed in the FEMP laboratory to reduce turn-around time. No other changes are anticipated for the sampling program at this time.

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Removal Actions

RA No. 3, South Groundwater Contamination Plume (continued)

Part 3 - Interim Advanced Wastewater Treatment

Part 3 entails installation and operation of an Interim Advanced Wastewater Treatment (IAWWT) system to reduce uranium contaminant loading to the Great Miami River to a level less than 1,700 pounds per year. The IAWWT system includes two treatment units; the IAWWT unit located at the Storm Water Retention Basin (SWRB) consists of two trailer-mounted assemblies, each with a 150 gpm capacity for a total capacity of 300 gpm; and the IAWWT unit located at the Biodenitrification Effluent Treatment System, with a capacity of 100 gpm. Current activities are described below:

IAWWT Storm Water Retention Basin Unit

The unit continues to use cartridge filter elements excessively during operation and the FEMP has had problems keeping them in stock. Accordingly, plans are being made to install multimedia filtration upstream of the ion exchange units. The filter units are scheduled to be installed by March 31, 1994 as part of the Supplemental Project (discussed below), pursuant to the Operable Unit 2 Dispute Resolution Agreement.

IAWWT Biodenitrification Effluent Treatment System Unit

The FEMP completed installation of a new dual media filtration system. The FEMP received and installed two new replacement ion exchange vessels in September 1993. The unit was satisfactorily restarted in September 1993 and continues to operate.

Part 4 - Groundwater Monitoring and Institutional Controls

Part 4 involves groundwater monitoring and institutional controls. Sampling of private homeowner and existing RI/FS wells in the South Plume area continues.

The two homeowner treatment systems installed south of the FEMP continue to operate successfully. The lead ion exchange columns for both homes are beginning to show evidence of "break through." Procedures for resin column changeout are being developed and should be completed in December 1993.

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Removal Actions

RA No. 3, South Groundwater Contamination Plume (continued)

Part 5 - Groundwater Modeling and Geochemical Investigation

In order to define the vertical and horizontal extent of the groundwater plume contaminated with 20 ppb of uranium, analysis is being performed on the radiological results of the following phases of Part 5 as well as the groundwater monitoring of Part 4:

- Phase I - two traverse lines of Hydropunch II(TM) borings within the alluvium area and concurrent sampling of existing nearby wells
- Phase II - two traverse lines of monitoring wells with corresponding Hydropunch II(TM) sampling north and south of the proposed well field
- Phase III - seven piezometers clustered near proposed extraction well R-4 (in accordance with the DMEPP).

A summary report of these analyses is being developed. Data interpretation is being completed. Generation of an internal first draft is anticipated for the week of December 20, 1993.

Operable Unit 2 Dispute Resolution Supplemental Project (Uranium Reduction in FEMP Discharge)

The Supplemental Project will provide for partial treatment of the South Plume discharge with the objective of further reducing uranium discharges from the FEMP to the Great Miami River. An addendum to the Part 2/3 Work Plan was prepared to incorporate this project; the amended Work Plan was issued to the EPAs on October 25, 1993. The project consists of the following steps; the status of each is provided:

Step 1

Construct one additional IAWWT unit to treat 200 gpm of South Plume flow. This new unit, referred to as the South Plume Interim Treatment (SPIT) project, will be operational by March 31, 1994 and will include the addition of multimedia filtration units to supplement filtration at the IAWWT System (SWRB).

The SPIT project construction contract was awarded on October 12, 1993. The construction subcontractor's design of the IX System was approved on November 2, 1993. Field construction began October 12, 1993 and is proceeding on schedule.

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Removal Actions

RA No. 3, South Groundwater Contamination Plume (continued)

Step 2

Use off-peak capacity in Phase I of the Advanced Waste Water Treatment (AWWT) system for South Plume flow when no storm water requires treatment. The AWWT package now under construction contains piping and valving to transfer South Plume flow to the existing SWRB pumping station for subsequent transfer to Phase I. This will be available when Phase I of the AWWT system becomes operational in January 1995.

Step 3

Eliminate low uranium streams (i.e., less than 20 ppb [Sewage Treatment Plant and clean-side General Sump]) from Phase II of the AWWT and use this capacity to treat a portion of the South Plume, estimated to be approximately 200 gpm. Changes have been made to the AWWT project scope to eliminate treatment of the Sewage Treatment Plant and clean-side General Sump flows.

Plans are underway to expedite installation of the 20-inch line that will serve a future AWWT system, Phase III. This will allow South Plume groundwater to be transferred to the AWWT Phase II system to meet this commitment. This will be available in January 1995 when Phase II of the AWWT system becomes operational.

RA No. 3, South Groundwater Contamination Plume (continued)

Step 4

Extend the planned operational life of the existing IAWWT SWRB unit, convert from treating storm water to treating South Plume flow, and increase capacity from 300 gpm to approximately 400 gpm. This would be accomplished by March 30, 1995. No actions have been taken to date.

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Removal Actions

RA No. 4, Silos 1 and 2

Installation of the bentonite in Silos 1 and 2 was completed on November 28, 1991.

The DOE submitted an evaluation detailing a revised method for determining the effectiveness of the bentonite in the silos to the U.S. EPA on December 17, 1992. As discussed with U.S. EPA on April 13, 1993, information contained in the revised Bentonite Effectiveness Evaluation document will be incorporated into the Removal Action Final Report. Due to a slight upward trend in headspace radon concentration in Silo 2. FERMCO plans to re-install the closed-circuit video camera. The video cameras will be used to inspect the bentonite cap for apparent signs of drying, cracking, or sloughing off the residue mounds. The results of this inspection will be compared against baseline videos of the bentonite surface taken immediately following its installation. The results of this investigation will be incorporated into the Removal Action Final report, this investigation has pushed back the anticipated completion date of the Final Report until January of 1994.

As defined in the Removal Action Work Plan and the FFA-CARE, data associated with monitoring the effectiveness of the bentonite installation are included in Enclosure C.

RA No. 5, K-65 Decant Sump Tank

Current activities include monitoring the liquid level of the K-65 Decant Sump Tank and performing maintenance as required. DOE will advise the EPA when pumping operations will take place.

RA No. 6, Waste Pit 6 Residues

This removal action was completed on December 19, 1990.

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Removal Actions

RA No. 7, Plant 1 Pad Continuing Release

This removal action consists of three stages. Stage I, which implements the run-on/off control measures, is complete. Stage II, addressing the installation of 80,000 square feet of a newly covered and controlled concrete storage pad, is complete. Stage III involves activities to upgrade the remaining 375,000 square feet of the existing Plant 1 storage pad. Stage III upgrading activities include installation of a polymeric vapor barrier over the existing concrete and the installation of concrete above the barrier with an epoxy sealant. In addition, 22,500 square feet of the Stage III work area will be enclosed beneath a tension support structure.

Phases C and D of Stage III is scheduled for completion in December 1993. During the month of November 1993, the subcontractor completed all of the concrete slab placement. The 22,500 square feet covered storage structure is being erected and is scheduled to be complete by December 17, 1993. The application of the Neoguard coating system for the slab has commenced; however, due to the weather, the application of the Neoguard coating system cannot be completed for Phases C and D until spring. A plan must be prepared for movement of the drums from the Phase E construction work, which begins in April 1994.

KEY MILESTONES	STATUS	DUE DATE
Complete Installation of Stage III and Tension Support Structure	Open, ahead of schedule	February 21, 1995

RA No. 8, Inactive Flyash Pile Control

The Inactive Flyash Pile Isolation Activity was completed, ahead of schedule, on December 23, 1991.

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Removal Actions

RA No. 9, Removal of Waste Inventories

During November 1993, 5,318 drum equivalents of low-level waste (LLW) were dispositioned. The FY1994 goal is to dispose of 78,000 drum equivalents of low-level waste. The total DEs of LLW shipped to the NTS through November 1993 is 8,243 DEs which is 4,472 DEs behind schedule.

A record number of shipments were successfully completed in the third week of November 1993 when 23 truck loads were shipped offsite in one week. This volume was the result of a backlog of shipments resulting from the independent truckers strike. Shipments were suspended during the first week of the strike to evaluate the potential risk to FEMP shipments. Due to the lack of strike related incidents, shipments suspended the second week resumed the third week.

Waste shipping activities for December 1993 will include continued closure of the open audit findings and submittal of the revised FEMP Application to ship Waste to the Nevada Test Site, Rev.5.1, and submittal of the final confirmatory sampling results for FEMP residues. The application and sample results must be reviewed and approved by DOE/NV for FERMCO to meet the FY94 shipping goals..

KEY MILESTONES	STATUS	DUE DATE
Submit Annual Work Procedures for 1994	Open, on schedule	June 30, 1994

RA No. 10, Active Flyash Pile Controls

This removal action was completed on June 29, 1992. Any required maintenance will be conducted on an ongoing basis.

RA No. 11, Pit 5 Experimental Treatment Facility

RA No. 11 was completed on March 20, 1992.

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Removal Actions

RA No. 12, Safe Shutdown

The Safe Shutdown Removal Action documents the activities that will remove uranium and other material from equipment and pipelines in former processing equipment and properly disposition the removed materials and equipment off-site.

KEY MILESTONES	STATUS	DUE DATE
Submit Annual Work Procedures for 1994	Open, ahead of schedule	June 30, 1994

The Operational Readiness Review, which will allow Safe Shutdown to proceed with removal of hold-up materials from equipment and lines, was submitted to DOE-FN on August 3, 1993. DOE-FN determined that a Readiness Assessment, rather than an Operational Readiness Evaluation, would be done to assess the adequacy of the Safe Shutdown Program Planning and Implementation so that field work can proceed. The DOE Operational Readiness Assessment board transmitted four (4) pre-start and two (2) post-start findings and several observations to FERMCO on November 17, 1993. FERMCO is actively addressing the findings and observations identified by the DOE.

Equipment and Material Assessments (formerly Preliminary Assessments) are continuing. Field evaluations of Plants 1, 4, 7, 8, and 9 have been completed. The field evaluation of Plant 5 is in process. Red-line, as-built floor plan drawings are being prepared for Plant 5 to reflect present equipment location.

The following is the status of expense items: 2,963 expense items are currently in the data base; 1,496 have been field verified; 578 are on a "shopping list" to ascertain on-site use; 1,042 have been transferred to Maintenance; and 126 have been placed on AC-563 Forms to be excessed. These numbers are expected to fluctuate from month to month as field verification is conducted.

The following is the status of capital equipment: of an estimated 1,697 total number of items, 1,140 have been put on AC-563 Forms to be excessed, and 557 have been identified as "In Use/Future Use" items. The number of items on AC-563 Forms and the "In Use/Future Use" listing may vary due to change of status of equipment items.

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Removal Actions

RA No. 12, Safe Shutdown (continued)

Six hundred eighty-seven (687) maintenance work orders to isolate and disconnect all utilities/energy sources from equipment not in use have been prepared. Of these, 355 have been completed. Field verification of the completed orders is ongoing. Completion of these work orders is a preliminary step for removal of hold-up material from the equipment in preparation for equipment removal and decontamination and decommissioning. These numbers may vary from month-to-month due to change in status of the equipment.

Phase II of the 4A Metal Removal Project covers the shipment of approximately 1,028 metric tons of uranium of Material Description Code 228 to the Nevada Test Site (NTS). Actual removal of the material from the site is contingent upon approval of the waste stream by NTS. Approval was expected by the end of November 1993; however, it is now projected for late December 1993 or early January 1994. Shipments are projected to commence in January 1994 once approval is received.

During November 1993, a contract was signed with the customer who purchased the Mark 31 depleted derbies. Once internal documentation is complete, shipment of this material will begin. The customer has requested two truckloads on a "Rush" basis. The remainder will be shipped at one (1) load per month for completion by December 31, 1996. The scope of this contract is to remove 973,651 net pounds (440 metric tons uranium) from the FEMP.

The contract for the sale of normal and enriched uranium, which is being managed by Westinghouse Hanford Company (WHC), was not awarded in November 1993 as had been projected; it is in the DOE-Richland Office for approval.

During December 1993, the FEMP will continue following the progress on contracts for the sale of other portions of the uranium inventory, issuing work orders for utility isolation work and following completion of the Readiness Assessment. Other key efforts include continuing to develop implementation plans for removing materials from process equipment, and continuing to verify equipment and material evaluations for Plant 5.

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Removal Actions

RA No. 13, Plant 1 Ore Silos

The Plant 1 Ore Silos Removal Action will include the dismantling of the 14 Plant 1 Ore silos and their support structure. This dismantling will eliminate the potential threat of additional material releases and the safety hazard due to structural deterioration of the silos and their support structure. The activities in this removal action will include characterization, removal, containerization, and disposal of the materials making up the above-ground portion of the facility.

During November 1993, a concrete cylinder and two cones were removed, size-reduced and placed in 7A boxes for shipment to NTS. A total of two complete concrete silos have been size-reduced since start-up of the size reduction facility. The ladders and platforms have been removed from the sides of the tile silos. Martech, Inc. completed cutting the cap free on the third concrete silo. The size reduction operation was shut down on November 19, 1993 because a lifting sling broke during removal of a piece of cone from a cart. An investigation of the incident is being performed by the DOE-FN and FERMCO.

December 1993 activities will include removing and size-reducing the remaining concrete silos, completing the tile silo scaffolding installation, and repairing the deteriorated tile on the southwest silo.

KEY MILESTONES	STATUS	DUE DATE
Complete Removal Action	Open, ahead of schedule	December 19, 1994

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Removal Actions

RA No. 14, Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator

This removal action will include the isolation or removal and disposition of contaminated soils in the vicinity of the Sewage Treatment Plant (STP). This action will eliminate the potential threat of additional material releases to the environmental media through migration. The activities in this removal action will include characterization, removal, and storage/disposal of the materials.

The revised Work Plan Addendum was submitted to the EPAs on July 12, 1993. A conditional approval was received from Ohio EPA on August 19, 1993. U.S. EPA approval was received August 24, 1993.

