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REMOVAL ACTION MEMORANDUM ADDENDUM NO. 1 - SCOPE OF RESPONSE CLARIFICATION AND REMOVAL SITE EVALUATION REMOVAL ACTION NO. 9 - REMOVAL OF WASTE INVENTORIES FERNALD ENVIRONMENTAL MANAGEMENT PROJECT, FERNALD OHIO

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United States Government

Department of Energy

Fernald Field Office

memorandum

DATE: MAR 10 1995
DOE-0675-95

REPLY TO ATTN OF: FN:Sattler

SUBJECT: REMOVAL ACTION MEMORANDUM ADDENDUM NO. 1 - SCOPE OF RESPONSE CLARIFICATION AND REMOVAL SITE EVALUATION REMOVAL ACTION NO. 9 - REMOVAL OF WASTE INVENTORIES FERNALD ENVIRONMENTAL MANAGEMENT PROJECT, FERNALD OHIO U.S. ENVIRONMENTAL PROTECTION AGENCY ID NO: OH6890008976

TO: Jack Craig, DOE-FN

THRU: Johnny Reising, DOE-FN JR

I. PURPOSE

The purpose of this *Removal Action Memorandum Addendum No. 1* is to request and document approval of the proposed *Scope of Response Clarification* for *Removal Action No. 9 (Removal of Waste Inventories)* at the U.S. Department of Energy (DOE) Fernald site. This *Scope of Response Clarification* addresses the following:

(1) that low-level radioactive wastes that are also regulated under other U.S. EPA environmental regulations and their State of Ohio counterparts, such as those that contain polychlorinated biphenyls (PCBs) or Resource Conservation and Recovery Act, 1976 (RCRA) hazardous constituents (e.g., low level "mixed wastes"), are subsets of the LLRW category which are covered under the scope of response already established for this removal action (see Sections II.A, III, and IV); and

(2) that excess nuclear materials inventory, equipment, unused stores material, or overstocked consumables that can be beneficially salvaged, reclaimed, reused or recycled, are not included within the inventory evaluated for release or threat of release under Sections II.A, III, and IV, and are excluded from the scope of response established for this removal action.

This removal action, Removal Action No. 9, was previously initiated to address inventories of thorium and low level radioactive waste (LLRW) remaining at the Fernald site when it ceased production operations in 1989 [Ref. 1]. These waste inventories are considered a component of Operable Unit (OU) 3 pursuant to the 1991 Consent Agreement as Amended (hereinafter, ACA) [Ref. 3].

Recycled and Recyclable

The federally owned facility is located at 7400 Willey Road, Fernald, Ohio (45030). The site is listed on the National Priorities List (NPL). Site property lies primarily within Hamilton County, with the northern portion extending into Butler County (see Figure 1). When active, the facility name was the Feed Materials Production Center (FMPC). It is currently called the Fernald Environmental Management Project (FEMP).

For the purposes of the administrative record, this *Removal Action Memorandum Addendum* also serves as a removal site evaluation (RSE) required under 40 CFR 300.410.

II. SITE CONDITIONS AND BACKGROUND

The FMPC produced uranium metal products used as feed materials in DOE defense programs from 1952 to 1989. Principal products were variously sized, purified uranium metal forms of assorted standard isotopic assays. Products, which included derbies, ingots, billets and fuel cores, were supplied to Rocky Flats, Colorado; Savannah River, South Carolina; Oak Ridge, Tennessee; and Hanford, Washington. The FMPC did not produce or handle explosive devises, nuclear weapons or highly enriched materials [Ref. 4].

The production process began with the purification of uranium contained in materials that were either received from off site or recycled from on-site production. Materials were dissolved in nitric acid to produce a crude uranyl nitrate hexahydrate solution (UNH) for solvent extraction purification. Purified UNH was concentrated by evaporation and thermally denitrated to uranium trioxide (UO_3), or orange oxide. Orange oxide was then converted to uranium tetrafluoride (UF_4), or green salt, for reduction to metal. An alternative process converted uranium hexafluoride (UF_6) received from other DOE sites to green salt [Ref. 4].

Additionally, the FMPC was used by the DOE as an interim storage site for thorium and thorium compounds. The physical form of the thorium varied from metal to powder and liquids and represented sixty-one streams or sources of material. From the mid-1960s to the mid-1970s, thorium was provided to facilities for test irradiations for potential breeder reactor applications. In preparation, thorium oxalate was precipitated from a thorium nitrate solution and then calcined to thorium oxide. Subsequent to test irradiations, depleted materials were returned to the FMPC [Ref. 14]. As used herein, PCB-contaminated LLRW consists of: liquids, sludges and solids associated primarily with the Fire Training Facility (FTF) open top tank and the Detrex Still; liquids and sludges consist of oil associated wastestreams; solids include electrical equipment, soil, trash and debris [Ref. 10].

RCRA hazardous constituents in LLRW were initially generated as an integral part of production processes and from support activities such as maintenance and laundry. Many of the LLRW wastestreams on site are classified as waste due to storage in process units for over 90 days after shutdown, and subsequent determination as being RCRA hazardous waste, or through application of the 40 CFR 261.3 mixture rule. These wastes may also be generated during remediation activities.

While the facility is no longer in production, thorium and LLRW that were left at the shut down of operations are stored at the site. A determination for a Time Critical Removal Action was made in August 1991 [Ref. 13], pursuant to results of the Removal Site Evaluation [Ref. 14]. Of primary concern was potential release of radioactive materials.

II.A. SITE DESCRIPTION

II.A.1. REMOVAL SITE EVALUATION

Results of the RSE for the thorium storage buildings are summarized in the July 1991 report (*RSE -- Thorium Storage Buildings*). Of the five storage buildings in use at that time, four were found to be in good condition, with Building No. 60 judged in poor condition. In Building No. 65, containers were stacked three-high; most were not on pallets and many were either in a severe state of deterioration or had been breached, with resultant leakage of materials [Ref. 14].

In May 1991, the U.S. Environmental Protection Agency (U.S. EPA) and the DOE entered into negotiations concerning a possible modification to the 1990 Consent Agreement. Consistent with these negotiations, the DOE agreed to reconfigure the existing LLRW and Thorium Management Program into a removal action (Removal Action No. 9) consistent with Section IX of the ACA then under negotiation and the provisions of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 CFR Part 300) [Ref. 3].

During that negotiation process, a consensus position was reached that in lieu of a removal action work plan, the DOE would submit a compendium of existing procedures and documentation for the LLRW and Thorium Management Program. These procedures have been consolidated into one deliverable, the Functional Requirement Document (FRD; August 1991), due to the similarity in operations and the reliance on overlapping policies and procedures [Ref. 3].

II.A.2. PHYSICAL LOCATION

Scattered residences and several townships, including Fernald, New Baltimore, Ross, New Haven and Shandon are located near the site (see Figure 1). Downtown Cincinnati is approximately 17 miles southeast of the site, and the cities of Hamilton and Fairfield are 6 to 8 miles to the northeast. There is an estimated population of 14,600 within 5 miles of the Fernald site, and an estimated population of 2.74 million within 50 miles.

The area's major economic activities rely heavily on the physical environment. Farming and raising dairy and beef cattle account for the majority of the land use in the area. Major crops include field corn, sweet corn, soybeans and winter wheat. Several nearby farms also sell produce locally or in nearby urban markets.

Other important commercial products from the area include sand, gravel and water from the aquifer. Many gravel pit operations exist along the Great Miami River valley. A water company is located 1.25 miles upstream of the site's effluent discharge to the river; presently, this company pumps about 20 million gallons of groundwater per day, for sale primarily to Greater Cincinnati industries.

The area's natural vegetation is comprised of a broad-leafed deciduous forest, dominated by beech and maple hardwoods. Some of these naturally wooded areas still exist north of the site and in the Paddys Run watershed to the west (see Figure 2). Sixty-two acres immediately north of the production area were planted with white and Austrian pines as part of a 1973 environmental improvement project. Non-native grasslands cover most of the remainder of the site. The plant diversity provides cover for deer, eastern cottontails, woodchucks, and bobwhite quail; predatory birds, such as red-tailed hawks, have also been observed on Fernald site property. Song sparrows, blue jays, cardinals, and robins nest in the pine plantations, while Paddys Run is home to numerous species of small fish, including minnows, darters and shiners.

