G-000-1005.78

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U.S. DEPARTMENT OF ENERGY COMMUNITY MEETING OF FEBRUARY 22, 1994 (AGENDA AND OVERHEADS)

02/22/94

DOE-FN/PUBLIC
53
OVERHEADS

U.S. DEPARTMENT OF ENERGY

COMMUNITY MEETING

February 22, 1994

The Plantation

6:00 - 7:00 p.m. Exhibits

7:00 p.m. Opening

Welcome/Introductory Remarks_____Ken Morgan

7:15 p.m.

RI/FS Timeline/Public Participation_____Jack Craig

7:30 - 8:30 Group Session

"Clean-upoly" Fernald's '94 Budget_____Sue Peterman

(15 minute break)

Agency Updates - FRESH Comments - Q&A

U.S. EPA Comments	Jim Saric
Ohio EPA Comments	Graham Mitchell
FRESH Comments	Lisa Crawford
Fernald Citizens Task Force	John Applegate

Group Questions and Answers

After the meeting, DOE/FERMCO staff will be available to talk with Stakeholders.

FERNALD'S WASTE MANAGEMENT PROGRAM

INCLUDES INFORMATION ON:

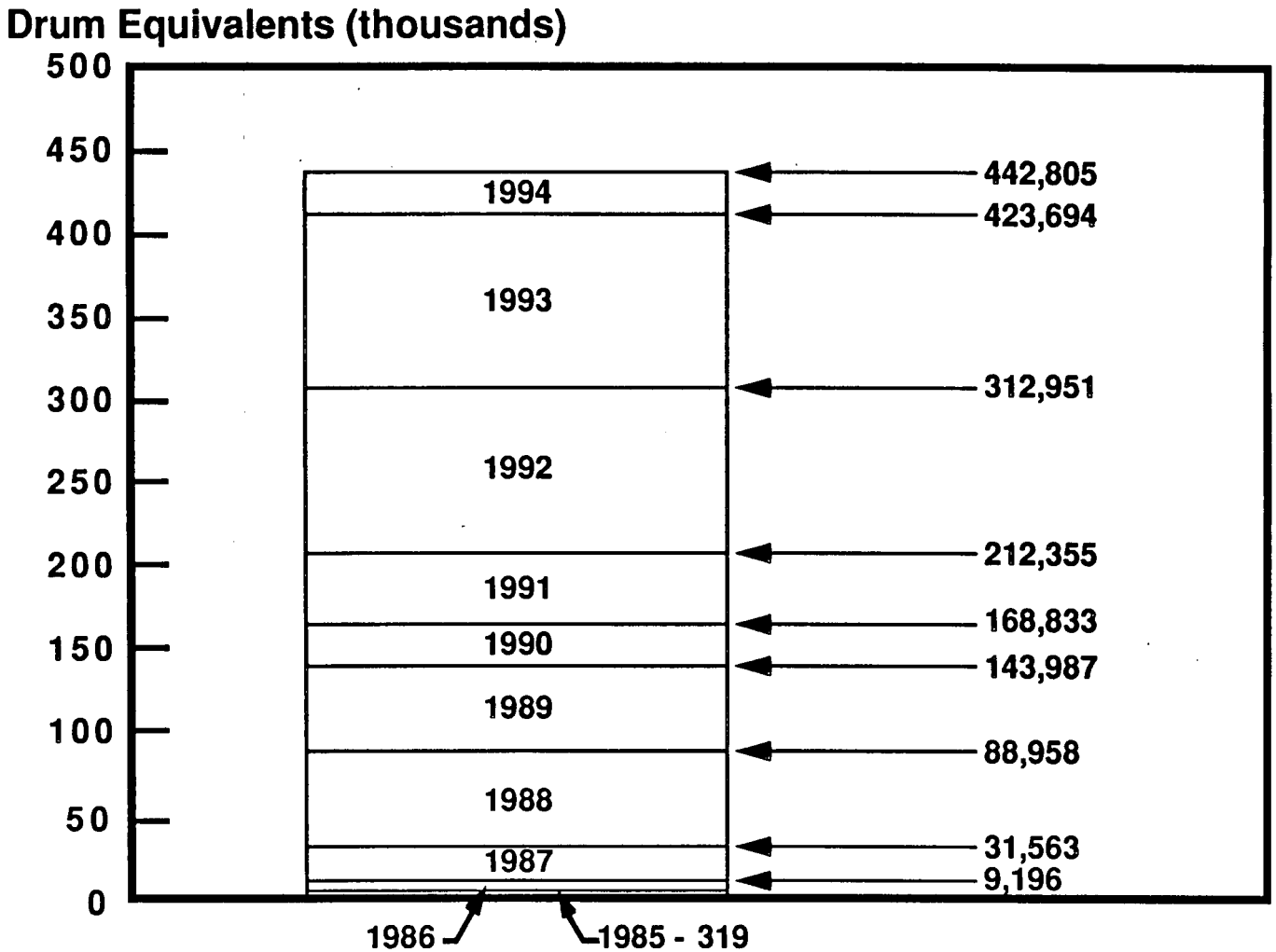
- Waste Shipments
- Inventory of Backlog Waste
- Inventory of Operable Unit Waste
- Inventory of Chemicals

February 22, 1994

5245

WASTE SHIPMENT CUMULATIVE TOTAL

INVENTORY REDUCTION THROUGH JAN. 28, 1994



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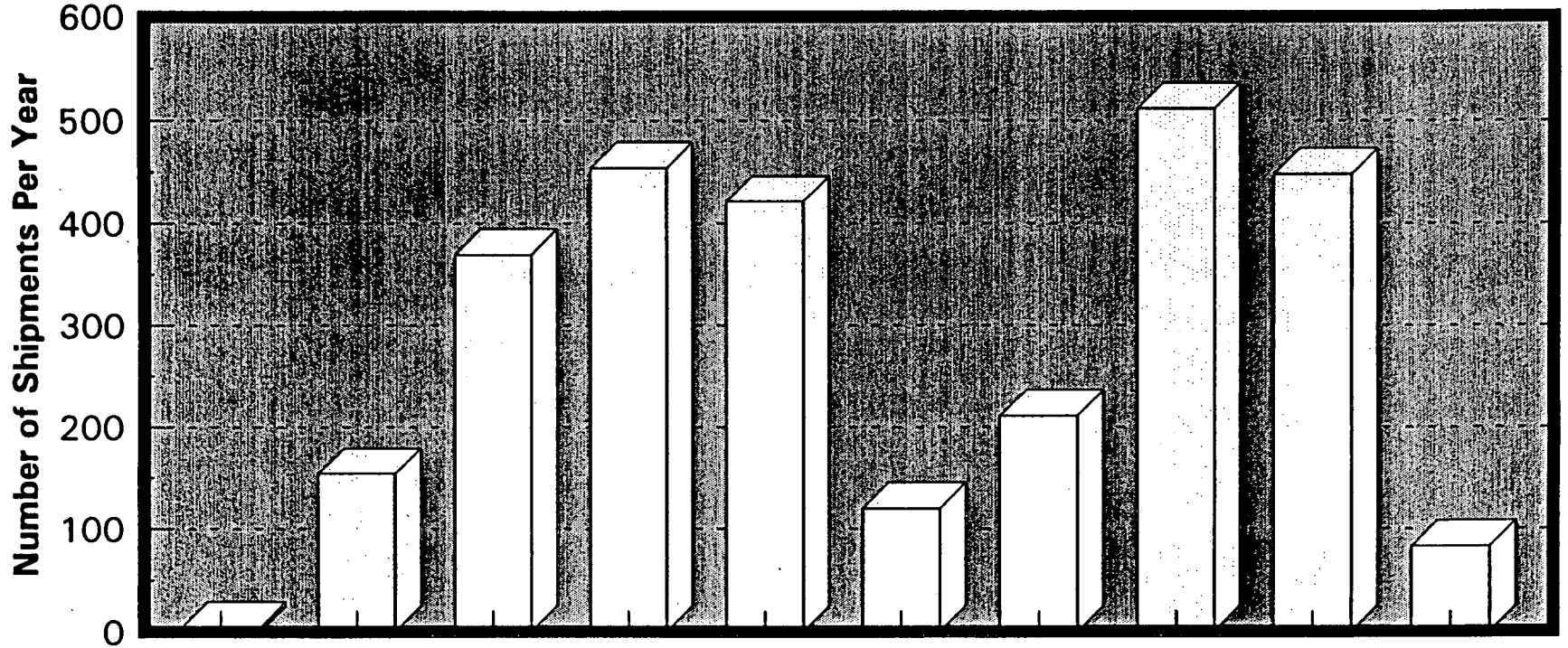
PROGRAM HISTORY

Number of Shipments



YEAR	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Shipments	4	154	369	454	421	120	211	511	448	83 *

** Thru 12-20-93*

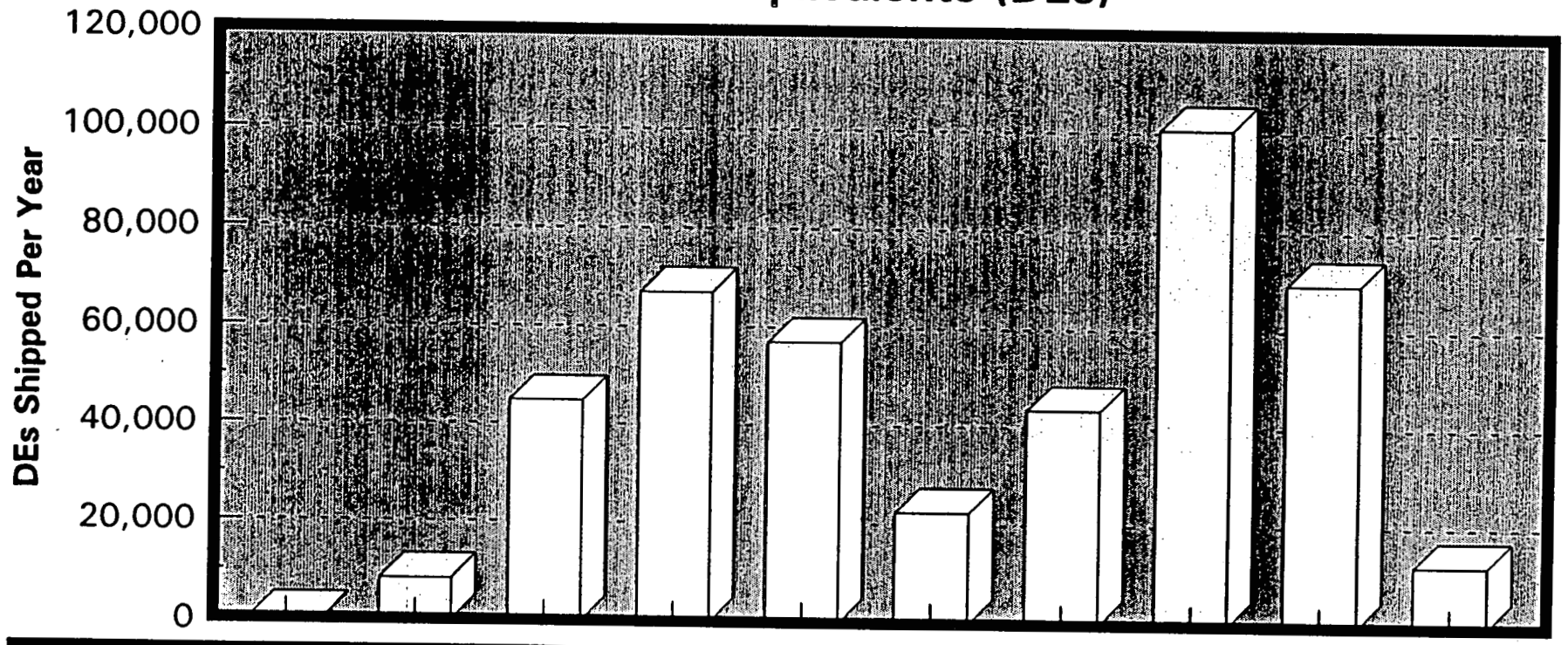
5245

LOW LEVEL WASTE SHIPPING PROGRAM

FEMP

PROGRAM HISTORY

Total Drum Equivalents (DEs)