The off-property area immediately east of the sewage treatment plant was backfilled with topsoil after the verification samples confirmed that the area was below the action level. The property line fence was removed along the wooded area located off-property and north of the STP. Removal of the trees and the vegetation in the area began. The trees were being cut into small manageable pieces, surveyed by a rad tech, and then released to the land owner for his use. The small branches and brush were relocated to an area west of the meteorological tower to be used as an animal habitat. A walkover survey was completed once 50% of the trees were cut down. The walkover survey results will be compared to the laboratory results from soil samples taken at the same areas as the walkover survey.

Scheduled December 1993 activities include completion of the tree and vegetation removal. Intrusive soil sampling in and around the wooded area is scheduled to start December 3, 1993. Excavation of the tree stumps and root systems is planned to begin about mid-month. Results from the sampling around the Thorium hotspots should be complete this month.

KEY MILESTONES	STATUS	DUE DATE
Phase IV - Completion of off-property and on-property excavations	Open, ahead of schedule	February 25, 1994
Phase IV - Submittal of Final Report	Open, on schedule	September 26, 1994

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Removal Actions

RA No. 15, Scrap Metal Piles

The Scrap Metal Piles Removal Action will detail the stabilization and disposition of LLW scrap metal currently stockpiled on-site. This removal action will minimize material releases to the environment. Approximately 1,400 tons of scrap copper along with approximately 2,200 tons of recoverable scrap metals are the focus of this removal action.

A total of 105 tons of non-ferrous metals has been shipped to Quadrex. Shipping of non-ferrous metal is complete. Shipping of ferrous metal to SEG is complete, a total of 2,278 tons. Demobilization and decontamination of the B69 Pad are complete. Through September 18, 1993, 1,807 tons of ferrous metal have been melted. Metal melting will resume the first week in December, 1993, however all remaining metal will be sorted again per SEG's new procedure to identify lead in the stockpile. Metal melting is scheduled for completion by the end of December, 1993. Quadrex began off-site processing of non-ferrous metal on September 16, 1993.

The present removal action schedule shows contract award/Notice to Proceed (NTP) on January 1, 1994, for the scrap copper wire inventory. The subcontractor's Removal Action Project Plan is expected 30 days after NTP. The delay in the procurement of a successful vendor was caused by the need to provide more radiological characteristic data on the copper pile.

KEY MILESTONES	STATUS	DUE DATE
Complete Phase I	Open, ahead of schedule	March 30, 1994
Phase I - Submit Final Report	Open, ahead of schedule	September 30, 1994
Phase IIB: Submittal of Subcontractor's Removal Action Plan	Open, behind Schedule	September 30, 1993
Phase IIB: Submittal of Final Report	Open, behind schedule	March 30, 1995

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Removal Actions

RA No. 16, Collect Uncontrolled Production Area Runoff – Northeast

The scope for this removal action was defined as management of radioactivity contaminated storm water runoff from the production area. It involved intercepting and redirecting uncollected storm water to the existing storm sewer system. Methods for redirecting these flows included intercepting the runoff with trench drains and curbs, and the addition of pipe and catch basic components.

This removal action was completed and placed into operation, ahead of schedule, on August 20, 1993.

RA No. 17, Improved Storage of Soil and Debris

This removal action will establish a site-wide management concept and implementation strategy for the improved storage of existing and future generated soils and debris at the FEMP. This removal action also includes the design and construction of four containment structures for the appropriate improved storage of contaminated soil and debris on site. This will eliminate the potential threat of additional material releases to the environment due to wind, rain, or vehicular traffic. Other activities in this removal action include the revision of site procedures to enhance the characterization, interim storage management of the contaminated soil and debris materials, until final remediation under Operable Unit 3.

The revised Request for Exemption from installing automatic sprinklers in tension support structures was submitted to DOE-HQ on June 7, 1993. The Request for Exemption was conditionally approved by DOE EM-331 on July 29, 1993. All design issues for the first design package have been agreed upon by DOE-FN and FERMCO as of June 11, 1993. DOE-FN granted approval on July 27, 1993 to complete the design for the Central Storage Facility pending NEPA review Proposed Plan/Environmental Assessment (PP/EA) as part of the RA No. 17 Phase I Design Package. The direction to complete with Phase I design package and begin Part II design package [Decontamination Facility Pad (DFP) only] was given on August 20, 1993.

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Removal Actions

RA No. 17, Improved Storage of Soil and Debris (continued)

November activities included presentation of the 50% design package for the DFP facility on November 1, 1993, followed by FERMCO review and comment and return of comment responses on this design package to the A/E on November 24, 1993. Completion of the characterization report on November 24, 1993 that provided the proposed management selection for the Soil and Rubble Pile north of Third Street based on recent sampling data results received. Direction to proceed with the Soil and Rubble Pile management alternative design will not be given to the A/E until the EPA approves the proposed plan to regrade and seed the pile. FERMCO submitted response to EPA comments on the PP/EA (the document that represents the needed NEPA approval for the CSF) on November 12, 1993.

December 1993 activities will include CRU3 approval of the Certified for Construction (CFC) design package for Phase I and transfer to the Construction Division for bid package preparation. Completion of the CFC design package for the DFP part of Phase II design is expected by December 31, 1993. Written approval of the Fire Exemption Request submitted to DOE-HQ for the three tension support structures identified in the RA 17 scope is expected in December 1993.

RA No. 18, Control Exposed Material in Pit 5

The final report was submitted to U. S. EPA and Ohio EPA on October 18, 1993.

RA No. 19, Plant 7 Dismantling

The Plant 7 Dismantling Removal Action will include dismantling and disposition of the Plant 7 structure. This dismantling will eliminate the threat of additional contaminant releases and the safety hazard due to histoplasmosis. The activities in this removal action will include characterization, gross decontamination, removal, dismantling, packaging, and disposal and potential recycling of the materials making up the above-ground portion of the facility.

The draft final Removal Action Work Plan (RAWP) was submitted to the EPAs on June 30, 1993. Ohio EPA granted conditional approval on July 12, 1993 with one comment, and U.S. EPA Approval was dated July 30, 1993. The Ohio EPA's comment has been addressed and submitted via letter attachment, dated August 24,1993. The RAWP will not be revised and resubmitted.

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Removal Actions

RA No. 19, Plant 7 Dismantling (continued)

Phase I activities began in May 1993 and were completed in August 1993 under the Safe Shutdown Program. Phase II activities began on July 21, 1993 and continued through October. Asbestos abatement activities within Plant 7 were completed in early October. Gross Decontamination activities commenced in early October and were essentially finished November 5, 1993.

The bid package went out to pre-qualified bidders on July 30, 1993. There was a pre-bid meeting at the FEMP on August 9, with a walk-through of Plant 7. Bids were received and opened on August 25, 1993; there were nine valid bidders on the contract. FERMCO Construction and DOE approved the apparent low bid by Project Development Group (PDG), Inc. of Monroeville PA for $1.8M to Dismantle Plant 7 and the Davis-Bacon determination for this work and related small projects on November 12, 1993.

The Plant 7 Dismantling Subcontract was awarded by FERMCO on November 16, 1993, ahead of the 90-day bid expiration date of November 25 and the award fee milestone date of December 1, 1993. The Notice to Proceed was issued to the subcontractor on December 1, 1993. A kick-off meeting with the subcontractor is scheduled for December 7, 1993.

RA No. 20, Stabilization of UNH Inventories

The Stabilization of UNH Inventories Removal Action will remove and prepare for safe storage approximately 230,000 gallons of acidic UNH that is currently stored in 21 tanks in and around Plant 2/3. Existing processing equipment will be used to neutralize the solutions, filter the precipitate, and package the resulting filter cake in double containment for safe storage. This activity was previously part of RA No. 12, Safe Shutdown, but is being accelerated as a separate expedited response.

Processing remains on-hold pending implementation of the recommendations resulting from the Class B investigation of an incident that occurred on April 27, 1993.

RA No. 21, Expedited Silo 3

The Expedited Silo 3 Removal Action Final Report was submitted to the U.S. EPA on February 24, 1993.

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Removal Actions

RA No. 22, Waste Pit Area Containment Improvement

The final report was submitted to the U.S. EPA and Ohio EPA on October 18, 1993.

RA No. 23, Inactive Flyash Pile

The final report was submitted to EPA on June 30, 1993.

RA No. 24, Pilot Plant Sump

This sump is located on the southwest side of the Pilot Plant. The sump consists of a stainless steel cylinder approximately 2-feet in diameter and 10-feet deep. This sump was built to remove liquids from the floor drains of the Pilot Plant and was used only during the renovation of the Pilot Plant in 1969. The sump is filled with a thick liquid and sludge. Analytical results of the sump contents show high concentrations of metals: lead, copper, chromium, nickel, as well as thorium and volatile organic compounds.

The field portion of the removal action was completed successfully, safely and without incident during the week of October 11, 1993. The final report is scheduled for submission to DOE-FN by December 15, and to the EPAs by December 22, 1993.

RA No. 25, Nitric Acid Tank Car and Area

The Nitric Acid Rail Car was formerly located on the northern perimeter of the production area and east of Building 63. The FEMP RCRA Part A and Part B application identify this tank car and area surrounding it as a Hazardous Waste Management Unit (HWMU).

This high-grade, stainless steel tank car has a capacity of approximately 100,000 gallons and measures approximately 10-feet wide by 40-feet long by 15-feet high. This unit operated from 1952 until about 1989. The tank car stored nitric acid used at the FEMP. Based on recent analysis, the tank car now contains 50-100 gallons of nitric acid. This removal action includes removing residual contents from the tank car followed by decontamination and disposal of the tank car.

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Removal Actions

RA No. 25, Nitric Acid Tank Car and Area (continued)

All rinsates were transferred to Tank F1-24 of the Nitric Acid Recovery System. The results of the verification samples collected from the base of the excavation of the entire HWMU indicated chromium to be below the background. The field portion of the removal action was completed successfully, safely, and without incident and all of the objectives were met. The Final Report was submitted to DOE-FN on October 18, 1993 and was transmitted to the EPAs on November 2, 1993.

RA No. 26, Asbestos Removals (Asbestos Program)

This removal action documents asbestos abatement activity at the FEMP to mitigate the potential for contaminant release and migration. Abatements within the Asbestos Program to date include small-scale in-situ repairs, encasement, encapsulation, and removals, and the initiation of large-scale asbestos abatement within Plant 7.

The June 1993 Work Procedures submittal included Large-Scale Asbestos Work Practices, which applies to all asbestos abatement on-site (both small- and large-scale). This submittal also provided generalizations of all abatement activities to-date as well as planned abatement activities for the next year, including several large-scale abatement projects. The U.S. EPA stated on July 28, 1993 that it had no comments on the draft annual work procedures update, therefore no additional submittal is required.

The FEMP is using the Large-Scale Asbestos Work Practices to perform the asbestos abatement activities associated with RA No. 19, Plant 7 Dismantling. Plant 7 interior Thermal System Insulation and miscellaneous asbestos-containing materials removal was completed on all seven floors by the end of September 1993. The No. 4 Power Feeder Removal Pilot Project was tested on Plant 7, with successful removal of three 200 foot 500 cm cables.

Planned activities for December 1993 include the continued removal of Thermal System Insulation from the outside of pipes and valves around the site. There are no current large-scale asbestos abatement activities due to the lack of funding. O & M activities continue with abatement and repair of asbestos on the outside piping with about 9% completed. O & M activities have completed about 30% of asbestos work orders.

Due to the deteriorated condition of the transite siding, roofing on Plant 2/3 Digester, Extraction Areas, and Plant 2D Metal Dissolver Building, interest and funding are being generated to have PARSONS resume this portion of the design. Resumption in the design would allow replacement/repair and containment actions to be taken to prevent further deterioration and hazards to personnel in those areas.

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Removal Actions

RA No. 27, Management of Contaminated Structures at the FEMP

The final EE/CA was approved June 16, 1993.

RA No. 28, Contamination at the Fire Training Facility

This removal action will address removal, decontamination and disposal, treatment or storage of all structures, tanks, equipment, the underground sump and oil/water separator, in addition to addressing "hot spots" soil staining, and any other surface soils from which a threat of migration of contamination exists.

U.S. EPA conditional approval of the Removal Action Work Plan/Closure Plan Information and Data Package (RAWP/CPID) was received August 6, 1993 and Ohio EPA disapproval was dated August 4, 1993. The revised RAWP/CPID and comment-responses were submitted to the DOE-FN on September 30, 1993 and subsequently transmitted to the EPAs on October 5, 1993. Comments from Ohio EPA on the final RAWP/CPID were received on November 16, 1993. During the month of December, responses to Ohio EPA comments will be prepared. Planning for this removal action will continue during December 1993.

RA No. 29, Erosion Control at Inactive Flyash Pile

This "time critical" removal action was performed in two phases. Phase I was an interim action completed on May 4, 1993, which involved the placement of a 220-foot long rock berm along the bank of Paddy's Run Creek immediately adjacent to the Inactive Flyash Pile. This initial action was implemented to mitigate the immediate threat of erosion induced slope failure and discharge of flyash to Paddy's Run Creek. Phase II involved design activities to determine the final remedy and implementation of the same. Construction of the final remedy, which is an enhancement of the initial rock berm, began on August 23, 1993 and was completed on September 9, 1993. The final report on this action is being prepared for submittal to EPA in February, 1994.

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Remedial Investigations/Feasibility Studies

1.0 Operable Unit 1

Operable Unit 1, as defined in the Amended Consent Agreement, includes Waste Pits 1 - 6, Clearwell, Burn Pit, berms, liners, and soil within the operable unit boundary.

1.1 Treatability Studies

Scope:

The Operable Unit 1 treatability studies will evaluate several treatment process options identified in the Operable Unit 1 Initial Screening of Alternatives document, including cement stabilization and vitrification. The FEMP will evaluate the technical feasibility of these technologies through a series of experiments on both composite waste samples and individual strata samples. Where it is appropriate, the FEMP will investigate performance criteria, including formulation ranges, compressive strength, leachability, bulking factor, and permeability. Cement stabilization binding agents, including Portland cement, flyash, blast furnace slag, and sodium silicate, are being evaluated. Clay (attapulgite and clinoptilolite) will be added to reduce the leachability of metals in the waste. Glass formers and modifiers considered for vitrification are flyash, soil, and sodium hydroxide.