The Indiana bat (*Myotis sodalis*) and the running buffalo clover (*Trifolium stoloniferum*), both of which are on the federal list of threatened and endangered species, have the potential to occur at the site. Surveys for both species were conducted during the summer of 1994. Although no individuals were identified, suitable habitat for the Indiana bat has been identified on Fernald property. Both of these species are found to occur in the surrounding areas. Several state-listed threatened and endangered species have been seen on or near the site, including the cave salamander (*Eurycea lucifuga*), Sloan's crayfish (*Orconectes sloanii*), slender fingergrass (*Digitaria filiformis*), mountain bindweed (*Polygonum cilinode*) and spring coralroot (*Corallorhiza wisteriana*). Surveys conducted during the summer of 1994 confirmed the presence of the Sloan's crayfish in Paddy's Run. However, no other species were identified on the Fernald property. In addition there are several species of threatened and endangered migratory birds that pass through the site. Some of the birds that have actually been spotted on site include the northern harrier (*Circus cyaneus*), northern waterthrush (*Seirus noveboracensis*) and dark-eyed junco (*Junco hyemalis*).

A total of 36 acres of freshwater wetlands were delineated on the site during a December 1992 through January 1993 study. Delineated wetlands included 27 acres of palustrine forested wetlands, 7 acres of drainage ditches/swales and 2 acres of isolated persistent emergent and scrub/shrub wetlands.

Floodplains within the site property are confined to the north-south corridor that contains Paddys Run. Outside of the site boundaries, the 100- and 500-year floodplains of the Great Miami River extend west of the "Big Bend" region, which is east of the Fernald site. It also extends northward along Paddys Run from the confluence of the two waterways past the southern boundary of the site (see Figure 1). This area overlaps a body of uranium-contaminated groundwater called the South Plume.

The Fernald site is part of the Great Miami River drainage basin, although it is above the floodplain (see Figure 3). Natural drainage from the Fernald site to the Great Miami River is primarily via Paddys Run, a small creek which begins north of the site and flows southward along the western edge of the site. This intermittent stream begins losing flow to the underlying sand and gravel aquifer south of the waste pit area. About 1.5 miles south of the site Paddys Run empties into the Great Miami River.

In addition to natural drainage through Paddys Run, site run-off is collected, treated and discharged to the Great Miami River through an effluent pipeline. The river, about 0.6 mile east and south of the site, runs in a southerly direction and flows into the Ohio River about 24 miles downstream of the site. Although turbulence makes the Great Miami River unsafe for swimming, some people do fish there. The segment of the river between the site and the Ohio River is not designated as a source of public drinking water.

II.A.3. SITE CHARACTERISTICS

The Fernald site is a federal facility owned by the DOE. During feed materials production the facility was managed by Defense Programs. In October 1990, the DOE transferred management responsibility to the Office of Environmental Restoration and Waste Management.

As a consequence of FMPC production operations, considerable quantities of thorium and LLRW have been generated. Until 1985, these wastes were placed in a series of waste pits and silos located on the western portion of the site. Beginning in 1984, much of the newly generated waste was placed in containers as the pits neared capacity. In 1986, placement of these materials into pits was terminated; since that time, all material has been containerized and stored for future disposition. Since the cessation of production activities in July 1989, waste materials generated at the FEMP are limited to those which result from environmental restoration activities [Ref. 3].

In August 1985, the FEMP initiated a large-scale, off-site program involving the transfer of LLRW inventories to the Nevada Test Site (NTS). This program involves the characterization, treatment, packaging, and transport of waste in full compliance with DOE Orders, Department of Transportation (DOT) regulations, NVO-325 and NTS waste acceptance criteria [Ref. 3].

Thorium and LLRW storage areas are located in OU3 (see OU3 Site Map.) Thorium warehouses include Building Nos. 60, 64, 65, 67 and 68 [Ref. 14]. LLRW storage locations include: Plant 6 Warehouse (Building 79); Plant 9 Warehouse (Building 81); KC-2 Warehouse (Building 63); Pilot Plant Warehouse (Building 68); Plant 8 Warehouse (Building 80); Plant 1 Storage Pad; and CP Storage Warehouse (Building 56) [Ref. 12].

Waste inventories are being prepared for off-site shipment. Annual update reports contain LLRW shipment summaries and three-year waste shipment forecasts. These activities, as well as anticipated closure of the storage units, are integrated with the OU3 interim remedial action, and the on-going selection of CERCLA remedial response action process for OU3 and OU5. Final closure of mixed waste storage units will be covered under closure plans developed pursuant to the Resource Conservation and Recovery Act (RCRA) or other documentation deemed appropriate by the regulatory agencies.

II.A.4. RELEASE OR THREATENED RELEASE INTO THE ENVIRONMENT OF A HAZARDOUS SUBSTANCE, OR POLLUTANT OR CONTAMINANT

Thorium and uranium are the primary radionuclides of concern at the Fernald site. However, some of the radioactive thorium and uranium materials are contaminated with PCBs or RCRA hazardous constituents, or exhibit RCRA hazardous characteristics. The FEMP Material Controls & Accountability (MC&A) database indicates that 6,468 containers of thorium and 46,079 containers of LLRW are currently stored on site [Ref. 9]. The size of containers ranges from low volume cans to high volume tanks. According to draft data prepared for the 1994 RCRA Annual Report, approximately 5,600,000 pounds of this waste currently are classified as mixed waste; an additional 310,000 pounds are undergoing review for RCRA applicability [Ref. 11]. The January 1995 Semi-Annual PCB Status Report indicates that 244 drums of PCB-contaminated wastes have been identified to date [Ref. 10].

Constituents or characteristics typically present in or exhibited by the FEMP's RCRA hazardous wastes include, but are not limited to, the following [Ref. 11]:

Acetone	Chloroform	Flammables	Pyridine
Arsenic	Chromium	Ignitables	Selenium
Barium	Corrosives	Lead	Silver
Benzene	Cresol	Mercury	Tetrachloroethylene (a.k.a., perchloroethylene, PCE)
Cadmium	1,2-Dichloroethane	Methylene chloride	1,1,1-Trichloroethane (1,1,1-TCA)
Carbon tetrachloride	1,1-Dichloroethylene	Methyl ethyl ketone (MEK)	Xylene

Chemical constituents and characteristics are documented in Material Evaluation Form (MEF) files developed for specific drum lots. RCRA determinations, along with waste volumes and other key information, are tracked in the site database.

The categories of radioactive material, PCBs and RCRA hazardous constituents, collectively indicate the presence of "hazardous substances" as defined in CERCLA Section 101(14). Given the variable condition of storage buildings and containers, mechanisms of potential release include spills and leaks, and radioactive airborne particulates and gases [Ref. 14]. Routes of exposure include high velocity winds and tornadoes and resulting air emissions; fire and resulting emissions; human contact; and contamination of environmental media, including surface run-off and leaching into soils and groundwater.

The OU3 RI/FS analyte list includes the following categories: radionuclides; Target Analyte List (TAL) inorganics; Target Compound List (TCL) semi-volatile organics, PCBs, and organics; and Toxicity Characteristic Leaching Procedure (TCLP) metals, semi-volatile and volatile organics (see Table 1) [Ref. 12].

II.A.5. NPL STATUS

On November 21, 1989 (54 FR 48184), the Fernald site was placed on the National Priorities List (NPL) of sites requiring environmental clean-up under CERCLA, as amended. In July 1986, a Federal Facility Compliance Agreement was jointly signed by the U.S. EPA and the DOE to perform site clean-up. Other key CERCLA drivers include the Consent Agreement (April 1990) and the ACA (September 1991). Additionally, a Consent Decree (December 1988), as amended by the Stipulated Amendments to the Consent Decree (January 1993), signed by the Ohio Environmental Protection Agency (OEPA) and the DOE addresses RCRA requirements, including closure of hazardous waste management units (HWMUs). (See Table 2.)

The ACA established the following operable units (OUs) briefly described below:

- OU1 Waste Pit Area
- OU2 Other Waste Units (Solid Waste Landfill, South Field Disposal Areas, Flyash Piles, Lime Sludge Ponds)
- OU3 Former Production Area (Including Thorium and LLRW Storage Buildings)
- OU4 Silos 1 - 4
- OU5 Environmental Media

The OUs are in various stages of CERCLA remedial response -- e.g., remedial investigation (RI), feasibility study (FS), proposed plan (PP), record of decision (ROD), remedial design (RD), remedial action (RA). Additionally, thirty-one removal actions have been identified, ten of which have been completed.

II.A.6. MAPS, PICTURES AND OTHER GRAPHIC REPRESENTATIONS

The following figures, maps and documentation are referenced in the text and included as an Attachment to this *Removal Action Memorandum Addendum.*

- Figure 1 -- Major Communities in Southwestern Ohio
- Figure 2 -- Great Miami River Drainage Basin
- Figure 3 -- Cross-Section of New Haven Trough
- Table 1 -- OU3 RI/FS Analyte List [Ref. 12]
- Table 2 -- OU3 HWMU Closure Status [Ref. 12]
- 1994 Annual Update Report (Excerpt) [Ref. 6]
- MC&A Inventory [Ref. 9]
- FEMP Operable Unit 3 Site Map [Ref. 12]

II.B. OTHER ACTIONS TO DATE

II.B.1. PREVIOUS ACTIONS

Previous clean-up activities conducted pursuant to the RSE and the initial Removal Action Memorandum (August 1991) for this removal action are described under Section V of this *Removal Action Memorandum Addendum*. Note also that community relations activities are an integral part of site-wide clean-up activities at the FEMP. An addendum to the RI/FS Community Relations Plan (August 1992) was prepared to address removal of waste inventories and waste management procedures under this removal action (Removal Action No. 9). Other community relations activities directed specifically towards this removal action included a 45-day public comment period (May 27 through July 11, 1992), telephone interviews with community citizens, and distribution of fact sheets [Ref. 2]. Also, an administrative record file for this removal action was established.