YEAR	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
DEs	320	8,300	44,800	67,000	57,000	22,437	43,522	100,595	69,430	12,362*

* *Thru 12-20-93*

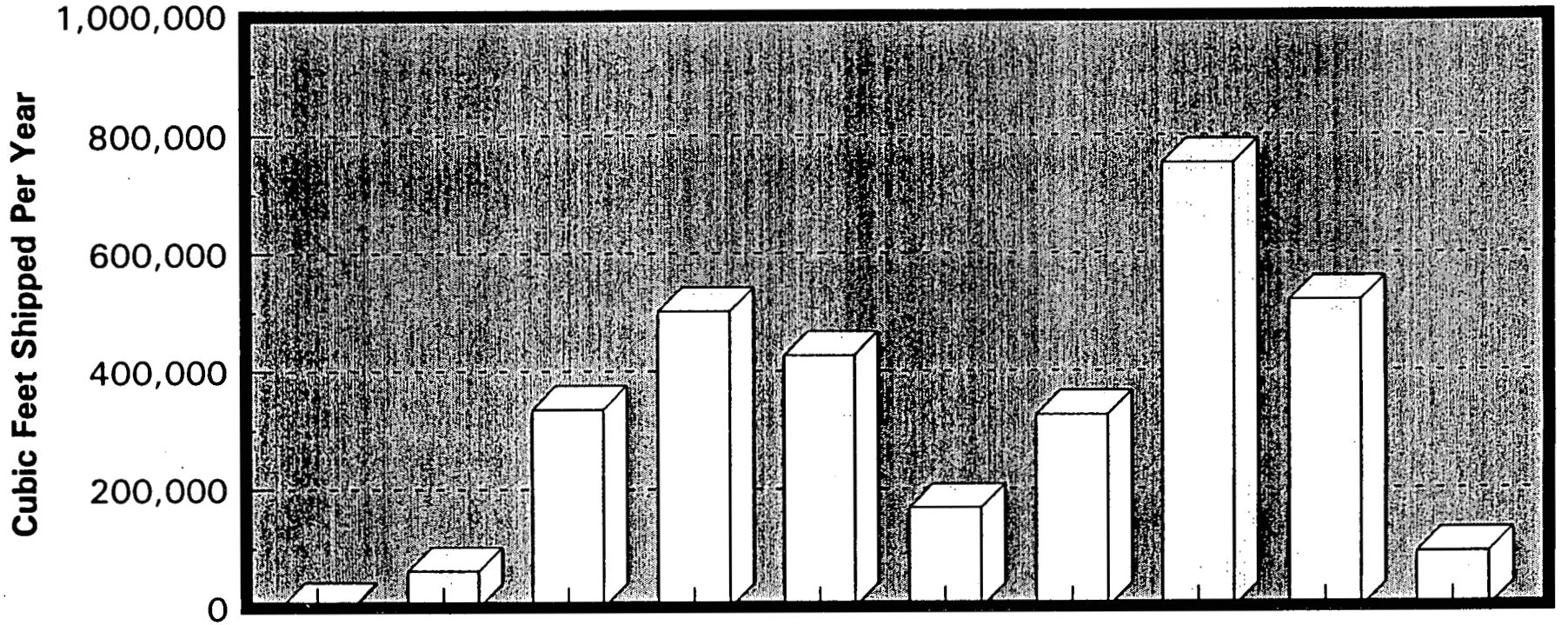
5245

LOW LEVEL WASTE SHIPPING PROGRAM

FEMP

PROGRAM HISTORY

Total Cubic Feet



YEAR	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Cubic Feet	2,394	62,048	335,104	501,160	426,360	167,829	325,545	752,451	519,336	92,468 *

* *Thru 12-20-93*

INVENTORY OF BACKLOG WASTE

The backlog tables are a compilation of data from the All Materials Inventory database from the Material Control and Accountability (MC&A) department. The information presented is a summary of the general types of containers and product that are currently stored in various facilities. The following tables are included in this section:

- Inventory of Non-RCRA Residue Containers
- Inventory of RCRA Containers
- Inventory of Thorium Containers
- Inventory of Product

INVENTORY OF NON-RCRA RESIDUE CONTAINERS

The Inventory of Non-RCRA Residue Containers table presents waste container information by Storage Location, Material Description, Container Type, Number of Containers, and Net Weight. Within each material description in the same storage location, all waste containers of similar size have been grouped together. The net weight represents the weight of the material inside the container and consists of a total weight of all the containers within each material description in the same storage location. In a few instances the net weight is unknown or is listed as having a weight of 0 which means those containers have not been weighed yet. This information was compiled from the All Materials Inventory database from the Material Control and Accountability (MC&A) department on January 5, 1994.

SUMMARY OF NON-RCRA RESIDUE CONTAINERS

CONTAINER TYPE	NUMBER OF CONTAINERS	NET WEIGHT (POUNDS)
5 GALLON CAN	551	5,571
10 GALLON CAN	834	196,989
30 GALLON DRUM	1,005	420,394
55 GALLON DRUM	29,838	12,271,805
85 GALLON DRUM	22,070	10,454,859
110 GALLON DRUM	194	113,026
WHITE METAL BOX	1,849	404,818
ISO	1	0
ISO/TOP LOAD	188	404,919
SKID	233	312,018
CANISTERS	234	5,371
ISO/TOP	1	0
TANK	5	3,739
SMALL WOOD BOX	1	45
WOOD BOX	77	1,738
J-HOPPER	20	0
T-HOPPER	116	7,370
TOTALS	57,217	24,602,662

INVENTORY OF RCRA CONTAINERS

The Inventory of RCRA Containers table presents waste container information by Storage Location, Material Description, Container Type, Number of Containers, and Net Weight. Within each material description in the same storage location, all waste containers of similar size have been grouped together. The net weight represents the weight of the material inside the container and consists of a total weight of all the containers within each material description in the same storage location. In a few instances the net weight is unknown or is listed as having a weight of 0 which means those containers have not been weighed yet. This information was compiled from the All Materials Inventory database from the Material Control and Accountability (MC&A) department on January 5, 1994.

SUMMARY OF RCRA CONTAINERS

CONTAINER TYPE	NUMBER OF CONTAINERS	NET WEIGHT (POUNDS)
5 GALLON	327	9,870
10 GALLON	1	68
10 OVERPACK	1	6
22 GALLON	1	44
30 GALLON	18	3,216
30 OVERPACK	11	558
55 GALLON	4,071	1,860,920
55 OVERPACK	3,475	1,134,303
55 LN	2	962
55 PLS	19	7,591
85 GALLON	118	46,566
85 OVERPACK	4,608	1,917,049
110 OVERPACK	55	29,720
BOX	2	3,984
POLY	1	335
TANK	20	2,286,349
WHITE METAL BOX	123	428,382
TOTALS	12,853	7,729,923

INVENTORY OF THORIUM CONTAINERS

The Inventory of Thorium Containers table presents waste container information by Storage Location, Material Description, Container Type, Number of Containers, and Net Weight. Within each material description in the same storage location, all waste containers of similar size have been grouped together. The net weight represents the weight of the material inside the container and consists of a total weight of all the containers within each material description in the same storage location. In a few instances the net weight is unknown or is listed as having a weight of 0 which means those containers have not been weighed yet. This information was compiled from the All Materials Inventory database from the Material Control and Accountability (MC&A) department on January 5, 1994.

SUMMARY OF THORIUM CONTAINERS

CONTAINER TYPE	NUMBER OF CONTAINERS	NET WEIGHT (POUNDS)
2 GALLON	1	7
5 GALLON	19	301
15 GALLON	16	1,034
24 GALLON	1	133
30 GALLON	2	441
55 GALLON	5,644	2,521,988
85 GALLON	199	54,420
85/110 OVER PACK	2	808
5/85/110 OVER PACK	2	249
55/85/110 OVER PACK	28	19,535
WHITE METAL BOX	453	1,645,509
46 BOXES IN 1 WOOD BOX	1 SKID	4,072
55 BOXES ON 1 METAL SKID AND 3 WOODEN SKIDS	1 SKID	4,304
UNKNOWN	33	9,265
TOTALS	6,402	4,262,066

INVENTORY OF PRODUCT

The Inventory of Product table presents a general summary of the types of product that are currently stored in various facilities. The information is presented by Storage Location, Material Description, Container Type, Number of Containers, and Net Weight. Within each material description in the same storage location, all waste containers of similar size have been grouped together. The net weight represents the weight of the material inside the container and consists of a total weight of all the containers within each material description in the same storage location. In a few instances the net weight is unknown or is listed as having a weight of 0 which means those containers have not been weighed yet. This information was compiled from the All Materials Inventory database from the Material Control and Accountability (MC&A) department on January 5, 1994.

SUMMARY OF PRODUCT INVENTORY

CONTAINER TYPE	NUMBER OF CONTAINERS	NET WEIGHT (POUNDS)
5 GALLON CAN	40	2,342
10 GALLON CAN	21,963	4,948,155
30 GALLON DRUM	444	356,281
55 GALLON DRUM	2,110	1,783,041
85 GALLON DRUM	291	215,678
110 GALLON DRUM	3	478
WHITE METAL BOX	374	2,271,836
SKIDS	5,891 PIECES	3,572,626
T-HOPPER	302	1,989,017
FURNACE POT	1	1,000
SHIPPING BOX	33	18,053
SMALL WOOD BOXES	1,484 BOXES	1,329,422
TOTALS	32,936	16,487,929

SUMMARY

FERNALD SITE URANIUM INVENTORY

JANUARY 1, 1994

DESCRIPTION	NO. CONTAINERS	~NET WT.(LBS.)	U WT. (MTU)[1]	DRUM EQUIV.[2]
UO_3	794	1,975,230	736	40899
UF_4	22492	5,767,330	1982	22551
METAL - DEPLETED	4353	7,372,682	3328	8982
METAL - NORMAL	296	470,280	211	470
METAL - ENRICHED	691	1,148,240	516	1148
RESIDUES				
RECOVERABLE	6789	2,871,288	673	13822
MISC. MAT'LS	16	8,662	3	28
TOTAL PRODUCT	**35431**	**19,613,712**	**7449**	**87900**
HOLDING ACCOUNT[3]	66171	29,696,615	1923	73,973
MISC. MAT'LS[4]	153	47,617	3	113
TOTAL U WASTE	**66324**	**29,744,232**	**1926**	**74086**
TOTAL INVENTORY	101,755	49,357,944	9,375	161,986

[1] MTU - Metric Tons Uranium (This is the weight, in metric tons, of just the uranium in the materials. In the case of metal, it is almost 100 percent uranium. However, in the UO_3, it would be ~83% uranium; and for the UF_4, it would be ~75% uranium. For the recoverable residues and miscellaneous materials, it could vary from 5% - 97%.)

[2] Drum Equivalents - This material is currently stored in many different types of containers, such as, 10-gallon cans, wooden boxes, skids, and drums. "Drum Equivalents" is just a rough calculation of the number of 55-gallon drums it would take to hold the material if it were all packaged in drums. Putting the material in drum equivalents facilitates a rough volume calculation, if needed.

[3] Holding Account - This is an assortment of miscellaneous uranium materials that are essentially waste because the uranium contained in them is not economical to recover according to the Economic Discard Limit (EDL), which is a value/cost breakeven point between recovering the uranium from a residue or disposing of it as waste. Included in this holding account, is the UNH. These materials have been written off the books to minimize costs of continual inventorying, which is required of uranium product materials.

[4] These materials are various material types that are in-process and will eventually be written off to the holding account as waste.