The stabilization testing was planned to be conducted in two phases. The preliminary phase, now complete, consisted of reagent range-finding experiments on a pit-by-pit basis using composite samples from individual waste pits. The advanced phase consisted of testing on strata samples where available. Each phase contained two stages permitting additional reagent testing as necessary. The advanced phase was discontinued after evaluation of preliminary phase data indicated further test work was unnecessary.

The FEMP will investigate a variety of drying methods including flash drying, rotary drying, and microwave drying. The FEMP will also test agglomeration of dried particles to reduce dusting, depending on the drying method and final particle size of the dried waste material. Polymer encapsulation will be studied using several types of low density polyethylene.

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Remedial Investigations/Feasibility Studies

1.1 Treatability Studies

Status:

The Final OU1 Treatability Study Report was submitted to DOE-FN November 30, 1993. The delivery to DOE-FN completed an Award Fee Milestone.

The Cooperative Remedy Screening Program (CRSP) Work Plan has been received from the Accelerated Life Testing & Environmental Research (ALTER) Facility at UC. This work plan is used to study thermal processing and particulate agglomeration as a remediation technology for CRU1 wastes.

Issues/Corrective Actions:

None to report.

1.2 Remedial Investigation

Scope:

The FEMP will prepare an RI Report in accordance with the U.S. EPA Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (EPA Directive 93553-01) and the approved Risk Assessment Work Plan Addendum.

Status:

U.S. EPA comments on the Draft OU1 Remedial Investigation are scheduled to be received on Monday December 6, 1993. Comments on the Baseline Risk Assessment portion of the report are expected around December 15, 1993.

Issues\Corrective Actions:

None to report.

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Remedial Investigations/Feasibility Studies

1.2 Remedial Investigation (continued)

OPERABLE UNIT 1 REMEDIAL INVESTIGATION REPORT **PRIMARY**

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Details the nature and extent of contaminants within the Operable Unit 1 study area. Estimates the volume of contaminated media and materials. Provides a baseline risk assessment and establishes remedial action objectives.	10/4/93 A	12/11/93 C	01/10/94 C

C = Consent Agreement Date
A = Actual

1.3 Feasibility Study

Scope:

The Feasibility Study evaluates remedial alternatives in detail with respect to the nine evaluation criteria developed by the U.S. EPA. The study analyzes remedial alternatives individually against each criterion and then compares them against one another to determine their respective strengths and weaknesses and to identify the key tradeoffs that must be balanced for the site.

Status:

The Draft OU1 Feasibility Study/Proposed Plan (FS/PP) was submitted to DOE-FN/HQ on November 9, 1993. Comments are expected on December 7, 1993.

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Describes and analyzes potential remedial alternatives. A comparative analysis is performed for all alternatives.	03/07/94 C	05/06/94 C	06/04/94 C

C = Consent Agreement Date A = Actual

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Remedial Investigations/Feasibility Studies

1.4 Planned Activities for December 1993

- Begin revision and EPA comment incorporation into the Final OU1 Remedial Investigation/Baseline Risk Assessment Report
- Begin revision and DOE comment incorporation on the Draft OU1 Feasibility Study/Proposed Plan
- Host an OU1 Public Workshop on December 7, 1993, regarding the OU1 Draft Remedial Investigation Report.

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Remedial Investigations/Feasibility Studies

2.0 Operable Unit 2

Operable Unit 2, as defined in the Amended Consent Agreement, includes the flyash piles, other South Field disposal areas, lime sludge ponds, Solid Waste Landfill, berms, liners, and soil within the operable unit boundary.

2.1 Field Investigation

2.1.1 RI/FS Work Plan Addendum for Operable Unit 2

Scope:

DOE-FN submitted the Remedial Investigation Report for Operable Unit 2 to the U.S. EPA and Ohio EPA in October 1992. Based on December 17, 1992, review comments from the U.S. EPA and Ohio EPA on the RI Report and subsequent disapproval of the document, Operable Unit 2 will require a second phase of Remedial Investigation sampling and analysis in order to meet the objectives of the March 1988 RI/FS Work Plan.

Status:

The tasks to produce an accelerated Revised Draft OU2 RI Report have been successfully completed. The Revised Draft OU2 RI Report was submitted to DOE, according to the revised schedule, on November 12, 1993. This date was established to allow the designated review periods by DOE and enable FERMCO to submit the CRU2 Revised Draft RI Report to EPA on February 18, 1994. The February 18, 1994 submittal date to EPA is required by the Agreement Resolving Dispute Concerning Denial of Request For Extension of Time To Submit Operable Unit 2 Documents (1993), an amendment of the USEPA Amended Consent Agreement (1991).

DOE is currently reviewing the CRU2 Revised Draft RI Report and is scheduled to provide comments on December 14, 1993. DOE comments will be incorporated in the document with a second submittal to DOE scheduled for January 14, 1994. Final comments from DOE will be received on February 1, 1994. The OU2 Revised Draft RI Report will be completed by February 14, 1994 for submittal to EPA on February 18, 1994.

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Remedial Investigations/Feasibility Studies

2.1 Field Investigation (continued)

Issues/Corrective Actions:

The RI schedule for the fate and transport and risk assessment tasks have been successfully accelerated to compensate for delays in completion of the sample analysis and data validation activities.

Fate and transport modeling and baseline risk assessment were conducted simultaneously to allow completion of the revised Draft RI Report for submittal to DOE as scheduled on November 14, 1993. Laboratory analyses of samples collected during the second phase of the field investigation were completed in August 1993, with entry of the validated results completed on September 30, 1993. Data reduction and evaluation tasks have been completed.

OPERABLE UNIT 2 REMEDIAL INVESTIGATION REPORT **PRIMARY**

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Submit RI Report/Baseline Risk Assessment	02/18/94 C	04/15/94 C	05/13/94 C

C = Consent Agreement Date

2.2 Feasibility Study

Status:

FERMCO is currently preparing the Draft OU2 Feasibility Study Report for submittal to DOE, according to the revised schedule, on January 28, 1994.

Issues/Corrective Actions:

Evaluate the revised Remedial Investigation results, the RI schedule is being accelerated.

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Remedial Investigations/Feasibility Studies

2.2 Feasibility Study (continued)

Develop Preliminary Remedial Goals for Solid Waste Landfill, Lime Sludge Ponds, Active Flyash Pile, Inactive Flyash Pile, and South Field.

Prepare detailed analysis of alternatives.

OPERABLE UNIT 2 FEASIBILITY STUDY REPORT — PRIMARY

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Describes and analyzes potential remedial alternatives. A comparative analysis will be performed for all alternatives.	04/29/94 C	06/27/94 C	07/25/94 C

C = Consent Agreement Date

2.3 Planned Activities for December 1993

- Continue work on the Feasibility Study
- Complete Geotechnical Sampling for the Solid Waste Landfill and the Operable Unit 2 disposal cell
- Initiate Treatability Study for Lime Sludge/Flyash.

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Remedial Investigations/Feasibility Studies

3.0 Operable Unit 3

Operable Unit 3, as defined in the Amended Consent Agreement, includes the Production Area and production-associated facilities and equipment (including all above- and below-grade improvements) including all structures, equipment, utilities, drums, tanks, solid waste, waste, product, thorium, effluent lines, K-65 transfer lines, wastewater treatment facilities, fire training facilities, scrap metal piles, feed stocks, and coal pile.

3.1 RI/FS Work Plan

Scope:

The RI/FS Work Plan will detail the approaches and assumptions to be applied to gathering information and the presenting results. Specifically, the Operable Unit 3 RI/FS Work Plan identifies the approach to be employed for baseline risk assessment and the specific sampling and sampling strategy to be performed during the field investigation program.

Status:

The Ohio EPA provided comments and granted conditional approval of the RI/FS Work Plan Addendum on February 16, 1993. In an April 14, 1993, letter, the U.S. EPA conditionally approved the revised Addendum, based on the comment-response package provided to the EPAs on March 19, 1993. After incorporation of the changes proposed in the comment-response package, and addressing some minor U.S. EPA concerns, the U.S. EPA provided final approval of the RI/FS Work Plan Addendum by letter of August 4, 1993.

Eleven Field Work Packages were completed, approved, and distributed in November, with the sampling identified therein, encompassing a large extent of the samples anticipated to be taken in the next couple months of Operable Unit 3 RI/FS sampling.

Issues/Corrective Actions:

None to report.

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3.2 Field Investigation

Scope:

The Operable Unit 3 field investigation program will gather information necessary to perform a baseline risk assessment, further identify the nature of contaminants in the operable unit, refine estimates of volume of contaminated materials, and support initial screening of applicable alternatives.

Status:

Field screening for chemical and metals contamination continued throughout November 1993 using two field portable X-Ray fluorescence analyzers, a field portable gas chromatograph and photo ionization detectors. Chemical screening was performed, to support selection of intrusive media locations, on the Soil Piles, Coal Pile Runoff Basin, Incinerator Building, Metals Production Plant, Biodenitrification Towers, Plant 6 Pads, and the Boiler Plant.

Intrusive media sampling was initiated in the Scrap Recovery Plant, Pilot Plant Annex, Incinerator Building, Metals Production Plant, Coal Pile Runoff Basin, Ozone Building, West Pad Bldg 65 and Soil Piles.

Intrusive media sampling for radiological analysis was initiated on November 15, 1993. Samples are currently being archived under Chain-of-Custody until radiological laboratory capacity is available in January 1994. A total of 70 intrusive samples were collected in November 1993.

Issues/Corrective Actions:

None to report.

3.3 Treatability Studies

Scope:

The treatability studies gather information necessary to support remedy selection, engineering, and implementation. Specific studies will be structured to gather the information necessary for specific technologies identified through screening as part of leading alternatives.

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Remedial Investigations/Feasibility Studies

3.3 Treatability Studies (continued)

Status:

The FEMP will conduct remedy screening treatability studies in parallel with the field investigation and alternatives development. Operable Unit 3 is developing a Treatability Study Work Plan to include initially-identified studies to be performed. Current actions involve the description of planned testing for the initial studies. The plan is scheduled to be complete to meet a January 15, 1994, due date to the EPA; however, additional tests will be planned and submitted as Addenda to the Treatability Study Work Plan. A draft document has been submitted for internal and DOE-FN review on October 19, 1993. DOE comments were received November 16, 1993.

Issues/Corrective Actions:

None to report.

3.4 Remedial Investigation Report

Scope:

The Remedial Investigation Report provides a summary of the field investigations and supports the Feasibility Study by defining the nature and extent of the contaminants in Operable Unit 3, estimating the volume of contaminated media and materials, and providing a baseline risk assessment which establishes remedial action objectives.

Status:

Formal development of the RI has begun in the form of report planning, RI Report layout, Baseline Risk Assessment Report layout, non-data dependent background information collection/integration, and Baseline Risk Assessment scenario development. Data management procedures are being developed to track and manipulate field characterization data.

Issues/Corrective Actions:

None to report.

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Remedial Investigations/Feasibility Studies

3.5 Feasibility Study

Scope:

The Feasibility Study evaluates alternatives in detail with respect to the nine U.S. EPA evaluation criteria. The FEMP analyzes the alternatives individually and then compares to one another to determine respective strengths and weaknesses and to identify key tradeoffs. The Feasibility Study also includes an overall assessment of site residual risks through a Comprehensive Response Action Risk Evaluation.

Status:

Operable Unit 3 has not begun formal activities on the Feasibility Study, although alternatives research and document layout planning are underway. As a result of the development of a Proposed Plan for Interim Action, the Feasibility Study will not address initial decontamination or dismantling, but will focus on treatment and disposal issues, which remain the scope of the final action.

Issues/Corrective Actions:

None to report.

3.6 Interim Action - Proposed Plan/Interim Action - Record of Decision

Scope:

The Interim Action Record of Decision (IROD) will document the preferred alternative from the Interim Action Proposed Plan/Environmental Assessment (PP/EA), as amended through public comment. The IROD draft will be submitted for U.S. EPA review and approval and, once approved, will form the basis for completing the decontamination and dismantlement action for Operable Unit 3 components.

Status:

The draft Interim Action PP/EA was submitted to the U.S. EPA on August 16, 1993. U.S. EPA and Ohio EPA comments were received October 18, 1993. A revised PP/EA was submitted to the EPAs on November 10. U.S. EPA comments were received November 30; FERMCO responses to EPA comments were submitted to DOE on December 1, 1993. Verbal Ohio EPA conditional approval was received on December 6, 1993. A draft IROD will follow U.S. EPA approval of the draft PP/EA and subsequent public comment.

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Remedial Investigations/Feasibility Studies

3.6 Interim Action - Proposed Plan/Interim Action - Record of Decision (continued)

Issues/Corrective Actions:

None to report.

3.7 RD/RA Work Plan

Scope:

The Interim RD/RA Work Plan will detail how design activities will be performed to meet the scope of the IROD for facility decontamination and dismantlement, and how this design will then be implemented through the Remedial Action.

Status:

The annotated outline for the RD/RA Work Plan has been further expanded and continues to be improved. Task groups have been developed based upon distinct activities associated with the development of the Work Plan. Meetings of the Group Coordinators for each of the task groups, as well as meetings for each of the individual task groups, are held at least every other week, or more often, if necessary. With the RD/RA Work Plan being significantly dependent on a clear definition of both the programmatic and implementation strategies (i.e., the construction sequencing and activities coordination, and sequencing within a grid, respectively), additional activities are being undertaken, primarily through the development of a Design Engineering Construction (DEC) Team, to assess, formulate, and document these strategies.

Issues/Corrective Actions:

None to report.

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3.8 Planned Activities for December 1993

- The draft Treatability Study Work Plan will be resubmitted for DOE review on December 8; plans are to submit the document to the EPAs by December 22, 1993

- Develop comment-response package for U.S. and Ohio EPA comments on the Operable Unit 3 Proposed Plan/Environmental Assessment (PP/EA) and resubmit a revised PP/EA

- Continue Remedial Investigation/Baseline Risk Assessment Report planning and development; evaluate field characterization data management procedures for effectiveness

- Continue chemical screening and intrusive media sampling. Samples for radiological analysis will continue to be archived

- Continue development of the RD/RA Work Plan for Interim Action, with continued meetings within and among the task groups

- Continue writing of Field Work Packages; continue radiological and chemical screening to support the Field Work Packages

- Continue preparation of test-specific work plans for initially identified Treatability Studies.