II.B.2 CURRENT ACTIONS

Current clean-up activities conducted pursuant to the RSE and the initial Removal Action Memorandum for this removal action are described under Section V of this *Removal Action Memorandum Addendum*. Community relations activities pursuant to the FEMP's revised Community Relations Plan (January 1995) continue to address this removal action. The administrative record file for this removal action is updated whenever new documentation is generated.

II.C. STATE AND LOCAL AUTHORITIES' ROLES

II.C.1. STATE AND LOCAL ACTIONS TO DATE

Clean-up activities at the Fernald site are conducted by the DOE, under direction of the Office of Environmental Restoration and Waste Management. Previously referenced agreements have been signed with U.S. EPA and/or OEPA. Communication with local governments is maintained to ensure prompt exchange of information and concerns.

II.C.2. POTENTIAL FOR CONTINUED STATE/LOCAL RESPONSE

No change from the arrangements discussed above is anticipated.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The storage of large inventories of thorium and LLRW at the Fernald site present a threat to public health, welfare and the environment, per the following 40 CFR 300.415(b)(2) criteria:

(a) Actual or potential exposure to nearby human populations, animals or the food chain from hazardous substances or pollutants or contaminants. [40 CFR 300.415(b)(2)(1)]

(b) Actual or potential contamination of drinking water supplies or sensitive ecosystems. [40 CFR 300.415(b)(2)(ii)]

(c) Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release. [40 CFR 300.415(b)(2)(iii)]

(d) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released. [40 CFR 300.415(b)(2)(v)]

Each of these threats to public health or welfare or the environment is discussed below in Sections III.A and III.B of this *Removal Action Memorandum Addendum*. See attached Table 1 for a list of OU3 RI/FS analytes.

III.A. THREATS TO PUBLIC HEALTH OR WELFARE

(a) 40 CFR 300.415(b)(2)(i) -- *Actual or potential exposure to nearby human populations, animals or the food chain from hazardous substances or pollutants or contaminants.*

Thorium, uranium, PCBs and RCRA hazardous constituents are components of containerized wastes in Fernald storage areas. Approximately 14,600 people reside within five miles of the site. Given the variable condition of waste containers and storage structures, there is a potential for release via leaks or spills. This poses a threat of exposure to workers at the site, as well as to off-site residents via surface run-off, leaching through soils to the groundwater, and airborne dispersion of radioactive materials.

(b) 40 CFR 300.415(b)(2)(ii) -- *Actual or potential contamination of drinking water supplies or sensitive ecosystems.*

Contaminants have been detected in both on- and off-site wells. Leaks or spills of the above constituents would pose a threat of further groundwater contamination via leaching through soils.

(c) 40 CFR 300.415(b)(2)(iii) -- *Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release.*

The above waste categories are in containers and structures of variable quality. Given the design, age, and in some cases, deteriorated state of the containers and structures, the wastes require recontainerizing and movement off site for appropriate disposition. Allowing the wastes to remain on site for the duration of CERCLA remedial response selection of remedy process activities poses potential risk to site workers and surrounding populations, as well as the physical environment on which the area's economy is based.

(d) 40 CFR 300.415(b)(2)(v) -- *Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.*

Storage structures and containers are at risk from high velocity winds and tornadoes. Releases of the above waste categories pose not only a potential for airborne contamination, but also contamination of soils, with subsequent surface run-off and leaching to soils and underlying groundwater. Contaminated environmental media in turn would serve as an exposure pathway to the surrounding human populations and the physical environment, on which the area's economy is based.

III.B. THREATS TO THE ENVIRONMENT

(a) 40 CFR 300.415(b)(2)(i) -- *Actual or potential exposure to nearby human populations, animals or the food chain from hazardous substances or pollutants or contaminants.*

The area surrounding the Fernald site is used, among other things, for agriculture and livestock. Furthermore, surrounding property includes natural wooded areas and non-native grasslands that provide habitat to a variety of land animals, birds and fish. Given the variable condition of waste containers and storage structures, there is a potential for exposure of the food chain (including humans as the highest trophic level) and wildlife via contamination of their environment.

(b) 40 CFR 300.415(v)(2)(ii) -- *Actual or potential contamination of drinking water supplies or sensitive ecosystems.*

The site is located above a Federally-declared sole-source aquifer, and includes delineated wetlands. Leaks or spills of the above containerized constituents pose a threat of contamination to these sensitive ecosystems.

(c) 40 CFR 300.415(b)(2)(iii) -- *Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release.*

All of the above waste categories are in containers and structures of variable quality. Given the design, age, and in some cases, deteriorated state of the containers and structures, the wastes require recontainerizing and movement off site for appropriate disposition. Allowing the wastes to remain on site for the duration of CERCLA remedial response selection of remedy process activities poses potential for exposure of the environment via surface run-off and leaching through soils to the groundwater, and via airborne dispersion of radioactive materials.

(d) 40 CFR 300.415(b)(2)(v) -- *Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.*

Storage structures and containers are at risk from high velocity winds and tornadoes. Release of the above waste categories poses not only a potential for airborne contamination, but also contamination of soils, with subsequent surface run-off and leaching to underlying groundwater.

IV. ENDANGERMENT DETERMINATION

The actual or threatened release of hazardous substances from this site, if not addressed by implementing the response action identified pursuant to the initial August 1991 Action Memorandum, or as re-affirmed in this *Removal Action Memorandum Addendum*, may present an imminent and substantial endangerment to public health, or welfare, or the environment, based upon the factors set forth in the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), 40 CFR 300.415(b)(2), as discussed above under Section III.

V. PROPOSED ACTIONS

Preparation of thorium and LLRW inventories for off-site disposition is the only feasible solution for mitigating threats posed by their presence; scope of this action is specifically subject to the *Scope of Response Clarification* stated in Section I of this *Removal Action Memorandum Addendum*. On-site stabilization without moving the materials off site would provide only a temporary solution to the threats posed.

V.A.1. PROPOSED ACTION DESCRIPTION

The objective of this removal action is to prepare and ship off site all thorium and LLRW inventories currently at the FEMP. For all subject materials, this on-going effort entails characterization, identification, packaging, storage, and treatment, as needed, in order to meet land disposal restrictions and receiving facility waste acceptance criteria. Remaining inventories are currently stored in the former production area (OU3), which is maintained as a radiologically controlled area requiring strict access and worker health and safety controls [Ref. 3].

Actions initiated subject to the initial August 1991 Action Memorandum for this removal action include the following:

- Thorium containers overpacked into containers meeting DOT requirements to provide safer storage configuration and support off-site disposal
- Safe interim storage provided
- Provisions for clean-up of any spilled material from overpack and storage upgrade activities
- Existing site documentation supporting the on-going thorium and LLRW programs submitted to U.S. EPA and OEPA
- Internal procedures modified to ensure that appropriate shipping documentation is entered into the administrative record

The radioactive nature of the wastes poses significant difficulties in contracting for off-site management. To date, LLRW that is not subject to RCRA or TSCA has been shipped to the DOE's Nevada Test Site (NTS). LLRW PCB liquids and LLRW RCRA hazardous liquids or combinations thereof are scheduled to be incinerated in the DOE's "TSCA" incinerator at the K-25 Facility at the Oak Ridge Reservation (Tennessee). LLRW RCRA hazardous solids are targeted for disposal at Envirocare (Utah). LLRW RCRA characteristically-hazardous wastes are targeted for disposal at NTS after on-site treatment to render them non-hazardous.

On-going thorium and LLRW Management Program actions are consistent with anticipated final remedial actions based on the fact that mitigation of personnel/environmental risk and safe, permanent disposition of FEMP wastes/materials are ultimate goals [Ref. 3].

Close coordination is being maintained with the on-going CERCLA remedial response selection of remedy process for OU3 to ensure that planned removal action activities appropriately support field investigations and alternative evaluations by incorporating interim clean-up of potential sources of contamination into site characterizations. Updates delineating LLRW inventories shipped off site, as well as projected shipments, are submitted on an annual basis. Storage areas are maintained and inspected, and will be closed, pursuant to relevant regulatory authorities.

