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SECTION J: CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

(Volume 9 of 13)

Fernald Environmental Management Project

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SECTION J:
Corrective Action For
Solid Waste Management Unit

SECTION J - CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

RCRA Part B Permit Application
Fernald Environmental Management Project
Fernald, Ohio

The purpose of this section is to identify the solid waste management units (SWMUs) located within the boundaries of the Fernald Environmental Management Project (FEMP) and characterize releases from these units as required by Ohio Administrative Code (OAC) 3745-55-011 and Title 40 of the Code of Federal Regulations (CFR) 264.101.

The FEMP, formerly the Feed Materials Production Center (FMPC), is a Department of Energy facility that formerly produced uranium metal. On November 28, 1989, the FEMP was included on the National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The FEMP is subject to a Federal Facilities Compliance Agreement (FFCA) (July 18, 1986) which was amended by the CERCLA Consent Agreement to meet the requirements of Section 120 of CERCLA for any facility on the NPL. The CERCLA Consent Agreement requires the FEMP to conduct a remedial investigation/feasibility study with remedial action to study and clean-up releases at and from the FEMP.

The CERCLA Consent Agreement also provides for the integration of CERCLA response actions and RCRA corrective actions. Specifically, Section VIII of the CERCLA Consent Agreement states that... "any removal or remedial action(s) selected, implemented and completed under this Agreement shall be deemed by the Parties to be protective of human health and the environment such that remediation of releases covered by this Agreement shall obviate the need for further corrective action under RCRA." Therefore, evaluation of releases from solid waste management units (SWMUs), as required in Section J-2, has been deferred to the CERCLA

program. Furthermore, corrective action for releases from SWMUs, if required, will be conducted under the CERCLA program. Descriptions of each SWMU currently identified at the FEMP are provided in Section J-1a.

Section VIII of the CERCLA Consent Agreement also states that if a RCRA permit is issued to the FEMP for on-going waste management activities, appropriate provisions of the CERCLA Consent Agreement, including schedules and the provision for the extension of schedules will be referenced and incorporated into the permit.

J-1 SOLID WASTE MANAGEMENT UNITS

A solid waste management unit (SWMU) is defined as "any discernable unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility of which solid wastes have been routinely and systematically released" (55 FR 30808). A solid waste management unit may include any of the following:

- landfill
- surface impoundment
- waste pile
- land treatment unit
- tank (including 90-day accumulation tanks)
- injection well
- incinerator
- wastewater treatment tank
- container storage area
- waste handling area
- transfer area
- waste recycling operation

Hazardous waste management units (HWMUs) are a subset of SWMUs. Because a waste cannot be considered a hazardous waste unless it also meets the definition of a solid waste, all HWMUs are also SWMUs. A HWMU is defined as "a contiguous area of land on or in which hazardous waste is placed or

the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples of hazardous waste management units include a surface impoundment, a waste pile, a land treatment area, a landfill cell, an incinerator, a tank and its associated piping and underlying containment system, and a container storage area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed" (OAC 3745-50-10 and 40 CFR 260.10).

The FEMP has not included areas that have treated or stored source, special nuclear, or by-product material as defined under the Atomic Energy Act as SWMUs because federal regulations (40 CFR 261.4(a)(4)) exclude this material from the definition of solid waste. Releases of source, special nuclear, or by-product material are not covered under the RCRA corrective action program. Information concerning the radiological component of mixed waste is included in this section for informational purposes only and is not intended to be part of the FEMP's hazardous waste permit.

In addition to the Federal Facilities Compliance Agreement and the CERCLA Consent Agreement, the FEMP is also operating under the terms of a Consent Decree and its proposed amendments. Section 3.11 of the Consent Decree and its proposed amendments requires the FEMP to identify all HWMUs at the facility on the revised Part A and Part B permit applications. To meet this requirement the FEMP is conducting a hazardous waste management unit review to identify HWMUs at the facility. The SWMUs and HWMUs identified in Section J-1a have been identified by this review.

To identify SWMUs and HWMUs at the FEMP, teams of trained facility personnel have surveyed the production area and associated disposal areas at the facility. All equipment, tanks, storage areas and other units within each area were evaluated to determine the status of the unit. Each unit was classified as a SWMU, HWMU, or neither (unregulated). The FEMP has used the criteria discussed in the RCRA Facility Assessment Guidance (Document No. PB87-107769, October 1986) to identify SWMUs at the FEMP. However, all sampling activities, assessment of migration pathways, and

exposure potential have been deferred to the CERCLA program as discussed previously. The SWMU assessment has included the following activities for each unit:

- An evaluation of unit characteristics including information on design, liners, age, construction, location, method of closure, and dates of operation, as applicable.
- A review of historical and current information on the types, volumes and characteristics of wastes handled in the unit.
- A visual inspection of the unit to assess the area for signs of routine and systematic releases, and to review the general unit condition including the current status of the unit (active/inactive, empty/non-empty).
- Interviews with facility personnel for historical information concerning uses and/or releases from the unit.

SWMU identification has not been completed at the FEMP. Although many SWMUs have been identified in the production area and associated waste disposal areas, the evaluation of all potential SWMUs in those areas is continuing. In addition, the FEMP plans to survey the non-production areas of the facility by examination of historical aerial photographs, implementation of a site walk-over, and interviews with facility personnel to identify additional SWMUs.

J-1a Characterize the Solid Waste Management Units

Using the criteria identified in Section J-1, the FEMP has identified approximately 250 solid waste management units. Fifty-one of these units also meet the definition of a hazardous waste management unit.

Under the CERCLA Consent Agreement, the FEMP has been divided into operable units. Operable unit is defined as "a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of a release

or pathway of exposure. The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with the site. Operable units may address geographical portions of a site, specific site problems, or initial phases of an action, or may consist of any set of actions performed over time or any actions that are concurrent but located in different parts of a site" (40 CFR 300.5).

The FEMP is divided into five operable units (OUs):

- OU1: Waste Pit Area
  - Waste pits 1-6, the clearwell, burn pit, berms, liners, and soil within the operable unit boundary
- OU2: Other Waste Units
  - Fly ash piles, other southfield disposal areas, lime sludge ponds, solid waste landfill, berms, liners and soil within the operable unit boundary
- OU3: Production Area
  - Production area and production-associated facilities and equipment (includes all above and below-grade improvements) including, but not limited to, all structures, equipment, utilities, drums, tanks, solid waste, waste, product, thorium, effluent lines, K-65 transfer line, wastewater treatment facilities, fire training facilities, scrap metal piles, feed stocks, and coal pile
- OU4: Silos 1-4
  - Silos 1, 2, 3 and 4, berms, decant tank system and soil within the operable unit boundary
- OU5: Environmental media
  - Groundwater, surface water, sediments, soil not included in the definitions of OU1-OU4, flora and fauna

A Remedial Investigation/Feasibility Study has been initiated for each operable unit.

Because the majority of SWMUs are in OU3, Section J-1a begins by presenting descriptions of all SWMUs in OU3, followed by SWMU descriptions for OU1, and OU2. No SWMUs are currently identified in OU4 and OU5. Descriptions of SWMUs and HWMUs are grouped together within each operable unit. Each description contains the following information:

- type of each unit
- location of each existing or closed unit on a topographic map (Figure J-1)
- engineering drawings for each unit, if available
- dimensions and materials of construction of each unit
- dates when the unit was in operation
- description of the wastes placed in each unit
- quantity or volume of waste, if known

The best available engineering drawings have been included for each unit. Because the only available drawings for some units are several years old, they may not reflect current conditions at the facility.

OPERABLE UNIT 3

Operable Unit 3 (OU3) is defined as the entire production area and production-associated facilities and equipment (includes all above and below-grade improvements) including, but not limited to, all structures, equipment, utilities, drums, tanks, solid waste, waste, product, thorium, effluent lines, K-65 transfer line, wastewater treatment facilities, fire training facilities, scrap metal piles, feed stocks, and coal pile.

This section is further divided into SWMUs associated with each plant or building in OU3. A short description of each plant or building is included prior to the description of the SWMUs associated with each area.

Plant 1 -- Sampling Plant

During periods of operation, Plant 1 served as a sampling facility to obtain representative samples of large amounts of uranium ore concentrates. Plant 1 activities also supported other plant projects and operations including:

- storing recyclable materials
- performing non-destructive testing and storage of recycled materials and reconditioned drums
- processing enriched uranium slag and other recyclable materials from the FEMP and off-site sources

The following SWMUs have been identified in Plant 1:

- Copper Metal Scrap Pile
- Magnesium Fluoride Titan Mill
- Plant 1 Ore Silos
- Plant 1 Sample Line
- Plant 1 Sump System
- Plant 1 Thaw Tunnel
- Safe Geometry Digestion Sump
- Slop Storage Tank

In addition, the following HWMUs have been identified in Plant 1:

- Detrex Still
- Plant 1 Pad
- Plant 1 Storage Bldg (Bldg 67)

Solid Waste Management Units

(1) Copper Metal Scrap Pile

The Copper Metal Scrap Pile is a waste pile on the west and north edges of the Plant 1 Pad (see Figure J-1). The Copper Metal Scrap Pile consists of two separate mounds of material on the concrete pad. The dimensions of

these mounds are approximately 192 ft long x 45 ft wide and 90 ft long x 36 ft wide. Approximately 1,500 tons of mica-coated copper scrap with asbestos insulation and copper ingots produced from this material are stored in this area. This storage unit has operated since March, 1976. A reference drawing of this unit is included in Attachment J-1-1.

(2) Magnesium Fluoride Titan Mill

The Magnesium Fluoride Titan Mill (Williams) is a recycling unit located on the first floor in Plant 1 (see Figure J-1). The mill was used to grind magnesium fluoride from the metal reduction process to produce magnesium fluoride liner. The mill also ground recoverable uranium compounds for use in the Refinery. The unit measures approximately 29 ft long x 14 ft wide and is made of metal. A reference drawing of the mill is included in Attachment J-1-2. Ancillary equipment includes a crusher, blower, dust collector, conveyors, and bucket elevators. The unit operated from 1953 to 1986.

(3) Plant 1 Ore Silos

The Plant 1 Ore Silos are waste storage units located south of Plant 1 (see Figure J-1). There are four 44 ft high silos and four 10 ft high silos constructed of glazed 8 inch tile mounted on steel structures. There are also six 10 ft high reinforced concrete silos. The silos are all approximately 13 ft in diameter. The steel supporting structures for the tile silos are about 38 feet high. A reference drawing of the silos is included in Attachment J-1-3.

The Plant 1 Ore Silos were constructed in 1953. The last operational use of the silos was in 1958. The silo contents included Q-11 ore concentrate (pitchblende ores) and cold metal oxide by-products from the processing of the pitchblende ores. When the processing of the pitchblende ores ceased in early 1962, the stored material was removed and shipped off-site. The silos were declared to be "abandoned-in-place." Residues remaining in the silos range from negligible quantities in the concrete silos to a depth of

approximately 3 ft-6 inches in the conical bases of the tile silos.

(4) Plant 1 Sample Line

The Plant 1 Sample Line is a waste handling area in the northwest corner of Plant 1 (see Figure J-1). The system consists of a drum conveyor, auger sampler, conveyor pit, and sump. Initially, the unit was used to sample ore concentrates and residues. In the mid-1980s, the Sample Line also began sampling materials for RCRA characterization. The Sample Line measures approximately 47 ft x 36 ft and is made of sheet metal. A reference drawing of the unit is included in Attachment J-1-3. The original unit operated from 1953 through 1990. In late 1990, the original system was altered covering the conveyor pit and sump with a concrete pad (with manway) and replacing the original sampling equipment. The replacement unit is currently operational.

The process wastes sampled by this unit include:

- black oxide (U_3O_8)
- magnesium fluoride (MgF_2)
- residues of scrap green salt (UF_4)
- roasted calcium precipitated sump cakes and filter cakes
- semi-solids
- uranium carbide (UC) pellets
- uranium dioxide (UO_2)
- UNH - solid and solution
- uranium trioxide (UO_3)
- uranium tetrafluoride (UF_4)
- uranium ore compounds
- uranyl fluoride (UO_2F_2)
- any other materials requiring RCRA characterization

5) Plant 1 Sump System

Plant 1 contains four sumps in various locations throughout the building (see Figure J-1). The sump system is part of the FEMP wastewater treatment system. A reference drawing of the Plant 1 Sump System is

included in Attachment J-1-4.

The sumps previously collected wastewater and floor washings. The sumps now collect washwater only. Water entering this sump system may have contained:

- kiln ash
- nitric acid
- oil
- solvents
- uranium

Individual elements of the Plant 1 Sump System are described below.

(5.1) East Drum Conveyor Sump

The East End Drum Conveyor Sump was located east of the mill room on the first floor inside Plant 1. The sump was made of steel and measured approximately 2 ft-6 inches square x 2 ft deep. Ancillary equipment included one pump and a discharge valve. The sump operated from 1952 until 1968 when it was covered with concrete. An office is now located in its place.

Wastes received by this sump included floor washings that may have contained:

- kiln ash
- nitric acid
- oil
- solvents
- uranium

(5.2) F2-60 Main Sump

The F2-60 Main Sump is located north of the mill room (Q-11 area) on the first floor inside Plant 1. The sump consists of a 200-gallon, ASTM A-285 Grade "C" steel tank set in concrete. The sump tank

measures approximately 2 ft-6 inches (O.D.) x 5 ft-6 inches deep. Ancillary equipment includes a pump and four overhead pipes which discharge to this sump. The sump began operating in 1952 and remains active.

This sump previously received wastewater from the lab sink next to the sump, the East Drum Conveyer Sump, and the safety shower floor drain. The sump also received decanted water from the Detrex Still, the G2-5 Washer, and Tank F2-55 which collected the slurry filtrate from Filter D2-1. The waste received from the Detrex Still included trichloroethylene, 1,1,1-trichloroethane, and perchloroethylene. The sump presently collects washwater only.

(5.3) F2-61 Main Sump

The F2-61 Main Sump is located on the first floor of Plant 1 in the sampling room. The sump consists of a 200-gallon, ASTM A-285 Grade "C" steel tank set in concrete. The sump tank measures approximately 2 ft-6 inches (O.D.) x 5 ft-6 inches deep. Ancillary equipment includes a pump, piping and controls. The unit became operational in 1952 and remains active.

This sump previously received wastewater from the restroom drains, the North Drum Conveyer Sump, the floor drain next to the abandoned sampler (2nd floor), and Tank F2-256 which collected slurry filtrate from Filter D2-6. This unit presently collects floor drain washwater only.

(5.4) North Drum Conveyor Sump

The North Drum Conveyor Sump is located east of the drum conveyor on the first floor inside Plant 1. The concrete and metal sump measures approximately 4 ft wide x 4 ft long. The depth of this sump is not known. Ancillary equipment includes a pump and piping. The unit became operational in 1952 and remains active.

The sump handled wastewater including floor washings that may have contained:

- kiln ash
- nitric acid
- oil
- solvent
- uranium

(6) Plant 1 Thaw Tunnel

The Thaw Tunnel is a waste handling/overpack area for leaking and deteriorated drums. The Thaw Tunnel is located in the north end of Plant 1 (see Figure J-1). The area measures approximately 20 ft x 40 ft and was constructed in 1952 using concrete, wood and metal. A reference drawing of this unit is included in Attachment J-1-5. The Thaw Tunnel remains active.

Initially, hoppers and drums that had been exposed to sub-freezing temperatures and consequently covered with frost were placed in the Thaw Tunnel to defrost. Later, as recent as 1985, the area was used to store small cans of enriched material. Presently, the Thaw Tunnel serves as an overpacking area. Storage drums in poor condition are brought to this area and repackaged before returning to a container storage area. These drums potentially contain any hazardous waste stored at the FEMP. Approximately 10 to 20 drums pass through this station daily.

(7) Safe Geometry Digestion Sump

The Safe Geometry Digestion Sump is a storage unit within the Safe Geometry Digestion System located in Plant 1 (see Figure J-1). The Safe Geometry Digestion System used nitric acid to dissolve enriched uranium compounds to yield uranyl nitrate. The sump collected leaked or spilled materials from the system. The sump measures approximately 8 inches in diameter and 1 ft in length and is constructed of stainless steel. Ancillary equipment includes a pump and approximately 60 ft of piping.

The unit was installed in the 1960s and used until 1984. A reference drawing of this unit is included in Attachment J-1-9.

This unit is considered a SWMU because it currently contains residue stored in the sump since shutdown.

(8) Slop Storage Tank

The aboveground Slop Storage Tank is a storage unit in the Safe Geometry Digestion System located in Plant 1 (see Figure J-1). The cylindrical, stainless steel tank has a design capacity of 200 gallons and measures approximately 8 inches in diameter and 25 feet in length. Ancillary equipment includes a pump and overhead piping. The tank was installed in the 1960s and used until 1984. A reference drawing of the unit is included in Attachment J-1-9.

The tank received material from the Safe Geometry Digestion Sump consisting of suspended uranium solids (i.e. UO_2, UO_3, U_3O_8), water and nitric acid. The unit is considered a SWMU because it currently contains residue that has been stored in the tank since shutdown.

Hazardous Waste Management Units

(9) Detrex Still

The Detrex Still is a waste recycling unit located in the north end of Plant 1 (see Figure J-1). The Detrex Still is made of metal and occupies an area approximately 2 ft 8 inches wide x 6 ft 4 inches long x 7 ft 6 inches high. The unit contains a tank/piping and condensing unit with dimensions approximately 2 ft x 3 ft. The still has a capacity of about 100 gallons and can recycle approximately 180 gallons of chlorinated solvent per day. This unit operated from September, 1956 until January, 1981. A reference drawing of the unit is included in Attachment J-1-6.

The unit was used to reclaim spent perchloroethylene, trichloroethylene, and 1,1,1-trichloroethane, listed hazardous wastes. Waste residues have been stored in the Detrex Still since operation of the unit ceased. The FEMP is not seeking a permit to operate this unit.

(10) Plant 1 Pad

The Plant 1 Pad is a container storage area located north of Plant 1 and west of B Street (see Figure J-1). The 8 inch thick, reinforced concrete pad occupies about 480,000 ft^2 and has the capacity to store approximately 198,040 55-gallon drums. The pad contains a 140 ft x 90 ft overpacking area and an 82 ft x 60 ft double-lined staging area. The storage pad was resurfaced in 1990 with a concrete sealant. The staging area was resurfaced with a layer of impermeable vinyl-nylon plastic and was surrounded with a 4 inch plastic pipe. The Plant 1 Pad has operated since 1952. A reference drawing of the unit is included in Attachment J-1-7.

The Plant 1 Pad contains drums which store various materials, including:

- low level radioactive wastes
- recoverable residues
- thorium materials
- RCRA hazardous wastes

The FEMP is seeking a permit to operate this unit. More detail on process information for this unit is included in Section D. A closure plan is included in Section I.

(11) Plant 1 Storage Building (Bldg 67)

The Plant 1 Storage Building is located directly west of Plant 1 and due north of the West Water Tower, near the southwest corner of the Plant 1 Pad (see Figure J-1). The building measures approximately 165 ft long x 190 ft wide and contains structural steel framing and a steel covering which rest directly on a concrete slab. A reference drawing of the unit is included in Attachment J-1-8.

The building has been used to store thorium materials from 1972 through the present. Some of the thorium material is mixed with characteristic hazardous waste. The FEMP is not seeking a permit to operate this unit.

Plant 2/3 -- Refinery

The original function of Plant 2/3 was converting natural uranium ore to uranium trioxide (UO_3, also known as "orange oxide"). Subsequent Refinery operations involved converting normal and enriched recycled materials to UO_3. Associated functions include:

- digesting recycled materials in nitric acid
- recovering uranium from internal process wastes
- performing purification by extraction
- recovering nitric acid from nitrogen oxide discharges

The Nitric Acid Recovery Plant operated in conjunction with the Refinery to recover nitric acid from the NO_x fumes generated by Refinery processes.