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4.0 Operable Unit 4

Operable Unit 4, as defined in the Amended Consent Agreement, consists of Silos 1, 2, 3, and 4, the silo berms, the Decant Sump Tank System, and soil within the operable unit boundary.

4.1 Field Investigation (Sampling West of K-65 Silos 1 and 2)

Scope/Status:

The Field Investigations in support of the Operable Unit 4 Remedial Investigation, and Feasibility study reports have been completed. Data from the additional sampling west of K-65 Silo's 1 and 2 has been incorporated in the OU 4 FS. Operable Unit 5 will continue to monitor water levels of wells 11204, 11205, 11206, and 11207. Monitoring Well 11207 will be sampled if and when the well yields a sufficient volume of water.

Data from this sampling program will be incorporated into the Operable Unit 5 RI report.

Issues/Concerns

Samples collected from perched water in the Operable Unit 4 area indicate that contamination has occurred directly beneath and to the west of Silos 1 and 2. Groundwater quality data collected from perched water indicate the presence of constituents which are consistent with those found in the Decant Sump. The data show no direct link between contamination in the Great Miami Aquifer and the contents of the Operable Unit 4 silos.

4.2 Treatability Studies

Scope:

A Treatability Study Work Plan addresses the additional information that is required to support the FS and subsequent remedy selection for Operable Unit 4. There are two separate treatability studies to support the Operable Unit 4 FS. One study considers cement stabilization of Silos 1, 2, and 3 material and chemical extraction, leachate precipitation, and leachate stabilization of Silos 1 and 2 material. The second treatability study considers the vitrification of Silos 1, 2, and 3 material.

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4.2 Treatability Studies (continued)

Status:

Treatability studies for Operable Unit 4 have been completed. The results from the vitrification studies, the Cement Stabilization Preliminary and Advanced Phase Tests, and the Chemical Extraction test have been summarized and incorporated in Appendix C of the Operable Unit 4 Feasibility Study.

The Cement Stabilization Optional Phase Treatability testing report has been completed and is included in the Operable Unit 4 Feasibility Study as Appendix H.

4.3 Remedial Investigation Report

Scope:

The RI provides a summary of the field investigations and supports the FS by defining the nature and extent of the contaminants in the Operable Unit 4 study area, estimating the volume of contaminated media and materials, and providing a baseline risk assessment which establishes remedial action objectives.

Status:

The Operable Unit 4 Remedial Investigation Final Report was transmitted to the U.S. EPA on October 29, 1993. Ohio EPA approved the document on November 23, 1993. U.S.EPA is currently reviewing the document.

4.4 Feasibility Study

Scope:

The FS evaluates remedial alternatives in detail with respect to the nine evaluation criteria developed by the U.S. EPA. The remedial alternatives are analyzed individually against each criterion and then compared against one another to determine their respective strengths and weaknesses, and to identify the key tradeoffs that must be balanced for the site.

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4.4 Feasibility Study (continued)

Status:

U.S.EPA and OEPA Comments on the OU 4 Feasibility Study were received on November 12, 1993. These comments are currently being responded to, and the Feasibility Study is being revised as necessary. The revised FS will is scheduled to be re-submitted to the U.S. EPA on December 28, 1993.

Issues/Corrective Actions:

The Operable Unit 4 Feasibility Study contains the first site-wide integrated FS/EIS and also the first site-wide CRARE. Presentation of the required technical information and integration with the RI/FS guidance for both documents are priority issues.

OPERABLE UNIT 4 FEASIBILITY STUDY **PRIMARY**

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Describes and analyzes potential remedial alternatives. A comparative analysis is performed for all alternatives.	09/10/93 C 09/09/93 A	11/10/93 C 11/12/93 A	12/28/93 C

C = Consent Agreement Date

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4.5 Proposed Plan

Scope:

The Proposed Plan identifies the remedial alternatives being considered for the remediation of Operable Unit 4 in the Feasibility Study for Operable Unit 4. The preferred alternative and the reasons for its selection will also be presented. The DOE-FN and the U.S. EPA will solicit public comments on the alternatives presented including the preferred alternative.

Status:

U.S.EPA and OEPA Comments on the OU 4 Proposed Plan were received on November 12, 1993. These comments are currently being responded to, and the Proposed Plan being revised as necessary. The revised Proposed Plan is scheduled to be re-submitted to the U.S. EPA on December 28, 1993.

Issues/Corrective Actions:

None

OPERABLE UNIT 4 PROPOSED PLAN **PRIMARY**

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Identifies potential remedial alternatives as listed in the FS and presents the preferred alternative to the U.S EPA and the public.	09/09/93 A	11/10/93 C 11/12/93 A	12/28/93 C

C = Consent Agreement Date

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4.6 Planned Activities for December 1993

- Complete response to U.S. EPA and OEPA comments on the OU 4 Feasibility Study and the Proposed Plan. Resubmit the FS/PP to the U.S.EPA and OEPA
- Continue work on the Operable Unit 4 Administrative Record for the RI and FS Reports
- Continue preparation of the Record of Decision based on the results of the FS and Proposed Plan
- Continue to monitor water levels for Monitoring Well 11207.

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5.0 Operable Unit 5

Operable Unit 5, as defined in the Amended Consent Agreement, includes: groundwater, surface water, soil not included in the definitions of Operable Units 1 through 4, sediment, flora and fauna.

5.1 RI Field Investigation

5.1.1 Operable Unit 5 Work Plan Addenda

Scope:

Soil and perched groundwater sampling was conducted in the following areas under this program: the Plant 1 Pad, the Southeast Quadrant of the Production Area, the Fire Training Area, the KC-2 Warehouse Area, Scrap Metal Area and Electrical Substation, and the K-65 Slurry Line and Clearwell Line.

Status:

Based on conditional approval from the U.S. EPA and Ohio EPA, field investigations for the above-mentioned areas began early in 1993 and were completed in September 1993. Responses to the agencies' additional comments were transmitted in July 1993. In order to reduce costs and save time, a supplement to the work plan is being prepared to document resolution of the comments and incorporate changes rather than issuing a revised work plan. This supplement was prepared in November 1993 and will be transmitted to the DOE in December 1993.

Issues/Corrective Actions:

None to report.

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5.1.2 Additional Operable Unit 5 Field Investigation Tasks

Scope:

The following seven site characterization programs make up this program:

- FEMP Trap Shooting Range Investigation
- Great Miami Riverbank Investigation
- Pilot Plant Drainage Ditch Seepage and Surface Water Background Investigation
- Surface and Subsurface Soil Sampling
- Additional Monitoring Well Installation and Well Abandonment
- Snapshot Monitoring Well Sampling and Surface Water/Sediment Sampling
- FEMP Glacial Overburden/Vadose Zone Hydraulic Investigation

Status:

Resolution to comments on the draft Project Specific Plans (PSPs) for these programs was the subject of an August 26, 1993 meeting with the U.S. and Ohio EPAs. In October, U.S. EPA approved all seven PSPs while Ohio EPA approved with additional comments. In order to reduce costs and save time, a supplement to each PSP is being prepared to document resolution of the comments and incorporate changes rather than issuing revised PSPs. Resolution for the Pilot Plant Drainage Ditch Seepage and Surface Water Background Investigation as well as the Outfall Line Investigation work plan were transmitted to DOE in November 1993. The remaining resolution documents were drafted in November and will be delivered to DOE in December 1993.

The sampling field work for the Operable Unit 5 RI Report was completed in September 1993 for six of the seven PSPs as well as for a few remaining tasks on older sampling plans. The aquifer pump test at Well 1785 near Plant 2/3, conducted the last week of October, indicated lower than expected permeability in the geologic materials penetrated by the well. The well was redeveloped and the test repeated during the first week of November 1993. This completed all field work being conducted for the Operable Unit 5 RI.

The Groundwater Monitoring staff are developing plans for removing Well 2561 (using FERMCO Construction Services personnel and equipment); removal is tentatively scheduled for mid-December 1993.

Issues/Corrective Actions:

None to report.

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5.1.3 Abandonment and Plugging of KC-2 Warehouse Well No. 67

Scope/Status:

During July 1993, attempts were made to remove a sediment-like material present in Well 67 of the KC-2 Warehouse, but due to the lack of progress, the project was halted. A fact sheet containing the analytical results of sediment and groundwater samples and a request to discontinue abandonment activities were prepared and submitted to the U.S. and Ohio EPAs in October. The fact sheet recommended that the well casing remain open until final closure of the KC-2 Warehouse so that groundwater samples could be collected on a semiannual basis for total uranium and HSL metals analyses. The fact sheet also stated that once the KC-2 Warehouse was decommissioned, further attempts would be made with larger equipment to remove the well casing from the ground. The Ohio EPA responded to the request and agreed with the findings and recommendations of FERMCO.

Issues/Corrective Actions:

None to report.

5.2 Treatability Study

Scope:

The Treatability Study provides information to support the Feasibility Study and subsequent remedy selection for Operable Unit 5. Specifically, the study will demonstrate the feasibility of soil washing as a remedial technology for cleaning soil. The study consists of two phases: I) remedy screening Stages 1 and 2, involving laboratory and bench-scale tests; and II) remedy selection using pilot-scale equipment. The study incorporates a physical separation/chemical extraction process that has the ability to separate a soil into different particle-size fractions. The process uses reagent formulas in the washing solutions to extract contaminants from the soil. The contaminants may be separated from the wash stream into a concentrated residue for further treatment.

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5.2 Treatability Study (continued)

Status:

Initial bench-scale studies were done on soil from the following areas: incinerator area (ID-A), Plant 1 Pad Area (ID-B) and maintenance building area (OU5-A). Results from these bench-scale studies were used to provide the initial operating conditions for start-up of the remedy selection soil washing pilot plant. Initial operating conditions included physical separation processes followed by chemical extraction with a dilute inorganic acid at an elevated temperature. The test system is designed to include spent extractant treatment.

After installing the equipment and training operations personnel, the soil washing pilot plant began processing radiologically contaminated soil, completing the ID-A and ID-B soil by early August. Results from the initial sample analysis, performed in the FERMCO on-site laboratory, were summarized and the mass balance calculated. FERMCO is evaluating the data to satisfy the requirement in the Operable Unit 5 Soil Washing Treatability Work Plan for completion of Stage 1 and Stage 2 work.

The soil treatability laboratory is being established at Fernald to support pilot plant testing and further bench testing for additional constituents of concern in support of all of FERMCO's CRU RI/FS studies. Government-owned laboratory and testing equipment from IT Corporation's ETDC facility in Oak Ridge was shipped to Fernald and is installed in the on-site laboratory.

The FEMP began design and programming of a database to accommodate Operable Unit 5 remedy screening and remedy selection data. The database is being designed to also accommodate soil washing treatability test data from Oak Ridge National Laboratory. This test program has been conducted in parallel to the Operable Unit 5 study under the umbrella of the DOE Uranium in Soils Integrated Demonstration Program.

Phase II of the pilot plant testing program will begin in early December 1993, and will examine other chemical reagents and operational parameters in a batch mode.

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5.2 Treatability Study (continued)

The Phase II testing activities are being funded primarily by the DOE Office of Technology and Development through the Uranium in Soils Integrated Demonstration program and is being coordinated by FERMCO soil treatability and remedial design organizations.

A Technical Information Exchange (TIE) meeting was held with the U.S. EPA and Ohio EPA on September 22, 1993 to discuss the above program and the overall FEMP treatment of soil.

Issues/Corrective Actions:

None to report.

5.3 Remedial Investigation

Scope:

The Remedial Investigation (RI) is the mechanism for collecting data to characterize site conditions, determine the nature of the site's wastes, determine the nature and extent of contamination and assess baseline risk to human health and the environment.

Status:

RI data compilation and evaluation continue. All data sources to be included are being identified and evaluated. Chemical and radiological data collected as part of both the RI/FS and other site sampling programs are being posted on maps and evaluated. The FEMP is compiling, evaluating and updating the geologic and hydrogeologic information contained in RI/FS site files and documents. Existing maps and cross sections are being updated where additional information has become available. New maps and cross sections of the glacial overburden continue to be generated.

Validation of the majority of the backlog samples was completed in June. Remaining validation, quality control, and formatting of the validated database are continuing. Additional validated data is being added to the database as validation is completed on supplemental data from non-RI/FS programs, new programs and laboratory data that has been received since the beginning of 1993.

Downloading of data from the Site-Wide Environmental Database to Operable Unit 5 staff began for the high priority tasks of: surface soil, subsurface soil, surface water/sediment, groundwater and facilities testing. Work began on splitting up the high priority data download into a format suitable to support Sections 4, 5, and 6 of the RI Report.

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5.3 Remedial Investigation (continued)

Ohio EPA has accepted the responses to their comments on the Groundwater Modeling Report - Summary of Model Development. U.S. EPA has completed its review of our responses to their comments on the Groundwater Modeling Evaluation Report and Improvement Plan and agrees with the overall approach.

Issues/Corrective Actions:

Due to continuing problems with the downloads, CRU5 has initiated a comprehensive review of all the data to ensure that all information in the Site-Wide Environmental Database is usable for the RI.

5.4 Planned Activities for December 1993

- Complete the comment resolution documents related to the field programs completed in September
- Complete the site strategy on determining attenuation/release characteristics for uranium. Present this strategy to the EPAs
- Continue work on RI report, Sections 1, 2, and 3. Continue compiling and evaluating historic data in support of the RI report
- Continue validation of the laboratory data from the current field programs and from supplemental non-RI/FS programs
- Verify that the data in the Site-Wide Environmental Database is correct and consistently coded so data retrievals are consistent and complete
- Continue to divide the validated database by media to support work on Sections 4, 5, and 6 of the RI report
- Continue work on Sections 4, 5, and 6 of the RI Report
- The response to comments on the "Characterization of Background Water Quality for Streams and Groundwater" has been approved by the U.S. EPA and Ohio EPA. The report will be revised once data from additional sampling of locations W1 (background on the Great Miami River) and W5 (background location on Paddy's Run) become available

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5.4 Planned Activities for December 1993 (continued)

- Continue upgrades to the groundwater model in preparation for releasing a final "Groundwater Modeling Report - Summary of Model Improvement" in April 1994. U.S. EPA has agreed to provide input to this process

- Complete supplements to work plans to document the resolution of the agencies' comments and incorporate changes to the original work plans rather than revising them

- A TIE meeting is scheduled for December 21 with U.S. EPA and Ohio EPA to continue discussion from the November 2 TIE on groundwater fate and transport model improvements. These technical discussions are designed to involve the U.S. and Ohio EPA technical staffs in the model improvement activities. Task Objectives/Technical Approach summaries detailing current improvement tasks are provided to the EPAs in these meetings.