TABLE OU1-A
Operable Unit 1 In Situ Waste Quantity Estimates
Summary Table

MATERIAL	MEDIA	VOLUME	DENSITY	WEIGHT
		Cubic Yards (yd^3)	Tons/yd^3	Tons
Pit 1				
Pit 1 Cap	Soil	1,700	1.35	2,295
Pit 1 Contents	Sludge	48,500	1.62	78,570
Pit 1 Liner	Soil	18,200	1.35	24,570
Pit 1 Excavated Soil	Soil	10,423	1.35	14,071
Subtotals		78,823		119,506
Pit 2				
Pit 2 Cap	Soil	4,200	1.35	5,670
Pit 2 Contents	Sludge	24,200	1.62	39,204
Pit 2 Liner	Soil	9,000	1.35	12,150
Pit 2 Excavated Soil	Soil	5,183	1.35	6,997
Subtotals		42,583		64,021
Pit 3				
Pit 3 Cap	Soil	93,700	1.35	126,495
Pit 3 Contents	Sludge	204,100	1.45	295,945
Pit 3 Liner	Soil	9,700	1.35	13,095
Pit 3 Excavated Soil	Soil	27,404	1.35	36,995
Subtotals		334,904		472,530
Pit 4				
Pit 4 Cap	Soil	14,600	1.35	19,710
Pit 4 Contents	Sludge	55,100	1.62	89,262
Pit 4 Liner	Soil	3,100	1.35	4,185
Pit 4 Excavated Soil	Soil	9,472	1.35	12,787
Subtotals		82,272		125,944

TABLE OU1-A
Operable Unit 1 In Situ Waste Quantity Estimates
Summary Table

MATERIAL	MEDIA	VOLUME	DENSITY	WEIGHT
		Cubic Yards (yd^3)	$Tons/yd^3$	Tons
Pit 5				
Pit 5 Contents	Sludge	97,900	1.20	117,480
Pit 5 Excavated Soil	Soil	18,102	1.35	24,438
Subtotals		116,002		141,918
Pit 6				
Pit 6 Contents	Sludge	9,600	1.20	11,520
Pit 6 Excavated Soil	Soil	3,600	1.35	4,860
Subtotals		13,200		16,380
Clearwell				
Clearwell Contents	Sludge	3,700	1.20	4,440
Clearwell Liner	Soil	600	1.35	810
Clearwell Excavated Soil	Soil	3,213	1.35	4,338
Subtotals		7,513		9,588
Burn Pit				
Burn Pit Contents	Sludge	30,300	1.62	49,086
Burn Pit Excavated Soil	Soil	4,419	1.35	5,966
Subtotals		34,719		55,052
OU1 In Situ Totals				
OU1 General Area	Sludge	473,400		685,507
OU1 General Area	Soil	236,616		319,432
Totals (All Materials)		710,016		1,004,939

Reference: Waste Information Manual, Prepared By CRU3 Project Integration, Section 1, Page OU1-A1.

TABLE OU2–A
Operable Unit 2 In Situ Waste Quantity Estimates
Summary Table

MATERIAL	MEDIA	VOLUME Cubic Yards (yd^3)	DENSITY Tons/ yd^3	WEIGHT Tons
Active Fly Ash Pile				
Fly ash	Fly ash	69,000	0.68	46,920
Active fly ash soil	Soil	3,550	1.50	5,325
Subtotals		72,550		52,245
Inactive Fly Ash Pile				
Fly ash	Fly ash	61,450	0.68	41,786
Inactive fly ash pile cap (0–1')	Soil	5,100	1.50	7,650
Inactive fly ash pile cap (1'–4')	Soil	15,300	1.50	22,950
Inactive fly ash pile – unwashable material	Unwashable material	2,000	1.50	3,000
Inactive fly ash pile soil adj. to unwash. material	Soil	5,000	1.50	7,500
Subtotals		88,850		82,886
Lime Sludge Ponds				
Lime sludge ponds contents	Sludge	19,700	1.35	26,595
Lime sludge ponds – soil beneath ponds	Soil	3,900	1.50	5,850
Subtotals		23,600		32,445
Solid Waste Landfill				
Solid waste landfill cap (0–1')	Soil	2,450	1.50	3,675
Solid waste landfill – unwashable material	Unwashable material	750	1.50	1,125
Solid waste landfill soil adj. to unwash. material	Soil	1,750	1.50	2,625
Solid waste landfill – waste material	Solid waste	17,200	1.50	25,800
Subtotals		22,150		33,225
South Field				
South field cap (0–1')	Soil	19,300	1.50	28,950
South field cap (1' to 1–3/4')	Soil	14,500	1.50	21,750
South field – unwashable material	Unwashable material	10,000	1.50	15,000
South field soil adj. to unwash. material	Soil	15,000	1.50	22,500
South field – clean fill and construction rubble	Soil	124,500	1.50	186,750
Subtotals		183,300		274,950
OU2 In Situ Totals				
OU2 General Area	Fly ash	130,450		88,706
OU2 General Area	Solid waste	17,200		25,800
OU2 General Area	Sludge	19,700		26,595
OU2 General Area	Soil	210,350		315,525
OU2 General Area	Unwashable material	12,750		19,125
Totals (All Materials)		390,450		475,751

Reference: Waste Information Manual, Prepared By CRU3 Project Integration, Section 2, Page OU2–A1.

TABLE OU3-A
Operable Unit 3 In Situ Waste Quantity Estimates
Summary Table

CERCLA REMEDIATION WASTE MATERIAL	VOLUME[a]	DENSITY[b]	WEIGHT
	Cubic Yards (yd^3)	Tons / yd^3	Tons
Concrete from dismantling of structures	87,626	2.03	177,880
Concrete block from dismantling of structures	10,951	1.35	14,784
Structural steel from dismantling of structures	2,071	6.62	14,198
Transite from dismantling of structures	1,485	2.03	3,015
Other metal from dismantling of structures	5,569	6.62	134,939
Soil/Rubble from stockpiles	36,333	1.35	49,050
Asphalt from pads and roadways	16,508	1.10	18,158
Equipment and misc. from dismantling of structures	109,818	c	c
Totals	270,361		413,276 [d]

References and Notes:

a. Volumes taken from Operable Unit 3 Workplan Addendum, FEMP, May 1993, Volume 1, Appendix A, Table A.7.

b. Estimated density corresponding to the form of material for which the volume was estimated. Final disposal volumes will differ significantly.

c. A density could not be assumed because of the wide variety of materials in this category, therefore a weight could not be given.

d. Total weight does not include equipment and miscellaneous from dismantling of structures.

TABLE OU4–A
Operable Unit 4 In Situ Waste Quantity Estimates
Summary Table

MATERIAL	MEDIA	VOLUME Cubic Yards (yd^3)	DENSITY Tons/ yd^3	WEIGHT Tons
Silo 1				
Silo 1 Cap	Bentogrout	467	1.35	630
Silo 1 Contents	Sludge	4,293	1.78	7,642
Silo 1 Structure	Structure	667	2.00	1,334
Subtotals		5,427		9,606
Silo 2				
Silo 2 Cap	Bentogrout	411	1.35	555
Silo 2 Contents	Sludge	3,719	1.78	6,620
Silo 2 Structure	Structure	667	2.00	1,334
Subtotals		4,797		8,509
Silo 3				
Silo 3 Contents	Dry Waste	5,088	0.77	3,918
Silo 3 Structure	Structure	667	2.00	1,334
Subtotals		5,755		5,252
Silo 4				
Silo 4 Contents	Water	64	0.84	54
Silo 4 Structure	Structure	667	2.00	1,334
Subtotals		731		1,388
Decant Sump System				
Decant Sump System Contents	Water	40	0.84	34
Decant Sump System Contents	Sludge	5	1.78	9
Decant Sump System Structure	Structure	365	2.00	730
Decant Sump System Structure	Concrete	29	2.00	58
Subtotals		439		831
OU4 General Area				
OU4 General Area – Berm Soil	Soil	10,537	1.69	17,808
OU4 General Area – Suface Soil	Soil	4,444	1.35	5,999
OU4 General Area – Subsurface Soil	Soil	14,646	1.35	19,772
OU4 General Area – Water	Water	495	0.84	416
Subtotals		30,122		43,995
OU4 In Situ Totals				
OU4 General Area	Bentogrout	878		1,185
OU4 General Area	Concrete	29		58
OU4 General Area	Dry Waste	5,088		3,918
OU4 General Area	Sludge	8,017		14,271
OU4 General Area	Soil	29,627		43,579
OU4 General Area	Structure	3,033		6,066
OU4 General Area	Water	599		504
Totals (All Materials)		47,271		69,581

Reference: Waste Information Manual, Prepared By CRU3 Project Integration, Section 4 Page OU4–A1.

TABLE OU5-A
Operable Unit 5 In Situ Waste Quantity Estimates
Summary Table

MATERIAL	MEDIA	FLOW Gal/Min (gpm)	VOLUME Cubic Yards (yd^3)	DENSITY Tons/ yd^3	WEIGHT Tons
Water					
Water – Stormwater/groundwater	Water	700	–	–	–
Water – Proc. & remed. wastewater/ groundwater	Water	400	–	–	–
Water – Groundwater, site-wide	Water	7,500	–	–	–
Subtotals		8,600			
Soils					
Soils – OU3 General Area	Soil	–	1,076,000	1.35	1,452,600
Soils – OU5 General Area	Soil	–	17,600	1.35	23,760
Subtotals			1,093,600		1,476,360
OU5 In Situ Totals					
Water	Water	8,600			
Soil	Soil		1,093,600		1,476,360
Totals (All Materials)		8,600	1,093,600		1,476,360

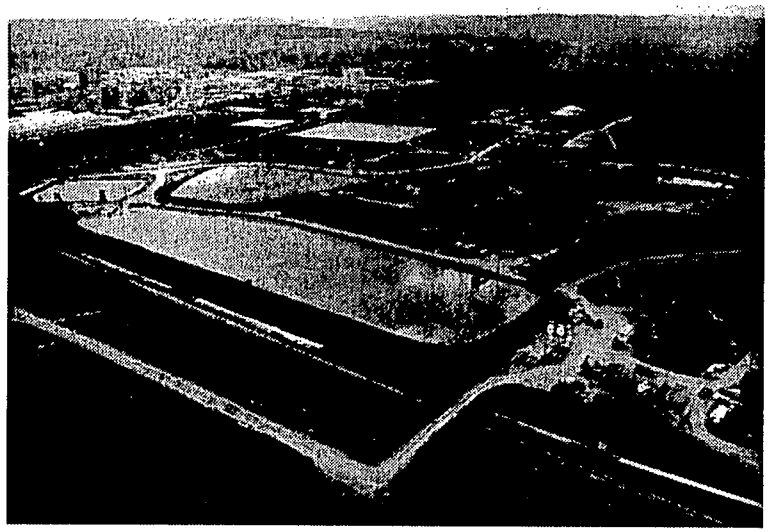
Reference: Waste Information Manual, Prepared By CRU3 Project Integration, Section 5, Page OU5-A1.

SUMMARY OF MATERIALS IN SARA 312 REPORT

Following is a list of the chemicals addressed under the OSHA Hazard Communication Standard. This includes those chemicals which the FEMP has a Material Safety Data Sheet. This summary shows pounds on site as of January 21, 1994.