The following SWMUs have been identified in Plant 2/3:

- Incinerator Building Satellite Accumulation Area
- Maintenance Shop Floor Drain
- Plant 2/3 Sump System
- Raffinate Storage Tank F1-400
- Raffinate Storage Tank F1-401
- Raffinate Storage Tank F1-402
- Raffinate Storage Tank F1-403
- Refinery Sump, Filter Wash Tank F1-608
- Refinery Sump, Filter Wash Tank F1-609
- Refinery Sump, Filter Wash Tank F1-610
- Refinery Sump, Filter Wash Tank F2E-601
- Refinery Sump, Filter Wash Tank F2E-602
- Refinery Sump, Thickener Slurry Tank F1-612
- Satellite Accumulation Area (Current)
- Satellite Accumulation Area (Prior)
- Tributyl Phosphate/Kerosene Holding Tank 17A

- Tributyl Phosphate/Kerosene Holding Tank 17B
- Tributyl Phosphate/Kerosene Holding Tank 17C
- Tributyl Phosphate/Kerosene Holding Tank F1-512
- UNH Storage Tank F1-310
- UNH Storage Tank F1-311
- UNH Storage Tank F1-312
- UNH Storage Tank F1-317
- Uranyl Nitrate Tank F1-405
- Uranyl Nitrate Raffinate Tank F3E-405
- Wastewater Storage Tank F1-25A
- Wastewater Storage Tank F1-26A

In addition, the following HWMUs have been identified in the Plant 2/3:

- NAR System Components
- Trane Thermal Liquid Incinerator
- Uranyl Nitrate Tanks (Digestion Area (2 locations)
- Uranyl Nitrate Tanks (NFS Storage Area)
- Uranyl Nitrate Tanks (North of Plant 2)
- Uranyl Nitrate Tanks (Raffinate Building)
- Uranyl Nitrate Tanks (Southeast of Plant 2)

Solid Waste Management Units

(12) Incinerator Building Satellite Accumulation Area

The Incinerator Building Satellite Accumulation Area is a container storage area located in the center of the Plant 2/3 Incinerator Building (see Figure J-1). The area occupies approximately 16 ft^2 of floor space and has operated since late 1989. A reference drawing of this unit is included in Attachment J-2-1.

The Incinerator Building Satellite Accumulation Area has a concrete floor and contains steel 55-gallon drums. The drums are either closed with bungs (17E) or have open tops, covers and locking rings (17H). The drums collect the daily accumulation of two wastestreams: aerosol cans and

flashlight batteries. A maximum of two 55-gallon drums of waste is accumulated in this area.

(13) Maintenance Shop Floor Drain

The Plant 2/3 Maintenance Shop contains a floor drain which connects to the FEMP wastewater treatment system (see Figure J-1). The floor drain and associated piping meet the definition of a wastewater treatment unit. A reference drawing is included in Attachment J-2-2. This floor drain system has operated since 1952. Numerous chemicals such as 1,1,1-trichloroethane, and solid wastes, may have been discharged to this unit.

(14) Plant 2/3 Sump System

Plant 2/3 contains many sumps located throughout the building (see Figure J-1). A series of sumps, floor drains and ancillary equipment in Plant 2/3 directed process effluent to the Refinery Sump where it was collected and the uranium was returned to the process. Wastewater collected in the Refinery Sump was treated and filtered. The decant was then sent to the General Sump which is part of the FEMP wastewater treatment system. The sump system meets the definition of a wastewater treatment unit.

Process waste has not been collected in the sumps since production was terminated in 1988. The sumps still collect rainwater, washwater, and any other liquids generated by the plant.

The wastes processed by these sumps include:

- kerosene
- nitric acid
- slop
- stormwater runoff
- sump liquor
- tributyl phosphate
- uranyl nitrate solution

A reference drawing of the Plant 2/3 Sump System is included in Attachment J-2-3. Individual elements of the sump system are described below.

(14.1) A, B, C and 512 Pad Sumps

The A, B, C and 512 Pad Sumps (02-A502-PMP) are located just north of the extraction and denitration areas of Plant 2/3. These sumps are made of concrete/acid brick with stainless steel liners and measure approximately 2 ft wide x 10 ft long. The depths of these sumps are not known. Ancillary equipment includes sump pumps, piping and controls. The sumps became operational in 1953 and remain active. The materials handled by these sumps include uranyl nitrate solution, tributyl phosphate/kerosene, and rainwater.

(14.2) CD Blend Pit Sump

The CD Blend Pit Sump is located in Plant 2/3 and serves Plant 2 Digestion. The sump is constructed of concrete/acid brick with a stainless steel liner. The sump measures approximately 3 ft wide x 6 ft long. The depth of the sump is unknown. Ancillary equipment includes a sump pump and piping. This unit became operational in 1953 and remains active. The wastes received by this sump consist of rainwater slops and sump liquor (nitric acid and uranyl nitrate solution).

(14.3) Digestion and Fume Recovery System Sumps (2)

The Digestion and Fume Recovery System Sumps serve the two Digestion Fume Recovery Units located in Plant 2/3. One Digestion Fume Recovery Unit is located on the north side of the plant near the D1-7 Digester. The other unit is located near the D1-3 Digester on the south side. The sumps serving these two units are both made of concrete with stainless steel liners and measure approximately 3 ft in diameter. The depths of the sumps are not known. Ancillary equipment includes a pump and approximately 15 ft of piping. These

sumps became operational in 1953 and remain active. The wastes received by the sumps include rainwater and nitric acid.

(14.4) Digestion Hot Side Sumps (2)

The two Digestion Hot Side Sumps are located in the northeast and west portions of the Digestion Hot Side (north side) of Plant 2/3. Both sumps measure approximately 3 ft in diameter and are made of concrete with stainless steel linings. The depths of the sumps are not known. Ancillary equipment includes piping. The sumps became operational in 1953 and remain active.

These sumps serve the Digestion Hot Side. The West Hot Side Sump receives water pumped from the Hot Side Pit. The wastes received by the sumps include slops and sump liquor.

(14.5) Digestion Cold Side Sumps (2)

The Digestion Cold Side (south side) in Plant 2/3 contains two floor sumps, East and West. The East Sump is located east of the Digestion Building and the West Sump is located west of the roll-up door. The sumps are both made of stainless steel and measure approximately 3 ft in diameter. The depths of these sumps are unknown. Ancillary equipment includes a pump and motor. The sumps became operational in 1953 and remain active.

The West Cold Side Sump receives water from the Cold Side Pit. The wastes received by these sumps include slop/sump liquor (nitric acid and uranyl nitrate solution).

(14.6) East Cold Side Extraction Sump

The East Cold Side Extraction Sump (02-A186-PMP) is located in the northeast corner extraction area of Plant 2/3. This sump serves the East Cold Side Extraction Area. The sump is made of concrete/acid

brick with a stainless steel liner and measures approximately 2 ft-6 inches in diameter. The depth of the sump is not known. Ancillary equipment includes about 15 ft of piping and a 1 ft x 3 ft pump. The sump became operational in 1953 and remains active. The waste received by the sump consists of nitric acid and tributyl phosphate/kerosene.

(14.7) East Hot Side Extraction Sump

The East Hot Side Extraction Sump (02-A224-PMP) is located in the southeast corner of the extraction area of Plant 2/3. This sump serves the East Hot Side Extraction Area. The sump is made of concrete and acid brick with a stainless steel liner and measures approximately 2 ft-6 inches in diameter x 2 ft-8 inches deep. Ancillary equipment includes valves, approximately 20 ft of piping, and a 1 ft x 3 ft pump. The sump became operational in 1953 and remains active. The wastes received by the sump consist of slop or sump liquor (nitric acid and uranyl nitrate solution), tributyl phosphate/kerosene, and pump drainage.

(14.8) East and West Combined Raffinate Sumps (2)

The two East and West Combined Raffinate Sumps are located in Plant 2/3 and serve the East and West Pad Combined Raffinate Areas. The East Sump measures approximately 4 ft wide x 5 ft long and the West Sump measures approximately 3 ft wide x 3 ft long. Both sumps are made of concrete and acid brick with stainless steel liners. The depths of these sumps are unknown. Ancillary equipment for each sump includes piping and a 1 ft x 3 ft pump. The sumps became operational in 1953 and remain active. The wastes received by the sumps include stormwater, uranyl nitrate, and raffinate (nitric acid and impurities).

(14.9) East and West Pad NAR Sumps (2)

The two East and West Pad NAR (Nitric Acid Recovery) Sumps (03-D008-PMP and 03-D007-PMP) are located in Plant 2/3. These sumps serve the south-central and west NAR pad areas. The East Sump measures approximately 3 ft wide x 3 ft long and the West Sump measures approximately 2 ft-6 inches in diameter. Both sumps are made of concrete and acid brick with stainless steel liners. The depths of these sumps are not known. Ancillary equipment for each sump includes about 20 ft of piping and a 1 ft x 3 ft pump. The East and West Pad NAR Sumps became operational in 1953 and remain active. The wastes received by the sumps include stormwater, nitric acid, and uranyl nitrate.

(14.10) East and West Refinery Pad Sumps (2)

The East (18-B033-PMP) and West (03-H009-PMP) Refinery Pad Sumps are located in Plant 2/3 and serve the East and West Refinery Pads. The East Sump measures approximately 2 ft in diameter and the West Sump measures approximately 3 ft in diameter. Both sumps are made of concrete and glazed tile. The depths of these sumps are not known. Ancillary equipment includes piping. The sumps became operational in 1953 and remain active. The wastes received by the sumps contain magnesium oxide, raffinate, and traces of all chemicals from the process.

(14.11) F1-410 Sump

The F1-410 Sump is located in Plant 2/3. The sump is made of concrete and acid brick with a stainless steel liner. The dimensions of this sump are not known. The sump became operational in 1953 and remains active. The wastes received by the sump include nitric acid and raffinate.

(14.12) Harshaw Tower Pad Sump

The Harshaw Tower Pad Sump is located in the northeast corner of the Harshaw Tower Pad at Plant 2/3. The sump is made of concrete and acid brick with a stainless steel liner and measures approximately 3 ft wide x 4 ft long. The depth of the sump is not known. Ancillary equipment includes piping, pumps, and controls. The sump operated from 1957 until 1972. This sump collected waste liquids from the Harshaw Tower Pad. The wastes received by the sump included nitric acid and rainwater.

(14.13) Hot Raffinate Area Sumps (4)

The four Hot Raffinate Area Sumps are located in Plant 2/3 and serve the Hot Raffinate Area. The units are constructed of concrete and acid brick with stainless steel liners. These sumps measure approximately 2 ft 7 inches in diameter. The depths of these sumps are unknown. Ancillary equipment includes pumps and piping. The sumps became operational in 1953 and remain active. The wastes received by the sumps include spent nitric acid with uranium and impurities.

(14.14) Metal Dissolver Building Sump

The Metal Dissolver Building Sump is located in Building 2D beneath the Dissolver Tank in the southwest corner of the building. This sump serves the Metal Dissolver Building. The sump is made of concrete and acid brick with a stainless steel liner and measures approximately 3 ft wide x 3 ft long. The depth of this sump is not known. Ancillary equipment includes pumps, piping, and controls. The sump became operational in 1953 and remains active.

The wastes received by the Metal Dissolver Building Sump include the following:

- activated charcoal
- dicalite
- nitric acid

- possibly slop/sump liquor
- tributyl phosphate/kerosene
- uranyl nitrate solution

(14.15) Metal Dissolver Pad Sump

The Metal Dissolver Pad Sump is located north of the Metal Dissolver Building on 2nd Street. This sump serves the Metal Dissolver Pad. The sump is made of concrete and acid brick with a stainless steel liner and measures approximately 4 ft wide x 4 ft long. The depth of this sump is not known. Ancillary equipment includes associated piping, pumps, and controls. The sump became operational in 1953 and remains active. The waste in the sump consists of stormwater runoff from the Metal Dissolver Pad.

(14.16) NFS Pump House Sump

The NFS Pump House Sump (02-E004-PMP) is located in Plant 2/3 and serves the NFS Pump House Area. The sump measures approximately 3 ft wide x 4 ft long and is made of concrete with a stainless steel liner. The depth of this sump is not known. Ancillary equipment includes about 20 ft of piping and dual sump pumps. This sump became operational in 1953 and remains active. The wastes received by the sump contain enriched uranyl nitrate.

(14.17) Nitric Acid Storage Tank Area Sump

The Nitric Acid Storage Tank Area Sump is located south of Plant 2/3. This sump serves the Nitric Acid Storage Tank Pad. This sump is made of stainless steel and has surface dimensions of approximately 3 ft x 3 ft. The depth of this sump is not known. Ancillary equipment includes piping, pumps, and controls. The sump began operating in 1953 and remains active. The wastes received by the sump include nitric acid spills and stormwater.

(14.18) Northeast Pad Denitrification Sump

The Northeast Pad Denitrification Sump was located in Plant 2/3 and served the Northeast Pad Denitrification Area. The sump was made of concrete with a stainless steel liner. The dimensions and dates of operation of this sump are not known. Although this sump no longer exists, it met the definition of a wastewater treatment unit.

(14.19) Northwest Digestion Storage Pad Sump

The Northwest Digestion Storage Pad Sump is located on the corner of 2nd Street and A Street and serves the Northwest Digestion Storage Pad. The sump is made of concrete and contains two sections that each measure approximately 3 ft wide x 4 ft long. The depth of the sump is not known. Ancillary equipment includes a pump and a filter. The sump became operational in 1953 and remains active.

The solids in this sump settle in one section and the clear liquor overflows into the other section. The waste received by this sump consists mostly of stormwater runoff.

(14.20) Northwest End Denitrification Sump

The Northwest End Denitrification Sump is located in Plant 2/3 and serves the Northwest End Denitrification Area. The sump is made of concrete and acid brick with a stainless steel liner and measures approximately 3 ft in diameter. The depth of the sump is not known. Ancillary equipment includes approximately 20 ft of piping. The sump became operational in 1953 and remains active. The wastes received by the sump consist of washwater, nitric acid and uranyl nitrate solution.

(14.21) OK Liquor Pit Sump

The OK Liquor Pit Sump (02-D020-PMP) is located between Tanks 225

and 222 at Plant 2/3 and serves the Uranyl Nitrate Storage Tank Area. The cylindrical sump is made of concrete and acid brick and measures approximately 2 ft-6 inches in diameter. The depth of the sump is not known. Ancillary equipment includes about 15 ft of piping and a pump. The sump became operational in 1958 and remains active. The wastes received by the sump consist of stormwater and spilled OK Liquor (uranyl nitrate solution).

(14.22) Ore Pit Area Sumps (2)

The two Ore Pit Area Sumps are located northwest of the digestion area and next to the Metal Dissolver Building. These sumps serve the Cold and Hot Side Ore Pits. Both sumps are made of concrete and measure approximately 4 ft wide x 3 ft long. The depths of these sumps are unknown. Ancillary equipment includes associated piping, pumps, and a steam eductor control which is manual on the cold side, and automatic on the hot side. The sumps became operational in 1953 and remain active. The wastes received by the sumps include stormwater and a mixture of uranium ore.

(14.23) Pad Area 5-A and 5-B Sump

The Pad Area 5-A and 5-B Sump is located on the north side of Plant 2/3 and serves the Hot and Cold Slop Tanks 5-A and 5-B. The sump is made of concrete and acid brick with a stainless steel liner and measures approximately 3 ft wide x 4 ft long. The depth of this sump is not known. Ancillary equipment includes a portable pump and about 12 ft of piping; the sump is pumped out manually with the portable pump. This unit has operated since 1953. The sump collects stormwater or slop spills from Tanks 5-A and 5-B.

(14.24) Southeast and Northeast End Denitrification Sumps (2)

The two Southeast and Northeast End Denitrification Sumps are located in Plant 2/3 and serve the Denitrification Areas of the

Southeast and Northeast Ends. The sumps are made of concrete with stainless steel linings and measure approximately 3 ft wide x 3 ft long. The depths of these sumps are not known. Ancillary equipment includes a pump and 12-15 ft of piping. These sumps operated from the mid-1950s until 1987. The wastes received by the sumps consisted of floor sump, washdown water, and process spills (nitric acid and uranyl nitrate).

(14.25) Southeast Pad Denitrification Sump

The Southeast Pad Denitrification Sump is located in Plant 2/3 and serves the Denitrification Area of the Southeast Pad. The sump measures approximately 3 ft wide x 3 ft long and is made of concrete lined with stainless steel. The depth of this sump is not known. Ancillary equipment includes about 12 ft of piping. The sump became operational in 1953 and remains active. The waste in the sump contains uranyl nitrate solution.

(14.26) Southwest End Denitrification Sump

The Southwest End Denitrification Sump is located in Plant 2/3 and serves the Southwest End Denitrification Area. The sump is made of concrete and acid brick with a stainless steel liner and measures approximately 3 ft in diameter. The depth of this sump is unknown. Ancillary equipment includes about 15 ft of piping. The sump has operated since 1953. The wastes handled by this sump include UNH (uranyl nitrate hexahydrate), nitric acid, and wastewater.

(14.27) West Cold and Center Hot Side Extraction Sumps (2)

The two West Cold and Center Hot Side Extraction Sumps (02-A150-PMP) are located in Plant 2/3 and serve the West Cold and Center Hot Extraction Areas. Both sumps are made of concrete and acid brick with stainless steel liners and measure approximately 2 ft-6 inches in diameter. The depths of these sumps are not known. Ancillary

equipment includes over 50 ft of piping and a pump. The sumps became operational in 1953 and remain active. The wastes received by the sumps consist of pump drainage and pump seal water.

(14.28) West Hot Side Extraction Sump

The West Hot Side Extraction Sump is located in Plant 2/3 and serves the West Hot Side Extraction Area. The concrete sump measure approximately 2 ft-6 inches in diameter. The depth of this sump is not known. Ancillary equipment includes about 40 ft of piping and a pump. The sump became operational in 1953 and remains active. The wastes received by the sump consist of pump drainage, pump seal water, and sulfuric acid (H_2SO_4).

(15) Raffinate Storage Tank F1-400

Raffinate Tank F1-400 is an outside, aboveground storage tank located northeast of Building 39A (see Figure J-1). This cylindrical, stainless steel (SS347) tank has a capacity of 6,060 gallons. The tank sits on a flat, diked pad made of ceramic brick, mortar, and concrete. A reference drawing of the tank is included in Attachment J-2-4. Ancillary equipment includes associated piping and a level indicator. Raffinate Storage Tank F1-400 began operating in 1951 and remains active. This unit previously stored non-neutralized waste raffinate which is primarily water and nitric acid mixed with uranium and other metals. The tank currently stores rainwater.

(16) Raffinate Storage Tank F1-401

Raffinate Tank F1-401 is an outside, aboveground storage tank located northeast of Building 39A (see Figure J-1). This cylindrical, stainless steel (SS347) tank has a capacity of 6,060 gallons. The tank sits on a flat, diked pad made of ceramic brick, mortar, and concrete. A reference drawing of the Tank F1-101 is included in Attachment J-2-4. Ancillary equipment includes associated piping and a level indicator. Raffinate

Storage Tank F1-401 began operating in 1951 and remains active. This unit previously stored non-neutralized waste raffinate which is primarily water and nitric acid mixed with uranium and other metals. The tank currently stores rainwater.

(17) Raffinate Storage Tank F1-402

Raffinate Tank F1-402 is an outside, aboveground storage tank located northeast of Building 39A (see Figure J-1). This cylindrical, stainless steel (SS347) tank has a capacity of 6,060 gallons. The tank sits on a flat, diked pad made of ceramic brick, mortar, and concrete. A reference drawing of the tank is included in Attachment J-2-4. Ancillary equipment includes associated piping and a level indicator. Raffinate Storage Tank F1-402 has operated since 1951. This unit previously stored non-neutralized waste raffinate which is primarily water and nitric acid mixed with uranium and other metals. The tank currently stores rainwater.

(18) Raffinate Storage Tank F1-403

Raffinate Tank F1-403 is an outside, aboveground storage tank located northeast of Building 39A (see Figure J-1). This cylindrical, stainless steel (SS347) tank has a capacity of 6,060 gallons. The tank sits on a flat, diked pad made of ceramic brick, mortar, and concrete. A reference drawing of the tank is included in Attachment J-2-4. Ancillary equipment includes associated piping and a level indicator. Raffinate Storage Tank F1-403 has operated since 1951. This unit previously stored non-neutralized waste raffinate which is primarily water and nitric acid mixed with uranium and other metals. The tank currently stores water from excavations in the facility.

(19) Refinery Sump, Filter Wash Tank F1-608

The Refinery Sump Filter Wash Tank F1-608 is an outside, aboveground storage tank located near Plant 2/3 (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of 26,550 gallons and

measures approximately 15 ft in diameter x 20 ft high. A reference drawing of the unit is included in Attachment J-2-5. Ancillary equipment includes flanges, couplings, associated piping, two pumps and a level indicator. The tank has been in service since 1953.

(20) Refinery Sump, Filter Wash Tank F1-609

The Refinery Sump Filter Wash Tank F1-609 is an outside, aboveground tank located near Plant 2/3 (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of 6,050 gallons. It measures approximately 9 ft-6 inches in diameter and 9 ft-6 inches long. A reference drawing of the unit is included in Attachment J-2-5. Ancillary equipment includes an agitator, associated piping, an overflow cascade pipe, and a high level sensor with an alarm. The tank has been in service since 1953 and is currently used for processing wastewater from Plant 2/3. Wastes processed by the tank include variable amounts of wastewater, nitric acid, and magnesium hydroxide slurry. This unit meets the definition of a wastewater treatment unit and is part of the wastewater treatment system.