6.0 On-Site Disposal Cell

The Engineered Waste Management Facility (EWMF) scope has been modified to evaluate the On-Site Disposal Cell (OSDC) alternative along with the complete evaluation of off-site alternatives. All further reference to the EWMF will be entitled OSDC.

The technical approach for the evaluation will be based on information previously developed for the EWMF. This information is being expanded to include the development of engineering assessment to evaluate the On-Site Disposal/Storage, Off-Site Disposal, and Transportation Risk Assessment for Off-Site Disposal. The information generated by these technical reports and the reports that will be generated from the information gathered for the EWMF Siting Report will serve as a basis for evaluating the disposal options and alternatives. These reports were completed in September 1993. No further work is anticipated on the On-Site Disposal, until design begins.

6.1 EWMF General Siting Report

Scope:

The EWMF Siting Report was scoped to evaluate the feasibility of locating an EWMF facility at the FEMP. The intent was to deliver all of the information necessary to meet the requirements in a singular document. In order to expedite the delivery of the technical information, the report has been subdivided into six stand-alone technical reports. The technical reports will be identified as follows with the appropriate scope:

- Geotechnical Engineering Analysis for an On-Site Disposal Cell - This report will contain the engineering analysis prepared for the EWMF structure. This will include an analysis of the barrier and cap design, drainage system, erosion analysis, slope stability analysis, and an estimated cost of construction for an on-site tumulus. The report will be entitled, "Technical Report 5.1A, Engineering Evaluation Report for On-Site Disposal."

- Site Characterization Report - This report will include the investigation and evaluation of the site geology, radiation measurements, well installation diagrams, boring logs, and analytical data. This report will be entitled "Technical Report 5.1B, Site Characterization/Geological Report for On-Site Disposal."

- Material Source Survey - This report will discuss the availability and cost of materials in the local area required to construct the OSDC. This report will be entitled "Technical Report 5.1C, Material Source Survey for On-Site Disposal."

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6.1 EWMF General Siting Report (continued)

- ARARs Report - This report will identify and discuss the ARARs that will be applicable to the construction of an OSDC. This report will be entitled "Technical Report 5.4, ARARs for On-Site Disposal Cell Concept."

- Survey of Local Geology in the Alternate Siting Areas - This report will cover the investigation of two alternative sites for the OSDC adjacent or near the FEMP situated on bedrock highs. The two sites to be evaluated are the Girl Scout Camp and another located west of the FEMP. The report will be entitled, "Technical Report 5.3A, Geological Report for Off-Site Disposal."

- Ecological Characterization - This report will discuss the ecological characterization of the two off-site locations. The two sites to be evaluated are the Girl Scout Camp and another located west of the FEMP. The report will be entitled, "Technical Report 5.3B, Ecological Characterization of the Off-Property Disposal Cell Study Area."

Status:

All six technical reports have been completed. These reports were incorporated as needed into the Draft OU1 Feasibility Study report. No further work is anticipated.

Issues/Corrective Actions:

None to report.

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7.0 Community Relations

Status:

The Community Environmental Education Course initiated last year at DOE-FN has a new title -- Science, Technology, the Environment, and the Public (STEP). Public meetings were held on November 2 (Water Path) and November 16, 1993 (Technologies) at the Plantation in Harrison, Ohio. The sessions provided an opportunity for the community to learn about Fernald and the environmental issues being addressed.

On November 16, 1993 DOE-HQ approved the *Fernald Environmental Management Project Utility Procurement Plan.* This approval allows DOE-FN to negotiate and enter into contract with Cincinnati Water Works (CWW) for the services of potable water to Fernald. On November 19, 1993 CWW rejected DOE's initial proposed contract for water service; however, both parties are in the process of negotiating a revised, simplified contract for a 10-year term commencing on July 1, 1994 or upon the completion date of the infrastructure to supply water service to the FEMP, whichever is later.

Members of the Fernald Citizens Task Force held their regular monthly meeting on November 18, 1993; about 14 members of the public, DOE-FN and FERMCO attended. The Task Force heard presentations on land use planning concepts from Miami University professor James Rubenstein and on disposal cell technology from Jack Caldwell of Jacobs Engineering. After soliciting proposals for outside staff to assist the Task Force with its deliberations, a contract was awarded to Douglas J. Sarno of Clean Sites and Alice Shorett of Triangle Associates. The next Task Force meeting is scheduled for December 9, 1993, at which time Task Force members plan to meet with Sarno.

DOE-FN representatives attended the monthly FRESH meeting on November 18, 1993. Thirty members of the community attended the meeting. Invited to the meeting was Donna Bohannon from Ohio EPA who gave an update on the Paddys Run Road Site project. Graham Mitchell, also from OEPA, asked for input on: "What factors should impact the decision of where Fernald waste should go?" and "What wastes should go off site?"

Updates on activates at the FEMP included:

- Start-up of the radon adsorption testing on Silo 2 on November 15, 1993
- Start of Phase II of the non-destructive testing on Silos 1-4 on November 22, 1993
- The dates for upcoming Operable Unit 4 public participation activities including a public comment period beginning March 7 and a tentative public hearing set for March 21, 1994.

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7.0 Community Relations (continued)

On November 23, 1993 the DOE-FN conducted a public workshop to discuss groundwater issues at the Fernald site. About 20 people, including Graham Mitchell from Ohio EPA, attended the meeting. The presentation focused on regional and local geology and hydrogeology. Also contamination pathways and patterns of uranium contamination in the perched water and in the Great Miami Aquifer were presented and discussed.

The Fernald site held a Technology Demonstration Day on November 30, 1993. The purpose of the tour was to show cleanup progress and the state-of-the-art technologies being employed at Fernald to carry out the environmental restoration mission. Print and electronic media, dignitaries from the State of Ohio, DOE, and EPA, and members of FRESH were invited to get a visual feel for progress at Fernald. Nine technologies and remediation programs were featured during Technology Demonstration Day. After completion of the driving tour, an optional question and answer session was conducted to clear up any remaining questions. Approximately 40 visitors attended the tour and Question and Answer session.

The Centers for Disease Control/Radiological Assessments Corporation held a public Technical Workshop on November 30 to discuss findings of the final Task 2 and 3 report: *Radionuclide Source Terms & Uncertainties*. The report describes the releases of materials from the FEMP for all years of operation. This report is part of the Fernald Dosimetry Reconstruction Project that the CDC/RAC is conducting. Approximately 70 people and several representatives from the media attended the meeting.

Issues/Corrective Action:

None.

7.1 Planned Activities for December 1993:

- The Agency for Toxic Substances and Disease Registry (ATSDR) will conduct availability sessions in the Ross, Ohio area on December 6, 7, and 8. The ATSDR along with the Centers for Disease Control and Prevention will be assessing the feasibility of conducting an epidemiological study of the Fernald area.

- DOE will conduct a workshop on December 7, 1993 on Operable Unit 1 Waste Pit Area. The meeting will begin at 7 p.m. and will be held at the ERA Building, 10991 Hamilton-Cleves Road.

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7.1 Planned Activities for December 1993: (continued)

- The Fernald Citizens Task Force will hold its monthly meeting on December 9 from 4 - 6 p.m. at the Meadowbrook in Ross, Ohio
- A 30-day public comment period on the OU 3 Proposed Plan/ Environmental Assessment opens on December 8.

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PERIOD ENDING NOVEMBER 30, 1993

ENCLOSURE A

WASTEWATER FLOWS AND RADIONUCLIDE CONCENTRATIONS UNDER CA SECTION XXIII.B

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Introduction

The accompanying Effluent Radiation Reports provide, in accordance with the requirements of Section XXIII.B of the Consent Agreement As Amended under CERCLA Sections 120 and 106 (a), data on the daily wastewater flows, radionuclide concentrations, and loadings released to the Great Miami River and an estimate of runoff and radionuclide concentrations to Paddy's Run during November 1993.

Summary - November 1993

The total quantity of uranium discharged from the FEMP to the Great Miami River via Manhole 175 (Outfall 1Io00004001) was 27.90 kilograms. The average uranium concentration for the previous 12 months was 0.54 mg/L. This is 60.7% of the Derived Concentration Guide (DOE Order 5400.5) for ingested water.

There was no discharge from the Stormwater Retention Basin Spillway (Outfall 1Io00004002) to Paddy's Run via the Storm Sewer Outfall Ditch in November 1993. Based on 4.09 inches of rainfall in November 1993, the total quantity of uranium discharged to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 11.62 kilograms.

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COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR
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EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: 1IO00004001
001 Total Discharge
Manhole 175 (Effluent to Great Miami River)

DATE: NOVEMBER 1993

Day	Flow (MGD)	Total Alpha (pCi/l)	Total Beta (pCi/l)	Total U (mg/l)	Total U (kgs)	Calculated Total U-238 (pCi/l) (1)
1	0.242	122	72	0.13	0.12	44
2	0.229	99	104	0.12	0.10	41
3	0.239	117	117	0.15	0.14	51
4	0.204	54	180	0.16	0.12	54
5	0.220	54	144	0.13	0.11	44
6	0.178	81	149	0.16	0.11	54
7	0.112	68	122	0.15	0.06	51
8	0.230	90	158	0.23	0.20	78
9	0.227	113	234	0.29	0.25	98
10	0.213	32	77	0.07	0.06	24
11	0.196	32	203	0.08	0.06	27
12	0.601	180	171	0.37	0.84	125
13	1.145	230	144	0.42	1.82	142
14	1.129	203	108	0.39	1.67	132
15	1.389	252	176	0.47	2.47	159
16	1.612	279	153	0.48	2.93	162
17	1.639	279	117	0.39	2.42	132
18	1.702	225	144	0.46	2.96	155
19	1.616	239	95	0.43	2.63	145
20	1.534	293	122	0.43	2.50	145
21	1.390	360	140	0.43	2.26	145
22	1.429	248	95	0.39	2.11	132
23	0.963	257	144	0.37	1.35	125
24	0.298	194	81	0.25	0.28	84
25	0.258	95	45	0.10	0.10	34
26	0.211	68	86	0.09	0.07	30
27	0.235	27	117	0.05	0.04	17
28	0.197	27	86	0.04	0.03	14
29	0.284	32	59	0.05	0.05	17
30	0.317	32	36	0.04	0.05	14
Total	20.239				27.90	

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CONSOLIDATED CONSENT AGREEMENT FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT (cont.)

FACILITY: Fernald Environmental Management Project

LOCATION: 001 Total Discharge

DATE: NOVEMBER 1993

	Flow (MGD)	Total Alpha (pCi/l)(2)	Total Beta (pCi/l)(2)	Total U (mg/l)(2)	Total U (kgs)	Calculated Total U-238 (pCi/l)(1)(2)
Avg.	0.675	222	127	0.36	0.93	123
Max.	1.702	360	234	0.48	2.96	162
Min.	0.112	27	36	0.04	0.03	14

The average uranium concentration for the previous twelve months was 0.54 mg/l. This is 60.7 percent of the Derived Concentration Guide(DOE Order 5400.5) for ingested water.

Comments:

(1) The activity of this discharge has been and will continue to be reported as Uranium-238 (pCi/l) in accordance with the Ohio EPA format for reporting uranium. Since this does not account for the activity of the other uranium isotopes in the effluent, the total uranium data is also presented. The calculated total U-238 is based on a conversion factor of 337.84 pCi U-238/mg Total U applied to the measured value of total uranium.

(2) Average values presented are flow-weighted.

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CONSOLIDATED CONSENT AGREEMENT FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR
CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: 11O00004002
002 Discharge (Overflow) to Storm Sewer Outfall Ditch
Stormwater Retention Basin Spillway (Effluent to Paddy's Run)

DATE: NOVEMBER 1993

There was no discharge to Paddy's Run from the Stormwater Retention Basin.

Based on 4.09 inches of rainfall for the month, the uranium discharge to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 11.62 kgs.

0059

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

PERIOD ENDING NOVEMBER 30, 1993

ENCLOSURE B

FFCA: INITIAL REMEDIAL MEASURES

AND OTHER OPEN ACTIONS

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

INTRODUCTION

Enclosure B describes actions undertaken at the FEMP during the period November 1 through November 30, 1993, that are not covered by the reporting requirements of the Consent Agreement As Amended under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 120 and 106(a).

WORK ASSIGNMENTS AND PROGRESS

Descriptions of ongoing work progress are presented in the following sections of this report. The status of ongoing work in support of the Federal Facility Compliance Agreement (FFCA) is summarized in Table 1 of Enclosure B. Completed work previously reported upon has been eliminated for the sake of brevity. In this portion of the report and in Table 1, descriptions of actions are presented in a format consistent with that of the FFCA.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA)

1. Initial Remedial Measures

   Section C

   K-65 Silo Project - Status information on the K-65 Silo project normally reported in this section is being provided under Operable Unit 4: Silos 1-4.

2. Remedial Investigation/Feasibility Study (RI/FS)

   Status information on the Remedial Investigation/Feasibility Study (RI/FS) normally reported in this section is being provided separately in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA)

3. Reports and Record Keeping

Section B

The RI/FS Monthly Technical Progress Report for October 1993 was transmitted to the U.S. EPA on November 20, 1993, as an integral part of the Consolidated Consent Agreement/Federal Facility Compliance Agreement/Federal Facility Agreement for Control and Abatement of Radon-222 Emissions (CA/FFCA/FFA-CARE) Monthly Progress Report in accordance with the requirements of Section X of the Consent Agreement As Amended.

CLEAN AIR ACT (CAA)

Section E

The Quarterly Particulate Emissions Report will now be incorporated into the Annual NESHAP Compliance Report.

RADIATION DISCHARGE INFORMATION

Section A

This information will now be submitted on an annual basis as part of the FEMP Annual Site Environmental Report.