CHEMICAL	POUNDS
Aluminum sulfate	28,000
Argon	12,032 (both liquid and gas)
Barium carbonate	47,922
Bentogrout	70,000
Blasting grit	25,340
Calcium hydroxide	12,500
Calcium oxide	215,365
Chlorine	1,200
Diatomaceous earth	58,000
Diatomaceous earth	62,404
Diesel fuel #2	24,522
Ferrous sulfamate	21,500
Hydrated alumina	61,600
Hydrochloric acid	1,500
Hydrogen fluoride	5,963
Lithium carbonate	15,950
Magnesium oxide	106,475
Methanol	359,096
Nitric acid	25,490
Nitrogen	14,146 (of both liquid and gas)
Nu-sal	49,800
Phosphoric acid	33,957
Potassium carbonate	29,011
Propane	8,631
Sodium carbonate	52,694
Sodium hydroxide	254,679
Sulfuric acid	86,919
Unleaded gasoline	26,447
Urea	21,859

OPERABLE UNIT 1 - WASTE PITS

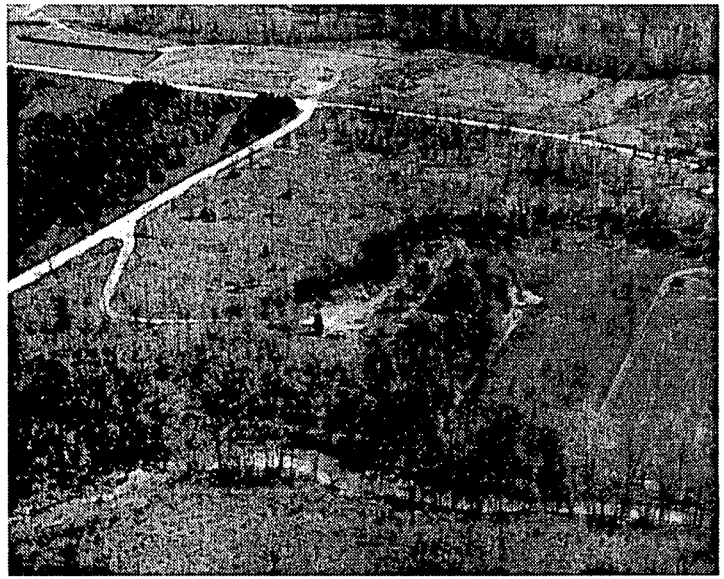


INCLUDES:
- Waste Pits 1 through 6
- Clearwell
- Burnpit
- Berms, Liners and Soils Within the OU Boundary

OBJECTIVE:
Stabilize, Isolate and/or Treat the Waste and Any Associated Soils and Groundwater to Prevent Further Release or Migration of Contaminants to the Environment.

SCHEDULE:
Submit Draft Feasibility Study/Proposed Plan to U.S. EPA March 1994
Record of Decision November 1994

OPERABLE UNIT 2 - OTHER WASTE UNITS



INCLUDES:

- Flyash Piles
- Lime Sludge Ponds
- Solid Waste Landfill
- Other South Field Disposal Areas
- Berms, Liners and Soils Within the OU Boundary

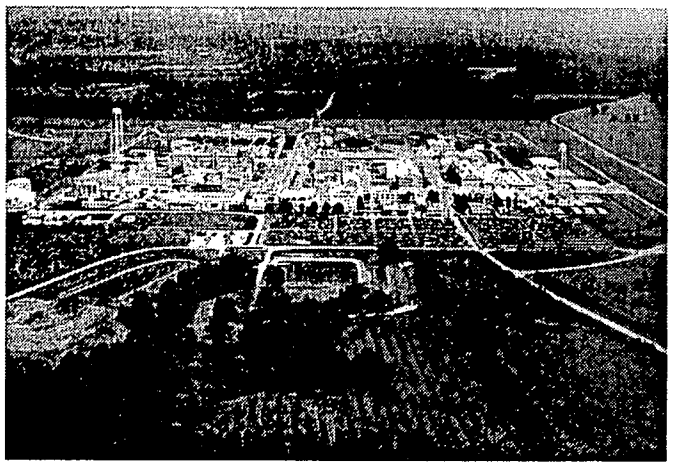
OBJECTIVE:

Mitigate a Potential Source of Contamination Resulting from Large Volumes of Waste Material that May Have Been Contaminated with Hazardous Chemical and Radioactive Materials During FEMP Operations.

SCHEDULE:

Submitted Draft Remedial Investigation Report to U.S. EPA February 1994
Submit Draft Feasibility Report/Proposed Plan to U.S. EPA April 1994
Record of Decision January 1995

OPERABLE UNIT 3 - PRODUCTION AREA



INCLUDES:

- All Man-Made Structures and Facilities at the Fernald, Above and Below Ground. Facilities Specifically Excluded from OU3 are:
  - K-65 Area (OU4)
  - Waste Storage Pits (OU1)
  - Fly Ash Piles (OU2)

OBJECTIVE:

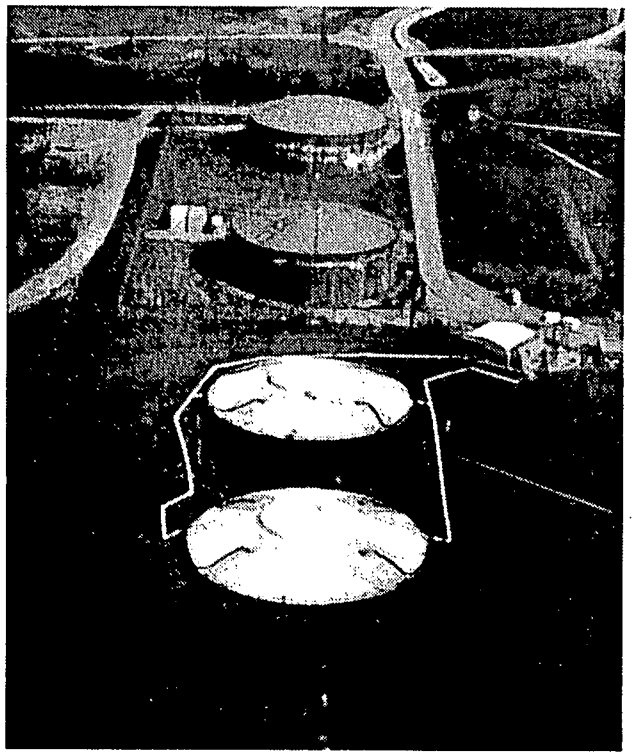
The Conduct of Environmental Investigations, Studies, Designs, Removal Actions, and Remedial Actions Necessary to Eliminate or Mitigate the Risks Posed to the Environment and Public Health by Contaminants Located Within OU3.

SCHEDULE:

Submitted Proposed Plan/Environmental Assessment for Interim Remedial Action (Decontamination and Demolition of Former Production Buildings) December 1993
Submit Draft Remedial Investigation Report/Baseline Risk Assessment to U.S. EPA March 1994
Submit Draft Feasibility Study/Proposed Plan to U.S. EPA August 1994
Record of Decision April 1997

5245

OPERABLE UNIT 4 - SILOS



INCLUDES:

- Silos 1 and 2 (K-65 Silos)
- Silo 3 - Metal Oxides
- Silo 4 - Empty
- Decant Sump System
- Soils and any Buried Concrete
- Berm Surrounding Silos 1 and 2
- Perched Water (Encountered During Remediation)

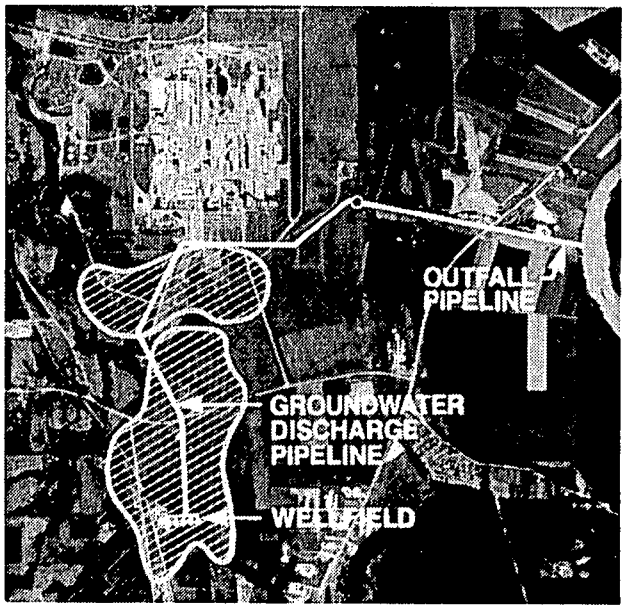
OBJECTIVE:

Treat, Stabilize or Isolate the Silo Contents, Structures and Affected Areas to Prevent Further Release or Migration of Contaminants to the Environment.

SCHEDULE:

Received Conditional U.S. EPA Approval of Feasibility Study/Proposed Plan February 1994
Record of Decision June 1994

OPERABLE UNIT 5 - ENVIRONMENTAL MEDIA



INCLUDES:

- Groundwater (Great Miami Aquifer)
- Groundwater (Perched Water)
- Surface Water
- Soils (Not Associated with OU1 - OU4)
- Sediment
- Flora and Fauna

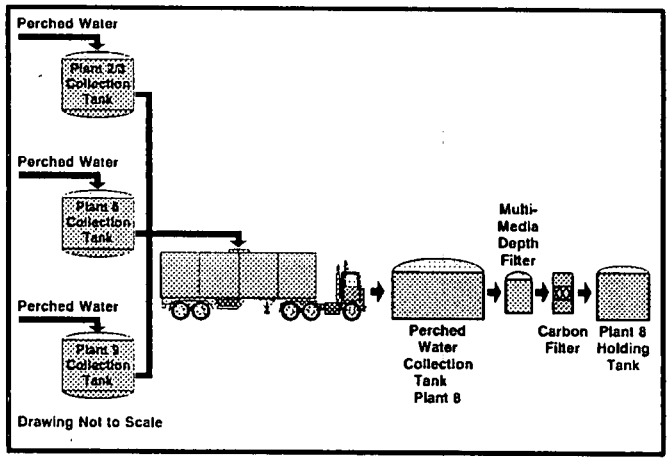
OBJECTIVE:

To Protect Human Health and the Environment by Preventing Exposure to Contaminated Soils or Water and to Prevent Further Contamination of Area Soils, Water, Flora and Fauna.

SCHEDULE:

Submit Final Remedial Investigation Report/Baseline Risk Assessment to U.S. EPA September 1994
Submit Final Feasibility Study Report/Proposed Plan to U.S. EPA February 1995
Record of Decision September 1995

REMOVAL ACTION #1
CONTAMINATED WATER BENEATH FERNALD BUILDINGS



OBJECTIVE/BENEFIT:

- Minimize the Potential for Uranium-Contaminated Groundwater to Infiltrate the Underlying Aquifer from Perched Water Zones Located Beneath Significantly Contaminated Portions of the Former Production Area.

ACTIVITIES:

- Extraction Facilities have been Installed.
- Pumping of Perched Groundwater in Progress at all Identified Locations.
- Treatment Removes Volatile Organic Compounds and Uranium Prior to Discharge to River.
- Addition of Plant 6 Motor Bay Sump Perched Water Collection and Treatment Scheduled March 1994.

SCHEDULE:
Pumping to Continue Until Final Remediation

REMOVAL ACTION #2
WASTE PIT AREA RUNOFF CONTROL

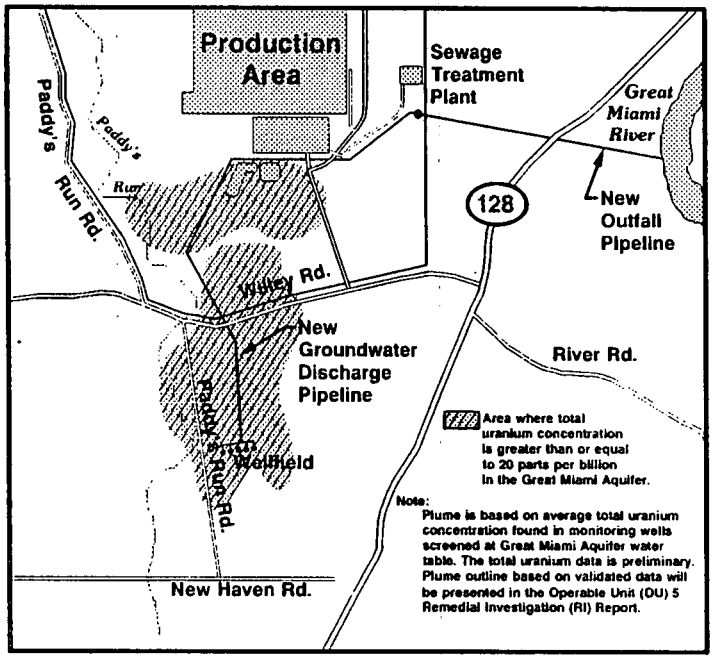
OBJECTIVE:
- Reduce Potential Groundwater Contamination from Contaminated Stormwater Runoff.