(21) Refinery Sump, Filter Wash Tank F1-610

The Refinery Sump Filter Wash Tank F1-610 is an outside, aboveground storage tank located near Plant 2/3 (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of 6,050 gallons. It measures approximately 9 ft-6 inches in diameter by 9 ft-6 inches high. A reference drawing of the tank is included in Attachment J-2-5. Ancillary equipment includes an agitator, magnesium hydroxide addition, pumps, associated piping, an overflow cascade pipe, and a high level sensor with an alarm. The tank has been in service since 1953 and is currently used for processing wastewater from Plant 2/3. Process materials handled by the tank include variable amounts of wastewater, nitric acid, and magnesium hydroxide. This unit meets the definition of a wastewater treatment unit and is part of the wastewater treatment system.

(22) Refinery Sump, Filter Wash Tank F2E-601

The Refinery Sump Filter Wash Tank F2E-601 is an outside, aboveground storage tank located near Plant 2/3 (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of 26,550 gallons and measures approximately 16 ft in diameter by 18 ft high. A reference drawing of Tank F2E-601 is included in Attachment J-2-5. Ancillary equipment includes flanges, pipes, a ladder, pumps, controls, a high level indicator, and an overflow cascade pipe. This unit became operational in 1955 and remains active. This tank receives wastewater from the Digestion, Extraction, Nitric Acid Recovery, Denitrification, Combined Raffinate and Hot Raffinate Sumps. Tank F2E-601 meets the definition of a wastewater treatment unit and is part of the wastewater treatment system.

(23) Refinery Sump, Filter Wash Tank F2E-602

The Refinery Sump Filter Wash Tank F2E-602 is an outside, aboveground storage tank located near Plant 2/3 (see Figure J-1). This cylindrical, stainless steel (SS304-L) tank has a capacity of 16,800 gallons and measures approximately 16 ft-6 inches in diameter by 10 ft-6 inches high. A reference drawing of the unit is included in Attachment J-2-6. Ancillary equipment includes a rake, pipes, pumps, and controls. The unit has served as a settling tank for Plant 2/3 wastewater since 1955. This unit meets the definition of a wastewater treatment unit and is part of the wastewater treatment system.

During operations, variable amounts of wastewater mixed with process materials were handled by the tank including:

- magnesium oxide
- raffinate
- treated wastewater
- uranium
- uranium precipitate

(24) Refinery Sump, Thickener Slurry Tank F1-612

The Refinery Sump Thickener Slurry Tank F1-612 is an outside, aboveground storage tank located near Plant 2/3 (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of about 1,800 gallons and measures approximately 6 ft-6 inches in diameter by 6 ft-6 inches high. A reference drawing of the unit is included in Attachment J-2-7. Ancillary equipment includes an agitator, associated piping, pumps, and controls. This wastewater treatment unit served as a treatment and holding tank for preparing Refinery raffinate thickener slurry from 1953 to 1989. During this time, the tank held variable amounts of precipitated uranium slurry and magnesium oxide.

(25) Satellite Accumulation Area (Current)

The Satellite Accumulation Area (Current) is a temporary container storage area located in the southeast corner of Plant 2/3 by the east wall of the Maintenance Shop (see Figure J-1). This storage area occupies an area approximately 4 ft x 12 ft and has operated since 1990. A reference drawing of this unit is included in Attachment J-2-4.

This unit contains 55-gallon, carbon steel drums with open tops, covers and locking rings (17H). The drums are used to store the daily accumulation of:

- gloves
- oil
- rags covered with 1,1,1-trichloroethane
- residues
- spent solvents
- spill clean-up

This area serves as an active collection center until the drums are filled and removed from the area. A maximum of four 55-gallon drums of waste are accumulated in this area.

(26) Satellite Accumulation Area (Prior)

The Satellite Accumulation Area (Prior) was a temporary container storage area located in the southeast corner of Plant 2/3, in the Maintenance Shop, on the west wall by the vent hood (see Figure J-1). The storage unit measured approximately 4 ft x 12 ft and operated from 1989 to 1990. The unit was relocated in 1990 to the east wall (Satellite Accumulation Area Current). A reference drawing is included in Attachment J-2-4.

This unit contained 55-gallon, carbon steel drums with open tops, covers and locking rings. The drums were used to store the daily accumulation of:

- gloves
- oil
- rags covered with 1,1,1-trichloroethane
- residues
- spent solvents
- spill clean-up

This container storage area served as an active collection center until the drums were filled and removed from the area. A maximum of four 55-gallon drums of waste were accumulated in this area.

(27) Tributyl Phosphate/Kerosene Holding Tank 17A

This Tributyl Phosphate (TBP)/Kerosene Tank makes up part of a system which processed tributyl phosphate and kerosene for use in the liquid-liquid extraction of uranyl nitrate. The complete system includes nine aboveground storage tanks, all located outside Plant 2/3 (see Figure J-1). This 2,500-gallon, stainless steel (SS304) tank measures approximately 6 ft in diameter x 8 ft high and occupies an area about 8 ft x 10 ft. A reference drawing of the unit is included in Attachment J-2-8. Ancillary equipment includes a pump and associated piping. The unit was installed in 1951 and used through 1988. Tank 17A was used to store waste

TBP/kerosene that could no longer be used in the extraction process.

(28) Tributyl Phosphate/Kerosene Holding Tank 17B

This Tributyl Phosphate (TBP)/Kerosene Tank makes up part of a system which processed tributyl phosphate and kerosene for use in the liquid-liquid extraction of uranyl nitrate. The complete system includes nine aboveground storage tanks, all located outside Plant 2/3 (see Figure J-1). This 2,500-gallon, stainless steel (SS304) tank measures approximately 6 ft in diameter by 8 ft high and occupies an 8 ft x 10 ft area. A reference drawing of the unit is included in Attachment J-2-8. Ancillary equipment includes a pump and associated piping. The unit was installed in 1951 and used through 1988. Tank 17B was used to store waste TBP/kerosene that could no longer be used in the extraction process.

(29) Tributyl Phosphate/Kerosene Holding Tank 17C

This Tributyl Phosphate (TBP)/Kerosene Tank makes up part of a system which processed tributyl phosphate and kerosene for use in the liquid-liquid extraction of uranium nitrate. The complete system includes nine aboveground storage tanks, all located outside Plant 2/3 (see Figure J-1). This 1,050-gallon, stainless steel (SS304) tank occupies an area approximately 6 ft x 6 ft. A reference drawing of the unit is included in Attachment J-2-8. Ancillary equipment includes a pump and associated piping. The unit was installed in 1951 and used through 1988. Tank 17C was used to store waste TBP/kerosene that could no longer be used in the extraction process.

(30) Tributyl Phosphate/Kerosene Holding Tank F1-512

The Tributyl Phosphate (TBP)/Kerosene Tank F1-512 tank is an outside, aboveground storage tank located in the center-west segment of the process area, north of Plant 2/3 (see Figure J-1). This cylindrical, stainless steel tank (SS347) has a capacity of about 25,600 gallons and measures approximately 12 ft in diameter x 27 ft-6 inches high. A reference drawing

of the unit is included in Attachment J-2-9. Ancillary equipment includes flanges, couplings, associated piping, pumps, a level indicator, and a high level sensor with an alarm. This tank operated from 1953 until 1988. It currently contains approximately 9,300 gallons of waste TBP/kerosene.

(31) UNH Storage Tank F1-310

UNH Storage Tank F1-310 is an outside, aboveground tank located east of Building 39A (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of 8,200 gallons. The tank sits on a flat, diked pad made of ceramic brick, mortar, and concrete. Ancillary equipment includes associated piping, a non-functioning agitator, a level indicator, and a high level sensor with an alarm. A reference drawing of the tank is included in Attachment J-2-4.

This tank previously stored uranyl nitrate in nitric acid (slag leach filtrate) for the Plant 2/3 Refinery, but now contains wastewater. The tank has operated since 1951.

(32) UNH Storage Tank F1-311

UNH Storage Tank F1-311 is an outside, aboveground tank located east of Building 39A (see Figure J-1). This cylindrical, stainless steel (SS034L) tank has a capacity of 8,200 gallons. The tank sits on a flat, diked pad made of ceramic brick, mortar, and concrete. Ancillary equipment includes associated piping, a non-functioning agitator, a level indicator, and a high level sensor with an alarm. A reference drawing of the tank is included in Attachment J-2-4.

This tank previously stored uranyl nitrate in nitric acid (slag leach filtrate) for the Plant 2/3 Refinery, but now contains wastewater. The tank has operated since 1951.

(33) UNH Storage Tank F1-312

UNH Storage Tank F1-312 is an outside, aboveground tank located east of Building 39A (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of 8,200 gallons. The tank sits on a flat, diked pad made of ceramic brick, mortar, and concrete. Ancillary equipment includes associated piping, a non-functioning agitator, a level indicator, and a high level sensor with an alarm. A reference drawing of the tank is included in Attachment J-2-4.

This tank previously stored uranyl nitrate in nitric acid (slag leach filtrate) for the Plant 2/3 Refinery, but now contains wastewater. The tank has operated since 1951.

(34) UNH Storage Tank F1-317

UNH Storage Tank F1-317 is an outside, aboveground tank located east of Building 39A (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of 8,200 gallons. The tank sits on a flat, diked pad made of ceramic brick, mortar, and concrete. Ancillary equipment includes associated piping, a non-functioning agitator, a level indicator, and a high level sensor with an alarm. A reference drawing of the tank is included in Attachment J-2-4.

This tank previously stored uranyl nitrate in nitric acid (slag leach filtrate) for the Plant 2/3 Refinery, but now contains wastewater. The tank has operated since 1951.

(35) Uranyl Nitrate Tank F1-405

The Uranyl Nitrate Tank F1-405 is an outside, aboveground storage tank located on the Combined Raffinate Pad in the uranyl nitrate processing section of the Plant 2/3 refinery area (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of 6,000 gallons and measures approximately 9 ft-6 inches in diameter x 9 ft-6 inches long.

A reference drawing is included in Attachment J-2-10. Ancillary equipment includes a pump, flanges, a level indicator, couplings and associated piping. The tank has been used to store uranyl nitrate-containing wastes from Plant 2/3 since 1951 and currently contains solid residues.

The contents of Tank F1-405 consist of evaporator product solid waste residues mixed with some liquid rainwater. The solid portion of the waste contains:

- nitric acid residues
- raffinate
- solvent residues
- uranyl nitrate

These wastes were generated during the process of converting uranium-containing materials (natural uranium ore or enriched recycled material) to uranium oxides. In the process, nitric acid was used to digest the uranium into a low-grade slurry. Uranyl nitrate was then extracted from the slurry with a solvent mixture of tributyl phosphate and kerosene. Nitric acid and impurities remain in the aqueous waste stream.

(36) Uranyl Nitrate Raffinate Tank, F3E-405

The Uranyl Nitrate Raffinate Tank F3E-405 is an outside, aboveground storage tank located on the Combined Raffinate Pad in the uranyl nitrate processing section of the Plant 2/3 refining area (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of 6,000 gallons and measures approximately 9 ft-6 inches in diameter by 9 ft-6 inches long. A reference drawing of this tank is included in Attachment J-2-11. Ancillary equipment includes a non-functioning agitator, flanges, a level indicator, couplings and associated piping. The tank has been used to store solid residues (uranyl nitrate raffinate) from Plant 2/3 since 1951.

Currently, Tank F3E-405 contains a small amount of solid residues. This residue may contain a combination of:

- magnesium oxide

- nitric acid
- raffinate
- solvent residue
- tributyl phosphate/kerosene
- uranyl nitrate

These wastes were generated during the process of converting uranium-containing materials (natural uranium ore or enriched recycled material) to uranium oxides. In the process, nitric acid was used to digest the uranium into a low-grade slurry. Uranyl nitrate was then extracted from the slurry with a solvent mixture of tributyl phosphate and kerosene. Nitric acid and impurities remain in the aqueous raffinate waste stream.

(37) Wastewater Storage Tank F1-25A

Wastewater Storage Tank F1-25A is an outside, aboveground tank located in a diked area on the north side of Plant 2/3 (see Figure J-1). This cylindrical tank is constructed of 304L stainless steel and has a capacity of 24,000 gallons. The tank measures approximately 16 ft in diameter x 15 ft high. A reference drawing is included in Attachment J-2-4. Ancillary equipment includes a top-mounted stirring motor, transfer pumps and a level indicator. This tank has stored wastewater from Plant 2/3 since 1955. It currently contains about 18,546 gallons of digestion wastewater.

(38) Wastewater Storage Tank F1-26A

Wastewater Storage Tank F1-26A is an outside, aboveground tank located in a diked area on the north side of Plant 2/3 (see Figure J-1). This cylindrical tank is constructed of 304L stainless steel and has a capacity of 24,000 gallons. The tank measures approximately 16 ft in diameter x 15 ft high. A reference drawing is included in Attachment J-2-4. Ancillary equipment includes a top-mounted stirring motor, transfer pumps and a level indicator. The tank has stored wastewater from Plant 2/3 since 1955 and currently contains about 16,114 gallons of digestion wastewater.

(39) NAR System Components

The NAR (Nitric Acid Reduction) System is located in Plant 2/3 and consists of several components (see Figure J-1). The NAR System served as part of the Denitrification System involved with converting uranyl nitrate to uranium oxides. The NAR System occupies an area of approximately 13,262 ft^2.

A reference drawing of the NAR System is included in Attachment J-2-4. Individual components of the system are described below.

(39.1) Acid Recovery Tank F1-24

Acid Recovery Tank F1-24 is an outside, aboveground storage tank located at the southwest end of Building 2A. This cylindrical, stainless steel (SS034L) tank has a capacity of 30,500 gallons and measures approximately 16 ft in diameter x 18 ft. The tank sits on a flat, tar-sealed, concrete pad surrounded by a 3 ft berm. Ancillary equipment includes vacuum pumps, associated piping, valves, a high level sensor with an alarm, and an overflow cascade pipe. This tank began operating in 1951. The NAR System closed in July, 1988, but Tank F1-24 was not closed until September, 1989.

This tank was used in a nitric acid recovery operation whereby NO_x vapors were condensed into 30% nitric acid. During operations, this tank processed material at a rate of approximately 10 gallons per minute. The tank is classified as a HWMU because it stored approximately 26,707 gallons of 6-normal (N) nitric acid, a characteristically hazardous (D002) waste, for more than 90 days.

(39.2) Liquor Cooler E3E-210

Liquor Cooler E3E-210 is located in Plant 2/3 as part of the NAR

System. This cylindrical, steel tank measures approximately 1 ft-6 inches in diameter x 12 ft high. Ancillary equipment includes pumps and piping. This unit operated from 1958 until 1988 and was used to cool liquid nitric acid for the venturi scrubbers. The Liquor Cooler is classified as a HWMU because nitric acid which is characteristically hazardous (D002) remained in the unit for more than 90 days.

(39.3) Liquor Cooler E3E-211

Liquor Cooler E3E-211 is located in Plant 2/3 as part NAR System. This cylindrical, steel tank measures approximately 1 ft-6 inches in diameter x 12 ft high. Ancillary equipment includes pumps and piping. This unit operated from 1958 until 1988 and was used to cool liquid nitric acid for the venturi scrubbers. The Liquor Cooler is classified as a HWMU because nitric acid which is characteristically hazardous (D002) remained in the unit for more than 90 days.

(39.4) Scrubber Liquid Storage Tank F3E-220

The Scrubber Liquid Storage Tank F3E-220 is located on the east side of Plant 2/3. This cylindrical, steel tank measures approximately 6 ft in diameter x 17 ft-6 inches long. Ancillary equipment includes pumps and piping. This unit operated from the mid-1950s until July, 1988.

Tank F3E-220 stored scrubber liquid (nitric acid) and provided a point for the separation of gas and liquid. This tank is a HWMU because it has contained nitric acid which is characteristically hazardous (D002) for more than 90 days. This tank presently contains approximately 2,036 gallons of nitric acid.

(39.5) Weir Box F3E-207

Weir Box F3E-207 is mounted above the Denitration Tank in the north side of the Denitration Area in Plant 2/3. This unit is made of steel and measures approximately 3 ft x 4 ft x 8 inches. Ancillary equipment includes the piping. This unit operated from 1953 until July, 1988, and served as part of a system that scrubbed NO_x gas from process vapors to recover nitric acid. The weir box is classified as a HWMU because acid residues which are characteristically hazardous (D002) have remained in the unit for more than 90 days.

(39.6) Weir Box F3E-213

Weir Box F3E-213 is mounted above the Denitration Tank in the north side of the Denitration Area in Plant 2/3. This unit is made of steel and measures approximately 3 ft x 4 ft x 8 inches. Ancillary equipment includes the piping. This unit operated from 1958 until July, 1988, and served as part of a system that scrubbed NO_x gas from process vapors to recover nitric acid. The weir box is classified as a HWMU because acid residues which are characteristically hazardous (D002) have remained in the unit for more than 90 days.

(39.7) Weir Box F3E-215

Weir Box F3E-215 is mounted above the Denitration Tank in the north side of the Denitration Area in Plant 2/3. This unit is made of steel and measures approximately 3 ft x 4 ft x 8 inches. Ancillary equipment includes the piping. This unit operated from 1958 until July, 1988, and served as part of a system that scrubbed NO_x gas from process vapors to recover nitric acid. The weir box is classified as a HWMU because acid residues which are characteristically hazardous (D002) have remained in the unit for more than 90 days.

(39.8) Weir Box F3E-218

Weir Box F3E-218 is mounted above the Denitration Tank in the north side of the Denitration Area in Plant 2/3. This unit is made of steel and measures approximately 3 ft x 4 ft x 8 inches. Ancillary equipment includes the piping. This unit operated from 1958 until July, 1988, and served as part of a system that scrubbed NO_x gas from process vapors to recover nitric acid. The weir box is a HWMU because acid residues which are characteristically hazardous (D002) have remained in the unit for more than 90 days.

(39.9) Venturi Scrubber Tank G3E-207

The Venturi Scrubber Tank G3E-207 is mounted above the weir box in the Denitration Area of Plant 2/3. This overhead vapor condenser tank is made of stainless steel. The unit is 7 ft tall and measures approximately 1 ft-6 inches in diameter at the top and 1 ft in diameter at the bottom. The diameter of the scrubber varies between the top and bottom and does not decrease linearly. Ancillary equipment includes the associated piping. The venturi scrubber operated from 1958 until July, 1988.

Vapors from the UO_3 gulping transfer passed through the Venturi Scrubber where the scrubber liquid removed water vapor, dust, and NO_x vapors. This unit classifies as a HWMU because acid residues which are characteristically hazardous (D002) have remained in the unit for more than 90 days.

(40) Trane Thermal Liquid Incinerator

The Trane Thermal Liquid Incinerator is located in Building 39A, and also includes the Plant 2/3 Pad adjacent to Building 39A and the Oil/Water Separator in Building 39B (see Figure J-1). The incinerator and its ancillary equipment were used to incinerate listed hazardous waste. The approximate dimensions of these units are as follows:

- Building 39A: 32 ft x 15 ft
- Building 39B: 16 ft x 26 ft

- Pad and Gravel Area: 120 ft x 40 ft

The incinerator consists of a steel casing with a refractory brick lining. The incinerator burned liquids at temperatures between 2600 °F and 2800 °F and has the capacity to burn about seven gallons per hour. A reference drawing of this unit is included in Attachment J-2-12. Other ancillary equipment includes pumps, associated piping, dust collectors, and a storage tank (F3E-406) which still contains residual waste oil, and an oil/water separator. The storage tank is an outside, aboveground stainless steel (SS304L) tank with a capacity of 6,000 gallons. The tank is equipped with a level indicator and has been in service since 1951. The Trane Thermal Liquid Incinerator operated from April, 1983, until May 7, 1986.

This unit was originally designed to incinerate liquid waste contaminated with radionuclides. However, the unit also incinerated oil containing characteristically hazardous levels of lead (D008) and spent 1,1,1-trichloroethane, a listed hazardous waste (F001/F002).

(41) Uranyl Nitrate Tanks (Digestion Area (2 locations))

The Digestion Area inside Plant 2/3 contains several uranyl nitrate storage tanks (see Figure J-1). This unit is divided into two separate areas:

- Area 1: 20 ft x 127 ft
  - contains Tanks D1-1, D1-2, D1-4, F1-1, F1-25
- Area 2: 20 ft x 127 ft
  - contains Tanks D1-7, D1-10, F1-26

The floor in each of these areas is lined with acid brick and sloped for drainage. A reference drawing is included in Attachment J-2-13.

The individual tanks located in this area are described below.