V.A.2. CONTRIBUTION TO REMEDIAL PERFORMANCE

As previously discussed, the existing LLRW and thorium inventory is within the scope of OU3 under the ACA. Consistent with the provisions of the National Contingency Plan (NCP, 40 CFR Part 300), removal actions should be appropriately integrated with CERCLA remedial response selection of remedy activities so as to: (1) ensure an appropriate documentation trail within the administrative record to address any changes to site conditions within the operable unit resulting from removal activities; and (2) ensure the removal action supports the efficient performance of anticipated final remedial actions. To ensure a proper documentation trail within the administrative record for the FEMP site, a separate administrative record file has been established to support this removal action. All key program documentation, including this submittal and a compilation of appropriate off-site shipping records, are included in this file. Relative to the second objective of integration, the prudent on-site management and off-site shipment of waste inventories clearly supports any projected remedial alternative for OU3.

Long-term clean-up of OU3, including the thorium and LLRW storage areas, is addressed in the RD/RA Work Plan for Interim Remedial Action (December 1994). Dates of unit closures will be dictated by sequencing methodology discussed in Section 3.3 of that work plan and its associated Prioritization and Sequencing Report (anticipated to be initially submitted to the regulatory agencies in March 1995). The methodology is based on combining the following program elements:

- Component benefit rating and prioritization;
- Combination of components into logical groupings or complexes;

- Identification of global and component-specific schedule constraints; and
- Determination of a preliminary sequence for remediation [Ref. 3].

Removal Action No. 9 update reports are anticipated to continue to be submitted on an annual basis until the thorium and LLRW inventory has been removed from the site.

V.A.3. DESCRIPTION OF ALTERNATIVE TECHNOLOGIES

The FRD (August 1991), submitted pursuant to the ACA, addresses on- and off-site waste management issues. Treatment of wastes has been integrated to the extent possible, given the radioactive and mixed nature of the waste.

V.A.4. EE/CA

Removal Action No. 9 was classified as Time-Critical upon its initiation in August 1991 [Ref. 13]. Consequently, an Engineering Evaluation/Cost Analysis (EE/CA) was not applicable. This *Removal Action Memorandum Addendum* does not propose to change that classification.

V.A.5. ARARs

While CERCLA is the primary driver for site clean-up, all activities in OU3 comply with applicable *or* relevant and appropriate requirements (ARARs). A complete ARAR table with discussion of each is contained in Appendix A of the Operable Unit 3 Proposed Plan/Environmental Assessment for Interim Remedial Action. ARARs are divided into three categories: contaminant-specific; location-specific; and action-specific. As the planning process progresses to the final design package/project specific plan stage for each individual action to be performed, the ARARs associated with that action will be more clearly identified.

Important drivers specific to this removal action include DOE Order 5280.2A, NVO-325, RCRA, TSCA, and the Clean Water Act and the Clean Air Act, and corresponding State of Ohio regulations in accordance with CERCLA as amended and the NCP. Note that all mixed and PCB wastes are characterized, stored, treated as necessary, and shipped off site in compliance with RCRA and TSCA, respectively, as well as DOT regulations, and corresponding State of Ohio regulations in accordance with CERCLA as amended and the NCP.

The compliance requirements of the National Environmental Policy Act (NEPA) are applicable to this removal action. The DOE issued a revised policy on NEPA on June 13, 1994. One major provision of this policy is that DOE may, after consultation with stakeholders, rely on the CERCLA process to satisfy the procedural requirements of NEPA. This means that as long as the values of NEPA have been incorporated into the planning of CERCLA actions (i.e., consideration of impacts to human health and the environment), formal NEPA documents (e.g., categorical exclusions (CXs)) are not required.

The DOE notified stakeholders about this change in policy in October 1994, solicited input on the plan for implementation, and no objections were received. Therefore, the policy is currently being implemented and as long as all activities under this removal action meet the appropriate health and safety requirements, NEPA compliance for this removal action has been attained.

V.A.6. PROJECT SCHEDULE

A projected three-year schedule is included in each annual update report, submitted by June 30 of each year. The schedule from the 1994 report is included as an attachment to this memorandum.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action would increase risk to human health and the environment through potential spills, leaks and airborne releases.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues.

VIII. ENFORCEMENT

This removal action is being conducted by the DOE in the context of on-going CERCLA response actions pursuant to the aforementioned ACA. Furthermore, the DOE is acting as lead agency in conduct of this removal action under authority delegated to it under Executive Order 12580 -- Superfund Implementation (1987). Any activity conducted herein that is or will be subject to an Order pursuant to the Federal Facilities Compliance Act (FFCAct), will be subject to the Order upon the Order's effective date.

IX. RECOMMENDATION

This decision document represents the selected removal action (hereafter Removal Action No. 9), one of numerous removal actions, for the Fernald site, in Fernald, Ohio, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the site. Conditions at the site meet the NCP Section 300.415 (b)(2) criteria for removal action. Signature of the "APPROVE" line below re-affirms the removal action approval, and approval of the *Scope of Response Clarification* stated in Section I of this *Removal Action Memorandum Addendum*.

John Sattler
Team Leader,
Waste Management

APPROVE: _____ 3/20/95
Signature Date

DISAPPROVE: _____ _____
Signature Date

cc:

J. Saric, U.S. EPA
T. Schneider, OEPA-Dayton
J. Craig, DOE-FN
D. Pfister, DOE-FN
J. Reising, DOE-FN
S. Bogart, DOE-OH
J. A. Cole, FERMCO
L. Goidell, FERMCO
T. Hagen, FERMCO
R. Holmes, FERMCO
S. Houser, FERMCO
M. West, FERMCO
M. Yates, FERMCO
Administrative Record (file under both Action Memorandum, and Removal Site Evaluation)

ATTACHMENTS

Figure 1: Major Communities in Southwestern Ohio

Figure 2: Great Miami River Drainage Basin

Figure 3: Cross-Section of the New Haven Trough, Looking North

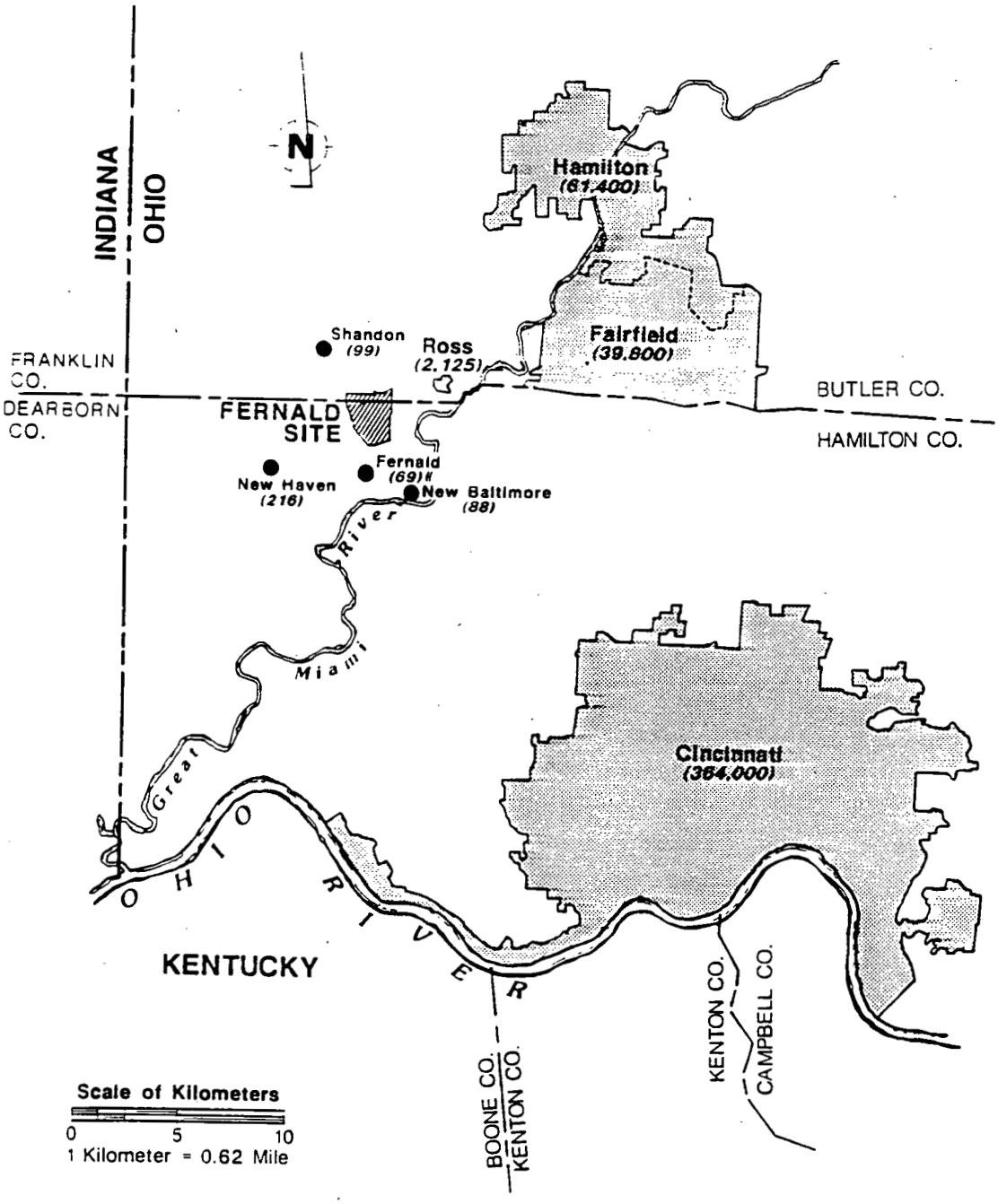
Table 1: Operable Unit 3 RI/FS Analyte List