BENEFITS:
- Reduce or Mitigate the Release of Uranium and Other Contaminants to Paddys Run.
- Mitigate the Potential for Contaminants from Surface Water from Reaching the Underlying Aquifer.

ACTIVITIES:
- Collection of Runoff in the Waste Pit and Adjacent Areas Through the Installation of Trenches and Dikes.
- Treatment of Runoff in Existing Fernald Wastewater Treatment Facilities

SCHEDULE:
Project Completed July 30, 1992. System Operational

REMOVAL ACTION #3
SOUTH GROUNDWATER CONTAMINATION PLUME



OBJECTIVE:

- Protect Public Health by Limiting Access to the Use of Uranium-Contaminated Groundwater in an Area South of the Fernald Site. The Removal Action is Broken into Five Parts.

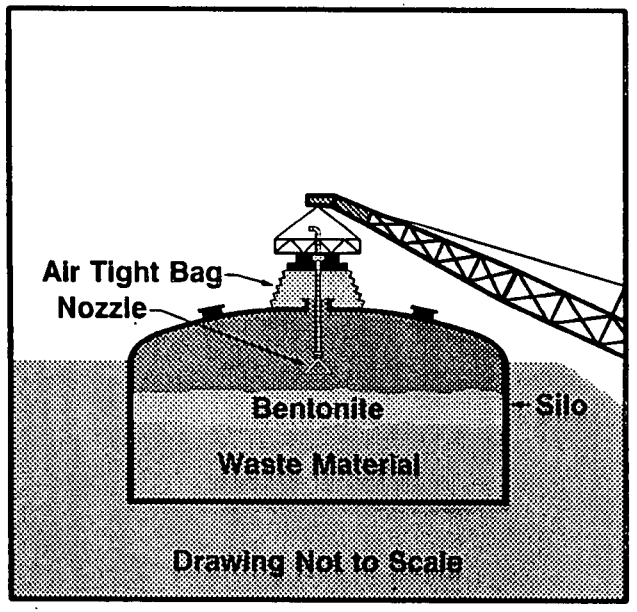
ACTIVITIES/BENEFITS:

- Part 1) Provide Alternate Water Supply to Affected Industry; Part 2) Extract and Pump Contaminated Groundwater Back to the Fernald Site for Monitoring, Future Treatment, and Discharge to the Great Miami River; 3) Construction and Operation of Interim Advanced Wastewater Treatment System; 4) Groundwater Modeling and Controls to Prevent the Use of Contaminated Groundwater, and 5) Additional Groundwater Investigations in the Vicinity of the South Plume.

SCHEDULE:

Part 1 was Completed on Schedule in December 1992
Part 2 was Completed on Schedule in August 1993
Part 3 is Complete and Operational
Part 4 is Ongoing
Part 5 Fieldwork has been Completed

REMOVAL ACTION #4
SILOS 1 AND 2



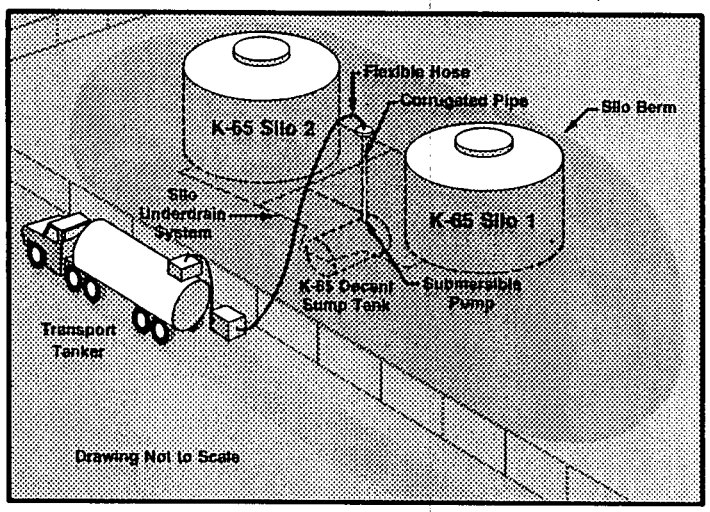
OBJECTIVE:
- Reduce Chronic Radon Emissions from Silos 1 and 2.

BENEFITS:
- Decrease, Mitigate, or Otherwise Control the Threat of a Release in the Event of a Silo Dome Collapse.
- Reduce Potential Radon Exposure of Both On-Site and Off-Site Personnel.

ACTIVITIES:
- This Removal Action Consisted of Placing Bentonite Clay Over the Top of the Residues Contained in Each Silo.

SCHEDULE:
This Removal Action was Completed in November 1991. DOE Continues to Monitor the Effectiveness of the Bentonite. This Data has Been Provided to the U.S. EPA. The Radon Head Space Concentration Post-Bentonite Installation has Been Reduced by Approximately 90 Percent.

REMOVAL ACTION #5
K-65 DECANT SUMP TANK



LOCATION OF K-65 DECANT SUMP TANK

OBJECTIVE:

- Reduce the Potential for Leakage of Contaminated Water into Surrounding Soils.

BENEFIT:

- Liquid was Analyzed at Off-Site Laboratory to Determine Proper Treatment and Disposition.

ACTIVITIES:

- Approximately 9,000 Gallons of Water was Removed, Analyzed, and Treated Through Existing Wastewater Treatment Systems at Fernald Prior to Discharge to the Great Miami River. The K-65 Decant Sump Tank was Used to Collect and Store Liquid that Drained from the K-65 Silos as the Slurried Material Settled.

SCHEDULE:

This Removal Action was Completed in April 1991.

Additionally During Late January and Early February 1993, Approximately 6,800 Gallons of Liquid Were Pumped from the Decant Sump Tank in a Maintenance Action and Transported to Holding Tanks at Plant 2/3. The Liquid will be Dispositioned Following Receipt of Analytical Data from Samples Collected from the Stored Liquid.

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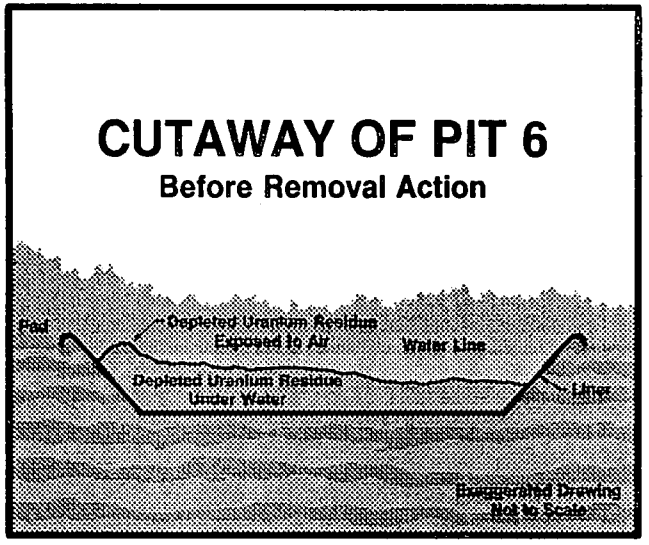
REMOVAL ACTION #6
WASTE PIT 6 RESIDUES



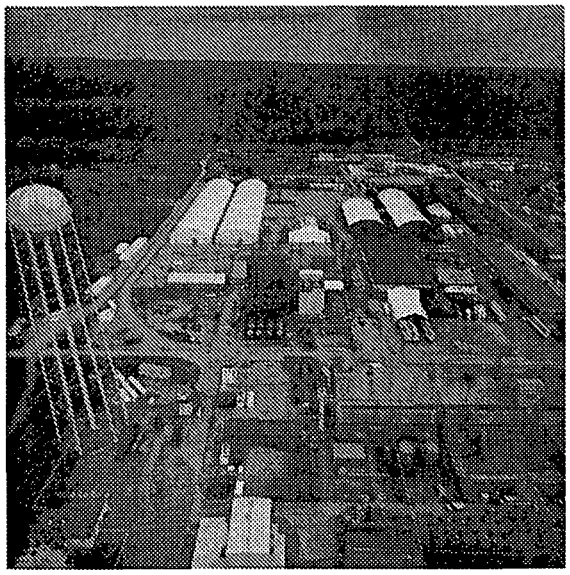
OBJECTIVE:
- Eliminate the Potential for Airborne Emissions Due to Wind Erosion from the Fernald Site Waste Pit Area.

BENEFITS:
- Mitigate Source of Potential Airborne Fugitive Dust Emissions.

ACTIVITIES:
- A Mound of Approximately 4,800 Square Feet of Dried Radioactive Waste was Submerged Below the Water Line and Distributed Evenly Below the Surface of the Water. The Mound Contained Process Residues, Asbestos, Depleted Slag, Green Salt, and Filter Cake from Past Operations at the Fernald Site.

SCHEDULE:
This Removal Action was Completed in December 1990

REMOVAL ACTION #7
PLANT 1 PAD CONTINUING RELEASE



OBJECTIVE:

- Upgrade 440,000 Square Feet of the Existing Plant 1 Pad Plus Provide 80,000 Square Feet Additional Covered Storage Facilities.

BENEFIT:

- Control the Potential for Migration of Contaminants from Materials Stored on the Pad into Surrounding Environmental Media.

ACTIVITIES: Three Phase Approach:

- Phase I - Implement Run-on/off Control Measures.
- Phase II - Installation of 80,000 Square Feet of New Covered and Controlled Storage Facilities and Upgrade 100,000 Square Feet of the Existing Concrete Pad.
- Phase III - Upgrade 340,000 Square Feet of the Existing Plant 1 Storage Pad, Provide 22,500 Square Feet of Covered Storage Facility.

SCHEDULE:

Phase I and II are Complete
Phase III Construction Commenced August 13, 1993
Phase III Construction Scheduled for Completion October, 1994
Complete Removal Action by February 19, 1995

REMOVAL ACTION #8
INACTIVE FLYASH PILE CONTROL

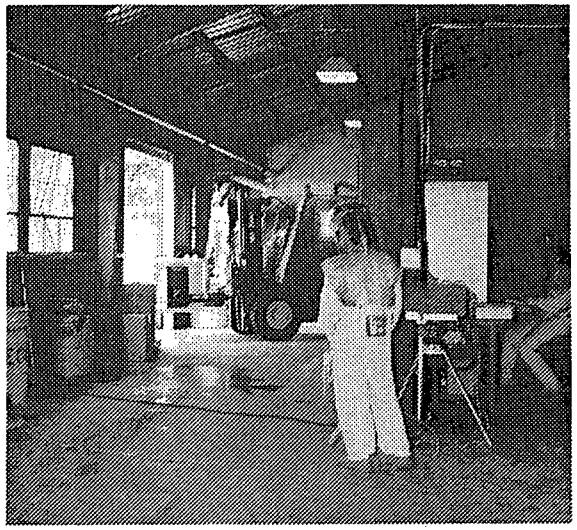
OBJECTIVE:
- Prevent Unauthorized Intrusion/Access into Radiological Surface Soil Contamination Area.

BENEFITS:
- Minimization of Potential Risk to Human Health.

ACTIVITIES:
- This Removal Action Consisted of Posting of Warning Signs and Installing a Chain Barrier Around the Perimeter of the Inactive Flyash Pile/Other South Field Disposal Areas.