(41.1) UNH Storage Tank D1-1

UNH Storage Tank D1-1 is an aboveground tank located in the Digestion Area inside Plant 2/3. This cylindrical, stainless steel tank has a capacity of approximately 3,460 gallons. Ancillary equipment includes material transfer pumps and a top-mounted stirring motor. The unit has served as a storage tank for uranyl nitrate in nitric acid from the mid-1950s to the present, and currently contains about 3,150 gallons of liquid uranyl nitrate. This tank is a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(41.2) UNH Storage Tank D1-2

UNH Storage Tank D1-2 is an aboveground tank located in the Digestion Area inside Plant 2/3. This cylindrical, stainless steel tank has a capacity of approximately 3,460 gallons. Ancillary equipment includes material transfer pumps and a top-mounted stirring motor. The unit has served as a storage tank for uranyl nitrate in nitric acid from the mid-1950s to the present, and currently contains about 3,068 gallons of liquid uranyl nitrate. This tank is a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(41.3) UNH Storage Tank D1-4

UNH Storage Tank D1-4 is an aboveground tank located in the Digestion Area inside Plant 2/3. This cylindrical, stainless steel tank has a capacity of approximately 3,460 gallons. Ancillary equipment includes material transfer pumps and a top-mounted stirring motor. The unit has served as a storage tank for uranyl nitrate in nitric acid from the mid-1950s to the present, and currently contains about 2,832 gallons of liquid uranyl nitrate. This tank classifies as a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for

more than 90 days. The FEMP is not seeking a permit to operate this unit.

(41.4) UNH Storage Tank D1-7

UNH Storage Tank D1-7 is an aboveground tank located in the Digestion Area inside Plant 2/3. This cylindrical, stainless steel tank has a capacity of approximately 3,627 gallons. Ancillary equipment includes a pump and piping. The unit has served as a storage tank for uranyl nitrate in nitric acid since the mid-1950s. The tank currently contains about 3,559 gallons of liquid uranyl nitrate. This tank is a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(41.5) UNH Storage Tank D1-10

UNH Storage Tank D1-10 is an aboveground tank located in the Digestion Area inside Plant 2/3. This cylindrical, stainless steel tank has a capacity of approximately 3,460 gallons. Ancillary equipment includes material transfer pumps and a top-mounted stirring motor. The unit has served as a storage tank for uranyl nitrate in nitric acid from the mid-1950s to the present, and currently contains about 3,187 gallons of liquid uranyl nitrate. This tank is classified as a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(41.6) UNH Storage Tank F1-1

UNH Storage Tank F1-1 (MMICS #02-A118-TNK) is an aboveground tank located in the Digestion Area inside Plant 2/3. This cylindrical, stainless steel tank has a capacity of approximately 3,300 gallons.

The unit has served as a storage tank for uranyl nitrate in nitric acid since the 1950s, and currently contains approximately 2,010 gallons of liquid uranyl nitrate. This tank is a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(41.7) UNH Storage Tank F1-25

UNH Storage Tank F1-25 is an aboveground tank located in the Digestion Area inside Plant 2/3. This cylindrical, stainless steel tank has a capacity of approximately 23,500 gallons. Ancillary equipment includes a level indicating gage, a pump and piping. The unit has served as a storage tank for uranyl nitrate in nitric acid since the mid-1950s. The tank currently contains about 16,915 gallons of liquid uranyl nitrate. This tank is a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(41.8) UNH Storage Tank F1-26

UNH Storage Tank F1-26 is an aboveground tank located in the Digestion Area inside Plant 2/3. This cylindrical, stainless steel tank has a capacity of approximately 23,500 gallons. Ancillary equipment includes a level indicating gage, a pump and piping. The unit has served as a storage tank for uranyl nitrate in nitric acid since the mid-1950s. The tank currently contains about 18,415 gallons of liquid uranyl nitrate. This tank is a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(42) Uranyl Nitrate Tanks (NFS Storage Area)

The NFS Storage Area south of the Plant 1 Ore Silos contains several uranyl nitrate storage tanks (see Figure J-1). These tanks sit in an area paved with concrete that measures approximately 61 ft-7 inches long x 53 ft-9 inches wide. The area is surrounded by a concrete dike that measures approximately 1 ft-6 inches high on the south side and 4 ft-4 inches high on the north side. A reference drawing of this unit is included in Attachment J-2-14.

The individual tanks located in this area are described below.

(42.1) UNH Storage Tank F2-605

The UNH Storage Tank F2-605 (02-E004-TNK) is an outside, aboveground tank located northwest of Plant 2/3. This cylindrical, horizontally-mounted, insulated tank is constructed of 304L stainless steel. The tank has a capacity of 25,500 gallons and measures approximately 10 ft-6 inches in diameter and 44 ft in length. Ancillary equipment includes a stirring motor, a chemical feed hopper, and a Varec level indicator. The unit has served as a storage tank for uranyl nitrate in nitric acid since 1967. This tank is a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(42.2) UNH Storage Tank F2-606

The UNH Storage Tank F2-606 (02-E003-TNK) is an outside, aboveground tank located northwest of Plant 2/3. This cylindrical, horizontally-mounted, insulated tank is constructed of 304L stainless steel. The tank has a capacity of 25,500 gallons and measures approximately 10 ft-6 inches in diameter and 44 ft in length. Ancillary equipment includes a stirring motor, a chemical feed hopper, and a Varec level indicator. The unit has served as a storage tank for uranyl nitrate in nitric acid since 1967. This tank is a HWMU because it has been used to store waste uranyl

nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(42.3) UNH Storage Tank F2-607

The UNH Storage Tank F2-607 (02-E002-TNK) is an outside, aboveground tank located northwest of Plant 2/3. This cylindrical, horizontally-mounted, insulated tank is constructed of 304L stainless steel. The tank has a capacity of 25,500 gallons and measures approximately 10 ft-6 inches in diameter and 44 ft in length. Ancillary equipment includes a stirring motor, a chemical feed hopper, and a Varec level indicator. The unit has served as a storage tank for uranyl nitrate in nitric acid since 1967. This tank is a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(42.4) UNH Storage Tank F2-608

The UNH Storage Tank F2-608 (02-E001-TNK) is an outside, aboveground tank located northwest of Plant 2/3. This cylindrical, horizontally-mounted, insulated tank is constructed of 304L stainless steel. The tank has a capacity of 25,500 gallons and measures approximately 10 ft-6 inches in diameter and 44 ft in length. Ancillary equipment includes a stirring motor, a chemical feed hopper, and a Varec level indicator. The unit has served as an storage tank for uranyl nitrate in nitric acid since 1967. This tank is a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(42.5) UNH Surge Tank, 02-E004A-TNK

The UNH Surge Tank, 02-E004A-TNK, is an outside, aboveground storage tank located above UNH Storage Tank F2-605 on the north side of

Plant 2/3. This steel tank has a cylindrical body with a funnel-shaped bottom. The tank measures approximately 3 ft in diameter x 4 ft high. Ancillary equipment includes associated piping. This tank has been used to store surge liquids (uranyl nitrate in nitric acid) from the UNH Storage Tanks since 1967. This tank is classified as a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(43) Uranyl Nitrate Tanks (North of Plant 2)

These uranyl nitrate storage tanks are grouped in one contiguous secondary containment area north of Plant 2/3 (see Figure J-1). This area measures approximately 63 ft-6 inches long x 40 ft-6 inches wide and is surrounded by a 2 ft-8 inch high dike. The floor and dike are both made of concrete and acid brick coated with tar. A reference drawing of this unit is included in Attachment J-2-13.

The individual tanks located in this area are described below.

(43.1) UNH Storage Tank F2E-5 (SE)

UNH Storage Tank F2E-5 (SE) is an outside, aboveground tank located on the north side of Plant 2/3. This cylindrical, stainless steel (304L) tank has a capacity of 25,265 gallons and measures approximately 18 ft-6 inches in diameter and 15 ft high. Ancillary equipment includes a top-mounted stirring motor, material transfer pumps, and a high pressure sensing device with an alarm. The tank has served as an storage unit for uranyl nitrate in nitric acid since 1955 and currently contains about 17,931 gallons of uranyl nitrate liquid. This tank is a HWMU because it has stored waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(43.2) UNH Storage Tank F2E-6 (NE)

UNH Storage Tank F2E-6 (NE) is an outside, aboveground tank located on the north side of Plant 2/3. This cylindrical, stainless steel (304L) tank has a capacity of 25,265 gallons and measures approximately 18 ft-6 inches in diameter and 15 ft high. Ancillary equipment includes a top-mounted stirring motor, material transfer pumps, and a high pressure sensing device with an alarm. The tank has served as an storage unit for uranyl nitrate in nitric acid since 1955 and currently contains about 17,931 gallons of uranyl nitrate liquid. This tank is a HWMU because it has stored waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(43.3) UNH Storage Tank F2E-8 (SW)

UNH Storage Tank F2E-8 (SW) is an outside, aboveground tank located on the north side of Plant 2/3. This cylindrical, stainless steel (304L) tank has a capacity of 25,265 gallons and measures approximately 18 ft-6 inches in diameter and 15 ft high. Ancillary equipment includes a top-mounted stirring motor, material transfer pumps, and a high pressure sensing device with an alarm. The tank has served as an storage unit for uranyl nitrate in nitric acid since 1955 and currently contains about 18,884 gallons of uranyl nitrate liquid. This tank is a HWMU because it has stored waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(44) Uranyl Nitrate Tanks (Raffinate Building)

The Hot Raffinate Building (Building 3E) contains several uranyl nitrate storage tanks (see Figure J-1). This unit is divided into two separate areas:

- Area 1: 14 ft x 50 ft
  - contains Tanks F1-301, F1-302, F1-303

- Area 2: 15 ft x 30 ft
  - contains Tank F1-308

Area 1 is surrounded by concrete walls on all sides and contains a sump for drainage. Area 2 is surrounded by concrete walls and an approximately 12 inch high dike. Area 2 also contains a sump for drainage. The floors in both areas are lined with acid brick. A reference drawing of this unit is included in Attachment J-2-15.

The individual tanks located in the Hot Raffinate Building are described below.

(44.1) UNH Storage Tank F1-301

UNH Storage Tank F1-301 is an aboveground tank located in the Hot Raffinate Building. This cylindrical, stainless steel tank has a capacity of 3,189 gallons and measures approximately 8 ft in diameter x 8 ft high. Ancillary equipment includes an agitator, a pump, and associated piping. The unit has served as a storage tank for uranyl nitrate solution since the mid-1950s. The tank currently contains approximately 2,188 gallons of uranyl nitrate. This tank is classified as a HWMU because it has stored waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(44.2) UNH Storage Tank F1-302

UNH Storage Tank F1-302 is an aboveground tank located in the Hot Raffinate Building. This cylindrical, stainless steel tank has a capacity of 3,189 gallons and measures approximately 8 ft in diameter x 8 ft high. Ancillary equipment includes an agitator, a pump, and associated piping. The unit has served as a storage tank for uranyl nitrate solution since the mid-1950s. The tank currently contains approximately 1,312 gallons of uranyl nitrate. This tank is classified as a HWMU because it has stored waste uranyl nitrate,

a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(44.3) UNH Storage Tank F1-303

UNH Storage Tank F1-303 is an aboveground tank located in the Hot Raffinate Building. This cylindrical, stainless steel tank has a capacity of 3,189 gallons and measures approximately 8 ft in diameter x 8 ft high. Ancillary equipment includes an agitator, a pump and associated piping. The unit has served as a storage tank for uranyl nitrate solution since the mid-1950s. The tank currently contains approximately 1,708 gallons of uranyl nitrate. This tank is classified as a HWMU because it has stored waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(44.4) UNH Storage Tank F1-308

UNH Storage Tank F1-308 is an aboveground tank located in the Hot Raffinate Building. This cylindrical, stainless steel tank has a capacity of approximately 2,254 gallons. Ancillary equipment includes a pump and associated piping. The unit has served as a storage tank for uranyl nitrate solution since the mid-1950s. This tank is classified as a HWMU because it has stored waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(45) Uranyl Nitrate Tanks (Southeast of Plant 2)

This uranyl nitrate storage tank is located in a secondary containment area southeast of Plant 2/3 (see Figure J-1). This area measures approximately 54 ft-7 inches long x 45 ft-4 inches wide and is surrounded by a 4 ft-7 inch high dike. Both the floor and dike are made of concrete coated with tar. A reference drawing of this unit is included in Attachment J-2-13.

The individual tank located in this area is described below.

(45.1) Uranyl Nitrate Tank F3E-223

Uranyl Nitrate Tank F3E-223 is an outside, aboveground storage tank located on the southeast side of Plant 2/3. This cylindrical, stainless steel (SS304L) storage tank has a capacity of 25,000 gallons and measures approximately 16 ft in diameter and 18 ft high. Ancillary equipment includes associated piping and high level sensors with an alarm system. Tank F3E-223 stores uranyl nitrate for Plant 2/3 and presently contains 12,180 gallons. This unit has operated since 1955. This tank is a HWMU because it has been used to store waste uranyl nitrate, a characteristic hazardous waste (D002), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

Plant 4 -- Green Salt Plant

The Green Salt Plant performed three principle operations in the overall process for producing uranium metal:

- Conversion of orange oxide (UO_3) to uranium tetrafluoride (UF_4, also known as "green salt")
- Blending and packaging depleted green salt for the Metals Production Plant derived from FEMP and off-site Gaseous Diffusion Operations
- Operation of the Tank Farm to supply production plants with bulk quantities of required liquid chemical compounds

The two main stages of the green salt production process are reduction of the UO_3 to UO_2 with dissociated ammonia followed by hydrofluorination of the UO_2 with anhydrous hydrofluoric acid (AHF) to form UF_4.

The following SWMU has been identified in Plant 4:

- Plant 4 Sump System

Additionally, the following HWMUs have been identified in Plant 4:

- Drummed HF Residue/Associated Storage Areas Inside Plant 4
- Drummed HF Residue/Associated Storage Areas NW of Plant 4
- Drummed HF Residue/Associated Storage Areas S. of Cooling Towers

Solid Waste Management Units

(46) Plant 4 Sump System

Plant 4 has six sumps located on the first floor: two in the Hydrogen Fluoride Area, and four in the Crane Bay Area (see Figure J-1). All the sumps and ancillary equipment in Plant 4 meet the definition of a wastewater treatment unit and are part of the FEMP wastewater treatment system.

Various wastes, rainwater, washwater, and other liquids have been handled by the Plant 4 sump system. During plant operations, spilled and spent process materials were neutralized in the sumps and uranium was recovered from the sump liquor. Although these sumps no longer collect process liquids, they remain active to collect non-process wastewater. A reference drawing of the Plant 4 Sump System is included in Attachment J-3-1.

Individual elements of the Plant 4 Sump System are described below.

(46.1) Center and East Sumps (2)

The two Center and East Sumps are located on the first floor of Plant 4 and serve the equipment washdown floor drains in the Hydrogen Fluoride Area. These sumps are made of concrete and acid brick and measure approximately 2 ft wide x 2 ft long. The depths of these sumps are not known. Ancillary equipment includes about 30 ft of piping. The sumps became operational in 1952 and remain active.

The following wastes have been collected in these sumps:

- ammonium hydroxide (NH_4OH)
- black oxide (U_3O_8)
- calcium fluoride (CaF_2)
- calcium hydroxide ($Ca(OH)_2$)
- detergent
- dilute Hydrofluoric Acid (DHF)
- oil
- potassium fluoride (KF)
- potassium hydroxide (KOH)
- slop
- thorium tetrafluoride (ThF_4)
- uranium dioxide (UO_2)
- uranium tetrafluoride (UF_4)
- uranium trioxide (UO_3)
- uranyl fluoride (UO_2F_2)

(46.2) Crane Bay Area Sumps (4)

The four Crane Bay Area Sumps are located on the first floor of Plant 4 and serve the equipment washdown areas in the northeast, northwest, southeast, and southwest bays. Each sump is made of concrete and measures approximately 2 ft wide x 2 ft long. The depth of these sumps is not known. Ancillary equipment includes 25-35 ft of piping. The sumps became operational in 1952 and remain active.

Spilled and spent process materials were neutralized in these sumps and the uranium was recovered from the sump liquor. These units have collected the following wastes:

- ammonium hydroxide (NH_4OH)
- black oxide (U_3O_8)
- detergents
- dilute Hydrofluoric Acid (DHF)
- oils
- slop
- thorium tetrafluoride (ThF_4)
- uranium dioxide (UO_2)
- uranium tetrafluoride (UF_4)
- uranium trioxide (UO_3)
- uranyl fluoride (UO_2F_2)

Hazardous Waste Management Units

(47) Drummed HF Residue/Associated Storage Areas Inside Plant 4

This container storage area was located in the north end of Plant 4 next to the elevator (see Figure J-1). The unit measured approximately 4 ft x 17 ft and operated from approximately October, 1987 to October, 1989. A reference drawing of this unit is included in Attachment J-3-2.

This area stored nineteen drums of anhydrous hydrofluoric acid (AHF) mixed with lime. This waste was generated when AHF storage tanks were emptied and cleaned in the Plant 4 Tank Farm. Lime was added to the residue to absorb free liquid and to neutralize the acid. This unit is a HWMU because hydrofluoric acid, a listed waste (U134), was stored in the area for more than 90 days.

(48) Drummed HF Residue/Associated Storage Areas NW of Plant 4

This container storage area was located in a graveled area northwest of Plant 4 (see Figure J-1). This area measured about 25 ft x 30 ft and operated from approximately January, 1990 to August, 1990. A reference drawing of this unit is included in Attachment J-3-3.

This unit is a HWMU because hydrofluoric acid, a listed hazardous waste (U134), was stored in the area for more than 90 days.

(49) Drummed HF Residue/Associated Storage Areas S. of Cooling Towers

This container storage area is located in a graveled area south of the cooling towers (see Figure J-1). This area measures approximately 10 ft x 32 ft and has operated since 1990. A reference drawing of this unit is included in Attachment J-3-4.

This area stores 55-gallon drums of anhydrous hydrofluoric acid (AHF) mixed with lime. Eighteen of these drums are contained in metal boxes and one is contained in an 85-gallon overpack drum. The containers are located within an excavated drainage way that terminates in a lime neutralization pit. This unit is a HWMU because hydrofluoric acid, a listed hazardous waste (U134), has been stored in the area for more than 90 days.

Plant 5 -- Metals Production Plant

During operations, the Metals Production Plant produced high-purity depleted, normal and enriched uranium derby metal by reduction of uranium tetrafluoride (UF_4) with magnesium metal. The plant also remelted derbies and recycled metals for casting into ingots and performed quality control sampling of metal products. Graphite materials were machined and shaped into various forms, and milling of magnesium fluoride (MgF_2) slag was performed for reuse in lining reduction pots. In addition, ingots of uranium were produced to be processed by the Metals Fabrication Plant (Plant 6) and the Special Products Plant (Plant 9).

The following SWMUs have been identified in Plant 5:

- Hoffman Dust Collector System 101
- Hoffman Dust Collector System 256
- Hoffman Dust Collector System 258
- Hoffman Dust Collector System 260
- Hoffman Dust Collector System 261
- Hoffman Dust Collector System 262
- Maintenance Shop Floor Drain and Sump
- Maintenance Shop Steam Booth
- Metals Plant Satellite Accumulation Area
- Plant 5 Sump System

In addition, the following HWMU has been identified in Plant 5:

- Hilco Oil Recovery

Solid Waste Management Units

(50) Hoffman Dust Collector System 101

The Hoffman Dust Collector System 101 is a physical treatment unit (air handling) located inside Plant 5 on the east side of the building (see Figure J-1). The dust collector contains a cylindrical portion which

measures approximately 3 ft in diameter by 8 ft long. Below the cylinder, the unit begins to taper like a cone. The diameter of the dust collector decreases from about 3 ft to roughly 8 inches in diameter. Overall, the unit is approximately 10 ft-5 1/2 inches long and occupies about 63 ft^3 of space. The unit is made of angle iron and sheet metal. Other elements in the dust collection system include a drumming station and flexible duct work. Ancillary equipment includes a vacuum pump and pipe work. Reference drawings of the unit are included in Attachments J-4-1 and J-4-2. The system was installed in 1952 and used through 1988.

System 101 operated as part of the East Breakout Area Conveying System. The unit may have contained the following:

- magnesium fluoride (MgF_2)
- U_3O_8 (black oxide)

These wastes were generated by removing the uranium derbies from the steel pots that they were heated in. Cleaning the derbies and separating them from the magnesium fluoride slag cap may have also generated these materials.

(51) Hoffman Dust Collector System 256

The Hoffman Dust Collector System 256 is a physical treatment unit (air handling) located on the east side of Plant 5 in the middle section of the second floor (see Figure J-1). The dust collector contains a cylindrical portion which measures approximately 3 ft in diameter by 8 ft long. Below the cylinder, the unit begins to taper like a cone. The diameter of the dust collector decreases from about 3 ft to roughly 8 inches in diameter. Overall, the unit is approximately 10 ft-5 1/2 inches long and occupies about 63 ft^3 of space. The unit is made of angle iron and sheet metal. Other elements in the dust collection system include a drumming station and flexible duct work. Ancillary equipment includes a vacuum pump, and pipe work. Reference drawings of the unit are included in Attachments J-4-1 and J-4-2. The system was installed in 1952 and used through 1988.

System 256 operated as part of the East Breakout Area. The unit may contain the following wastes:

- magnesium fluoride (MgF_2)
- uranium
- U_3O_8 (black oxide)

These wastes were generated during the derby breakout process.