Table 2: Operable Unit 3 Hazardous Waste Management Unit Closure Status

Table 3: List of References Cited

MC&A Inventory

Figure 1: Major Communities in Southwestern Ohio



LEGEND

● Population in parenthesis estimated in 1989

■ Population in parenthesis from 1990 U. S. Census Figures

Figure 2: Great Miami River Drainage Basin

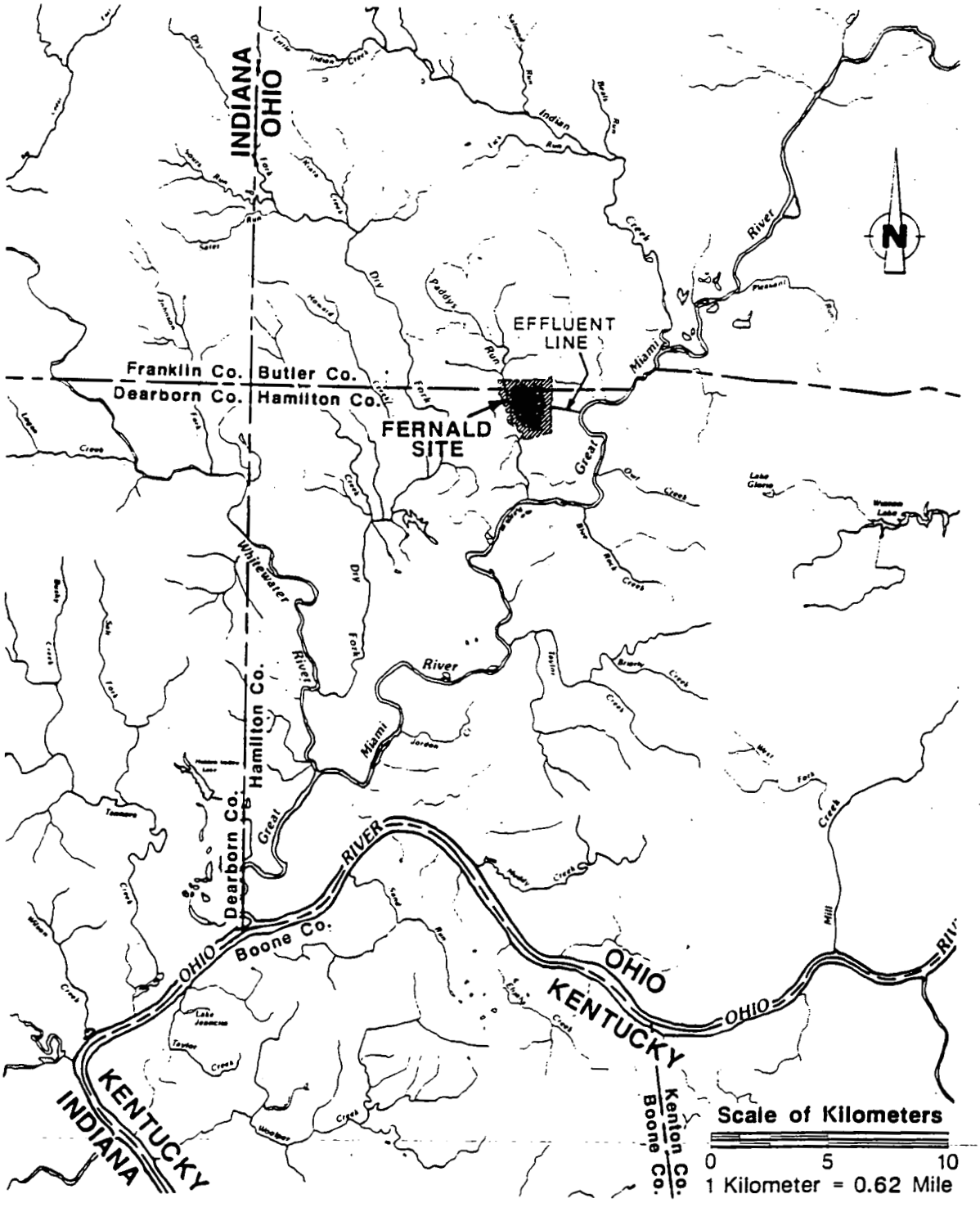


Figure 3: Cross-Section of the New Haven Trough, Looking North

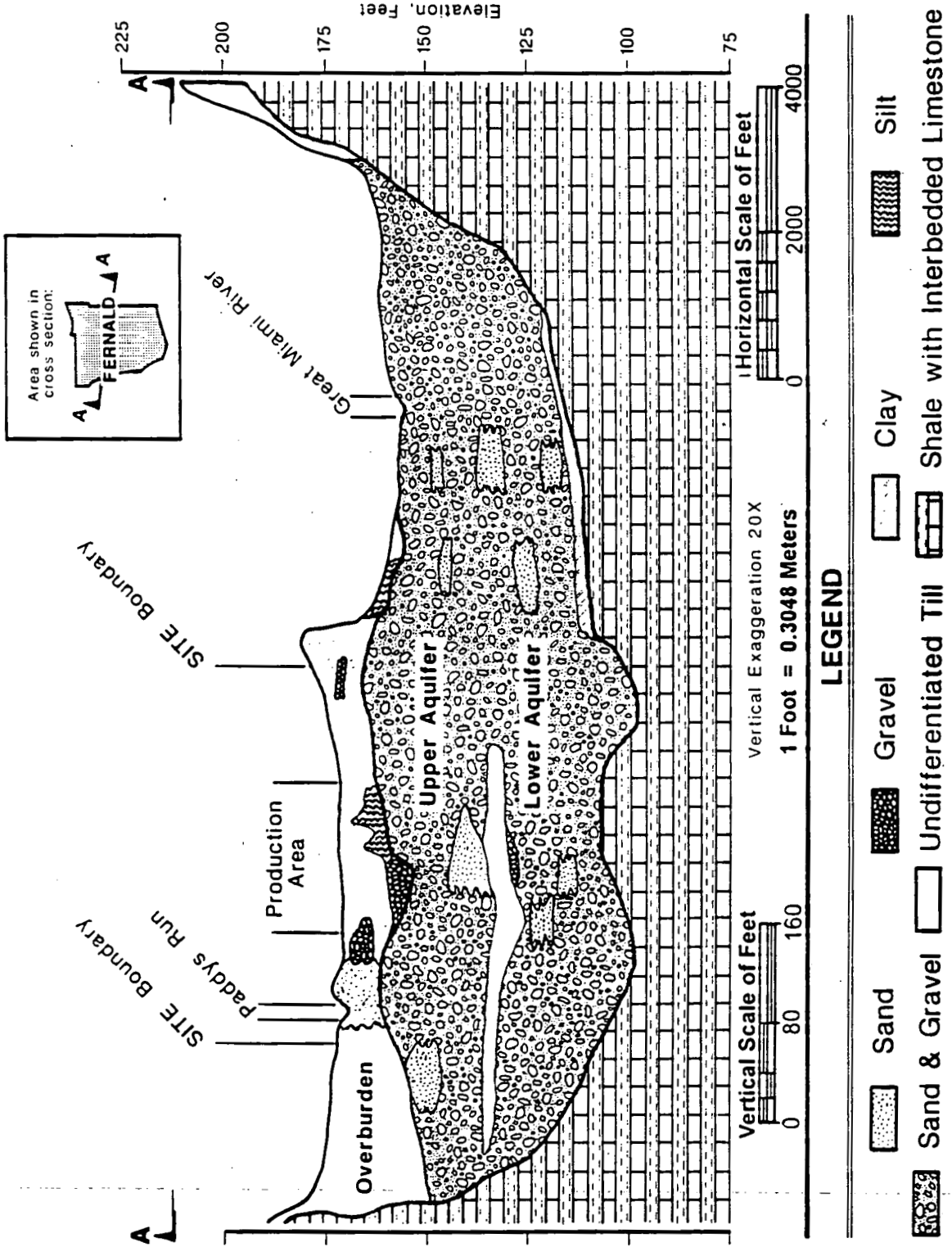


Table 1: Operable Unit 3 RI/FS Analyte List

Radionuclides

Isotopic uranium
Isotopic thorium
Isotopic plutonium and 241
Radium-226 and 228
Neptunium-237
Americium-241
Cesium-137
Strontium-90
Lead-210
Polonium-210
Technetium-99
Alpha/Beta Screening