REPORTING REQUIREMENTS

Section B

The Federal Facility Compliance Agreement Monthly Progress Report for October 1993, was transmitted to the U.S. EPA on November 20, 1993, as Enclosure B of the Consolidated Consent Agreement/Federal Facility Compliance Agreement/Federal Facility Agreement for Control and Abatement of Radon-222 Emissions (CA/FFCA/FFA-CARE) Monthly Progress Report.

ACTION	DESCRIPTION	COMPLETION TIME AFTER FFCA SIGNED	FY1992 STATUS
CERCLA			
1.	INITIAL REMEDIAL MEASURES		
1.C	Implement radon control plan approved by the U.S. EPA.	------	No longer applicable. Progress on actions to address radon emissions from the K-65 Silos are being reported separately under Section IX-Removal Actions of the Consent Agreement/FFCA Monthly Progress Report.
2.	REMEDIAL INVESTIGATION/FEASIBILITY STUDY		No action required.
2.A	RI/FS work is to be conducted in accordance with the U.S. EPA guidelines.	N/A	
2.B	--No Action Required--	------	Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).
2.E	Amend and submit revised RI/FS Work Plan to U.S. EPA if deficiencies are found.		Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).
2.F	Implement tasks described in the approved RI/FS Work Plan		Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA sections 120 and 106(a).
3.	REPORTS AND RECORD KEEPING		
3.B	Submit monthly RI/FS progress reports.	monthly	The RI/FS Monthly Progress Report for October 1993 was transmitted to the U.S. EPA on November 20, 1993.
CLEAN AIR ACT			
B.4	Prepare annual progress report installation and replacement of emission control devices.	yearly	The Fifth Annual Progress Report on the installation and replacement of emission control devices was transmitted to the U.S. EPA on March 9, 1993 (DOE-1305-93).

TABLE 1

STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS

NOVEMBER 30, 1993

C.	Provide annual reports to the U.S. EPA per 40 CFR 61.94(c).	yearly	The Annual NESHAP Compliance Report for CY1992 was transmitted to the U.S. EPA on June 28, 1993 (DOE-2281-93).
D.1	Provide U.S. EPA with yearly stack-testing schedule.	yearly	The 1989 stack testing schedule was transmitted to the U.S. EPA on June 16, 1989. A letter (DOE-1615-89) was transmitted to the U.S. EPA on September 15, 1989, indicating that, due to the uncertainty concerning resumption of production at the FEMP, the 1989 FFCA Stack Testing Program was being deferred. In August 1991, the DOE confirmed that no further production would take place at the facility, and renamed the facility the FEMP. Stacks in areas such as the Laboratory have been identified for potential testing during FY1993.
D.2	Provide U.S. EPA with stack-test results for stacks tested that year.	45 days	Because the FEMP has been out of production since mid-1989, there was no opportunity to perform stack testing. The DOE, in August 1991, confirmed that no future production will take place at the FEMP. Stacks in areas such as the Laboratory have been identified for potential testing during FY1993.
E.1	Maintain records of monthly particulate matter emissions.	------	Ongoing.
E.2	Provide quarterly reports to U.S. EPA on these emissions.	------	The Quarterly Particulate Emissions Report will now be incorporated into the Annual NESHAP Compliance Report.
RCRA			
A.1	Conduct a hazardous waste determination on all waste streams.	30 days	Complete. Pursuant to the Proposed Amended Consent Decree, a RCRA waste evaluation was conducted on all identified waste streams pertaining to the PACD.
A.2	Commence a hazardous waste analysis program for materials in the landfill and going to the incinerator.	30 days	Complete. Operation of these units was discontinued and data on the waste which had gone to them was provided in a 30-day FFCA deliverable on August 17, 1986.
A.5	Update the facility closure plan to reflect the year the facility expects to begin closure.	30 days	The Facility closure date is dependent upon closure schedules for individual TSD units as presented most recently in Section I of the RCRA Part B Permit Application transmitted to the Ohio EPA and the U.S. EPA on March 26, 1993 (DOE-1471-93). Facility closure will be completed on a date the last TSD unit is closed.

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TABLE 1

STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS

NOVEMBER 30, 1993

RADIATION DISCHARGE INFORMATION

A.3	Report to U.S. EPA, Ohio EPA and Ohio Department of Health the results of the continuous liquid discharge samples.	yearly	The twenty-first Quarterly Discharge Report for the period October through December 1991 was transmitted to the U.S. EPA on February 20, 1992 (DOE-941-92). This information will now be reported on an annual basis.

REPORTING REQUIREMENTS

B.	Issue monthly progress report of actions taken to ensure compliance with FFCA requirements.	monthly	October's FFCA Monthly Progress Report was transmitted to the U.S. EPA on November 20, 1993.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

PERIOD ENDING NOVEMBER 30, 1993

ENCLOSURE C

FEDERAL FACILITY AGREEMENT:
CONTROL AND ABATEMENT OF RADON-222 EMISSIONS

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CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

Introduction

The Federal Facility Agreement for Control and Abatement of Radon-222 Emissions (FFA-CARE) between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (U.S. EPA), signed November 19, 1991, requires that a monthly report be submitted to the U.S. EPA regarding all steps undertaken in the preceding month to implement Part V of the agreement and that all data generated as a result of those actions be submitted.

Enclosure C fulfills those requirements by describing steps taken at the FEMP during the period November 1, through November 30, 1993, to implement Part V, Radon-222 Control and Abatement Plan, paragraphs 19-33 of the FFA-CARE.

After four months of data collection for the applicable parameters, preparation is now underway to evaluate the data for use in the Transport Release Models.

Work Assignments and Progress

In this section of Enclosure C, action descriptions and work progress are presented in a format consistent with that of the FFA-CARE. Immediately following this section are the K-65 Silos Report and the Selected Radon Data Report. Reporting this data is also a requirement included in the U.S. EPA approved Silos 1 and 2 Removal Action Work Plan (Removal Action No. 4).

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

FFA Part, Paragraph(s)	Description of Commitment	FFA Due Date	Status of Commitment
Part V, 19 & 21	Implement the K-65 Silos 1 and 2 Removal Action in accordance with the approved Silos 1 and 2 Removal Action Work Plan.	12/1/91	Completed. Installation of the bentonite completed 11/28/91.
Part V, 20	Reduce radon-222 to a level As-Low-As Reasonably-Achievable (ALARA) with the goal as specified in the Silos 1 and 2 Removal Action Work Plan.	5/22/92	Completed. Concentrations offsite remain well below performance goal of removal action.
Part V, 22	Submit proposed methodology for estimating radon-222 concentration reductions resulting from completion of the Silos 1 and 2 Removal Action.	Within 60 days of completing removal action; 1/27/92.	The Bentonite Effectiveness Environmental Monitoring Plan was resubmitted to the U.S. EPA for comment and approval on 3/13/92. EPA approval was received on 4/24/92. DOE has prepared a revision to the methodology. Comment responses to the U.S. EPA's disapproval of the revised methodology is under way. Applicable information contained in this revised methodology will be included in the final report, which is now being prepared.

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FFA Part, Paragraph(s)	Description of Commitment	FFA Due Date	Status of Commitment
Part V, 23	Evaluate performance of the removal action and determine whether or not additional actions are needed prior to final remediation.	None specified.	Methodology for estimating radon-222 concentration reduction submitted to U.S. EPA per paragraph 20 of Part V. The first Bentonite Effectiveness Environmental Monitoring Report was issued to the U.S. EPA on 5/22/92. DOE submitted a revision to the methodology to the U.S. EPA on 12/17/92. Comment responses to the U.S. EPA's disapproval of the revised methodology is under way. Applicable information contained in this revised methodology will be included in the final report, which is now being prepared.
Part V, 24, 25, and 33	Demonstrate compliance with NESHAP Subpart Q at the completion of final remediation using a methodology approved by the U.S. EPA. Applicable to: Silos 1, 2, and 3; Waste Pits 1, 2, 3, 4, and 5 and the Clearwell; and any newly discovered radon-222 emission sources.	None specified.	No information to report for November 1993.
Part V, 26	Directly measure radon-222 flux from Waste Pits 1, 2, 3, 4, and 5 and the Clearwell in the RI/FS under the CERCLA Consent Agreement.	None specified.	Radon sampling is complete for Pits 1, 2, and 3. All measurements were below the criteria set by the U.S. EPA. A final report was issued to the U.S. EPA on 6/25/92. A letter was received from the U.S. EPA on 10/16/92 giving approval of the proposed method for measuring the radon flux from Pit 4. The letter also stated that since the Clearwell is water covered, and Pit 5 is nearly 100% water covered, the flux from Pit 5 and the Clearwell may be assumed to be zero.
Part V, 26	Include direct measurement data from Waste Pits 1, 2, 3, 4, and 5 and the Clearwell in the RI/FS under the CERCLA Consent Agreement.	None specified.	See above.

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FFA Part, Paragraph(s)	Description of Commitment	FFA Due Date	Status of Commitment
Part V, 27	Estimate radon-222 emissions from Silo 3 based upon characterization data; include the estimated radon-222 emission data from Silo 3 in the RI/FS that includes Silo 3 under the CERCLA Consent Agreement.	None specified.	Completed. An estimate of radon flux from the K-65 Silo 3 was submitted to the U.S. EPA on 12/17/91. Radon flux for the silo was estimated to be above 20 pCi/m^2-s.
Part V, 28	Submit documentation or estimates of current radon-222 emissions from existing but newly discovered sources that contain radium-226 in sufficient concentrations to emit radon-222 in excess of NESHAP Subpart Q prior to final remediation.	Within 30 days of discovery.	No new sources identified.
Part V, 30	Submit methodology for direct measurement or other appropriate means of characterization of the relevant emissions pursuant to paragraph 29 of the FFA.	Within 45 days of the U.S. EPA response pursuant to paragraph 29.	None required.
Part V, 31	Submit results of measurements pursuant to paragraph 30.	Within 30 days of U.S. EPA approval of characterization method.	None required.
Part VI, 31	Submit monthly report on steps undertaken to implement Part V of the FFA-CARE and the data obtained in the preceding month.	20th day of succeeding month.	The progress report being submitted herewith as an integral part of the CERCLA Consent Agreement Monthly Progress Report.

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CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

Data Reporting Requirements: RA No. 4: Silos 1 and 2

As defined in the Silos 1 and 2 Removal Action Work Plan and the Federal Facility Agreement, data associated with monitoring the effectiveness of the bentonite installation are included in the following tables: the K-65 Silos Report and the Selected Radon Data Report.

The K-65 Silos Report includes data on the following parameters:

- Ambient temperature and pressure near the silos.
- Silos 1 and 2 headspace temperature.
- Silos 1 and 2 differential pressure.
- Silos 1 and 2 radon headspace concentration.
- Silos 1 and 2 headspace humidity

The Selected Radon Data Report includes radon data from the following locations:

- Air monitoring station number 5 (AMS-5)
- Air monitoring station number 6 (AMS-6)
- Pilot Plant
- Background data
- K-65 Monitoring Data (K-65 NW, K-65 SW, K-65 NE, K-65 SE).

The radon data submitted in Enclosure C: Radon Data for the K-65 Removal Action and in all previous consent agreement status updates is considered to be draft. The radon data, although collected by qualified technicians using detailed procedures, was not obtained in a manner which would withstand a rigorous validation process. The various field and laboratory procedures are currently being reviewed and modified to be in accordance with the conditionally approved Site-Wide CERCLA Quality Assurance Project Plan (SCQ). Once the sampling and analysis procedures have been modified and approved, along with specific validation protocols, suspect radon data will either be qualified or rejected.

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CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITIES COMPLIANCE AGREEMENT/ FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

MONTH: NOVEMBER
YEAR: 93

FACILITY: Fernald Environmental Management Report
U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton

SELECTED RADON DATA REPORT

(Monthly Summary of Selected Sampling Locations)

Daily Averages:	AMS-6 (pCi/L)	AMS-6 (pCi/L)	PILOT PLANT (pCi/L)	BKGD (pCi/L)
11/01/93	0.5	0.6	0.5	(b)
11/02/93	1.1	1.4	1.2	(b)
11/03/93	0.6	0.6	0.5	(b)
11/04/93	0.5	0.5	0.5	(b)
11/05/93	0.4	0.4	0.5	(b)
11/06/93	0.4	0.4	0.5	(b)
11/07/93	0.6	0.6	0.6	(b)
11/08/93	1.5	1.4 (a)	1.3	0.2 (b)
11/09/93	1.7	2.7 (a)	1.5	1.6 (b)
11/10/93	1.8	(a)	1.8	2.1
11/11/93	1.4	(a)	1.4	1.8
11/12/93	0.7	(a)	0.6	1.6
11/13/93	0.4	1.2 (a)	0.5	1.4
11/14/93	0.4	0.7 (a)	0.4	1.3
11/15/93	0.4	0.6	0.4	1.4
11/16/93	0.6	0.7	0.5	1.4
11/17/93	0.5	0.8	0.5	1.4
11/18/93	0.5	0.5 (a)	0.4	1.5
11/19/93	0.5	(a)	0.5	1.5
11/20/93	0.5	(a)	0.6	1.5
11/21/93	0.6	(a)	0.6	1.5
11/22/93	1.0	1.3 (a)	1.0	1.6
11/23/93	1.6	1.6	1.6	1.8
11/24/93	1.5	1.4	1.3	1.7
11/25/93	0.5	0.7	0.5	1.6
11/26/93	0.7	0.7	0.6	1.5
11/27/93	0.5	0.6	0.6	1.5
11/28/93	0.6	0.7	0.6	1.7
11/29/93	0.4	0.6	0.5	1.7
11/30/93	0.4	0.6	0.5	1.7

Monthly Averages:	AMS-6 (pCi/L)	AMS-6 (pCi/L)	PILOT PLANT (pCi/L)	BKGD (pCi/L)
AVERAGE:	0.8	0.9	0.7	1.5
MAXIMUM:	1.8	2.7	1.8	2.1
MINIMUM:	0.4	0.4	0.4	0.2
MEDIAN:	0.5	0.7	0.6	1.5
STD. DEV.:	0.4	0.5	0.4	0.3

STANDARD LEGEND:

1. "(a)" indicates censored data due to erroneous readings.
2. "(b)" indicates data loss due to monitor malfunction.
3. "(c)" indicates operator error in programming monitor.
4. "(d)" indicates data loss due to relocation of monitor.