SCHEDULE:
This Removal Action was Completed in December 1991
Ongoing Maintenance Required

REMOVAL ACTION #9
REMOVAL OF WASTE INVENTORIES
THORIUM MANAGEMENT



OBJECTIVE:
- Overpacking and Off-Site Removal of Drummed Thorium Material.

BENEFIT:
- Mitigates Potential for Releases from the Drummed Thorium Material, Reduces Stored Waste Inventories and Worker Exposures.

ACTIVITIES:
- Encompass Existing Shipping and Management Procedures for Thorium Materials that are Ready to be Shipped and those which Require Overpacking for the Off-Site Disposition, Approximately 10,600 Drum Equivalents.

SCHEDULE:
Submitted Updated Procedures June 1993
Complete Overpacking Inventories in March 1995
Ongoing Removal of Waste Inventories Through May 1995

REMOVAL ACTION #10
ACTIVE FLYASH PILE CONTROLS

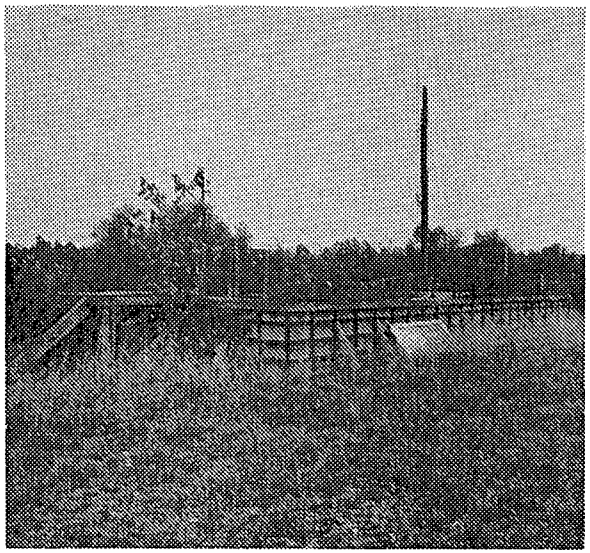
OBJECTIVE:
- Control Wind and Water Erosion of Active Flyash Pile.

BENEFITS:
- Minimize Wind and Surface Water Erosion.
- Reduce Fugitive Dust Emissions.
- Protective of Human Health and Safety.

ACTIVITIES:
- This Removal Action Consisted of a Combination of Control Measures to Minimize Fugitive Dust Emissions and Stormwater Runoff. A Silt Fence was Installed Around the Base of the Pile to Mitigate Stormwater Runoff and Wind Barriers were put in Place to Mitigate Wind Erosion. Minor Grading and Compaction were Conducted and a Chemical Spray was Applied to the Surface to Provide Stabilization.

SCHEDULE:
This Removal Action was Completed in June 1992
Ongoing Maintenance Required

REMOVAL ACTION #11
PIT 5 EXPERIMENTAL TREATMENT FACILITY



OBJECTIVE:

- Reduce the Spread of Contamination and Exposure of Personnel to ETF Wastes.

BENEFITS:

- Reduce or Mitigate the Release of Waste Materials Contained in the ETF to the Surrounding Area.
- Reduce or Mitigate the Potential for Exposure of Personnel through Removal of the ETF.

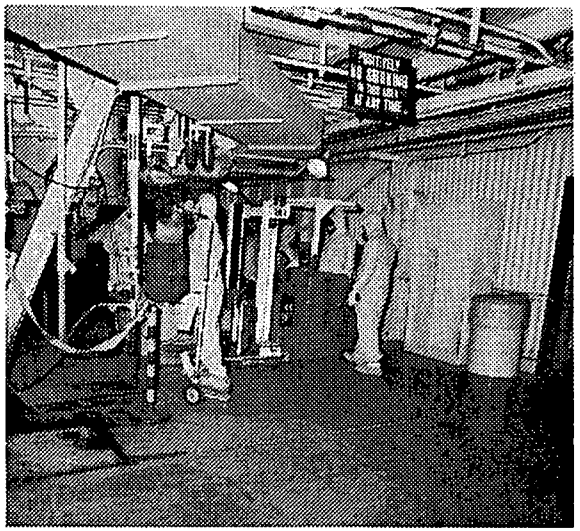
ACTIVITIES:

- Remove and Dispose of the Vegetation Surrounding the ETF.
- Collect, Containerize, and Store Waste Material Contained Within the ETF Structure.
- Collect, Containerize, and Store Filter Bed and ETF Wooden Structure.
- Sample and Analyze the Soil Affected by the ETF.

SCHEDULE:

This Removal Action was Completed in March 1992

REMOVAL ACTION #12
SAFE SHUTDOWN



OBJECTIVE:

- Removal and Disposition of Uranium and Process Materials from Fernald Site Buildings.

BENEFITS:

- Eliminates Source Term for Further Environmental Releases. Enhances ALARA Goals. Provides Necessary Preliminary Step for Preparation of the Systems for Subsequent Remedial Activities.

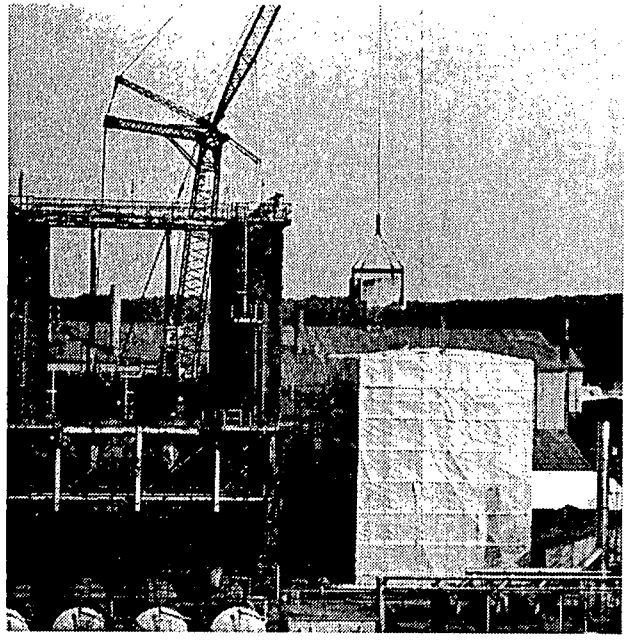
ACTIVITIES:

- Document Ongoing Shutdown Activity which will Remove Uranium and Other Process/Raw Materials from Equipment and Lines in Areas of Formerly Used Processing Equipment in Plants 1, 2/3, 4, 5, 6, 7, 8, 9 and the Pilot Plant. Systematic, Plant by Plant Implementation of Safe Shutdown and Incorporation of Results into OU3 RI/FS.

SCHEDULE:

Submitted Updated Procedures June 1993
Submit Updated Procedures June Annually
Began Shipment of Depleted Uranium tc Buyer January 1994
Ongoing Safe Shutdown Implementation Period Through September 30, 1997

REMOVAL ACTION #13
PLANT 1 ORE SILOS



OBJECTIVE:
- Dismantle the Plant 1 Ore Silos and Support Structure.

BENEFITS:
- Eliminates Threat of Additional Material Releases.
- Eliminates Safety Hazard Due to Structural Deterioration of the Silos and Supporting Structure.

ACTIVITIES:
- Remove, Containerize, Characterize, and Dispose of the Material Identified to Exist in the Silos. All 14 Silos at Plant 1 will be dismantled Under this Removal Action.

SCHEDULE:
Submitted Final Work Plan to U.S. EPA July 1992
Initiated Field Activities October 1992
Complete Field Activities by September 1994
Complete Removal Action by December 1994

REMOVAL ACTION #14
CONTAMINATED SOILS ADJACENT TO SEWAGE TREATMENT PLANT INCINERATOR

OBJECTIVE:
- To Address Contaminated Soils with Elevated Levels of Uranium.

BENEFIT:
- Mitigates the Potential for Migration of Contamination.

ACTIVITIES:
- Remove and Dispose of Contaminated Soils in the Vicinity of an Out-of-Service Solid Waste Incinerator at the Sewage Treatment Plant.

SCHEDULE:
Completed Phase I (Walkover Survey) August 1992
Completed Phase II (Excavation and Verification Sampling) October 1992
Completed Additional Off-Property (Walkover Survey) July 1993
Completed On-Site Excavations, Excluding Thorium 230 Hot Spots November 1993
Completed Off-Property Vegetation Removal December 1993
Completed Off-Property Soil Removal February 1994
Complete Additional Sampling Around Thorium 230 Hot Spots February 1994
Submit Final Report September 1994

REMOVAL ACTION # 15
SCRAP METAL PILES

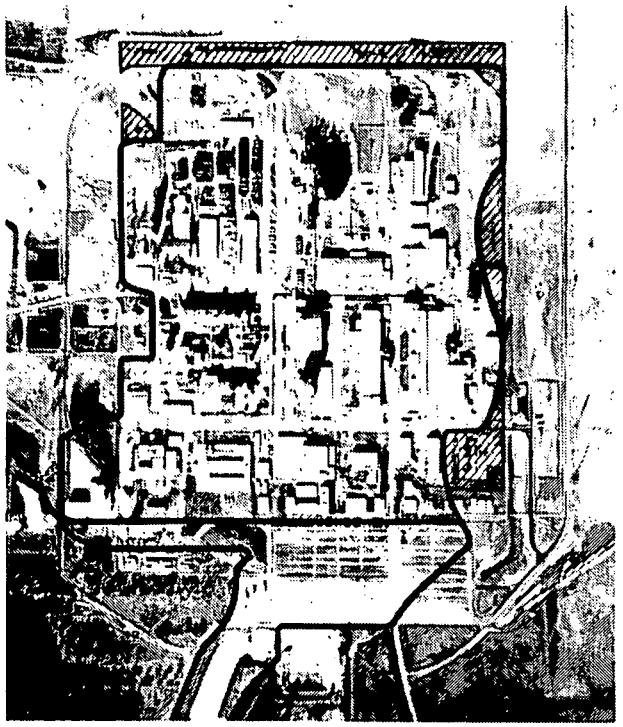
OBJECTIVE:
- Removal and Beneficial Reuse of Low-Level Radioactive Waste Scrap Metal Off-Site.

BENEFIT:
- Eliminate Potential Air Emission Source and Reduce Releases to Surge Lagoon and Great Miami River by Eliminating Source Contamination to Surface Water Runoff.

ACTIVITIES:
- Off-Site Removal, Treatment, and Disposition of 3,000 Tons of Recoverable Scrap Metal.
- Material Includes Approximately 1,300 Tons of Scrap Copper and Other Small Metal Piles.

SCHEDULE:
Submitted Final Work Plan to U.S. EPA June 1992
Complete Phase I March 1994
Submit Final Report Phase I September 1994
Complete Phase II May 1995

REMOVAL ACTION #16
COLLECT UNCONTROLLED PRODUCTION AREA RUNOFF



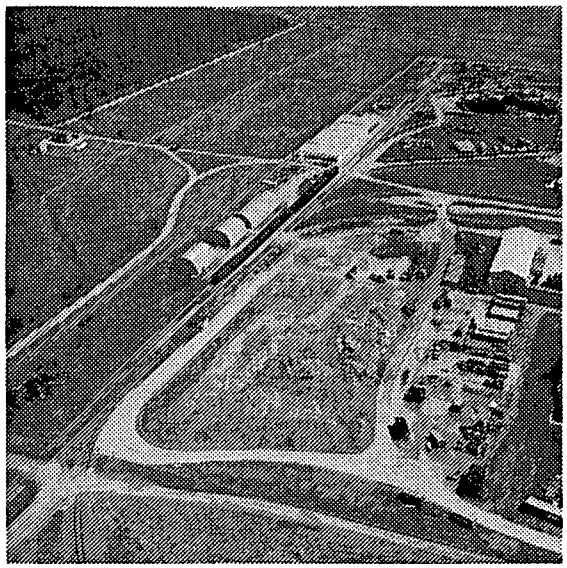
OBJECTIVE:
- Collect Uncontrolled Process Areas Runoff.