TAL Inorganics

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Potassium
Selenium
Silver
Sodium
Thallium
Vanadium
Zinc
Cyanide[1]

TCL Semi-Volatile Organics

1,2-Dichlorobenzene
1,2,4-Trichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2-Chloronaphthalene
2-Chlorophenol
2-Methylnaphthalene
2-Methylphenol
2-Nitroanilene
2-Nitrophenol
2,2-Oxybis-(1-chloropropane)
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,6-Dinitrotoluene
3-Nitroaniline
3,3-Dichlorobenzidine
4-Bromophenyl-phenyl ether
4-Chloro-3-methylphenol
4-Chloroaniline
4-Chlorophenyl-phenyl ether
4-Methylphenol
4-Nitroaniline
4-Nitrophenol
4,6-Dinitro-2-methylphenol
Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
bis(2-Chloroethyl) ether
bis(2-Chloroethoxy) methane
bis(2-Ethylhexyl)phthalate
Butylbenzylphthalate
Carbazole
Chryzene
Dibenzofuran
Dibenzo(a,h)anthracene
Diethylphthalate
Dimethylphthalate
Di-n-butylphthalate
Di-n-octylphthalate
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Ideno(1,2,3-cd)pyrene
Isophorone
Napthalene
Nitrobenzene
N-Nitroso-di-n-dipropylamine
N-Nitrosodiphenylamine
Pentachlorophenol
Phenanthrene
Phenol
Pyrene

TCL PCBs (Polychlorinated Biphenols

Arochlor-1016
Arochlor-1221
Arochlor-1232
Arochlor-1242
Arochlor-1248
Arochlor-1254
Arochlor-1260

TCL Volatile Organics

1,1-Dichloroethane
1,1-Dichloroethene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1,2,2-Tetrachloroethane
1,2-Dichloroethane
1,2-Dichloroethene (total)
1,2-Dichloropropane
2-Butanone
2-Hexanone
4-Methyl-2-pentanone
Acetone
Benzene
Bromodichloromethane
Bromoform
Bromomethane
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
cis-1,3-Dichloropropene
Dibromochloromethane
Ethylbenzene
Methylene chloride
Styrene
Tetrachloroethene
Toluene
Total Xylenes
trans-1,3-Dichloropropene
Trichloroethene
Vinyl Chloride

TCLP Metals

Arsenic
Barium
Cadmium
Chromium
Lead
Mercury
Selenium
Silver

TCLP Semi-Volatile Organics

1,4-Dichlorobenzene
2,4-Dinitrotoluene
Hexachlorobenzene
Hexachloroethane
Hexachloro-1,3-butadiene
Nitrobenzene
Pentachlorophenol
Pyridine
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
o-Cresol
m-Cresol
p-Cresol

TCLP Volatile Organics

Benzene
Carbon tetrachloride
Chlorobenzene
Chloroform
2-Butanone
1,2-Dichloroethane
1,1-Dichloroethylene
Tetrachloroethylene
Trichloroethylene
Vinyl chloride

[1] Requested only in components with history of cyanide usage.

Table 2: Operable Unit 3 Hazardous Waste Management Unit Closure Status

HWMU Number	HWMU Identification	Component Location	Closure Schedule Submittal\Action *
INACTIVE UNITS			
	UNITS TO BE CLEAN CLOSED UNDER RCRA		
30	Barium Chloride Salt Treatment Facility	13A	19-Apr-90
3	Waste Oil Storage in Garage	31A	08-Jul-92
5	Drum Storage Area South of W-26 (Lab)	15A	06-Oct-92
4	Drum Storage Area Near Loading Dock (Lab)	15A	04-Apr-93
7	Drummed HF Residue Storage NW of Plant 4A	NA	24-Jun-93
9	Nitric Acid Rail Car and Area	NA	21-Oct-93
26	Detrex Still	1A	05-Nov-93
31/32	Bulk Storage Tanks T5 & T6	13D	18-Nov-93
52	North and South Solvent Tanks (Pilot Plant)	13D	30-Dec-93
36	Storage Pad North of Plant 6A	74J	30-Dec-93
6	Drummed HF Residue Storage Inside of Plant 4A	4A	21-Jan-94
38	HF Tank Car	19A	15-Mar-94
8	Drummed HF Residue Storage South of Cooling Tower	19D	To Be Determined
21	Hilco Oil Recovery	5A	To Be Determined
53	Safe Geometry Digestion Sump (Plant 1A)	1A	To Be Determined
13	Wheelabrator Dust Collector (Building 66)	66	To Be Determined
	UNIT REMEDIATION TO BE COMPLETED UNDER RCRA/CERCLA INTEGRATION PROCESS		
1	Fire Training Facility	73A,B,C,D,E	08-Aug-93
10	NAR System Components	2A	30-Jun-93
11	Tank Farm Sump	19D	To Be Determined
12	Wheelabrator (Building 66)	66	To Be Determined
14	Box Furnace	74R	To Be Determined
15	Oxidation Furnace #1	8A	To Be Determined
16	Primary Calciner	8A	To Be Determined
17	Plant 8A East Drum Storage Pad	74C	To Be Determined
18	Plant 8A West Drum Storage Pad	74D	To Be Determined
22	Abandoned Sump West of Pilot Plant	13A	To Be Determined
25	Plant 1A Storage Building - Building 67	67	To Be Determined
28	Trane Incinerator	39A,B,74W	To Be Determined
40	Biodenitrification Surge Lagoon	18A	To Be Determined
41	Sludge Drying Beds	25F	To Be Determined
46	UNH Tanks - NFS Storage Area	2E	22-Jun-93
47	UNH Tanks - North of Plant 2A	2A	22-Jun-93
48	UNH Tanks - Southeast of Plant 2A	2A	22-Jun-93
49	UNH Tanks - Digestion Area (2 locations)	2A	22-Jun-93
50	UNH Tanks - Raffinate Building (2 locations)	3E	22-Jun-93
ACTIVE RCRA STORAGE COMPONENTS - UNITS TO BE CLOSED UNDER PART B			
19	CP Storage Warehouse (Butler Building)	56A	29-Mar-93
20	Plant 1 Storage Pad	74T	29-Mar-93
29	Plant 8A Warehouse - Building 80	80	29-Mar-93
33	Pilot Plant Warehouse - Building 68	68	29-Mar-93
34	KC-2 Warehouse - Building 63	63	29-Mar-93
35	Plant 9A Warehouse - Building 81	8	29-Mar-93
37	Plant 6A Warehouse - Building 79	79	29-Mar-93

* Dates are those agreed upon in the Stipulated Amendment to the Consent Decree. Dates for closure of HWMUs under the interim remedial action will be dictated by the sequencing methodology discussed in Section 3.3.

Table 3
List of References Cited

1. *Action Memorandum - Removal of Waste Inventories (Removal Action No. 9)*, August 20, 1991 (AR-No. R-020-201.1). DOE-2083-91: to WEMCO, W.H. Britton, President; from DOE-FN, Gerald W. Westerbeck, Manager.

2. *Addendum to the RI/FS Community Relations Plan for Removal Action No. 9 - Removal of Waste Inventories and Thorium Management Procedures*, August 1, 1992 (AR No. R-020-1002.1).

3. *Addendum to the Removal Action No. 9 Low Level Radioactive Waste and Thorium Management Program*, August 1992 (AR No. R-020-204.10, 3672).

4. *Closer Look at Uranium Metal Production, A Technical Overview*, March 1988.

5. *Documentation Supporting Fernald Environmental Management Project Removal of Waste Inventories - Update*, June 1992 (AR No. R-020-204.8, 3511).

6. *Documentation Supporting Fernald Environmental Management Project Removal of Waste Inventories - Update*, June 1994 (AR No. R-020-204.15, 5690).

7. *Documentation Supporting Fernald Environmental Management Project Removal of Waste Inventories - Update*, June 1993 (AR No. R-020-204.13, 4552).

8. *Documentation Supporting FEMP Removal of Waste Inventories - Removal Action No. 9*, August 28, 1991 (AR No. R-020-202.4, 2018).

9. *EDL Container Report*, Material Controls and Accountability, February 1991.

10. *FEMP Semi-Annual PCB Status Report*, January 1995. Letter No. C:OP:94-1318: to DOE-FN, Jack R. Craig, Acting Director; from FERMCO, Don Ofte, President.