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CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITIES COMPLIANCE AGREEMENT/ FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

MONTH: NOVEMBER
YEAR: 93

FACILITY: Fernald Environmental Management Report
U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton

SELECTED RADON DATA REPORT

(Monthly Summary of Selected Sampling Locations)

Daily Averages:	K-65, NW (pCi/L)	K-65, SW (pCi/L)	K-65, NE (pCi/L)	K-65, SE (pCi/L)
11/01/93	1.0	0.5	2.5	1.5
11/02/93	2.3	1.9	5.4	2.9
11/03/93	1.7	1.0	2.4	1.7
11/04/93	1.1	0.6	0.8	0.9
11/05/93	0.9	0.5	2.1	1.1
11/06/93	0.9	0.4	2.6	1.2
11/07/93	1.1	0.9	3.4	1.5
11/08/93	9.0 (a)	1.7	7.6	3.6
11/09/93	3.6	2.2	11.0	5.4
11/10/93	2.7	2.4	14.6	5.0
11/11/93	1.9	1.8	9.4	3.9
11/12/93	0.9	0.7	1.2	1.0
11/13/93	1.6	0.5	0.6	0.8
11/14/93	1.4	0.4	0.7	0.7
11/15/93	0.6	0.4	1.4	1.2
11/16/93	2.0	2.1	1.7	1.3
11/17/93	1.5	1.8	0.8	1.2
11/18/93	2.4	1.7	2.5	1.7
11/19/93	0.8	0.9	2.3	1.9
11/20/93	0.8	0.7	3.2	1.5
11/21/93	0.9	0.9	2.5	1.7
11/22/93	1.4 (b)	1.4	4.9	2.8
11/23/93	(b)	2.4	5.2	3.7
11/24/93	(b)	2.2	3.8	3.5
11/25/93	(b)	2.8	0.6	0.8
11/26/93	(b)	1.3	2.5	1.7
11/27/93	(b)	1.3	7.8	4.6
11/28/93	(b)	1.5	2.3	3.1
11/29/93	(b)	0.5	1.2	1.1
11/30/93	(b)	1.4	0.6 (b)	0.8

Monthly Averages:	K-65, NW (pCi/L)	K-65, SW (pCi/L)	K-65, NE (pCi/L)	K-65, SE (pCi/L)
AVERAGE:	1.8	1.3	3.6	2.1
MAXIMUM:	9.0	2.8	14.6	5.4
MINIMUM:	0.6	0.4	0.6	0.7
MEDIAN:	1.4	1.3	2.5	1.6
STD. DEV.:	1.7	0.7	3.3	1.3

STANDARD LEGEND:

1. "(a)" indicates censored data due to erroneous readings.
2. "(b)" indicates data loss due to monitor malfunction.
3. "(c)" indicates operator error in programming monitor.
4. "(d)" indicates data loss due to relocation of monitor.

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CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/
FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton

K-65 SILO REPORT
RADON CONCENTRATIONS

MONTH: NOVEMBER, 1993

REPORT GENERATED: 12/03/93

Daily Summary of Recorded Headspace Concentrations
(recorded at 5 minute intervals)

	SILO 1				SILO 2			
Date	Average	Maximum	Minimum	Std. Dev.	Average	Maximum	Minimum	Std. Dev.
11/01/93	62,859	304,666	15,729	33,309	2,285,639	2,669,740	1,544,380	214,083
11/02/93	268,163	564,706	102,935	130,613	2,546,859	2,957,060	1,783,820	209,446
11/03/93	179,242	574,993	46,104	141,472	2,434,956	3,004,950	1,640,150	350,765
11/04/93	381,061	842,843	71,475	219,455	2,633,988	3,172,560	1,257,050	362,182
11/05/93	191,795	893,721	3,519	238,045	2,304,012	3,148,610	969,730	597,163
11/06/93	70,058	95,073	42,228	9,138	2,343,254	2,765,510	1,975,370	140,926
11/07/93	99,619	420,318	30,569	49,221	2,378,005	2,861,290	1,472,550	307,406
11/08/93	132,044	386,362	38,302	59,601	2,568,725	2,957,060	1,879,590	177,870
11/09/93	211,329	555,162	52,591	153,774	2,838,592	3,148,610	2,478,190	177,988
11/10/93	177,484	532,492	59,089	110,601	2,824,458	3,196,500	2,478,190	184,368
11/11/93	199,930	586,752	48,070	112,596	2,628,501	3,292,280	1,400,710	396,607
11/12/93	310,415	680,569	51,953	220,343	3,050,262	3,364,110	2,023,250	208,326
11/13/93	326,955	736,605	44,139	208,968	2,595,079	3,316,220	1,281,000	488,067
11/14/93	419,130	837,428	82,613	207,099	2,799,034	3,196,500	371,130	361,739
11/15/93	68,366	386,362	7,357	73,947	2,758,635	3,028,900	2,286,640	151,959
11/16/93	352,998	801,014	76,718	219,765	2,904,604	3,100,730	2,430,300	116,761
11/17/93	396,054	1,046,225	7,357	339,191	2,685,119	3,148,610	1,807,760	301,472
11/18/93	364,404	985,771	15,096	308,701	2,683,625	3,124,670	1,711,980	318,327
11/19/93	277,477	1,001,804	13,832	294,187	2,361,295	3,148,610	1,352,830	435,162
11/20/93	106,170	356,166	22,799	47,569	2,290,128	2,693,680	1,257,050	352,454
11/21/93	143,302	580,839	29,299	91,958	2,149,957	2,909,180	634,510	657,702
11/22/93	241,228	637,145	47,379	153,389	2,706,818	3,004,950	2,166,920	152,712
11/23/93	482,693	835,836	128,023	201,260	2,920,150	3,172,560	2,286,640	194,804
11/24/93	313,090	789,463	9,303	244,645	2,836,929	3,196,500	1,400,710	347,681
11/25/93	97,913	711,542	2,258	166,930	1,931,387	3,148,610	873,950	730,171
11/26/93	368,023	743,469	65,597	188,775	2,644,880	3,148,610	1,376,770	414,658
11/27/93	330,865	804,871	102,935	182,052	2,679,798	3,100,730	2,095,090	258,562
11/28/93	253,188	895,267	53,230	227,794	2,525,992	3,052,840	1,999,310	348,247
11/29/93	137,917	749,593	57,170	130,901	2,469,374	2,957,060	2,023,250	197,410
11/30/93	85,409	405,393	52,591	42,537	2,567,477	2,981,010	2,023,250	164,568

Grab Samples of Headspace

Date	SILO 1 Concentration	SILO 2 Concentration
11/03/93	57,000	2,616,000
11/04/93	957,000	3,886,000
11/10/93	56,000	2,483,000
11/12/93	34,000	3,140,000
11/17/93	1,660,000	3,131,000
11/21/93	41,000	1,920,000
11/22/93	949,000	3,204,000

Notes: 1. All values reported in pCi/L.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/
FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton

K-65 SILO REPORT

LOCATION: Silo # 1 DATE: November 1993

Day	Ambient Temp °F	Ambient Press In. Hg.	Temperature Head Space °F	Inter. Hum. %	Diff. Press In. HG	Head Space Radon (pCi/l)
1	36.2	29.62	52.6	*	-0.008	62859
2	33.4	29.76	52.0	*	-0.007	268163
** 3	40.1	29.53	51.9	*	-0.034	179242
4	47.8	29.33	51.9	*	-0.005	381061
** 5	49.9	29.15	52.7	*	-0.015	191795
6	32.3	29.38	52.3	*	-0.009	70058
7	27.3	29.63	51.3	*	-0.009	99619
8	31.4	29.75	50.4	*	-0.008	132044
9	34.6	29.77	50.0	*	-0.007	211329
10	35.8	29.70	49.7	*	-0.007	177484
11	41.3	29.54	49.6	*	-0.007	199930
12	53.3	29.53	50.4	*	-0.005	310415
** 13	54.7	29.36	51.1	*	-0.065	326955
14	60.7	29.33	51.9	*	0.006	419130
** 15	50.9	29.55	52.5	*	0.029	68366
16	46.2	29.70	52.2	*	-0.006	352998
** 17	50.5	29.39	52.1	*	0.034	396054
** 18	41.8	29.59	51.9	*	0.027	364404
19	41.8	29.23	51.4	*	-0.007	277477
20	31.5	29.45	50.6	*	-0.009	106170
21	37.6	29.59	49.6	*	-0.007	143302
22	39.9	29.70	49.3	*	-0.007	241228
23	39.9	29.59	49.0	*	-0.007	482693
24	47.4	29.48	49.3	*	-0.006	313090
25	45.0	29.61	49.9	*	-0.006	97913
** 26	48.2	29.47	50.1	*	-0.022	368023
** 27	30.4	29.47	49.6	*	0.027	330865
28	26.0	29.32	48.3	*	-0.005	253188
29	26.7	29.56	47.4	*	-0.009	137917
30	32.3	29.89	46.9	*	-0.008	85409
ARITHMETIC MEAN	40.5	29.5	50.6	*	-0.005	234973
MAXIMUM	60.7	29.9	52.7	*	0.034	482693
MINIMUM	26.0	29.1	46.9	*	-0.065	62859
MEDIAN	40.0	29.5	50.5	*	-0.007	226278

Note: * – Silo #1 Relative Humidity was inoperable, default value = 0.
** – Some Delta Pressure values were outside of range restrictions.
On November 15 the system was down for approximately 30 minutes.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/
FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

-4985

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton

K-65 SILO REPORT

LOCATION: Silo # 2 DATE: November 1993

Day	Ambient Temp °F	Ambient Press In. Hg.	Temperature Head Space °F	Inter. Hum. %	Diff. Press In. HG	Head Space Radon (pCi/l)
1	36.2	29.62	52.4	96.9	-0.008	2285639
2	33.4	29.76	51.9	97.0	-0.007	2546859
3	40.1	29.53	51.8	97.0	-0.008	2434956
4	47.8	29.33	51.7	97.0	-0.008	2633988
5	49.9	29.15	52.3	96.9	-0.008	2304012
6	32.3	29.38	52.1	96.8	-0.008	2343254
7	27.3	29.63	51.2	97.0	-0.007	2378005
8	31.4	29.75	50.4	96.8	-0.007	2568725
9	34.6	29.77	50.1	96.8	-0.007	2838592
10	35.8	29.70	49.9	96.8	-0.007	2824458
11	41.3	29.54	49.7	96.9	-0.008	2628501
12	53.3	29.53	50.3	96.5	-0.008	3050262
13	54.7	29.36	50.9	96.4	-0.062	2595079
14	60.7	29.33	51.6	96.0	-0.003	2799034
15	50.9	29.55	52.2	96.0	0.020	2758635
16	46.2	29.70	51.9	96.0	-0.007	2904604
17	50.5	29.39	51.9	96.0	-0.066	2685119
18	41.8	29.59	51.7	96.0	-0.007	2683625
19	41.8	29.23	51.3	96.0	-0.008	2361295
20	31.5	29.45	50.6	96.5	-0.007	2290128
21	37.6	29.59	49.8	96.6	-0.008	2149957
22	39.9	29.70	49.4	96.6	-0.007	2706818
23	39.9	29.59	49.2	96.7	-0.007	2920150
24	47.4	29.48	49.5	96.4	-0.008	2836929
25	45.0	29.61	49.8	96.1	-0.009	1931387
26	48.2	29.47	50.0	96.1	-0.031	2644880
** 27	30.4	29.47	49.6	96.7	0.012	2679798
28	26.0	29.32	48.5	97.0	-0.008	2525992
29	26.7	29.56	47.7	97.0	-0.007	2469374
30	32.3	29.89	47.3	97.0	-0.007	2567477
ARITHMETIC MEAN	40.5	29.5	50.6	96.6	-0.010	2578251
MAXIMUM	60.7	29.9	52.4	97.0	0.020	3050262
MINIMUM	26.0	29.1	47.3	96.0	-0.066	1931387
MEDIAN	40.0	29.5	50.5	96.7	-0.008	2611790

Note: ** – Some Delta Pressure values were outside of range restrictions
On November 15 the system was down for approximately 30 minutes.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

PERIOD ENDING NOVEMBER 30, 1993

ENCLOSURE D

DRILLING/BORING LOGS

=4985

No Boring Logs Submitted for the Period Ending November 1993

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

PERIOD ENDING NOVEMBER 30, 1993

ENCLOSURE E

EFFLUENT RADIATION DISCHARGES TO THE GREAT MIAMI RIVER

-4985

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

Introduction

Enclosure E lists monthly discharges to the Great Miami River. This information is required by the DOE/USEPA Agreement Resolving Dispute Concerning Denial of Request for Extension of Time to Submit Operable Unit 2 Document and discussed in the "Addendum No. 1 to the South Groundwater Contamination Plume Removal Action Parts 2 and 3 Work Plan."

NOTE: Included this month in Enclosure E is a revision to the September 1993 report. This revision reports the Alpha and Beta analytical data for samples taken at the SWRB IAWWT (SP1).

CONSOLIDATED CONSENT AGREEMENT FACILITY 4985
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [SP1]
IAWWT (SWRB) Discharge
Interim Advanced Wastewater Treatment Effluent

DATE: OCTOBER 1993

Day	Flow (MGD)	Total Alpha (pCi/l)	Total Beta (pCi/l)	Total U (ug/l)	Total U (kgs)	TSS (mg/l)	pH (MIN) (S.U.)	pH (MAX) (S.U.)
1	0.000							
2	0.000							
3	0.000							
4	0.000							
5	0.000							
6	0.000							
7	0.000							
8	0.000							
9	0.000							
10	0.000							
11	0.000							
12	0.000							
13	0.000							
14	0.098	0.9	6.3	<1	0.000	3.6	7.5	8.0
15	0.224	1.4	5.9	<1	0.001	1.6	7.4	8.5
16	0.218	0.9	6.3	<1	0.001	<1	8.0	8.5
17	0.198	0.9	5.4	<1	0.001	1.2	8.2	8.5
18	0.017	AH	AH	AH	AH	AH	8.2	8.4
19	0.000							
20	0.000							
21	0.000							
22	0.000							
23	0.000							
24	0.000							
25	0.000							
26	0.000							
27	0.000							
28	0.000							
29	0.000							
30	0.000							
31	0.000							
Total	0.755				0.003			

AH: Not enough flow for composite sampler.