BENEFITS:
- Reduce or Mitigate the Release of Uranium and Other Contaminants to Paddys Run.
- Mitigate Flow of contaminants from Surface Water to Underlying Aquifer.

ACTIVITIES:
- Redirection of Subdrainage Areas and Collection of Runoff from Perimeter of Former Process Area to Site. Stormwater Retention Basin has been Completed.

SCHEDULE:
Completed Removal Action on August 20, 1993

REMOVAL ACTION #17
IMPROVED STORAGE OF SOIL AND DEBRIS



OBJECTIVE:

- Construct Improved Storage Structures and Develop a Site Wide Management Concept and Implementation Strategy for the Improved Storage of Soil and Debris and Management of Associated Storage Facilities.

BENEFIT:

- Minimize Potential Contaminant Migration from specific Storage Areas and Provide Safe and Environmentally - Sound Management and Interim Storage of Soil and Debris.

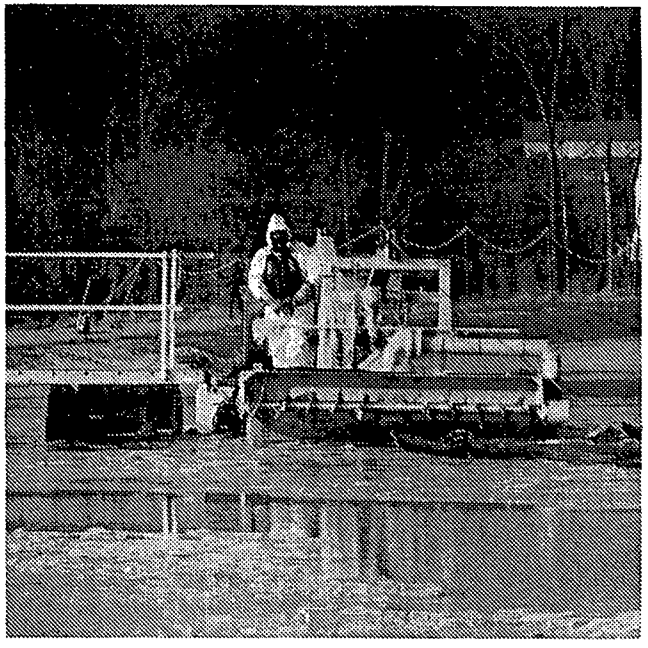
ACTIVITIES:

1. Revise Existing Procedures for Management and Control.
2. Identify Suitable Areas for Storage of Soil and Debris.
3. Establish Current and Future Policy and Engineering Approaches for Handling of Soil and Debris.
4. Evaluate the Engineering Approaches Considered with Respect to Applicable, Relevant and Appropriate Requirements (for ARARs).
5. Design and Construction of Three Improved Storage Structures.
6. Regrade and Seed One Large Existing Soil and Rubble Pile

SCHEDULE:

Submitted Final Work Plan to U.S. EPA August 1992
Provided Phase I Storage Upgrades for Existing Piles July 1992
Received U.S. EPA Approval and Ohio EPA Concurrence for Final Work Plan December 1992
Complete Construction of four Storage Facilities May 1995

REMOVAL ACTION #18
CONTROL EXPOSED MATERIALS IN PIT 5



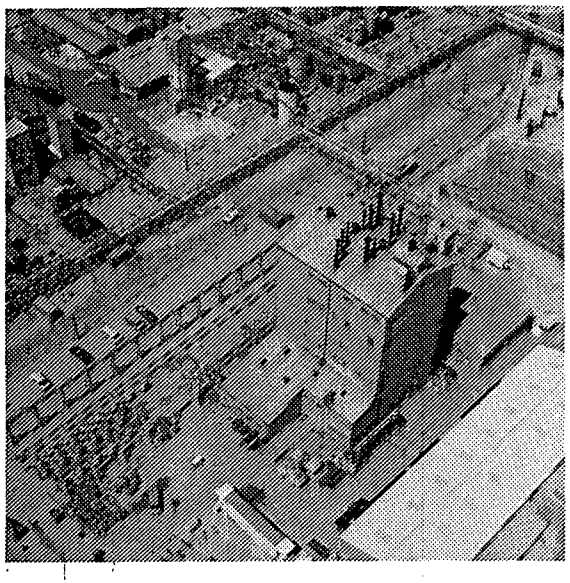
OBJECTIVE:
- Control Surface Emission of Radionuclide Contamination from Waste Pit 5.

BENEFITS:
- Reduce or Mitigate Worker Exposure and Exposure to Off-Site Residents Due to Airborne Radionuclide Contamination.

ACTIVITIES:
- Evaluated Alternatives for Emission Control and Selected Preferred Approach.
- Prepared Work Plan Using Preferred Alternative (Dredging) and Obtained EPA Approval.

SCHEDULE:
This Removal Action was Completed in December 1992

REMOVAL ACTION #19
DECONTAMINATION AND DISMANTLING OF PLANT 7

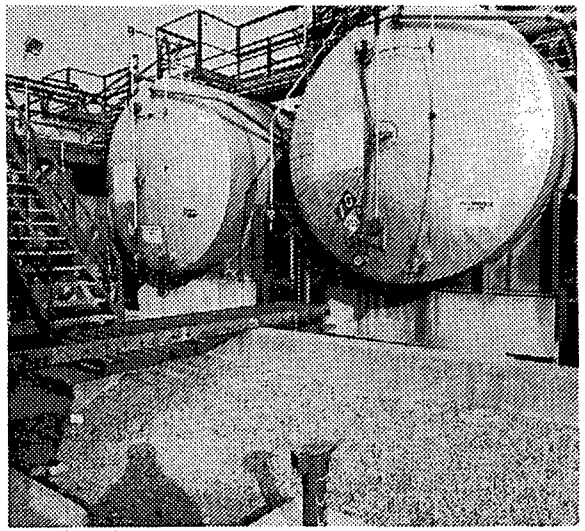


OBJECTIVE/BENEFIT:
Mitigate Potential Contaminant Releases and Support the DOE Integrated Technology Demonstration Program. D&D will also Serve as a Pilot Program for Future Remedy of the Site.

ACTIVITIES:
Decontaminating and Dismantling Operations will be Conducted. After Equipment Removal, the Building Demolition and Removal will begin. The Major Activities Anticipated Include: 1) Relocation of Stored Drummed Material and Debris; 2) Removal of Interior Asbestos Insulation; 3) Provision for Surface Decontamination of Interior Components; 4) Termination of Utility Services; 5) Removal of the Transite Surface Panels; 6) Dismantling of the Structural Steel.

SCHEDULE:
Completed Relocation of Stored Drum Material and Debris August 1993
Completed Removal of Interior Asbestos Insulation October 1993
Completed Surface Decontamination of Interior Components November 1993
Awarded Subcontract to PDG, Inc. November 1993
Start of Dismantling Work Scheduled February 1994

REMOVAL ACTION #20
NEUTRALIZATION OF UNH INVENTORIES



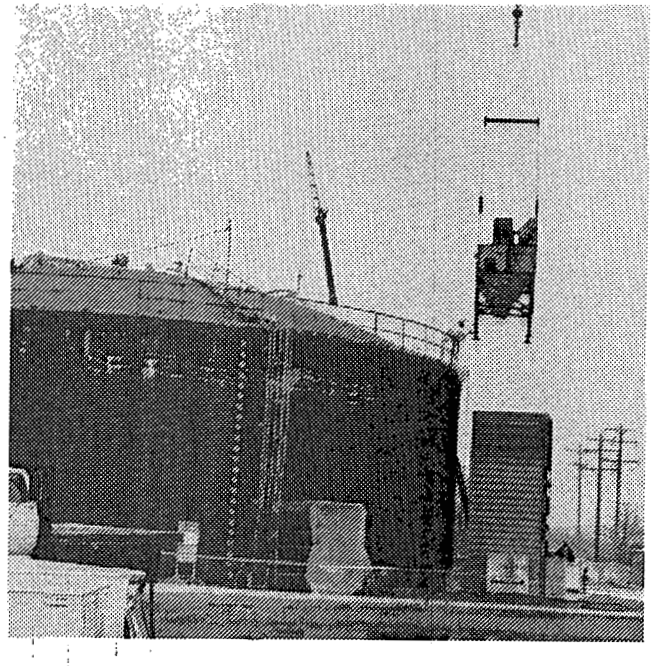
OBJECTIVE:
- Remove and Prepare for Safe Storage 220,000 Gallons of Acidic UNH Currently Stored in 21 Tanks in and Around Plant 2/3.

BENEFIT:
- Mitigate Potential Releases to Environment.

ACTIVITIES:
- Neutralize Solutions, Precipitate the Material, Filter the Precipitate, and Package the Resulting Filter Cake in Double Containment for Safe Storage.

SCHEDULE:
Completed Systems Integrity Testing February 1992
Completed Neutralization of First Batch of 21,000 Gallons November 1992
Completion of Neutralization Scheduled December 1995

REMOVAL ACTION #21
EXPEDITED SILO 3



OBJECTIVE:

- Eliminate the Potential for Release of Radioactive Material to the Environment from the Silo 3 Dust Collector and Hopper Assembly.

BENEFIT:

- All Pathways are Permanently Sealed to Prevent the Release of Silo 3 Contents to the Atmosphere. Eliminated the Source of Potential Airborne Emissions.

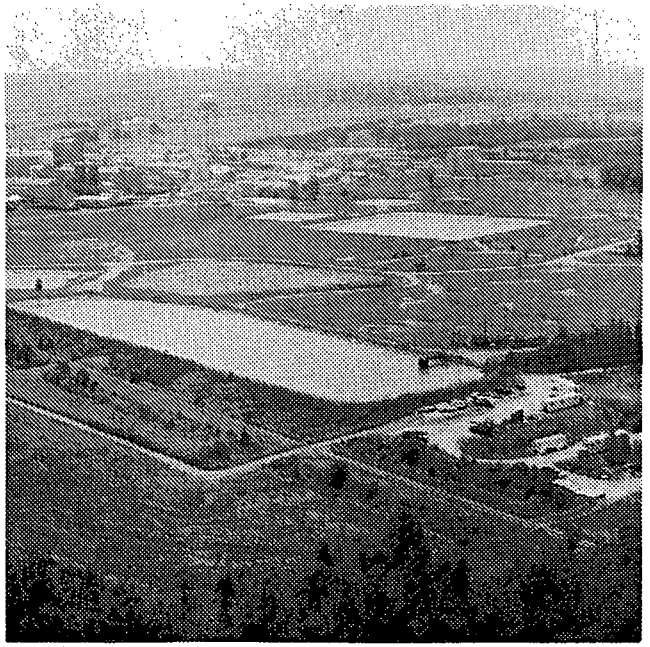
ACTIVITIES:

- The Three-Piece Assembly was Removed from Atop the Silo Dome and Lowered Directly into a Sea/Land Container for Disposal. Piping and Associated Equipment Originally Used to Place Waste in the Silo were also Removed and Prepared for Shipment.

SCHEDULE:

This Removal Action was Completed in January 1992
Shipment of the Assembly to the Nevada Test Site was Completed in October 1992

REMOVAL ACTION #22
WASTE PIT AREA CONTAINMENT IMPROVEMENT



OBJECTIVE:
- Minimize the Potential for Wind or Water Erosion of Contaminated Materials from Access Roads and Exposed Surfaces in the Waste Pit Area.

BENEFIT:
- Mitigate Sources of Potential Airborne Dust Emissions and Contaminated Surface Water Runoff.

ACTIVITIES:
- This Removal Action Included Revegetation (Seeding) of the Pit Area for Erosion Control, and Regrading of Some Existing Stormwater Ditches in the Pit Area to Promote Positive Drainage.