11. *1994 RCRA Annual Report - Fernald Environmental Management Project, Draft.*

12. *RD/RA Work Plan for Interim Remedial Action - OU3, Rev. 0, Draft*, March 1994.

13. *Removal Action Memorandum: Thorium Storage Buildings*, August 22, 1991 (AR-No. R-020-201.2). DOE-1719-91: from DOE-FN, Gerald W. Westerbeck, Manager; to WEMCO, W.H. Britton, President.

14. *Removal Site Evaluation - Thorium Storage Buildings*, Volume 1, July 1, 1991 (AR No. R-020-202.1, 2019).

MC&A Inventory

Page No. 1
01/27/95

JANUARY
EOM CONTAINER
REPORT

MATERIAL TYPE	MATERIAL DESCRIPTION	CONTAINER TYPE	PLANT	BELOW EOL DEPLETED	BELOW EOL ENRICHED	BELOW EOL NORMAL	THORIUM	ABOVE EOL DEPLETED	ABOVE EOL ENRICHED	ABOVE EOL NORMAL	Thorium TOTAL THORIUM	LLRW TOTAL BELOW EOL	NON-MASS RESTRICTED ABOVE	MASS RESTRICTED ABOVE
** CONTAINER TYPE BOXES														
218-263	SCRAP METAL	BOXES	5	0	0	0	0	11	0	0	0	0	11	0
2208300	AWAIT. SHPT. DEBRIES	BOXES	5	0	0	0	0	100	0	0	0	0	100	0
302-340	REMELT FEED	BOXES	5	0	0	0	0	1	0	0	0	0	1	0
100-149	HIGH GRADE RESIDUES	BOXES	6	2	0	0	0	0	1	0	0	2	1	0
218-263	SCRAP METAL	BOXES	6	0	0	0	0	43	0	0	0	0	43	0
400-510	IN PROCESS CORES	BOXES	6	0	0	0	0	989	5	0	0	0	992	0
400-510	AWAITING SHPT. CORES	BOXES	6	0	0	0	0	523	0	0	0	0	523	0
** Subtotal **				2	0	0	0	1667	6	0	0	2	1671	0
** CONTAINER TYPE CANES														
001-099	LOW GRADE RESIDUES	CANES	1	0	0	0	0	0	25	0	0	0	0	25
100-149	HIGH GRADE RESIDUES	CANES	1	0	0	0	0	0	84	0	0	0	0	84
150-199	REFINERY FEEDS	CANES	1	0	0	0	0	0	177	0	0	0	0	177
** Subtotal **				0	0	0	0	0	236	0	0	0	0	236
** CONTAINER TYPE CANS														
001-099	LOW GRADE RESIDUES	CANS	1	552	37	17	0	0	13	0	0	606	13	0
100-149	HIGH GRADE RESIDUES	CANS	1	3	1	5	0	0	8	0	0	9	8	0
150-199	REFINERY FEEDS	CANS	1	1	0	0	0	0	17	5	0	1	17	0
200-203	IBIS	CANS	1	0	0	0	0	1	1	2	0	0	3	0
210-216	UF4	CANS	1	0	0	0	0	1	2	1	0	0	4	0
218-263	SCRAP METAL	CANS	1	0	0	0	0	0	1	0	0	0	0	1
001-099	LOW GRADE RESIDUES	CANS	4	0	0	0	0	0	0	0	0	0	0	0
210-216	UF4	CANS	4	0	0	0	0	9987	4659	2584	0	0	15531	1422
001-099	LOW GRADE RESIDUES	CANS	5	0	17	0	0	0	0	0	0	17	0	0
218-263	SCRAP METAL	CANS	5	0	0	0	0	0	6	0	0	0	0	0
302-340	REMELT FEED	CANS	5	0	0	0	0	0	0	0	0	0	0	0
100-149	HIGH GRADE RESIDUES	CANS	6	0	0	0	0	0	2	0	0	0	2	0
210-216	UF4	CANS	6	0	0	0	0	0	419	0	0	0	0	419
302-340	REMELT FEED	CANS	6	0	0	0	0	0	1	0	0	0	0	1
210-216	UF4	CANS	P.PLT	0	0	0	0	4619	0	0	0	0	4619	0
001-099	LOW GRADE RESIDUES	CANS	RURA	781	28	0	0	0	0	0	0	351	0	0
100-149	HIGH GRADE RESIDUES	CANS	RURA	0	5	0	0	0	0	0	0	5	0	0
150-199	REFINERY FEEDS	CANS	RURA	0	0	0	1	0	0	0	1	0	0	0
001-099	LOW GRADE RESIDUES	CANS	WST-79	1	0	0	0	0	0	0	0	1	0	0
** Subtotal **				838	128	22	1	14528	5124	2596	1	988	20198	1850
** CONTAINER TYPE CONT.MIX														
600	LEAN FUPT. DRESALE	CONT.MIX	A.SITE	5	0	0	0	0	0	0	0	5	0	0
** Subtotal **														

000024

6758

JANUARY
FDI CONTAINER
REPORT

MATERIAL TYPE	MATERIAL DESCRIPTION	CONTAINER TYPE	PLANT	BELOW FDI DEPLETED	BELOW FDI ENRICHED	BELOW FDI NORMAL	THORIUM	ABOVE FDI DEPLETED	ABOVE FDI ENRICHED	ABOVE FDI NORMAL	TOTAL THORIUM	TOTAL BELOW FDI	NON-MASS RESTRICTED ABOVE	MASS RESTRICTED ABOVE
** CONTAINER TYPE DMPSTR														
001-099	LOW GRADE RESIDUES	DMPSTR	A.SITE	0	0	44	0	0	0	0	0	44	0	0
** Subtotal **				0	0	44	0	0	0	0	0	44	0	0
** CONTAINER TYPE DRUMS														
001-099	LOW GRADE RESIDUES	DRUMS	1	19677	3580	577	249	0	714	0	249	23634	425	789
100-149	HIGH GRADE RESIDUES	DRUMS	1	621	75	203	167	70	537	88	167	899	403	87
150-199	REFINERY FEEDS	DRUMS	1	272	0	0	2	0	294	54	2	272	515	13
157	REFCS REJECT UO3	DRUMS	1	1	5	1	0	0	0	0	0	5	0	0
200-203	UO3	DRUMS	1	0	0	0	0	174	45	18	0	0	103	4
204	PURIFIED URANYL	DRUMS	1	0	0	0	0	0	0	1	0	0	1	0
205	THO2	DRUMS	1	0	0	0	0	0	0	0	0	0	0	0
210-216	UF4	DRUMS	1	0	0	0	0	51	67	174	0	0	287	5
215	THORIUM HYDROXIDE	DRUMS	1	0	0	0	5567	0	0	0	5567	0	0	0
218-263	SCRAP METAL	DRUMS	1	0	0	0	4	860	5	119	4	0	979	5
270&300	DEBRIES	DRUMS	1	0	0	0	0	0	0	2	0	0	2	0
302-340	REMELT FEED	DRUMS	1	0	0	0	0	24	0	87	0	0	106	0
001-099	LOW GRADE RESIDUES	DRUMS	2	0	64	0	0	0	0	0	0	64	0	0
001-099	LOW GRADE RESIDUES	DRUMS	4	0	11	0	0	0	0	0	0	19	0	0
100-149	HIGH GRADE RESIDUES	DRUMS	4	0	0	0	0	0	0	0	0	0	0	0
150-199	REFINERY FEEDS	DRUMS	4	0	0	0	0	0	0	0	0	0	0	0
200-203	UO3	DRUMS	4	0	0	0	0	1	0	0	0	0	1	0
210-216	UF4	DRUMS	4	0	0	0	0	94	0	0	0	0	94	0
218-263	SCRAP METAL	DRUMS	4	0	0	0	0	0	0	0	0	0	0	0
302-340	REMELT FEED	DRUMS	4	0	0	0	0	0	0	0	0	0	0	0
400-510	CORES	DRUMS	4	0	0	0	0	0	0	0	0	0	0	0
001-099	LOW GRADE RESIDUES	DRUMS	5	213	858	28	0	0	409	0	0	1099	111	298
100-149	HIGH GRADE RESIDUES	DRUMS	5	101	0	0	0	0	669	0	0	101	303	366
150-199	REFINERY FEEDS	DRUMS	5	0	7	0	0	0	55	0	0	7	7	55
157	REFCS REJECT UO3	DRUMS	5	0	0	0	0	0	4	0	0	0	0	4
200-203	UO3	DRUMS	5	0	0	0	0	0	599	0	0	0	7	599
210-216	UF4	DRUMS	5	0	0	0	0	7	24	0	0	0	5	25
218-263	SCRAP METAL	DRUMS	5	0	0	0	0	76	353	0	0	0	76	353
302-340	REMELT FEED	DRUMS	5	0	0	0	0	5	107	0	0	0	5	107
400-510	CORES	DRUMS	5	0	0	0	0	0	2	0	0	0	0	2
001-099	LOW GRADE RESIDUES	DRUMS	6	525	1520	0	0	0	738	6	0	1845	607	129
100-149	HIGH GRADE RESIDUES	DRUMS	6	0	1857	0	0	0	1653	2	0	1857	1356	299
150-199	REFINERY FEEDS	DRUMS	6	0	2084	0	0	0	607	0	0	2084	506	301
200-203	UO3	DRUMS	6	0	0	0	0	0	11	0	0	0	2	9
210-216	UF4	DRUMS	6	0	0	0	0	0	4	0	0	0	4	0
218-263	SCRAP METAL	DRUMS	6	0	0	0	0	206	8	0	0	0	206	8
302-340	REMELT FEED	DRUMS	6	0	0	0	0	25	0	1	0	0	26	0
400-510	IN PROCESS CORES	DRUMS	6	0	0	0	0	0	1	41	0	0	41	1
													1	0