(52) Hoffman Dust Collector System 258

The Hoffman Dust Collector System 258 is a physical treatment unit (air handling) located on the west side of Plant 5 in the middle section of the second floor (see Figure J-1). The dust collector contains a cylindrical portion which measures approximately 3 ft in diameter by 8 ft long. Below the cylinder, the unit begins to taper like a cone. The diameter of the dust collector decreases from about 3 ft to roughly 8 inches in diameter. Overall, the unit is approximately 10 ft-5 1/2 inches long and occupies about 63 ft^3 of space. The unit is made of angle iron and sheet metal. Other elements in the dust collection system include a drumming station, pipe work, and a roller conveyor. Ancillary equipment includes a bag station, and a vacuum pump. Reference drawings of the unit are included in Attachments J-4-1 and J-4-2. The system was installed in 1952 and used through 1988.

System 258 serviced the Lid Cleaning Station, Bottom West Remelt Furnace, and Hi-Vac. Parts of this dust collector may contain:

- calcia stabilized zirconia ($CaOZrO_2$)
- graphite
- terrapaint
- uranium
- U_3O_8 (black oxide)

These wastes were generated during the loading and unloading of the Remelt Furnaces and during filling of the Reduction Pots at the lidding station.

(53) Hoffman Dust Collector System 260

The Hoffman Dust Collector System 260 is a physical treatment unit (air handling) located on the east side of Plant 5 in the middle section of the second floor (see Figure J-1). The dust collector contains a cylindrical portion which measures approximately 3 ft in diameter by 8 ft long. Below the cylinder, the unit begins to taper like a cone. The diameter of the dust collector decreases from about 3 ft to roughly 8 inches in diameter. Overall, the unit is approximately 10 ft-5 1/2 inches long and occupies about 63 ft^3 of space. The unit is made of angle iron and sheet metal. Other elements in the dust collection system include a drumming station and flexible duct work. Ancillary equipment includes a vacuum pump and pipe work. Reference drawings of the unit are included in Attachments J-4-1 and J-4-2. The system was installed in 1952 and used until 1988.

System 260 serviced the East Burnout, Remelt Furnace, and Separation Hi-Vac. Parts of the dust collector may contain quantities of:

- Al_2O_3
- Altec 102
- calcia stabilized zirconia ($CaOZrO_2$)
- #301 cement
- dicalite
- firecrete
- firelite
- firebrick
- graphite
- Kaowool insulation
- magnesium oxide
- sillimantite cement
- terrapaint
- U_3O_8 (black oxide)
- uranium
- visolite
- yttria (Y_2O_3)

These wastes were generated by removing crucibles from the Remelt Furnaces.

(54) Hoffman Dust Collector System 261

The Hoffman Dust Collector System 261 is a physical treatment unit (air handling) located on the east side of Plant 5 in the second floor north section (see Figure J-1). The dust collector contains a cylindrical portion which measures approximately 3 ft in diameter by 8 ft long. Below the cylinder, the unit begins to taper like a cone. The diameter of the dust collector decreases from about 3 ft to roughly 8 inches in diameter. Overall, the unit is approximately 10 ft-5 1/2 inches long and occupies about 63 ft^3 of space. The unit is made of angle iron and sheet metal. Other elements in the dust collection system include a drumming station and flexible duct work. Reference drawings of the unit are included in Attachments J-4-1 and J-4-2. Ancillary equipment includes a vacuum pump and pipe work. The system was installed in 1952 and operated through 1988.

This system serviced the East Charging, Crucible Burnout and Separation Hi-Vac, Mold Tank Rebuild, and East Remelt Furnace. Parts of the dust collector may contain quantities of:

- Al_2O_3
- Altec 102
- calcia stabilized zirconia ($CaOZrO_2$)
- #301 cement
- dicalite
- firecrete
- firelite
- firebrick
- graphite
- Kaowool insulation
- magnesium oxide
- sillimantite cement
- sulfur dioxide

- terrapaint
- U_3O_8 (black oxide)
- uranium
- visolite
- yttria (Y_2O_3)

These wastes were generated by removing crucibles from the Remelt Furnaces and cleaning and plugging the crucibles for reuse.

(55) Hoffman Dust Collector System 262

The Hoffman Dust Collector System 262 is a physical treatment unit (air handling) located on the west side of Plant 5 in the second floor north section (see Figure J-1). The dust collector contains a cylindrical portion which measures approximately 3 ft in diameter by 8 ft long. Below the cylinder, the unit begins to taper like a cone. The diameter of the dust collector decreases from about 3 ft to roughly 8 inches in diameter. Overall, the unit is approximately 10 ft-5 1/2 inches long and occupies about 63 ft^3 of space. The unit is made of angle iron and sheet metal. Other elements in the dust collection system include a drumming station and flexible duct work. Ancillary equipment includes a vacuum pump and pipe work. Reference drawings of the unit are included in Attachments J-4-1 and J-4-2. The system was installed in the 1952 and operated through 1988.

The System 262 serviced the graphite lathes and mills. Parts of the dust collector may contain quantities of the following:

- graphite
- terrapaint
- U_3O_8 (black oxide)
- yttria (Y_2O_3)

These wastes were generated by machining graphite for reuse or from new graphite.

(56) Maintenance Shop Floor Drain and Sump

The Maintenance Shop Floor Drain and Sump are located in Plant 5 on the east side of the Maintenance Shop (see Figure J-1). The concrete floor in this area slopes to a 2 ft x 3 ft steel grate over a drain in the floor. This drain leads to a concrete sump that ties into the wastewater treatment system. Ancillary equipment includes a steam eductor. This system was installed in 1952 and used through 1988. A reference drawing of the Maintenance Shop Floor Drain and Sump is included in Attachment J-4-3.

The Floor Drain and Sump collected waste from Plant 5 floor washings. The waste consisted of mostly debris/particulates that were contained in soapy water as suspended solids. The solids consisted primarily of grease, oil, merco dri, and uranium oxides. This unit meets the definition of a wastewater treatment unit and is part of the wastewater treatment system.

(57) Maintenance Shop Steam Booth

The Maintenance Shop Steam Booth is located in the east-central section of Plant 5 on the outside wall (see Figure J-1). The steam booth consists of a sheet metal shell room measuring approximately 4 ft wide x 4 ft long x 8 ft tall. A 1 ft square steel grate floor drain in the center of the booth drains into a concrete sump and ultimately to the wastewater treatment system. A reference drawing of the Maintenance Shop Steam Booth is included in Attachment J-4-3. Ancillary equipment includes a steam eductor and a water hose. The system was installed in 1952 and used through 1988. The Steam Booth may currently contain some residual material.

This Steam Booth was used to clean furnace parts. This process produced an unknown quantity of debris/particulates which were contained in soapy water as suspended solids. The solids consisted of magnesium fluoride, oil/grease, scale, uranium and U_3O_8.

(58) Metals Plant Satellite Accumulation Area

The Metals Plant Satellite Accumulation Area is a temporary container storage area located in the northeast corner of Plant 5 (see Figure J-1). The storage area measures approximately 3 ft x 21 ft and has operated since 1989. A reference drawing is included in Attachment J-4-4.

The area contains 55-gallon steel drums either closed with bungs (17E) or with open tops, covers and locking rings (17H). These drums collect the daily accumulation of six wastestreams:

- batteries
- rags
- spent oils
- spent solvents
- spill clean-up
- spray cans

This container storage area serves as an active collection center until the drums are closed and stored. A maximum of 330 gallons (six 55-gallon drums) of waste is accumulated in this unit.

(59) Plant 5 Sump System

Plant 5 contains 18 sumps located in various areas throughout the building (see Figure J-1). The sumps, floor drains and ancillary equipment in Plant 5 are wastewater treatment units which are part of the FEMP wastewater treatment system. Most of these sumps began operating in 1952. Others were added later as the need arose. These sumps have received a variety of wastes from process operations and stormwater runoff. The wastes collected by the Plant 5 Sump System have included:

- black oxide (U_3O_8)
- caustic-containing detergents
- coolant
- cooling water
- copper turnings and chips

- defoaming agent
- dicalite
- filter paper
- fire brick fragments
- floor sweepings
- graphite
- green salt
- hydraulic oil
- lubricating oil
- magnesium
- magnesium zirconate
- magnesium fluoride
- merco dri
- outside pad runoff
- overflow and leakage from the 6,000-gallon tank
- paint chips
- prill
- process oil
- process water
- rainwater
- sanitary water
- solvents
- terrapaint
- yttria

A reference drawing of the Plant 5 Sump System is included in Attachment J-4-4. Individual elements of the sump system are described below.

(59.1) Center of East and West Jolter Area Sump

This floor sump is located in the center of the East and West Jolter Areas in Plant 5. The sump is made of concrete and measures approximately 2 ft wide x 2 ft long. The depth of this sump is not known. Ancillary equipment includes a steam pipe. The sump began operating in 1952 and was closed in the 1960s.

The wastes in this sump contained:

- floor sweepings
- hydraulic oil from the jolting process
- lubricating oil from the jolting process
- magnesium
- magnesium fluoride
- merco dri
- process water
- uranium tetrafluoride

(59.2) Derby Breakout Station Sump

The Derby Breakout Station Sump is located on the first floor directly beneath the Derby Breakout Station in Plant 5. The sump consists of a concrete pit with a steel liner that measures approximately 3 ft square x 2 ft-6 inches deep. Ancillary equipment includes a steam eductor. The sump became operational in 1952 and remains active.

The sump receives wastes from the Breakout Station that consist of:

- cooling water
- floor sweepings
- lubricating oil
- magnesium fluoride
- oil from fork trucks (leaks)
- prill
- process water
- uranium oxide

(59.3) Drum Staging Area Sump

The Drum Staging Area Sump is located just south of Building 55. The sump is made of concrete and measures approximately 3 ft in diameter and 3 ft deep. The sump operated from the mid-1950s until 1989.

This sump collected runoff from the staging area. Magnesium, uranium tetrafluoride, magnesium fluoride, and the defoaming agent used to keep the magnesium fluoride moist may have leaked from drums in this area and entered the sump.

(59.4) East Cold Saw Sump

The East Cold Saw Sump is located in the area where ingots are cropped and sampled in Plant 5. The sump is made of concrete with a steel liner and measures approximately 3 ft square x 2 ft-6 inches deep. Ancillary equipment includes a steam eductor. The sump became operational in 1952 and remains active.

The wastes in the East Cold Saw Sump consist of:

- floor cleaning water (caustic-containing detergent)
- hydraulic oil
- sanitary water
- spilled coolant
- terrapaint
- uranium
- uranium oxide

(59.5) East Filling (F) Machine Sump

The East Filling (F) Machine Sump is located in the proximity of the capping station and lidding area in Plant 5. The sump is made of concrete with a steel liner and measures approximately 3 ft square x 2 ft-6 inches deep. Ancillary equipment includes a steam eductor. The sump operated from 1952 until closing in 1989.

The wastes received by the East Filling (F) Machine Sump included:

- fire brick fragments
- floor scrubber cleaning liquids (caustic-containing detergents)
- floor sweepings

- green salt (uranium tetrafluoride)
- hydraulic oil
- lubricating oil
- magnesium
- magnesium fluoride
- process oil

(59.6) East Pad Sump

The East Pad Sump is located east of Plant 5 and north of the Old Slag Building. The sump is divided into two sections. The first section measures approximately 8 ft wide x 8 ft-4 inches long x 8 ft-8 inches deep. The second section measures approximately 2 ft-10 inches wide x 8 ft long x 4 ft deep. Both sections are made of concrete. Ancillary equipment includes an electric pump and a filter. This sump became operational in 1952 and remains active.

The East Pad Sump contains a filtration system that filters the solids from the stormwater. The solids in this sump settle out in the larger section while the clear liquor overflows into the smaller section. This sump receives stormwater from the Northeast Plant 5 Pad and previously received oil from the Hilco System for the Plant 5 Remelt Furnaces.

(59.7) Furnace Repair Room Sump

The Furnace Repair Room Sump is located in the Rockwell Furnace repair area in Plant 5. The sump is made of concrete/metal and measures approximately 2 ft-2 inches wide x 3 ft-6 inches long x 2 ft deep. Ancillary equipment includes a steam eductor. The sump has operated since 1952.

The wastes in the Furnace Repair Room Sump consist of the following:

- ceramics
- cooling water

- fire brick fragments
- paint chips from the Rockwell furnace
- process water
- uranium
- uranium oxide (U_3O_8)

(59.8) 6,000-Gallon Tank Sump

The 6,000-Gallon Tank Sump is located in Plant 5. The sump is made of concrete and measures approximately 8 ft wide x 10 ft long. The depth of this sump is not known. Ancillary equipment includes two pumps, a filter and associated piping. The 6,000-Gallon Tank Sump became operational in 1952. The sump has since been removed from service.

The wastes received by this sump consisted of:

- cleanings from the filter press
- cooling water
- dicalite
- filter paper
- floor sweepings
- hydraulic oil
- lubricating oil
- magnesium fluoride-containing blowouts from the Rockwell furnaces
- unspecified coolant

(59.9) Graphite Breakup Booth Sump

The Graphite Breakup Booth Sump is located in the graphite break-up and mold emptying areas of Plant 5. The sump is made of concrete and measures approximately 2 ft-8 inches wide x 3 ft-10 inches long x 2 ft-8 inches deep. Ancillary equipment includes a steam eductor. The sump began operating in 1952 and remains active.

The wastes received by the Graphite Breakup Booth Sump consist of the following:

- black oxide (U_3O_8)
- cooling oil
- floor sweepings
- graphite
- process water
- uranium
- vacuum grease from mold reconditioning

(59.10) Ingot Pickling Facility Sump

The Ingot Pickling Sump is located in Plant 5. The sump is made of concrete and measures approximately 2 ft-6 inches square. The depth of this sump is not known. Ancillary equipment includes an electric pump, pipes, and controls. This sump was installed in 1985, but has never been used. No other trenches or sumps are routed to the Ingot Pickling Sump.

(59.11) Maintenance Shop Parts Cleaning Sump

The Maintenance Shop Parts Cleaning Sump is located in Plant 5. The sump is made of concrete and measures approximately 1 ft-9 inches wide x 3 ft long x 2 ft-6 inches deep. Ancillary equipment includes a steam eductor. The sump has operated since 1952.

The sump contains wastes generated during the cleaning of Plant 5 machinery. The wastes in the sump consist of cleaning oils (unspecified), floor sweepings, and all Plant 5 production wastes.

(59.12) New Northwest Saw Sump

The New Northwest Saw Sump is located in Plant 5. The sump is made of concrete and measures approximately 3 ft in diameter and 2 ft deep. Ancillary equipment includes an electric pump, pipes, and

controls. The sump has operated since 1952 even though the saw was not installed until 1986.

The wastes received by the New Northwest Saw Sump include:

- floor sweepings
- floor water
- hydraulic oil
- sanitary water
- spilled coolants
- uranium oxide (U_3O_8)

(59.13) North Pad Sump

The North Pad Sump is located at the northwestern end of Plant 5, in the interim storage area of drums and reuse and remelt, top crop, and primary crop ingots. The sump is made of concrete and measures approximately 4 ft-3 inches wide x 10 ft long x 4 ft-8 inches deep. Ancillary equipment includes a drain with a manual valve and piping. The sump became operational in 1952 and remains active.

The unit is a Type III (decant) sump. The main purpose of this type of sump is to settle out solids in the stormwater. The solids settle out in the bottom of the sump by flowing over a series of small weirs at specified heights. The filtered water is then drained to the storm sewer system.

The waste in the North Pad Sump contains the following:

- black oxide (U_3O_8)
- fork truck oil (leaks)
- materials from ingots and derbies
- paper
- rainwater
- spilled metal
- sump cleanings

(59.14) Old North Saw Sump

The Old North Saw Sump is located in the area of cropping ingots, flats and scraps, and sampling derbies in Plant 5. The sump is made of concrete and measures approximately 1 ft-5 inches in diameter and 2 ft deep. The sump became operational in 1953 and remains active.

The wastes in the Old North Saw Sump consist of:

- floor cleaning water (caustic-containing detergent)
- hydraulic oil
- sanitary water
- spilled coolant (unspecified)
- water soluble oil
- uranium oxide (U_3O_8)

(59.15) Old Slag Building Sump

The Old Slag Building Floor Sump is located about 30 ft east of Plant 5. The sump is made of concrete and measures approximately 3 ft wide x 4 ft long x 3 ft-5 inches deep. Ancillary equipment includes an electric pump. The sump became operational in 1952 and remains active.

The wastes in the Old Slag Building Sump contain:

- maintenance shop cleanings
- magnesium fluoride
- rainwater
- runoff from the pad outside the building

(59.16) Remelt Furnace Sumps (4)

Four Remelt Furnace Sumps (Northeast, Southeast, Northwest and Southwest) are located in Plant 5. The Northeast and Southeast Sumps are both divided into two sections. The first section measures approximately 3 ft square x 3 ft deep. The second section

measures approximately 3 ft wide x 1 ft-3 inches long x 3 ft deep. The Northwest and Southwest Sumps both measure approximately 3 ft in diameter by 3 ft deep. All four sumps are made of concrete. Ancillary equipment includes steam eductors and electric pumps. The sumps became operational in 1952 and remain active.

The primary activity in these areas of the plant was the fabrication of ingots: uranium ingots in the East and West Remelt Furnaces and copper ingots in the West Remelt Furnace. The wastes received by these sumps included:

- black oxide (U_3O_8)
- caustic-containing detergents
- cooling oil
- cooling water
- hydraulic oil
- process water
- sanitary water

The Northwest and Southwest sumps may have also received copper turnings and copper chips.

(59.17) West Cold Saw Sump

The West Cold Saw Sump is located in the area of cropping flats and copper ingots in Plant 5. The sump is made of concrete and measures approximately 3 ft square x 2 ft-8 inches deep. Ancillary equipment includes a steam eductor. The sump became operational in 1952 and remains active.

The wastes received by the West Cold Saw Sump consist of the following:

- cleaning solvents (unspecified)
- floor cleaning water
- floor sweepings (merco dri)
- hydraulic oil

- magnesium zirconate
- spilled coolant (unspecified)
- terrapaint
- yttria

(59.18) West Filling (F) Machine Sump

The West Filling (F) Machine Sump is located in the proximity of the capping station and lidding area inside Plant 5. The sump is made of concrete and measures approximately 3 ft wide x 3 ft long x 2 ft-8 inches deep. Ancillary equipment includes a steam eductor. This sump became operational in 1952 and remains active.

The wastes received by the West Filling (F) Machine Sump consist of the following:

- firebrick fragments
- floor scrubber cleaning liquids (caustic-containing detergents)
- floor sweepings
- green salt (uranium tetrafluoride)
- hydraulic oil
- lubricating oil
- magnesium
- magnesium fluoride
- process oil

Hazardous Waste Management Units

(60) Hilco Oil Recovery

The Hilco Oil Recovery unit is a waste recycling unit located on both the first and second floors of Plant 5 (see Figure J-1). This unit reclaimed oil used to lubricate the Stokes Vacuum Pumps. The oil from the vacuum pumps flowed through pipes to common covered floor sumps. The sumps

pumped the waste to a steel, dirty oil holding tank. The oil was then filtered to remove solids, heated to drive off water, and reclaimed in the clean oil tank to lubricate the Stokes Vacuum Pumps again. The Hilco Oil Recovery Unit occupies an area of approximately 272 ft^2. The steel sumps in this system are approximately 1 ft-7 inches wide x 1 ft-2 inches long x 3 ft deep. Other ancillary equipment includes two holding tanks, two filter units, an evaporator and piping. A reference drawing of the unit is included in Attachment J-4-5. This unit operated from 1952 to 1989.

The wastes produced by the oil recovery process included oily semi-solids, spent filters, dirty oil, and oily filter cakes. The spent filters from the unit were determined to be hazardous waste because they exhibited ignitability characteristics (D001) and contained benzene (D018). This unit is a HWMU because these filters remained in the unit for more than 90 days after the unit was shut down. The FEMP is not seeking a permit to operate this unit.

Plant 6 -- Metals Fabrication Plant

The Metals Fabrication Plant performed various operations to produce finished uranium products including fuel cores and other elements machined to specific tolerances. Principal operations included rolling, heat treating, machining, pickling, cropping, and quality control inspections. Salvageable fuel cores were returned from other sites for reprocessing and FEMP rejects were recycled through Plant 6.