-4985

CONSOLIDATED CONSENT AGREEMENT FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR
CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT (cont.)

FACILITY: Fernald Environmental Management Project

LOCATION: SP1 IAWWT (SWRB) Discharge

DATE: OCTOBER 1993

	Flow (MGD)	Total Alpha (pCi/l)(1)	Total Beta (pCi/l)(1)	Total U (mg/l)(1)	Total U (kgs)	Total TSS (kgs) (1)
Avg.	0.024	0	0	0.00	0.00	0.00
Max.	0.224	1	6	0.00	0.00	0.00
Min.	0.000	0	0	0.00	0.00	0.00

Comments: (1) Average values presented are flow-weighted.

CONSOLIDATED CONSENT AGREEMENT FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [SP2]
Stormwater Retention Basin Emergency Bypass
SWRB Bypass Effluent

DATE: OCTOBER 1993

Day	Flow (MGD)
1	0.000
2	0.000
3	0.000
4	0.000
5	0.000
6	0.000
7	0.000
8	0.000
9	0.000
10	0.000
11	0.000
12	0.000
13	0.000
14	0.000
15	0.000
16	0.000
17	0.272
18	0.115
19	0.477
20	1.125
21	1.230
22	0.340
23	0.360
24	1.073
25	1.044
26	1.068
27	1.054
28	0.992
29	0.000
30	0.000
31	0.000
Total	9.150

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CONSOLIDATED CONSENT AGREEMENT FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [SP3]
SWRB Valve House
South Groundwater Contamination Plume

DATE: OCTOBER 1993

Day	Flow (MGD)	Total Alpha (pCi/l)	Total Beta (pCi/l)	Total U (ug/l)	Total U (kgs)	TSS (mg/l)
1	3.042	72.07	5.41	16	0.18	
2	2.939	94.59	54.05	17	0.19	
3	2.653	9.01	270.27	16	0.16	
4	2.947	36.04	31.53	14	0.16	
5	2.987	22.52	67.57	14	0.16	
6	2.715	13.51	<36.04	13	0.13	
7	2.876	9.01	108.11	15	0.16	1.2
8	2.668	13.51	<27.03	16	0.16	
9	2.978	18.02	144.14	15	0.17	
10	2.888	18.02	40.54	14	0.15	
11	2.604	27.03	<31.53	17	0.17	
12	2.868	22.52	31.53	20	0.22	
13	2.894	13.51	<49.55	13	0.14	
14	3.096	22.52	<9.01	13	0.15	1.4
15	2.748	22.52	<40.54	18	0.19	
16	2.950	31.53	45.05	13	0.15	
17	3.020	13.51	<45.05	20	0.23	
18	2.574	13.51	49.55	21	0.20	
19	3.119	13.51	40.54	19	0.22	
20	2.754	22.52	54.05	17	0.18	
21	2.925	4.50	211.71	18	0.20	1.0
22	2.824	9.01	207.21	21	0.22	
23	2.736	9.01	184.68	19	0.20	
24	3.038	9.01	189.19	17	0.20	
25	2.887	4.50	72.07	14	0.15	
26	2.887	13.51	40.54	16	0.17	
27	2.902	13.51	40.54	21	0.23	
28	2.796	31.53	<40.54	20	0.21	2.0
29	2.889	27.03	<31.53	16	0.17	
30	2.731	27.03	<40.54	22	0.23	
31	3.104	13.51	<31.53	18	0.21	
Total	89.039				5.67	

AH: Data not available. Samples taken at improper location.
Flows for 10/25 and 10/26 are an average from data taken on third shift of 10/25 and third shift of 10/27. Usual third shift data from 10/26 not available.
Total flow for month not affected.
Note: Flow data compiled from daily log sheets for each well in South Plume.

CONSOLIDATED CONSENT AGREEMENT FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [605]
Biodenitrification Tower
BDN Tower Effluent

DATE: OCTOBER 1993

Day	Flow (MGD)	Total Alpha (pCi/l)	Total Beta (pCi/l)	Total U (mg/l)	Total U (kgs)	C-BOD5 (mg/l)	TSS (mg/l)	NH3-N (mg/l)
1	AC							
2	AC							
3	AC							
4	AC							
5	AC							
6	0.075	122	338	0.11	0.03	1.97	15	0.21
7	0.111	41	81	0.01	0.00			
8	0.091	36	131	0.01	0.00			
9	0.111	<27	131	<0.01	0.00			
10	0.104	18	95	<0.01	0.00			
11	0.111	14	158	<0.01	0.00			
12	0.115	18	122	0.01	0.00	0.46	3	<0.10*
13	0.129	5	77	0.01	0.00			
14	0.124	14	104	0.01	0.00			
15	0.131	14	68	<0.01	0.00			
16	0.123	<5	68	<0.01	0.00			
17	0.126	5	50	<0.01	0.00			
18	0.127	131	257	0.01	0.00		<2	<0.10*
19	0.131	50	95	0.04	0.02	0.30		
20	0.128	36	81	<0.01	0.00			
21	0.128	23	86	<0.01	0.00			
22	0.046	99	180	0.24	0.04			
23	0.033	18	59	0.01	0.00			
24	0.127	18	63	0.01	0.00		<2	<0.10*
25	0.129	5	77	0.01	0.00			
26	0.121	63	72	0.01	0.00	0.52		
27	0.128	207	171	0.30	0.15			
28	0.128	414	401	0.45	0.22			
29	0.136	730	369	0.76	0.39			
30	0.103	158	171	0.26	0.10			
31	0.092	167	189	0.26	0.09			
Total	2.908				1.12			

AC: Biodenitrification tower placed on recycle mode. No discharge occurred.
*: Value is less than detectable limit.

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CONSOLIDATED CONSENT AGREEMENT FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT (cont.)

FACILITY: Fernald Environmental Management Project

LOCATION: 605 Biodenitrification Tower

DATE: OCTOBER 1993

	Flow (MGD)	Total Alpha (pCi/l)(2)	Total Beta (pCi/l)(2)	Total U (mg/l)(2)	Total U (kgs)	Calculated Total U-238 (pCi/l)(1)(2)
Avg.	0.094	98	141	ERR	0.04	ERR
Max.	0.136	730	401	31.00	0.39	0
Min.	0.000	0	50	0.00	0.00	0

Comments: (1) The activity of this discharge has been and will continue to be reported as Uranium-238 (pCi/l) in accordance with the Ohio EPA format for reporting uranium. Since this does not account for the activity of the other uranium isotopes in the effluent, the total uranium data is also presented. The calculated total U-238 is based on a conversion factor of 337.84 pCi U-238/mg Total U applied to the measured value of total uranium.

(2) Average values presented are flow-weighted.

CONSOLIDATED CONSENT AGREEMENT FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [606]
SWRB Pump Station Discharge
Stormwater Retention Basin Effluent

DATE: OCTOBER 1993

Day	Flow (MGD)	Total Alpha (pCi/l)	Total Beta (pCi/l)	Total U (mg/l)	Total U (kgs)
1	AC				
2	AC				
3	AC				
4	AC				
5	AC				
6	AC				
7	AC				
8	AC				
9	AC				
10	AC				
11	AC				
12	AC				
13	AC				
14	0.098	414	77	0.27	0.10
15	0.224	527	266	0.28	0.24
16	0.218	306	225	0.28	0.23
17	0.470	266	275	0.29	0.52
18	0.132	383	266	0.43	0.21
19	0.477	383	266	0.43	0.78
20	1.125	329	185	0.45	1.92
21	1.230	374	135	0.42	1.95
22	0.340	248	131	0.51	0.66
23	0.360	198	126	0.36	0.49
24	1.073	221	63	0.31	1.26
25	1.044	225	99	0.35	1.38
26	1.068	477	135	0.50	2.02
27	1.054	374	176	0.50	1.99
28	0.992	378	99	0.50	1.88
29	AC				
30	AC				
31	AC				
	9.905				15.62

AC: Stormwater levels in retention basins not high enough to necessitate discharge.

CONSOLIDATED CONSENT AGREEMENT FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR
CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT (cont.)

FACILITY: Fernald Environmental Management Project

LOCATION: 606 SWRB Pump Station Discharge

DATE: OCTOBER 1993

	Flow (MGD)	Total Alpha (pCi/l)(1)	Total Beta (pCi/l)(1)	Total U (mg/l)(1)	Total U (kgs)	Total TSS (kgs) (1)
Avg.	0.320	0	0	0.00	1.04	ERR
Max.	1.230	ERR	ERR	0.51	2.02	ERR
Min.	0.000	ERR	ERR	0.27	0.10	ERR

Comments: (1) Average values presented are flow-weighted.

CONSOLIDATED CONSENT AGREEMENT FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR
CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [605]
Biodenitrification Tower
BDN Tower Effluent

DATE: OCTOBER 1993

Day	Flow (MGD)	NO3-N (mg/l)	Chromium (ug/l)	Copper (ug/l)	Nickel (ug/l)	Hex-Chrom (ug/l)
1	AC					
2	AC					
3	AC					
4	AC					
5	AC					
6	0.075	4.0	<6.0*	<14.0*	<17.0*	<6.0*
7	0.111					
8	0.091					
9	0.111					
10	0.104					
11	0.111					
12	0.115	1.1	<6.0*	<14.0*	<17.0*	<6.0*
13	0.129					
14	0.124					
15	0.131					
16	0.123					
17	0.126					
18	0.127	0.62	<6.0*	<14.0*	<17.0*	<6.0*
19	0.131					
20	0.128					
21	0.128					
22	0.046					
23	0.033					
24	0.127	0.67	<6.0*	<14.0*	<17.0*	<6.0*
25	0.129					
26	0.121					
27	0.128					
28	0.128					
29	0.136					
30	0.103					
31	0.092					
Total	2.908					

AC: Biodenitrification tower placed on recycle mode. No discharge occurred.
*: Value is less than detectable limit.

CONSOLIDATED CONSENT AGREEMENT FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT (cont.)

FACILITY: Fernald Environmental Management Project

LOCATION: 605 Biodenitrification Tower

DATE: OCTOBER 1993

	Flow (MGD)	Total Alpha (pCi/l)(2)	Total Beta (pCi/l)(2)	Total U (mg/l)(2)	Total U (kgs)	Calculated Total U-238 (pCi/l)(1)(2)
Avg.	0.094	0	0	0.00	0.00	0
Max.	0.136	0	0	0.00	0.00	0
Min.	0.000	0	0	0.00	0.00	0

Comments:

(1) The activity of this discharge has been and will continue to be reported as Uranium-238 (pCi/l) in accordance with the Ohio EPA format for reporting uranium. Since this does not account for the activity of the other uranium isotopes in the effluent, the total uranium data is also presented. The calculated total U-238 is based on a conversion factor of 337.84 pCi U-238/mg Total U applied to the measured value of total uranium.

(2) Average values presented are flow-weighted.

CONSOLIDATED CONSENT AGREEMENT FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR
CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O.Box 398705
Cincinnati, Ohio 45239-8705
9002 M 9501 900212

LOCATION: [SP4]
Parshall Flume
Effluent Downstream of Manhole 176B

DATE: OCTOBER 1993

Day	DO (mg/l)	IRON (mg/l)	MANGANESE (mg/l)
1			
2			
3			
4			
5			
6			
7	9.0	0.55	0.1
8			
9			
10			
11			
12			
13			
14	9.7	0.54	0.1
15			
16			
17			
18			
19			
20			
21			
22	9.3	0.62	0.1
23			
24			
25			
26			
27			
28	9.8	0.83	0.2
29			
30			
31			

CONSOLIDATED CONSENT AGREEMENT FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT (cont.)

FACILITY: Fernald Environmental Management Project

LOCATION: SP1 IAWWT (SWRB) Discharge

DATE: SEPTEMBER 1993

	Flow (MGD)	Total Alpha (pCi/l)(1)	Total Beta (pCi/l)(1)	Total U (mg/l)(1)	Total U (kgs)	Total TSS (kgs) (1)
Avg.	0.010	2	4	0.00	0.00	0.70
Max.	0.166	2	5	0.00	0.00	1.40
Min.	0.000	1	4	0.00	0.00	0.00

Comments: (1) Average values presented are flow-weighted.

CONSOLIDATED CONSENT AGREEMENT FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT (cont.)

FACILITY: Fernald Environmental Management Project

LOCATION: 605 Biodenitrification Tower

DATE: SEPTEMBER 1993

	Flow (MGD)	Total Alpha (pCi/l)(2)	Total Beta (pCi/l)(2)	Total U (mg/l)(2)	Total U (kgs)	Calculated Total U-238 (pCi/l)(1)(2)
Avg.	0.001	755	1686	ERR	0.06	ERR
Max.	0.012	761	1761	31.00	0.08	ERR
Min.	0.000	739	1613	0.00	0.02	ERR

Comments: (1) The activity of this discharge has been and will continue to be reported as Uranium-238 (pCi/l) in accordance with the Ohio EPA format for reporting uranium. Since this does not account for the activity of the other uranium isotopes in the effluent, the total uranium data is also presented. The calculated total U-238 is based on a conversion factor of 337.84 pCi U-238/mg Total U applied to the measured value of total uranium.

(2) Average values presented are flow-weighted.

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CONSOLIDATED CONSENT AGREEMENT FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT FOR CONTROL AND ABATEMENT OF RADON-222 EMISSIONS
MONTHLY PROGRESS REPORT

Period Ending November 30, 1993

EFFLUENT RADIATION REPORT (cont.)

FACILITY: Fernald Environmental Management Project

LOCATION: 606 SWRB Pump Station Discharge

DATE: SEPTEMBER 1993

	Flow (MGD)	Total Alpha (pCi/l)(1)	Total Beta (pCi/l)(1)	Total U (mg/l)(1)	Total U (kgs)	Total TSS (kgs) (1)
Avg.	0.198	286	ERR	ERR	0.83	ERR
Max.	1.146	ERR	ERR	0.35	1.52	ERR
Min.	0.000	ERR	ERR	0.20	0.24	ERR

Comments: (1) Average values presented are flow-weighted.