000025

875

JANUARY
EOL CONTAINER
REPORT

MATERIAL TYPE	MATERIAL DESCRIPTION	CONTAINER TYPE	PLANT	BELOW EOL DEPLETED	BELOW EOL ENRICHED	BELOW EOL NORMAL	THORIUM	ABOVE EOL DEPLETED	ABOVE EOL ENRICHED	ABOVE EOL NORMAL	THORIUM	TOTAL BELOW EOL	NON-MASS RESTRICTED ABOVE	MASS RESTRICTED ABOVE
100-149	HIGH GRADE RESIDUES	DRUMS	8	-14	2	1	0	0	1	0	0	17	1	0
001-099	LOW GRADE RESIDUES	DRUMS	9	145	0	0	0	0	0	0	0	145	0	0
600	CLEAN SOIL	DRUMS	9	37	0	0	0	0	0	0	0	37	0	0
001-099	LOW GRADE RESIDUES	DRUMS	A.SITE	10	0	0	0	0	0	0	0	10	0	0
001-099	LOW GRADE RESIDUES	DRUMS	P.PLT	314	86	0	0	0	70	0	0	400	0	70
100-149	HIGH GRADE RESIDUES	DRUMS	P.PLT	0	0	0	0	0	178	0	0	0	0	178
218-263	SCRAP METAL	DRUMS	P.PLT	0	0	0	0	0	0	0	0	0	0	0
001-099	LOW GRADE RESIDUES	DRUMS	RORA	4785	1802	39	6	0	374	0	6	6626	253	171
100-149	HIGH GRADE RESIDUES	DRUMS	RORA	492	188	39	2	0	190	0	2	719	158	57
150-199	REFINERY FEEDS	DRUMS	RORA	82	0	11	2	0	505	0	2	93	447	63
200-203	DUS	DRUMS	RORA	0	0	0	0	0	1	0	0	0	0	1
001-099	LOW GRADE RESIDUES	DRUMS	WSI-79	186	0	0	0	0	0	0	0	186	0	0
** Subtotal **														
				27333	14038	899	5999	2037	7762	568	5999	42270	7184	3183
** CONTAINER TYPE ISO														
001-099	LOW GRADE RESIDUES	ISO	1	5	0	3	2	0	0	0	2	8	0	0
001-099	LOW GRADE RESIDUES	ISO	A.SITE	57	7	2	0	0	0	0	0	66	0	0
600	CLEAN EQPT. (RESALE)	ISO	A.SITE	21	0	0	0	0	0	0	0	21	0	0
** Subtotal **														
				83	7	5	2	0	0	0	2	95	0	0
** CONTAINER TYPE J-HOP														
001-099	LOW GRADE RESIDUES	J-HOP	1	0	20	0	0	0	0	0	0	20	0	0
** Subtotal **														
				0	20	0	0	0	0	0	0	20	0	0
** CONTAINER TYPE RR CAR														
001-099	LOW GRADE RESIDUES	RR CAR	RORA	0	0	0	0	0	0	0	0	0	0	0
** Subtotal **														
				0	0	0	0	0	0	0	0	0	0	0
** CONTAINER TYPE SKIDS														
001-099	LOW GRADE RESIDUES	SKIDS	5	65	0	0	0	0	0	0	0	65	0	0
218-263	SCRAP METAL	SKIDS	5	0	0	0	0	167	0	0	0	0	167	0
220&300	DEBRIES	SKIDS	5	0	0	0	0	229	0	0	0	0	229	0
302-340	REMELT FEED	SKIDS	5	0	0	0	0	79	0	0	0	0	79	0
400-510	IN PROCESS FLATS	SKIDS	5	0	0	0	0	3	0	0	0	0	3	0
400-510	PRODUCT INGOTS	SKIDS	5	0	0	0	0	166	0	0	0	0	166	0
001-099	LOW GRADE RESIDUES	SKIDS	6	7	0	0	0	0	0	0	0	7	0	0
218-263	SCRAP METAL	SKIDS	6	0	0	0	0	7	37	17	0	0	49	37
220&300	DEBRIES	SKIDS	6	0	0	0	0	0	97	24	0	0	0	121
400-510	PRODUCT INGOTS	SKIDS	6	0	0	0	0	0	70	7	0	0	0	77
** Subtotal **														

JANUARY
EOL CONTAINER
REPORT

MATERIAL TYPE	MATERIAL DESCRIPTION	CONTAINER TYPE	PLANT	BELOW EOL DEPLETED	BELOW EOL ENRICHED	BELOW EOL NORMAL	DURATION	ABOVE EOL DEPLETED	ABOVE EOL ENRICHED	ABOVE EOL NORMAL	TOTAL DURATION	TOTAL BELOW EOL	NON-MASS RESTRICTED ABOVE	MASS RESTRICTED ABOVE
** CONTAINER TYPE 1-HOP														
157	REELS REJECT 003	1-HOP	1	0	0	116	0	0	0	0	0	116	0	0
208-213	003	1-HOP	1	0	0	0	0	17	163	8	0	0	188	0
210-216	004	1-HOP	1	0	0	0	0	113	0	0	0	0	113	0
** Subtotal **				0	0	116	0	130	163	8	0	116	301	0
** CONTAINER TYPE TANK														
001-099	LOW GRADE RESIDUES	TANK	RCRA	0	4	0	0	0	0	0	0	4	0	0
150-199	REFINERY FEEDS	TANK	RCRA	0	19	0	0	0	0	0	0	19	0	0
** Subtotal **				0	23	0	0	0	0	0	0	23	0	0
** CONTAINER TYPE TANKER														
001-099	LOW GRADE RESIDUES	TANKER	RCRA	1	0	0	0	0	0	0	0	1	0	0
** Subtotal **				1	0	0	0	0	0	0	0	1	0	0
** CONTAINER TYPE UOP L.														
001-099	LOW GRADE RESIDUES	UOP L.	1	15	2	8	0	0	0	0	0	25	0	0
001-099	LOW GRADE RESIDUES	UOP L.	A.STIF	31	105	45	0	0	0	0	0	181	0	0
** Subtotal **				46	107	53	0	0	0	0	0	206	0	0
** CONTAINER TYPE WMR														
001-099	LOW GRADE RESIDUES	WMR	1	103	131	57	455	0	0	0	455	291	0	0
001-099	LOW GRADE RESIDUES	WMR	2	0	4	0	0	0	0	0	0	4	0	0
001-099	LOW GRADE RESIDUES	WMR	5	20	119	0	0	0	0	0	0	139	0	0
001-099	AWAIT SUPT RESIDUES	WMR	6	0	5	0	0	0	0	0	0	5	0	0
100-149	HIGH GRADE RESIDUES	WMR	6	0	0	0	0	0	0	0	0	0	0	0
218-263	SCRAP METAL	WMR	6	0	0	0	0	0	0	0	0	0	0	0
001-099	LOW GRADE RESIDUES	WMR	A.STIF	1063	477	57	8	0	0	0	8	1597	0	0
600	CLEAN EQPT. (RESALE)	WMR	A.STIF	19	0	0	0	0	0	0	0	19	0	0
001-099	LOW GRADE RESIDUES	WMR	RCRA	7	118	0	5	0	0	0	5	125	0	0
001-099	LOW GRADE RESIDUES	WMR	RST-.Y	0	0	0	0	0	0	0	0	0	0	0
** Subtotal **				1212	857	109	466	0	0	0	466	2173	0	0
** CONTAINER TYPE WOOD BX														
001-099	LOW GRADE RESIDUES	WOOD BX	1	0	0	0	0	0	0	0	0	0	0	0
001-099	LOW GRADE RESIDUES	WOOD BX	A.STIF	53	11	0	0	0	0	0	0	64	0	0
** Subtotal **				53	11	0	0	0	0	0	0	64	0	0
*** Total ***														

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