The following SWMUs have been identified in Plant 6:

- Electrostatic Dust Collector System, North DC
- Electrostatic Dust Collector System, South DC
- Operations Area Satellite Accumulation Area
- Plant 6 Sump System
- Spent Cooling Water for Nu-Sal Heat Treatment Tank W1
- Spent Cooling Water for Nu-Sal Heat Treatment Tank W2
- Spent Nitric Acid Storage Tank F6-3
- Underground Storage Tank (UST) #14
- Wastewater Storage Tank F6E-700
- Water Treatment Satellite Accumulation Area

In addition, the following HWMUs have been identified in Plant 6:

- Plant 6 Warehouse (Bldg 79)
- Storage Pad North of Plant 6

Solid Waste Management Units

(61) Electrostatic Dust Collector System, North DC

The Electrostatic Dust Collector (DC) System, North DC is located outside Plant 6 (see Figure J-1). This system is a physical treatment unit (air handling). The unit measures approximately 16 ft x 38 ft-8 inches and occupies about 618 ft^2 of floor space. The dust collection system consists of an electrostatic precipitron and filter rolls. A reference drawing of

this unit is included in Attachment J-5-1. Ancillary equipment includes a blower, filters, and a sump system. The unit is constructed of sheet metal, angle iron, and an electrostatic grid. The dust collector was installed in 1952 and used through 1988.

The North DC ventilated work areas of Plant 6 involved with machining uranium. Parts of the unit may contain:

- coolant mist
- Sun Seco Oil
- Sun Soluble Oil 31
- U_3O_8 (black oxide)
- uranium dust

These wastes were generated during the process of machining uranium metal products.

(62) Electrostatic Dust Collector System, South DC

The Electrostatic Dust Collector (DC) System, South DC is located outside Plant 6 (see Figure J-1). This system is a physical treatment unit (air handling). The unit measures approximately 8 ft x 10 ft-4 inches and occupies about 83 ft^2 of floor space. The dust collection system consists of an electrostatic precipitron and filter rolls. A reference drawing of this unit is included in Attachment J-5-2. Ancillary equipment includes a sump. The unit is constructed of sheet metal, angle iron and an electrostatic grid. The dust collector was installed in the early 1950s and used through 1988.

The South DC ventilated work areas of Plant 6 involved with machining uranium. Parts of the unit may contain:

- coolant mist
- Sun Seco Oil
- Sun Soluble Oil 31
- U_3O_8 (black oxide)
- uranium dust

These wastes were generated during the process of machining uranium metal products.

(63) Operations Area Satellite Accumulation Area

The Operations Area Satellite Accumulation Area is a container storage area located in the northeast corner of Plant 6 (see Figure J-1). This storage area measures approximately 3 ft x 6 ft and has operated since 1989. A reference drawing of this satellite accumulation area is included in Attachment J-5-3.

The area contains 55-gallon steel drums with open tops, covers and locking rings (17H). These drums collect the daily supply of two wastestreams: aerosol cans and flashlight batteries.

This container storage unit serves as an active collection center until the drums are filled and removed from the area. The maximum amount of waste stored in this area is 110 gallons (two 55-gallon drums.)

(64) Plant 6 Sump System

Plant 6 contains several sumps located in various areas throughout the building (see Figure J-1). The effluent from these series of sumps, floor drains and ancillary equipment flows to the wastewater treatment system. All sumps, floor drains and ancillary equipment meet the definition of a wastewater treatment unit. A reference drawing of the Plant 6 Sump System is included in Attachment J-5-4.

The sumps received waste from uranium metal finishing processes including heat treatment, machining, pickling and cleaning. Some sumps also received water containing VOCs from the pump and treat system for perched groundwater.

Individual elements of the Plant 6 Sump System are described below.

(64.1) Chip Pickling Area Sump

The Chip Pickling Area Sump is located in the Chip Pickling area of Plant 6. The sump is made of stainless steel and measures approximately 3 ft wide x 4 ft-10 inches long. The depth of this sump is not known. Ancillary equipment includes piping and an automatic steam eductor and an electric control. The sump operated from 1953 to 1989.

This sump received waste from the pickling system units including the rinse tanks, pickling tank, oil separator, and heat exchanger. The wastes received by the sump contained:

- caustic detergent
- nitric acid
- rinse tank overflow
- urea
- waste acid and spills

(64.2) Cross Machining Area Sump

The Cross Machining Area Sump is located in the northeast (central) area of Plant 6. The sump is made of concrete and metal and measures approximately 2 ft square. The depth of this sump is not known. Ancillary equipment includes an automatic, electrically controlled pump. The sump began operating in 1953, but has not been used since 1987. During plant operations, this sump collected any leakage (water soluble coolant) from the coolant recycle pumps for the Cross Transfermatic machine.

(64.3) Crop Shear Pit Sump

The Crop Shear Pit Sump is a composite of five sumps located in Plant 6: the Crop Shear Sump, Rolling Mill Sump, Finishing Mill Sump, Cooling Bed Sump, and Blooming Mill Sump. These sumps are located in the center (east) area of Plant 6. Each sump is made of

metal and concrete and measures approximately 12 ft square x 14 ft deep. The Blooming Mill Sump and Crop Shear Sumps both have manual steam controls. The Finishing Mill Sump has automatic electric and steam controls. The Cooling Bed Sump has manual steam ejector controls. Other ancillary equipment includes piping. The sumps operated from 1953 to 1988.

The wastes received by the Crop Shear Pit Sump included:

- water soluble oil
- floor sweepings
- waste from the Finishing Mill, Rolling Mill, Cooling Bed, and Blooming Mill Sumps
- uranium oxide

(64.4) Core Cleaning Floor Sump

The Core Cleaning Floor Sump is located in the northeast (central) area of Plant 6. The sump is made of stainless steel and measures approximately 3 ft-3 inches wide x 3 ft-3 inches long. The depth of this sump is not known. Ancillary equipment includes an automatic steam control and an eductor. The sump began operating in 1953 and remains active.

The wastes received by this sump in the past and/or present include:

- caustic detergent
- floor sweepings
- nitric acid
- sodium hydroxide
- water soluble oils

(64.5) Hoffman Clarifier Sump

The Hoffman Clarifier Sump is located in Plant 6. The sump is made of concrete and metal and measures approximately 3 ft wide x 3 ft long. The depth of this sump is not known. Ancillary equipment

includes an automatic, steam controlled jet and an OPS pump. The sump operated from 1953 until 1987.

The wastes received by the Hoffman Clarifier Sump included:

- coolant from cross machines
- cooling water from Plant 9
- floor scrubber liquid from the Garage
- surface water from the East Pad
- uranium fines and semi-solids from machining operations in Plants 6 and 9
- water containing VOCs from the perched groundwater recovery system
- water from Plant 5

The sump may also have received materials from the thorium furnace and the trench adjacent to the furnace.

(64.6) Motor Bay Basement Sumps (4)

There are four Motor Bay Basement Sumps located in the basement of Plant 6. One sump is situated on the south wall of the plant, and three are located on the west wall as follows: one on the south end of the wall, one in the middle, and one on the north end of the wall. The sumps are all made of metal and concrete. The approximate surface dimensions of the sumps are as follows:

- Center South Sump: 3 ft wide x 3 ft long
- Center West Sump: 1 ft-6 inches wide x 1 ft-6 inches long
- Northwest Sump: 3 ft wide x 3 ft long
- Southwest Sump: 2 ft wide x 2 ft long

The depths of these sumps are not known. Ancillary equipment includes four pumps that all have automatic, electric controls. The sumps operated from 1953 to 1987 and received groundwater that seeped through the building foundation.

(64.7) Pit Floor Sumps (2)

The two Pit Floor Sumps are located under the small clarifier and beneath the Scrap Pickling Area floor in Plant 6. Both sumps are made of concrete and metal and measure approximately 18 inches in diameter x 2 ft deep. Ancillary equipment includes two automatic, electrically controlled pumps, hoses, and an automatic steam jet. The sumps operated from 1953 to 1987.

The wastes received by these sumps included:

- nitric acid from pickling baths
- heels from tanks
- rinse tank overflow
- urea
- water that contained high concentrations of VOCs from the pump and treat system for perched groundwater

(64.8) Salt/Oil Treatment Sump

The Salt/Oil Treatment Facility Sump is located in the southwest area of Plant 6. The sump is made of concrete/metal and measures approximately 2 ft wide x 2 ft long. The depth of this sump is not known. Ancillary equipment includes piping and an automatic, electrically controlled pump. The sump operated from 1953 to 1987.

The wastes received by the Salt/Oil Treatment Sump included:

- floor sweepings
- potassium chloride
- sodium chloride
- water soluble oil

(64.9) Scrap Pickling Floor Sump

The Scrap Pickling Floor Sump is located in the northeast area of Plant 6. The sump is made of stainless steel and measures

approximately 3 ft-3 inches long x 2 ft-6 inches wide. The depth of this sump is not known. Ancillary equipment includes piping, a manual steam control, and a steam jet. The sump began operating in 1953 and remains active.

Wastes received by this unit in the past and/or present include:

- nitric acid from pickling baths
- heels from tanks
- rinse tank contents and overflow
- urea

(64.10) Southeast Pad Sump

The Southeast Pad Sump is located in the southeast corner of Plant 6. The sump is made of concrete/metal and measures approximately 3 ft wide x 3 ft long. The depth of this sump is not known. Ancillary equipment includes an automatic steam jet, piping and an OPS pump with a float. The sump operated from 1953 until 1987.

The wastes received by this unit mostly came from the outside storage pad. These wastes consisted of dilute oily waste, dilute acid waste, runoff water, and dust.

(64.11) Water Treatment Floor Sump

The Water Treatment Floor Sump is located in the floor of the water treatment area in Plant 6. This sump is made of concrete and metal and measures approximately 3 ft-10 inches in diameter. The depth of this sump is not known. Ancillary equipment includes a steam eductor. The sump began operating in 1953 and remains active.

The wastes received by this sump consist of overflow and/or leakage from:

- filter press droppings
- 10,000-gallon holding tank

- nitric acid tank
- oil/water separator
- precipitation tank
- the exterior diked pads

(65) Spent Cooling Water for Nu-Sal Heat Treatment Tank W1

The Spent Cooling Water for Nu-Sal Heat Treatment Tank W1 is an outside, aboveground storage tank located adjacent to Plant 6 (see Figure J-1). This cylindrical, stainless steel tank has a capacity of 1,500 gallons. A reference drawing of the unit is included in Attachment J-5-5. This unit operated from the early 1950s until 1987. The tank was used to store water which was used to cool heat-treated metal. The tank currently contains approximately 265 gallons of wastewater and residuals. The cooling water may contain soluble oil, sodium chloride, and potassium chloride.

(66) Spent Cooling Water for Nu-Sal Heat Treatment Tank W2

The Spent Cooling Water for Nu-Sal Heat Treatment Tank W2 is an outside, aboveground storage tank located adjacent to Plant 6 (see Figure J-1). This cylindrical, stainless steel tank has a capacity of 1,000 gallons. A reference drawing of the unit is included in Attachment J-5-5. This unit operated from the early 1950s until 1987. The tank was used to store water which was used to cool heat-treated metal. The tank currently contains approximately 265 gallons of wastewater and residuals. The cooling water may contain soluble oil, sodium chloride, and potassium chloride.

(67) Spent Nitric Acid Storage Tank F6-3

The Spent Nitric Acid Storage Tank F6-3 is an outside, aboveground storage tank adjacent to Plant 6 (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of 1,175 gallons and measures approximately 6 ft in diameter by 8 ft long. A reference drawing of the

unit is included in Attachment J-5-6. This unit operated from 1953 until 1988 and is currently empty. During plant operations, Tank F6-3 received spent nitric acid from process area sumps as a result of pickling operations. In addition to spent nitric acid, the unit may have also received water soluble oils, water, urea and salt solution.

(68) Underground Storage Tank (UST) #14

Underground Storage Tank #14 is located in the northeast corner of the scrap melting area (see Figure J-1). The cylindrical, carbon steel tank measures approximately 5 ft-4 inches in diameter x 18 ft long and has a capacity of 3,000 gallons. A reference drawing of the tank is included in Attachment J-5-7. UST #14 stored cutting oil used in machining operations from 1964 to 1970. The tank is considered a SWMU because residual oil and semi-solids were stored in the tank from 1970 through 1990. Corrective action for underground storage tanks has been initiated under the direction of the Ohio State Fire Marshall.

(69) Wastewater Storage Tank F6E-700

This Wastewater Storage Tank (F6E-700) is an outside, aboveground storage tank located adjacent to Plant 6 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 40,000 gallons and measures approximately 11 ft in diameter and 51 ft long. A reference drawing of the unit is included in Attachment J-5-8. The unit became operational in 1954 and remains active. In addition to wastewater, the tank may receive liquid wastes containing water soluble oil.

(70) Water Treatment Satellite Accumulation Area

The Water Treatment Satellite Accumulation Area is a temporary container storage area located in the northeast corner of Plant 6 near the sump (see Figure J-1). This storage area measures approximately 3 ft x 6 ft and has operated since 1990. A reference drawing of the unit is included in Attachment J-5-8.

The area contains 55-gallon steel drums either closed with bungs (17E) or with open tops, covers and locking rings (17H). These drums collect the daily accumulation of two wastestreams: decanted oil and oily rags. The drums are placed in satellite accumulation containers (plastic tubs) which sit directly on the concrete floor.

This container storage unit serves as an active collection center until the drums are closed and stored. The maximum quantity of waste accumulated in this area is 110 gallons (two 55-gallon drums).

Hazardous Waste Management Units

(71) Plant 6 Warehouse (Bldg 79)

The Plant 6 Warehouse (Bldg 79) is a container storage building located east of Plant 6 (see Figure J-1). The warehouse measures approximately 100 ft x 170 ft and consists of a steel framed, enclosed, metal building with an 8 inch thick, reinforced concrete slab. The slab is coated with a hardener/sealer. The warehouse is divided into three bay areas delineated by concrete curbing. The concrete curbs vary in height with a minimum curb height of 6 inches. A reference drawing of this unit is included in Attachment J-5-9. The Plant 6 Warehouse building has operated as a storage unit since 1989.

The total storage capacity of this warehouse is 3,684 55-gallon drums. A breakdown of each bay follows:

- Bay 1: 1,536 - 55 gallon drums (84.480 gallons)
- Bay 2: 1,104 - 55 gallon drums (60.720 gallons)
- Bay 3: 1,044 - 55 gallon drums (57.420 gallons)

This warehouse can store hazardous waste with and without free liquids.

The FEMP is seeking a permit to operate this unit. More detail on process information for this unit is included in Section D. A closure plan is included in Section I.

(72) Storage Pad North of Plant 6

This container storage unit is located north of and adjacent to Plant 6 (see Figure J-1). This concrete pad measures approximately 8 ft wide x 40 ft long. A 6 inch high dike borders the east side of the pad. This unit operated from 1952 until March, 1989. A reference drawing of the unit is included in Attachment J-5-10.

This storage pad contained 55-gallon steel drums that stored wet filter cakes and oily semi-solids from the wastewater treatment system in Plant 6. The pad also stored containers of oil containing characteristically hazardous levels of lead (D008) and spent 1,1,1-trichloroethane, a listed hazardous waste (F001/F002). Drums were stored in this area for more than 90 days. These drums were placed on wooden pallets (4 drums per pallet) and stacked 2 pallets high. When 40 drums were accumulated in this area they were moved to another on-site storage location. The maximum amount of waste stored on this pad was 40 drums (approximately 2,200 gallons). The FEMP is not seeking a permit to operate this unit.

Plant 7 -- Uranium Hexafluoride Reduction Plant

During a two-year period (1954-1956), uranium hexafluoride was reduced to uranium tetrafluoride (UF_6 to UF_4) in Plant 7 by a dissociated ammonia process similar to the process used in the Pilot Plant. Currently the plant is used for storage of equipment, empty containers, and green salt.

The following SWMUs have been identified in Plant 7:

- Abandoned Sump Tank 07-Undesignated
- Hydrogen Fluoride Scrubber Area Sump #0817

Solid Waste Management Units

(73) Abandoned Sump Tank 07-Undesignated

The Abandoned Sump Tank 07-Undesignated is located outside on the east side of Plant 7 in the south corner (see Figure J-1). This cylindrical, steel tank measures approximately 9 ft-6 inches in diameter by 10 ft long. Ancillary equipment includes a pump motor and sump. This unit operated from the mid-1950s until 1987. The tank is presently empty and abandoned. A reference drawing of the sump tank is included in Attachment J-6-1. This sump tank collected waste containing process materials from the uranium tetrafluoride reduction process.

(74) Hydrogen Fluoride Scrubber Area Sump #0817

The Hydrogen Fluoride Scrubber Area Sump #0817 is located on the ground floor in the former Hydrogen Fluoride Scrubber Area outside Plant 7 (see Figure J-1). This sump is made of concrete and metal and measures approximately 3 ft wide x 4 ft long. The depth of this sump is not known. A reference drawing of the sump is included in Attachment J-6-2. Ancillary equipment includes approximately 12 ft of piping and a 1 ft x 3 ft pump.

This sump operated regularly from 1954 until 1956 and was used on a limited basis from 1956 until the late 1970s. The tanks and piping that were once associated with the sump system were abandoned-in-place in 1987.

Two catch basins on each level of this seven story building received spilled and spent liquids from the process areas in Plant 7. These liquids combined in the Hydrogen Fluoride Scrubber Area Sump on the ground floor. In the sump, the liquids were neutralized and uranium was recovered from the sump liquor. The sump also served as a containment vessel for waste liquids until sampling and analysis verified the liquid's suitability for discharge to the wastewater treatment system.

The wastes received by this sump included:

- ammonia
- hydrogen fluoride
- lubricants
- rainwater
- uranium tetrafluoride
- washwater

Plant 8 -- Scrap Recovery Plant

In the Scrap Recovery Plant, normal residues from uranium processing were upgraded and sent to the Refinery for extraction. Plant 8 also processed enriched uranium residues and performed waste management objectives. The recycling function involved upgrading enriched uranium recycle materials from both FEMP and off-site sources. Uranium materials were roasted and then sent to the Refinery (Plant 2/3) as feed materials.

The following SWMUs have been identified in Plant 8:

- East Oliver Filter
- Eimco Filter (East)
- Eimco Filter (West)
- Filtrate Tank, 08-A005-TNK
- Filtrate Tank, 08-A006-TNK
- Filtrate Tank, 08-A007-TNK
- Oxidation Furnace #2
- Plant 8 Sump System
- Rotary Kiln
- Rotex Screening Unit

In addition, the following HWMUs have been identified in Plant 8:

- Box Furnace
- Oxidation Furnace #1
- Plant 8 East Drum Storage Pad
- Plant 8 West Drum Storage Pad
- Plant 8 Warehouse (Bldg 80)
- Primary Calciner

Solid Waste Management Units

(75) East Oliver Filter

The East Oliver Filter is located along the north wall of the wet area in

Plant 8 (see Figure J-1). The unit measures approximately 12 ft x 15 ft and consists of a drum filtration system using a precoat of diatomaceous earth. A reference drawing of the unit is included in Attachment J-7-1. Ancillary equipment includes pumps, piping, and filtrate separators. This unit has operated since 1952.

The East Oliver Filter previously filtered uranium-bearing liquids. Today, the filter removes particulates from wastewater. The Oliver Filter presently receives wastewater for filtration from the following locations:

- stormwater control pads
- stormwater drains
- scrubber pumps
- water purged from on-site and off-site groundwater wells

This unit processes approximately 1,000 gallons of water per hour.

(76) Eimco Filter (East)

The East Eimco Filter is located on the west side of Plant 8 (see Figure J-1). This unit is made of stainless steel and occupies approximately 100 ft^2 of floor space. A reference drawing of the unit is included in Attachment J-7-2. Ancillary equipment includes a system of pumps, mixing tanks, holding tanks, and a vacuum system. This unit has operated since 1952.

The East Eimco Filter treated raffinate, slag and other waste process materials from Plant 2/3. The filter also processes excess stormwater to assist the Oliver Filter during periods of heavy rain. This unit handles approximately 800 gallons of material per hour.

(77) Eimco Filter (West)

The West Eimco Filter is located on the west side of Plant 8 (see Figure J-1). This unit measures approximately 9 ft x 12 ft and is constructed of stainless steel. A reference drawing of the West Eimco Filter is included

in Attachment J-7-2. Associated equipment includes a system of pumps, mixing tanks and holding tanks. This unit operated from 1952 until 1985.

The West Eimco Filter treated raffinate, slag, and other waste process material from Plant 2/3 by direct transfer, by-passing the digester. The filter also processed excess stormwater to assist the Oliver Filter during periods of high rain. This unit handled approximately 800 gallons of process material per hour.

(78) Filtrate Tank, 08-A005-TNK

Filtrate Tank 08-A005-TNK (TK-22A) is an outside, aboveground storage tank located on the north side of Plant 8 (see Figure J-1). This cylindrical, steel tank has a capacity of approximately 6,192 gallons. A reference drawing of the tank is included in Attachment J-7-3. Ancillary equipment includes pumps and piping. This tank has operated since 1952. This tank currently stores wastewater filtrate from recovery plant operations. The unit handles varying amounts of filtrates from raffinate, filter cakes, and the Oliver Filter.