SCHEDULE:
Removal Action Completed August 1993

REMOVAL ACTION #23
INACTIVE FLYASH PILE

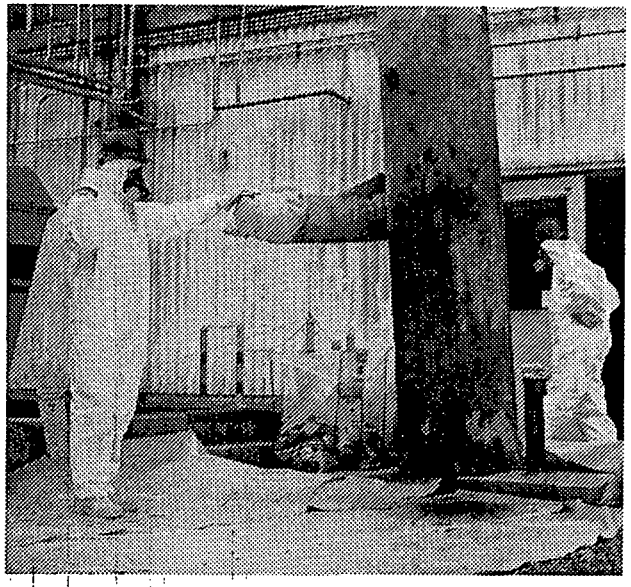
OBJECTIVE:
- Removal and Disposition of Isolated Areas of Radiological Surface Contamination in the Inactive Flyash Pile/Other South Field Disposal Areas.

BENEFIT:
- Mitigate Potential Migration of Contaminants.

ACTIVITIES:
- A Small Amount of Debris Including Soil and Transite Material was Removed from the Inactive Flyash Pile and Placed in Appropriate Containers for Storage Pending Final Disposition.

SCHEDULE:
This Removal Action was Completed in June 1992

REMOVAL ACTION #24
PILOT PLANT SUMP



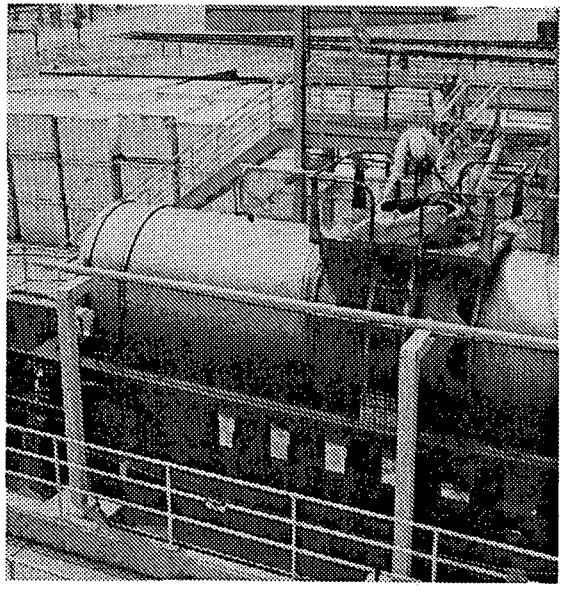
OBJECTIVE:
- Remove the Sump and its Liquid and Sludge Containing High Concentrations of Metals.

BENEFIT:
- Mitigate Source of Potential Environmental Releases.

ACTIVITIES:
- Pump-out Accumulated Liquid and Sludges, Removal of the Sump, and Identification of Contaminated Soils Resulting from its Operation. Sump was Removed September 17, 1993.

SCHEDULE:
Received Ohio EPA Work Plan Concurrence January 1993
Received U.S. EPA Work Plan Approval February 1993
Completed Project October 1993
Received U.S. EPA Final Report Approval January 1994

REMOVAL ACTION #25
NITRIC ACID TANK CAR AND AREA



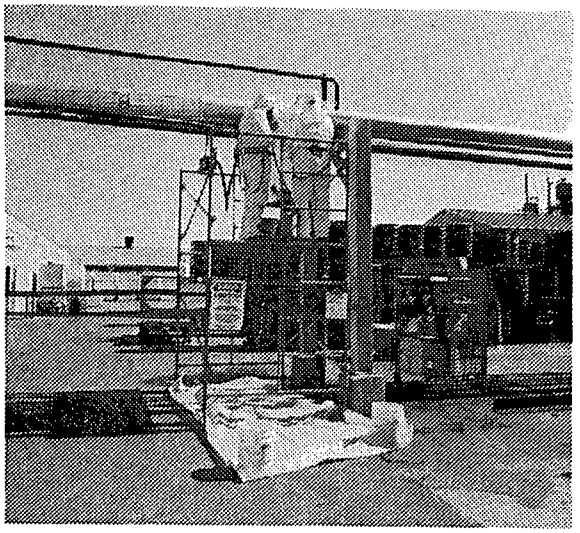
OBJECTIVE:
- Remove Residual Contents Followed by Decontamination and Disposition of the Tank Car.

BENEFITS:
- Mitigate Source of Potential Contamination Releases to the Environment.
- Initiate RCRA Closure Activities for Designated (HWMU) Hazardous Waste Management Unit.

ACTIVITIES:
- Removed Residual Contents and Decontaminated Tank Car, Characterized Soils in the HWMU for Contaminants Related to the Tank Car, Soil Excavated in HWMU Completed to Depth of 12 Inches & Dismantled Tank Car.

SCHEDULE:
Received U.S. EPA Work Plan Approval March 1993
Received Ohio EPA Work Plan Concurrence May 1993
Completed Project October 1993
Received U.S. EPA Final Report Approval December 1993

REMOVAL ACTION #26
ASBESTOS REMOVALS (ASBESTOS PROGRAMS)



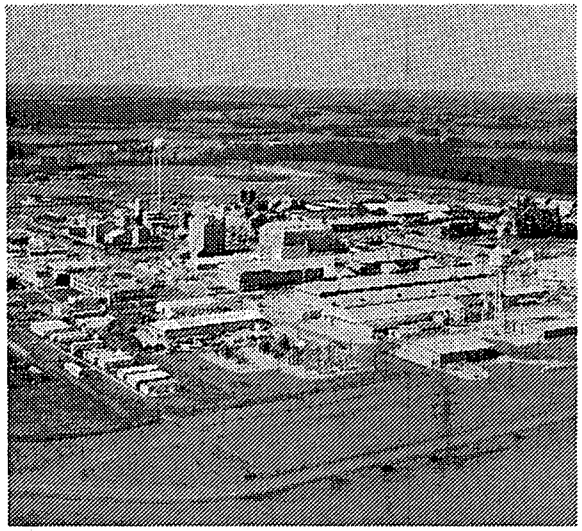
OBJECTIVE:
- Manage Ongoing Asbestos Abatement Activity at the Fernald Site.

BENEFIT:
- Mitigate the Potential for Contaminant Release and Migration.
- Reduce Potential for Worker Exposure to Respirable Asbestos.

ACTIVITIES:
- Document Existing Conditions.
  Ongoing Abatements Include:
  - Small-Scale In-Situ Repairs, Encapsulation, and Removals
- Engineering Activity for Large-Scale Abatements

SCHEDULE:
Submit Annual Work Procedures to EPA Each June

REMOVAL ACTION #27
MANAGEMENT OF CONTAMINATED STRUCTURES AT FERNALD



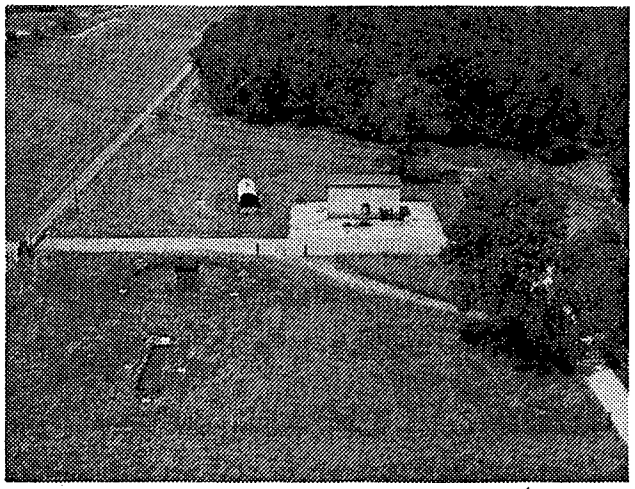
OBJECTIVE:
- Establish a Broad-based Removal Action to Support the Implementation of Clean-up Actions at Fernald's Contaminated Facilities.

BENEFIT:
- Mitigate the Potential Threat to Human Health and Environment.

ACTIVITIES:
- Submit Engineering Evaluation/Cost Analysis (EE/CA) to Support Proposed Removal Actions for Managing Contaminated Structures/Facilities.

SCHEDULE:
Submitted Draft EE/CA to U.S. EPA December 1992
Received U.S. EPA Conditional Approval January 1993
Submitted final EE/CA June 1993
EE/CA Superceded by Proposed Interim Remedial Action

REMOVAL ACTION #28
CONTAMINATION AT THE FIRE TRAINING FACILITY



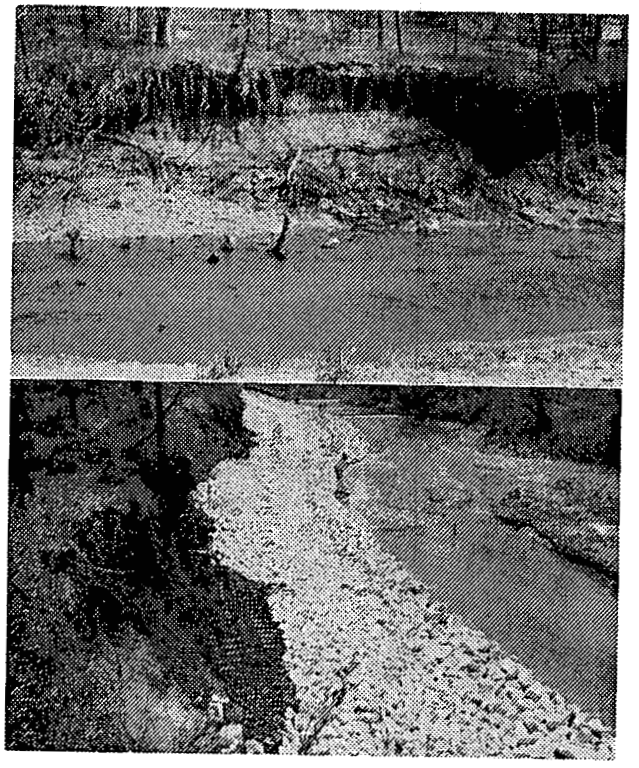
OBJECTIVE:
- Removal of Soil Contamination and Contaminated Structures in the Fire Training Area

BENEFIT:
- Mitigate Source of Potential Contaminant Releases to the Environment.
- Initiate RCRA Closure Activities for Designated Hazardous Waste Management Unit

ACTIVITIES:
- Remove Contaminated Soil, Buildings, Tanks, Sump, and Pond; Obtain Additional Information on Contaminated Perched Water

SCHEDULE:
Submitted Draft Removal Action Work Plan/Closure Plan Information and Data (RAWP/CPID) to U.S. EPA and Ohio EPA June 1993
Received U.S. EPA Conditional Approval August 1993
Submitted Final RAWP/CPID U.S. & Ohio EPA October 1993
Received U.S. EPA Approval November 1993
Resubmitted RAWP/CPID to Ohio EPA February 1994

REMOVAL ACTION #29
STABILIZATION OF PADDYS RUN BANK NEAR THE INACTIVE FLYASH PILE



OBJECTIVE:
- Stabilize East Bank of Paddys Run Adjacent to Inactive Flyash Pile

BENEFIT:
- Prevent Potential Discharge of Flyash to Paddys Run

ACTIVITIES:
- First Phase of Removal Action was to Construct a Rock Berm as an Interim Protective Measure
- Second Phase of Removal Action was Detailed Engineering Evaluation Followed by Construction to Increase Berm Height and Improve Long-Term Protection

SCHEDULE:
Interim Protective Measure Completed May 1993
Final Protective Measure Completed September 1993
Ongoing Maintenance Required

53