(79) Filtrate Tank, 08-A006-TNK

Filtrate Tank 08-A006-TNK (TK-21A) is an outside, aboveground storage tank located on the north side of Plant 8 (see Figure J-1). This cylindrical, stainless steel tank has a capacity of approximately 6,192 gallons. A reference drawing of the tank is included in Attachment J-7-3. Ancillary equipment includes pumps and piping. This unit has operated since 1952. The tank currently stores wastewater filtrate from recovery plant operations. The unit handles varying amounts of filtrates from raffinate, filter cakes, and the Oliver Filter.

(80) Filtrate Tank, 08-A007-TNK

Filtrate Tank 08-A007-TNK (TK-28A) is an outside, aboveground storage tank located on the north side of Plant 8 (see Figure J-1). This cylindrical,

steel tank has a capacity of about 6,192 gallons. A reference drawing of the tank is included in Attachment J-7-3. Ancillary equipment includes pumps and piping. This unit has operated since 1952. This tank currently stores wastewater filtrate from recovery plant operations. The unit handles varying amounts of filtrates from raffinate, filter cakes, and the Oliver Filter.

(81) Oxidation Furnace #2

Oxidation Furnace #2 is a waste recycling unit in Plant 8 (see Figure J-1). The unit consists of a steel cylinder approximately 4 ft-5 inches in diameter and 25 ft high lined with refractory brick. The furnace contains six hearths with a combined surface area of approximately 85 ft^2. Ancillary equipment includes a fan, an orifice scrubber, and a discharge drumming station. A reference drawing of Oxidation Furnace #2 is included in Attachment J-7-4.

Oxidation Furnace #2 operated intermittently from the mid-1950s until 1987. The unit was used to convert UF_4 to calcium uranate and calcium fluoride and was also used to process dust collector residues and sump cake.

(82) Plant 8 Sump System

The Plant 8 Sump System consists of 10 sumps located in various areas throughout the plant (see Figure J-1). During plant operations, these sumps received and treated spilled and spent process materials. The sumps also received wastewater for uranium recovery from Plants 1, 4, 6 and 9, the Pilot Plant, and the General Sump. The wastes in the sumps include:

- paint
- rainwater
- scrubber blowdown
- slops
- sodium hydroxide
- washdown from process areas

Although process waste is not currently collected in the sump system, the wastewater treatment portion of the Plant 8 Sump System is actively used to collect rainwater and wastewater. The sumps meet the definition of wastewater treatment units and are part of the wastewater treatment system. A reference drawing of the Plant 8 Sump System is included in Attachment J-7-3.

Individual elements of the Plant 8 Sump System are described below.

(82.1) Box Furnace Pit Sump

The Box Furnace Pit Sump is located north of Plant 8. The sump is made of concrete and steel coated with tar and measures approximately 1 ft-10 inches square. The depth of this sump is unknown. Ancillary equipment includes a centrifugal pump controlled by a float switch. The sump operated from 1952 to 1987.

This sump served the floor drains in the equipment washdown area. The following materials were fed to the Box Furnace and may have spilled into the sump:

- cake clean-outs from Hilco Oil Recovery
- chips in concrete from off-site
- magnesium fluoride (MgF_2)
- magnesium fluoride with high free metal
- metals containing metl-x
- non-briquettable chips
- Rockwell spills
- saw chips
- scrap UO_2 pellets
- U_3O_8 (black oxide)
- UO_3 (orange oxide)
- waste merco dri
- waste rags, paper, and polyethylene

The unit presently contains some rainwater.

(82.2) Caustic Tank Pit Sump

The Caustic Tank Pit Sump (08-A003-PMP) is located in the northeast area of Plant 8. The concrete sump measures approximately 2 ft-6 inches in diameter. The depth of this sump is unknown. Ancillary equipment includes about 30 ft of pipe and a 1 ft x 2 ft-6 inch centrifugal pump that is controlled by a float switch. The sump has operated since the early 1950s.

This sump serves the sodium hydroxide tanks. The wastes received by this sump include sodium hydroxide, sodium oxalate, and rainwater. The sump currently contains accumulated runoff and condensate water.

(82.3) Center Aisle Pump Sump

The Center Aisle Pump Sump (08-A042-PMP) is located in the center aisle opposite the control room in Plant 8. This concrete sump measures approximately 15 ft wide x 14 ft-5 inches long. The depth of this sump is unknown. Ancillary equipment includes about 50 ft of pipe and a 3 ft-6 inch x 3 ft-6 inch pump which is controlled automatically. The sump has operated since the early 1950s.

This sump has received the following wastes:

- all floor water and spills
- caustic scrubbers from the following areas:
  - Box Furnace
  - Oxidation Furnace #1
  - Oxidation Furnace #2
- dicalite and uranium from:
  - East Eimco Filter clean-up
  - East Oliver Filter clean-up
- washwater from the Drum Washing Area
- wastes from the Rotary Kiln Sump

The unit may currently contain some runoff water.

(82.4) Drum Reconditioning Area Sump

The Drum Reconditioning Area of Plant 8 contains a trench that collects liquids from the Drum Washing Area. The trench is made of concrete and measures approximately 5 ft x 5 ft. This trench has conducted material since the 1988. This unit receives paint and slops from the drum washing process.

(82.5) Filtrate Tanks Pit Area Sump

The Filtrate Tanks Pit Area Sump is located north of Plant 8. This sump serves the Filtrate Tanks Pit. The concrete sump measures approximately 4 ft wide x 4 ft long. The depth of this sump is not known. Ancillary equipment includes about 15 ft of pipe and a 1 ft-6 inch x 2 ft centrifugal pump that is controlled by a float switch. The sump has operated since the early 1950s. It is currently used to pump condensate and filtrate. The sump also receives overflow from Tanks 21A, 22A, and 28A.

(82.6) Hydrochloric Acid/Metal Dissolver Sump

The Hydrochloric Acid/Metal Dissolver Sump was located in Plant 8. This sump served the Hydrometallurgical System. The dimensions and construction material of this sump are not known. The sump operated from 1960 until 1984 and has been removed.

This sump received wastes containing hydrochloric acid from the Hydrometallurgical process (a uranium recovery/recycling process).

(82.7) Northwest Pad Sump

The Northwest Pad Sump (08-A012-PMP) is located in the northwest corner of Plant 8. The concrete sump is divided into two sections. The first section measures approximately 8 ft-2 inches wide x 8 ft long and the second section measures approximately 8 ft-2 inches

wide x 3 ft long. The depths of these sumps are unknown. Ancillary equipment includes about 100 ft of piping and a centrifugal pump controlled by a float switch. The sump operated from the early 1950s to 1989.

This sump received rainwater and washdown from spills. The unit may currently contain some rainwater.

(82.8) Muffle Furnace Pit Sump

The Muffle Furnace Pit Sump was located adjacent to the north overhead door of Plant 8. The sump measured approximately 4 ft wide x 4 ft long. The depth of this sump is unknown. Ancillary equipment included a centrifugal pump controlled by a float switch. The sump operated from 1952 to 1988, but has since been removed.

The wastes received by this sump included:

- dust collector residues
- leakage from the scrubber pump
- off-spec UF_4 or ThF_4
- spills
- U_3O_8 - wet or +8 mesh
- wet sump cake

(82.9) Railroad Pit Sump

The Railroad Pit Sump (08-A018-PMP, 08-A019-PMP) is located east of Plant 8. This sump serves the railroad cars area. The sump measures approximately 21 ft-7 inches wide x 12 ft-2 inches long x 8 ft-6 inches deep. The railroad pit measures approximately 54 ft wide x 12 ft long x 2 ft-3 inches deep. Ancillary equipment includes about 25 ft of piping and two 1 ft-6 inch x 4 ft centrifugal pumps that are manually controlled. The unit is constructed of concrete and is surrounded by a concrete berm. The sump operated from 1952 to 1988.

This sump received wastes consisting of rainwater and rail car washdown. The unit may currently contain some runoff.

(82.10) Rotary Kiln Sump

The Rotary Kiln Sump is located in the area of the Rotary Kiln. This sump is made of concrete and stainless steel and measures approximately 2 ft-6 inches in diameter. The depth of this sump is not known. This unit has been in operation since 1952.

This sump collects or has collected waste from the Rotary Kiln which contains the following:

- magnesium fluoride (MgF_2) with high free metal
- non-briquettable chips
- oil burner ash
- potassium hydroxide (KOH) reversion cake
- saw dust for oxidation
- semi-solids from machinery area clean-out
- sump cake processed in Plant 8
- tributyl phosphate and/or kerosene semi-solids
- U_3O_8 (+8 mesh) - both low and high fluoride
- waste merco dri
- wet UF_4 and magnesium
- wet sump or filter cakes

(83) Rotary Kiln

The Rotary Kiln is located in the southeast section of Plant 8 on the first and second floors (see Figure J-1). This unit functions as a processing unit for drying, roasting and oxidizing materials to be recovered. The kiln also serves as a pre-treatment unit for volume reduction as well as drying materials for shipment. The unit consists of a refractory brick-lined, steel cylinder that measures approximately 5 ft-6 inches in diameter and 50 ft in length. A reference drawing of the kiln is included in Attachment J-7-5. Auxiliary units include two burners, a

control panel, a dust collector and a fume scrubber. This unit operated from 1952 until 1986.

Typically, materials processed by the kiln were fed to a ventilated feed table or a dry feed dumping station. The kiln reprocessed batches of material containing recoverable amounts of uranium from different parts of the production process. The end products were returned to refining operations for uranium recovery. Residues with uranium concentrations too low for economic recovery were pre-treated by the kiln to dry and reduce their volume prior to shipment off-site. Estimates show that this unit processed an average volume of 2,000 gallons/week.

(84) Rotex Screening Unit

The Rotex Screening Unit is located in the center section dry area of Plant 8 on the first and second floors (see Figure J-1). This unit processed non-RCRA wastes. It produced materials for recovery operations and separated wastes for disposal. The Rotex Screening Unit is made of angle iron and sheet metal and measures approximately 10 ft x 10 ft x 25 ft tall. The unit houses a Model 12 Rotex vibrating screen which separated materials of -8 mesh size and +8 mesh size. A reference drawing is included in Attachment J-7-6. This unit operated from 1952 to 1988.

The Rotex Screening Unit typically received feed materials containing mostly U_3O_8 (black oxide). On one occasion (March, 1981), the unit was used to overpack depleted uranium materials (UF_4) with concentrations too low for economic recovery. The unit has a processing capacity of 10 tons/day.

Hazardous Waste Management Units

(85) Box Furnace

The Box Furnace is a treatment unit located outside and north of Plant 8 (see Figure J-1). The furnace structure consists of an 18 ft x 14 ft

unit, constructed of angle iron and sheet metal lined with refractory brick. The unit is gas-fired by a single burner. A reference drawing of the unit is included in Attachment J-7-7. Ancillary equipment includes a fume scrubber and a pump. The Box Furnace operated from 1959 through 1989.

The Box Furnace was used to convert scrap uranium into uranium oxide. The furnace was also used to convert other process materials into ash that was suitable for reprocessing. Waste materials processed for incineration included:

- cake clean-outs from Hilco Oil Recovery
- chips in concrete from off-site
- dust collector bags containing:
  - magnesium fluoride (MgF_2)
  - U_3O_8 (black oxide)
  - UO_3 (orange oxide)
- magnesium fluoride with high free metal
- metals containing metl-x
- non-briquettable chips
- Rockwell spills
- saw chips
- scrap UO_2 pellets
- waste merco dri
- waste rags, paper, and polyethylene

The Box Furnace is classified as a HWMU because it burned rags and gloves covered with spent 1,1,1-trichloroethane, a listed hazardous waste (F001/F002). The FEMP is not seeking a permit to operate this unit.

(86) Oxidation Furnace #1

Oxidation Furnace #1 is located in Plant 8 (see Figure J-1). This furnace is a combined reprocessing/recovery unit and pretreatment unit. The 54 inch (ID) furnace contains six hearths with a total hearth area of approximately 85 ft^2 and three open-flame gas burners. A vertical, air-

cooled shaft supports the rabble arms and is driven by a 3/4 HP, 1800 RPM motor. A reference drawing of this unit is included in Attachment J-7-7. Auxiliary equipment includes Dust Collector 8-035 which supplies exhaust ventilation, and a water jet scrubber for scrubbing furnace off-gas. This furnace operated from 1953 until 1989.

Materials handled by the furnace included:

- dust from the dust collectors
- scrubber liquor
- uranium chips and turnings

This unit processed approximately 500 gallons of scrubber liquor per week and 800 lbs of collector dust per week. This quantity varied depending upon how much material was fed into the furnace. This unit also processed oily and non-oily semi-solids identified as characteristic and listed hazardous wastes. Specifically, the unit processed oily semi-solids containing characteristically hazardous levels of barium (D005) and lead (D008) as well as non-oily semi-solids identified as spent solvent (F002). The FEMP is not seeking a permit to operate this unit.

(87) Plant 8 East Drum Storage Pad

The Plant 8 East Drum Storage Pad is a container storage area located on the east side of Plant 8 (see Figure J-1). The storage pad has a capacity of approximately 18,330 ft^2. The floor is constructed of reinforced concrete with concrete berms. A reference drawing of this unit is included in Attachment J-7-8. This unit has operated since 1952.

The pad stores drums containing materials either awaiting processing at Plant 8, that have completed processing at Plant 8 and are awaiting further processing elsewhere at the FEMP, or are awaiting off-site disposal. The wastes stored at this unit contain uranium and waste products. The number of drums stored on the pad depends on the enrichment of the uranium being stored.

In the past, drums of hazardous waste were stored on the pad for more than 90 days. The pad is not currently used to store hazardous waste and the FEMP is not seeking a permit to operate this unit.

(88) Plant 8 West Drum Storage Pad

The Plant 8 West Drum Storage Pad is a container storage area located on the west side of Plant 8 (see Figure J-1). The storage pad has a capacity of approximately 12,304 ft^2. The floor is constructed of reinforced concrete with concrete berms. A reference drawing of this unit is included in Attachment J-7-9. This unit began operating in 1952 and remains active.

The pad stores drums containing materials either awaiting processing at Plant 8, that have completed processing at Plant 8 and are awaiting further processing elsewhere at the FEMP, or are awaiting off-site disposal. The wastes stored at this unit contain uranium and waste products. The number of drums stored on the pad depends on the enrichment of the uranium being stored.

In the past, drums of hazardous waste were stored on the pad for more than 90 days. The pad is not currently used to store hazardous waste and the FEMP is not seeking a permit to operate this unit.

(89) Plant 8 Warehouse (Bldg 80)

The Plant 8 Warehouse is a container storage building located north of 1st Street and west of B Street in the southwestern portion of the production area (see Figure J-1). This warehouse is a steel framed, enclosed (unheated), metal building that measures about 60 ft wide x 170 ft long. The 8 inch, reinforced concrete floor is coated with a hardener/sealer and designed to withstand 4,000 pounds per square inch (psi) pressure. A reference drawing of the building is included in Attachment J-7-10. This unit has operated since 1989.

This warehouse has a storage capacity of 2,532 55-gallon drums. The building does not have curbing or berms for secondary containment, and therefore only stores drums of hazardous waste without free liquids.

The FEMP is seeking a permit to operate this unit. More detail on process information for this unit is included in Section D. A closure plan is included in Section I.

(90) Primary Calciner

The Primary Calciner is a furnace located in Plant 8 (see Figure J-1). The Calciner consists of a steel shell measuring approximately 13 ft-6 inches in diameter x 40 ft high with eight refractory brick-lined hearths and three burners. The burners are located on hearths 3, 5, and 6 and are fired by natural gas. A reference drawing of this unit is included in Attachment J-7-11. Auxiliary equipment includes a Steele Feeder System which received feed material from Plants 1 and 8 and fed it into the furnace at a specified rate. Other equipment includes a crew conveyor that discharged products from the furnace, a dust collector, and a caustic water scrubber. This unit operated intermittently between 1953 and 1989.

Process wastes received by this unit included:

- Plant 6 sump cake
- Plant 9 sump cake
- semi-solids
- solvents
- waste from the Box Furnace
- wet ammonium diuranate cake
- wet Refinery thickener slurry

The Primary Calciner handled about 1,500 gallons of material each week.

The Primary Calciner is a HWMU because it received ash containing listed hazardous waste (F001/F002) from the Box Furnace. The FEMP is not seeking a permit to operate this unit.

Plant 9 -- Special Products Plant

The Special Products Plant functions included: casting ingots larger than those produced in Plant 5, machining pieces of uranium metal to produce extrusions, melting derbies and other feed material to cast large diameter ingots, and cleaning slag from derbies by a molten salt process. Another major function of the plant involved the chemical decladding of reject co-extrusion sections of uranium metal received from off-site locations. This operation involved the Zirnlo Process to remove a copper coating and a Zircoloy coating to expose the uranium metal core. The cores were then remelted and recast into ingots. Aluminum was also removed from uranium pieces with sodium hydroxide in this plant.

The following SWMUs have been identified in the Special Products Plant, Plant 9:

- Dilute Hydrofluoric Acid (DHF) Dumpster Tank (SPCC 21 East)
- Filtrate Water Sump Tank F1-1
- Filtrate Water Sump Tank F1-2
- Filtrate Water Sump Tank F1-3
- Lime Slurry Dumpster Tank (SPCC 21 West)
- Plant 9 Sump System
- Spent Nitric Acid Tank (SPCC 20A West)
- Spent Nitric Acid Tank (SPCC 44 Tank 1)
- Spent Nitric Acid Tank (SPCC 44 Tank 2)
- Underground Storage Tank (UST) #7
- Used Cutting Oil Tank (SPCC 25)
- Wastewater Storage Tank F-9N1-700
- Wastewater Storage Tank 2429 (SPCC 23)
- Water Treatment Ammonia Tank (SPCC 24)
- West Portable Oil/Water Residue Tank (SPCC 15)

In addition, the following HWMU has been identified at Plant 9:

- Plant 9 Warehouse (Bldg 81)

Solid Waste Management Units

(91) Dilute Hydrofluoric Acid (DHF) Dumpster Tank (SPCC 21 East)

The Dilute Hydrofluoric Acid (DHF) Dumpster Tank (SPCC 21 East) is a portable, aboveground storage tank located west of Plant 9 (see Figure J-1). This cylindrical, rubber-lined, carbon steel tank has a capacity of 1,000 gallons. The tank measures approximately 5 ft-2 inches in diameter x 7 ft long. A reference drawing is included in Attachment J-8-1. This tank was used to store spent DHF from 1957 to 1987. The tank is currently empty and has been cleaned by rinsing with water.

(92) Filtrate Water Sump Tank F1-1

Filtrate Water Sump Tank F1-1 (MMICS # 09-J001-TNK) is an outside, aboveground storage tank located inside the diked area west of Plant 9 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 5,000 gallons and measures approximately 8 ft in diameter x 14 ft-7 inches long. A reference drawing of the tank is included in Attachment J-8-2. Ancillary equipment includes piping and a steam coil. The tank has collected non-process wastewater since 1953.

(93) Filtrate Water Sump Tank F1-2

Filtrate Water Sump Tank F1-2 is an outside, aboveground storage tank located inside the diked area west of Plant 9 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 2,500 gallons and measures approximately 7 ft in diameter x 10 ft long. A reference drawing is included in Attachment J-8-2. Ancillary equipment includes piping and a steam coil. The tank has collected non-process wastewater since 1953.

(94) Filtrate Water Sump Tank F1-3

Filtrate Water Sump Tank F1-3 is an outside, aboveground storage tank located inside the diked area west of Plant 9 (see Figure J-1). This

cylindrical, carbon steel tank has a capacity of 2,500 gallons and measures approximately 7 ft in diameter x 10 ft long. A reference drawing of the tank is included in Attachment J-8-2. Ancillary equipment includes piping and a steam coil. The tank has collected non-process wastewater since 1953.

(95) Lime Slurry Dumpster Tank (SPCC 21 West)

The Lime Slurry Dumpster Tank (SPCC 21 West) is an aboveground, portable storage tank located inside the diked area west of Plant 9 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 1,000 gallons. The tank measures approximately 5 ft-2 inches in diameter and 7 ft long. A reference drawing is included in Attachment J-8-1. This tank was used to store spent lime slurry (calcium hydroxide) from 1957 to 1987. The tank is currently empty and has been cleaned by rinsing with water.

(96) Plant 9 Sump System

The Plant 9 Sump System contains 12 sumps that are situated in various locations in and around the plant (see Figure J-1). These sumps and ancillary equipment are wastewater treatment units that direct effluent to the FEMP wastewater treatment system. Although no process waste has been collected since the shutdown in 1988, most of these sumps still collect rainwater, washwater, and other wastewaters which are treated and sent to the sump system.

A reference drawing of the Plant 9 Sump System is included in Attachment J-8-3. Individual elements of the sump system are described below.

(96.1) Decant Tank Sump

The Decant Tank Sump is located in Plant 9 and served the northwest area of the Plant. The sump is made of concrete and measures approximately 2 ft wide x 2 ft long. The depth of this sump is unknown. Ancillary equipment includes an automatically controlled

pump, a steam eductor and float switch. The sump collected process waste from 1953 until 1988. The wastes received by this sump included oil, semi-solids, coolant and U_3O_8 (black oxide).

(96.2) Electrostatic Precipitator Sump

The Electrostatic Precipitator Sump is located in Plant 9 and served the machining area. The surface dimensions of the sump are approximately 2 ft x 2 ft. The depth of this sump is unknown. Ancillary equipment includes a steam eductor system. The sump collected process waste from 1953 to 1988. The wastes received by this sump included oily wastes.

(96.3) Filtrate Hold Tank Sump

The Filtrate Hold Tank Sump is located in Plant 9 and served the northwest area of the plant. The sump is made of concrete and metal and measures approximately 3 ft wide x 3 ft long. The depth of this sump is unknown. Ancillary equipment includes piping, a float switch, an automatically controlled pump and a steam eductor. The sump collected process waste from 1953 until 1988. The wastes received by the sump included the following:

- aluminum
- copper
- cutting oil
- hydrofluoric acid
- lithium
- nickel
- nitric acid
- thorium
- thorium nitrate
- thorium tetrafluoride
- zinc chloride
- zirconium

(96.4) I & E Remelt Furnace Sump

The I & E Remelt Furnace Sump was located in Plant 9. The sump collected process waste from 1953 until 1988. It has since been filled with gravel and covered with a metal plate measuring approximately 6 ft square. The dimensions and construction material of this sump are not known.

(96.5) Machining Sump

The Machining Sump is located in Plant 9 and served the machining area. The sump is made of concrete and metal and measures 7 ft-8 inches in diameter. The depth of this sump is not known. Ancillary equipment includes a pump and piping. This sump collected process waste from 1953 until 1988. The wastes received by the sump included coolant, oil and U_3O_8 (black oxide).

(96.6) NPR Remelt Furnace Sump

The NPR Remelt Furnace Sump is located in the southeast area of Plant 9. The sump is made of concrete and metal and measures approximately 3 ft-5 inches square. The depth of this sump is not known. Ancillary equipment includes a pump and piping. The sump collected process waste from the casting area between 1953 and 1988.

(96.7) Rapid Bore Area Sump

The Rapid Bore Area Sump is located in Plant 9 and served the northeast area of the plant. The sump is made of concrete/metal and measures approximately 6 ft wide x 5 ft long. The depth of this sump is unknown. Ancillary equipment includes a pump and piping. The sump collected process waste from 1953 until 1988. The wastes received by the sump included cutting oil, coolant, wastewater and process sediments.

(96.8) Southeast Controlled Pad Sump

The Southeast Controlled Pad Sump is located southeast of Plant 9. The sump is made of concrete/metal and measures approximately 7 ft square. The depth of this sump is unknown. Ancillary equipment includes a pump and piping. The sump collected process waste from 1953 until 1988. The wastes received by the sump included cutting oil, coolant, wastewater, and process sediments.

(96.9) Southeast Diked Pad Sump

The Southeast Diked Pad Sump is located southeast of Plant 9 and served the diked area. The sump is made of concrete and metal and measures approximately 8 ft-3 inches wide x 8 ft long. The depth of this sump is unknown. Ancillary equipment includes a pump and piping. The sump collected process waste from 1953 until 1988.

The wastes received by the sump included:

- copper
- cutting oil
- hydrofluoric acid
- lithium
- nickel
- nitric acid
- thorium compounds
- zirconium

(96.10) Water Treatment Building Sump

The Water Treatment Building Sump is located in Plant 9. The sump measures approximately 2 ft wide x 2 ft long. The depth of this sump is unknown. Ancillary equipment includes a steam eductor, a manually controlled pump, and approximately 30 ft of piping. The sump collected process wastewater from 1953 to 1988.

(96.11) West Pad Sump

The West Pad Sump is located west of Plant 9. The sump is made of concrete and metal and measures approximately 3 ft square x 2 ft-6 inches deep. Ancillary equipment includes piping and an electric, automatically controlled pump. The sump collected process waste from 1953 until 1988. The wastes received by the sump included rainwater and spills.

(96.12) Zirnlo Sump

The Zirnlo Sump is located in Plant 9 and serves the Zirnlo Area. The sump is made of concrete and metal and measures approximately 3 ft wide x 3 ft long. The depth of this sump is unknown. Ancillary equipment includes an electric, manually controlled pump and a float switch. The sump collected process waste from 1953 until 1988. The wastes received by the sump included copper, zirconium, and uranium.

(97) Spent Nitric Acid Tank (SPCC 20A West)

This Spent Nitric Acid Tank (SPCC 20A West) is an outside, aboveground storage tank located off the southeast corner of Plant 9 (see Figure J-1). This cylindrical, carbon steel, lined tank has a capacity of 5,000 gallons and measures approximately 10 ft in diameter and 8 ft-2 inches long. A reference drawing of the unit is included in Attachment J-8-3. Ancillary equipment includes associated piping and a Gage Board level indicator. This tank was used to store spent nitric acid from Plant 9 operations between 1961 and 1988. The unit is presently empty.

(98) Spent Nitric Acid Tank (SPCC 44 Tank 1)

This Spent Nitric Acid Tank (SPCC 44 Tank 1) is an outside, aboveground storage tank located west of Plant 9 (see Figure J-1). This cylindrical, carbon steel, lined tank has a capacity of 575 gallons. The tank measures approximately 3 ft-6 inches in diameter x 11 ft long. A reference drawing

of the unit is included in Attachment J-8-3. This tank was used to store spent nitric acid from the Zirnlo Decladding Process in Plant 9 from 1957 until 1988. This nitric acid solution also contained uranyl nitrate and copper. Tank 1 is presently empty.

(99) Spent Nitric Acid Tank (SPCC 44 Tank 2)

This Spent Nitric Acid Tank (SPCC 44 Tank 2) is an outside, aboveground storage tank located west of Plant 9 (see Figure J-1). This cylindrical, carbon steel, lined tank has a capacity of 575 gallons. The tank measures approximately 5 ft-2 inches in diameter x 7 ft long. A reference drawing of the unit is included in Attachment J-8-3. This tank was used to store spent nitric acid from the Zirnlo Decladding Process in Plant 9 from 1957 to 1988. This nitric acid solution also contained uranyl nitrate and copper. Tank 2 is presently empty.

(100) Underground Storage Tank (UST) #7

UST #7 is located north of Plant 9 (see Figure J-1). This cylindrical, steel tank has a capacity of 5,000 gallons. A reference drawing of the unit is included in Attachment J-8-3. Ancillary equipment includes an entry port and a goosenecked airway. This tank began operating in 1974 and remains active. UST #7 receives washdown water containing floor soap and cutting oil from the Rapid Bore Area. Corrective action for underground storage tanks has been initiated under the direction of the Ohio State Fire Marshall.

(101) Used Cutting Oil Tank (SPCC 25)

The Used Cutting Oil Tank (SPCC 25), also known as Tank GH-1, is an outside, aboveground storage tank located outside the northeast corner of Plant 9 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 3,000 gallons. The tank measures approximately 8 ft in diameter x 10 ft long. A reference drawing of the unit is included in Attachment J-8-4. Ancillary equipment includes pumps and associated

piping. This tank stored used cutting oil from Plant 9 operations between 1963 and 1988. The tank is presently empty.

(102) Wastewater Storage Tank F-9N1-700

Wastewater Storage Tank F-9N1-700 is an outside, aboveground storage tank located below dike level by the southeast corner of Plant 9 (see Figure J-1). This cylindrical, stainless steel tank has a capacity of about 5,000 gallons and measures approximately 9 ft in diameter x 11 ft long. A reference drawing of Tank F-9N1-700 is included in Attachment J-8-5. Ancillary equipment includes a pump, an agitator, piping, and controls. The tank has stored wastewater, rainwater, and condensate water since 1953.

(103) Wastewater Storage Tank 2429 (SPCC 23)

Wastewater Storage Tank 2429 (SPCC 23) is an outside, aboveground storage tank located on the west side of Plant 9 (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of about 2,300 gallons and measures approximately 6 ft-6 inches in diameter x 10 ft long. A reference drawing is included in Attachment J-8-3. Ancillary equipment includes pumps, associated piping, and a Gage Board level indicator. The tank became operational in 1961 and remains active. This tank was originally used to store nitric acid. The tank currently stores rainwater that accumulates in Dike 23 prior to processing in the wastewater treatment system.

(104) Water Treatment Ammonia Tank (SPCC 24)

Water Treatment Ammonia Tank (SPCC 24), also known as the Precipitation Tank, is an outside, aboveground storage tank located west of Plant 9 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 1,100 gallons and measures approximately 5 ft-6 inches in diameter x 6 ft long. A reference drawing of the unit is included in Attachment J-8-3. Ancillary equipment includes pumps and associated piping. This tank

stored ammonia used in the precipitation treatment of wastewater from 1967 until 1981. Wastewater was also stored in the tank. The tank is currently empty.

(105) West Portable Oil/Water Residue Tank (SPCC 15)

The Oil/Water Residue Tank (SPCC 15) is a portable, aboveground storage tank that is currently located inside Dike 15, northwest of Plant 9 (see Figure J-1). The tank was formerly located in areas around Buildings 31 and 46 and at the southern end of Plant 6. This cylindrical, stainless steel (SS304L) tank has a capacity of 1,000 gallons. A reference drawing of the unit is included in Attachment J-8-3. This unit served as a storage tank for waste oils, salts, and water from quenching and milling operations between 1955 and 1990. The West Portable Oil/Water Residue Tank is currently empty.

Hazardous Waste Management Units

(106) Plant 9 Warehouse (Bldg 81)

The Plant 9 Warehouse is a container storage unit located on the north side of Plant 9 (see Figure J-1). This 80 ft x 100 ft warehouse is a steel framed, enclosed, metal building. The building has a sprinkler system and is not insulated. The 6 inch, reinforced concrete floor is designed to withstand 4,000 pounds per square inch (psi) pressure. The building also has a 12 inch concrete foundation wall. In 1990, dikes and berms were added to the building, and all sumps were sealed. The concrete floor has been treated with a concrete sealant. A reference drawing of this building is included in Attachment J-8-6.

The warehouse has a storage capacity of 1,512 - 55-gallon drums (83,160 gallons). The building is divided into 3 containment areas. A breakdown of each bay follows:

- Bay A: capacity of 552 - 55-gallon drums or 30,360 gallons

- Bay B: capacity of 900 - 55-gallon drums or 49,500 gallons
- Bay C: capacity of 60 - 55-gallon drums or 3,300 gallons

This warehouse presently stores solid and liquid hazardous wastes. The FEMP is seeking a permit to operate this unit. More detail on process information for this unit is included in Section D. A closure plan is included in Section I.

Boiler Plant -- Building 10

The Boiler Plant is a totally enclosed steam generating station located in the north-central area of the site, east of B Street and west of the coal pile. Four stoker-fired steam generators, each with a capacity of approximately 75,000 lbs/hour, provide the steam requirements for the entire site. In addition to generating steam and compressed air, the Boiler Plant is provided with zeolite water, treated water, raw water, condensate return and turbine exhaust steam. Ashes are removed pneumatically by an ash conveyor and stored in a silo. Stack emissions are controlled by two electrostatic precipitators that were placed into service in 1978. Steam is distributed throughout the site in steam lines equipped with traps to return collected condensate to a surge tank.

The following SWMUs have been identified in the Boiler Plant:

- Ash Receiving Tank, 10-B004A
- Ash Receiving Tank, 10-B004B
- Ash System, Air Wash Sprayer, 10-B004C
- Boiler Plant Maintenance Satellite Accumulation Area
- Boiler Plant Satellite Accumulation Area
- Chemical Feed Sump
- Graphite Burner
- Oil Burner

Solid Waste Management Units

(107) Ash Receiving Tank, 10-B004A

Ash Receiving Tank 10-B004A is an outside, aboveground tank located at the top of the silo on the north end of the Boiler Plant complex (see Figure J-1). Tank 10-B004A is one of three tanks which comprise the first stage of the FEMP Ash Solid Waste Processing Unit. This cylindrical, steel tank has a capacity of 752 gallons and measures approximately 4 ft in diameter x 8 ft tall. A reference drawing is included in Attachment J-9-1.

Ancillary equipment includes associated piping, a hopper, and a spray washer. The unit began operating in the 1950s and remains active. The tank handles varying amounts of process material, including bottom ash, fly ash, and coarse mechanical precipitate ash.

(108) Ash Receiving Tank, 10-B004B

Ash Receiving Tank 10-B004B is an outside, aboveground tank located at the top of the silo on the north end of the Boiler Plant complex (see Figure J-1). Tank 10-B004B is one of three tanks which comprise the first stage of the FEMP Ash Solid Waste Processing Unit. This cylindrical, steel tank has a capacity of 130 gallons and measures approximately 1 ft-8 inches in diameter x 8 ft tall. A reference drawing of the unit is included in Attachment J-9-1. Ancillary equipment includes associated piping. The unit began operating in 1952 and remains active. The tank handles varying amounts of process material, including bottom ash, fly ash, and coarse mechanical precipitate ash.

(109) Ash System, Air Wash Sprayer, 10-B004C

Air Wash Sprayer Tank 10-B004C is an outside, aboveground tank located at the top of the silo on the north end of the Boiler Plant complex (see Figure J-1). Tank 10-B004C is one of three tanks which comprise the first stage of the FEMP Ash Solid Waste Processing Unit. This cylindrical, steel tank has a capacity of 470 gallons and measures approximately 4 ft in diameter x 5 ft tall. A reference drawing of the unit is included in Attachment J-9-1. Ancillary equipment includes about 400 ft of 6 inch pipe and a steam powered eductor. The unit began operating in 1952 and remains active. The tank handles varying amounts of process material, including bottom ash, fly ash, and coarse mechanical precipitate ash.

(110) Boiler Plant Maintenance Satellite Accumulation Area

The Boiler Plant Maintenance Satellite Accumulation Area is a temporary container storage area located in the center of the west wall in Building

10 (see Figure J-1). This area measures approximately 3 ft x 8 ft and has operated since February, 1989. A reference drawing of the unit is included in Attachment J-9-2.

This unit contains 55-gallon steel drums either closed with bungs (17E) or with open tops, covers and locking rings (17H). These drums collect the daily accumulation of three wastestreams:

- agitene
- pads covered with oil/solvent
- 1,1,1-trichloroethane

This container storage unit serves as an active collection center until the drums are filled and removed from the area. The maximum volume of waste accumulated here is 110 gallons.

(111) Boiler Plant Satellite Accumulation Area

The Boiler Plant Satellite Accumulation Area is a temporary container storage area located at the north end of Building 10 (see Figure J-1). This area measures approximately 3 ft x 6 ft and has operated since 1990. A reference drawing of the unit is included in Attachment J-9-2.

The unit contains two 55-gallon steel drums either closed with bungs (17E) or with open tops, covers and locking rings (17H). These drums collect the daily accumulation of two wastestreams: oil/solvent, and rags and pads covered with oil/solvent.

This container storage unit serves as an active collection center until the drums are filled and removed from the area. The maximum volume of waste accumulated here is 110 gallons.

(112) Chemical Feed Sump

The Chemical Feed Sump is located south of the Water Plant (see Figure J-1). The sump is made of concrete and measures approximately 10 ft wide x

15 ft long. The depth of this sump is not known. A reference drawing of this sump is included in Attachment J-9-2. Ancillary equipment includes two circulating pumps, two sump pumps, and about 100 ft of 3 inch pipe. This sump has operated since 1952.

Until 1985, the Chemical Feed Sump received precipitation runoff from the nearby coal pile. The runoff was neutralized inside the sump with lime, then transferred to the General Sump which is part of the FEMP wastewater treatment system.

(113) Graphite Burner

The Graphite Burner was an incinerator and/or waste recycling station located on the oil pad northeast of the Boiler Plant (see Figure J-1). The unit consisted of a steel, solid waste incinerator and occupied an area approximately 4 ft x 4 ft. Ancillary equipment included a metal hopper. The Graphite Burner operated from 1965 until 1979. The unit was disassembled in 1986.

This unit burned approximately 30,000 lbs of uranium contaminated graphite crucibles per year. A reference drawing of the Graphite Burner is included in Attachment J-9-2.

(114) Oil Burner

The Oil Burner was an incinerator located on the oil pad northeast of the Boiler Plant (see Figure J-1). The burner contained a carbon steel furnace pot measuring approximately 16 inches in diameter and 24 inches tall. A horizontal, monel feed pipe approximately 2 inches in diameter and 36 inches long entered the side of the furnace pot at mid-height. The Oil Burner also included four tanks connected in series and a brick enclosed burner. A reference drawing of the unit is not available. The Oil Burner operated from March, 1962, until June, 1979. It was partially disassembled in 1986. The unit burned variable amounts of vehicle oil, solvents, cutting oils and extractants.

Service Building -- Building 11

The Service Building houses several multi-purpose operations including:

- an exercise room
- cafeteria
- combined conference/seminar room and training facility
- laundry services
- locker and shower rooms
- non-process area maintenance shop
- protective clothing/equipment storage

The following SWMUs have been identified in Building 11:

- Aerosol Can Storage Area
- Building 11 Sump System
- Product Storage Behind Building 11
- Service Building Satellite Accumulation Area

Solid Waste Management Units

(115) Aerosol Can Storage Area

The Aerosol Can Storage Area is a container storage area located in Room 146 of Building 11 (see Figure J-1). This area measures approximately 4 ft x 4 ft and contains one 55-gallon drum. This unit operated from 1988 to 1991. A reference drawing of this area is not available.

This unit collected empty aerosol spray paint cans. This temporary container storage area served as an active collection center until the drum was filled and removed from the area.

(116) Building 11 Sump System

The Building 11 Sump System consists of two sumps that collect wastewater from the laundry and the cafeteria (see Figure J-1). Effluent from the

sumps and ancillary equipment flowed to the wastewater treatment system. A reference drawing of the Building 11 Sump System is included in Attachment J-10-1.

Individual elements of the Building 11 Sump System are described below.

(116.1) Laundry Sump

The Laundry Sump is located in the between Building 11 (Service Building) and Building 53 (Health and Safety Building). This concrete sump consists of an 8 ft square sump pit and an 18 ft wide x 54 ft long catch basin. The depths of the pit and basin are unknown. Ancillary equipment includes numerous floor drains, piping and two pumps. This sump has operated since the early 1950s.

This sump collected waste from laundry operations that contained bleach, detergents, and lubricants. These materials may still be present in the sump.

(116.2) Kitchen Sump

The Kitchen Sump is located in the tank room of Building 11. This sump is made of steel and measures approximately 3 ft wide x 6 ft long. The depth of this sump is unknown. Ancillary equipment includes numerous floor drains and piping. The sump operated has operated since the early 1950s.

This sump collected waste from the cafeteria that contained bleach, detergents, and lubricants. These materials may still be present in the sump.

(117) Product Storage Behind Building 11

The Product Storage Behind Building 11 was a container storage area located by the north wall of Building 11 (see Figure J-1). The dimensions

of this storage area were approximately 36 ft x 120 ft. The unit operated from the early 1950s until 1990. A reference drawing of the area is included in Attachment J-10-2.

The area stored 55-gallon, carbon steel drums which contained oil, grease, wax, and detergent. The non-diked, concrete floor shows evidence of incidental product spills.

(118) Service Building Satellite Accumulation Area

The Service Building Satellite Accumulation Area is a temporary container storage area located in the center of the west hallway of Building 11 (see Figure J-1). The dimensions of the area are approximately 4 ft x 16 ft. The unit has operated since April, 1990. A reference drawing of the area is included in Attachment J-10-2.

The area contains four 55-gallon, carbon steel drums either closed with bungs (17E) or with open tops, covers and locking rings (17H). These drums store the daily accumulation of:

- gloves
- oil
- rags
- spent solvents

The area serves as an active collection center until the drums are filled and removed from the area.

Maintenance -- Building 12

The Maintenance Shops Building was constructed in the mid-1950s, except for the section on the east side of the building. This section was added about three years later and houses the Operations and Maintenance Management Offices on the second floor and the Electrical and Scale Shops on the first floor. The building also contains:

- Machine Shop
- Pipe Shop
- Millwright Shop
- Weld Shop
- Instrument Shop
- Carpenter Shop
- Paint Shop
- Scale and Radio Shop
- Stores Stock Warehouse
- Pipe and Steel Warehouse

The following SWMUs have been identified in Building 12:

- Floor Drains
- Instrument Shop Satellite Accumulation Area
- Machine Shop Satellite Accumulation Area
- Mercury Recycle Unit and Vent Hood
- Paint Shop Satellite Accumulation Area
- Paint Spray Booth in the Paint Shop

The following HWMU has been identified in Building 12:

- Parts Cleaner in Welding Shop (Maintenance Bldg 12)

<u>Solid Waste Management Units</u>

(119) Floor Drains

Building 12 contains a series of floor drains (at least one in each shop)

that connect to the wastewater treatment system via underground piping (see Figure J-1). These floor drains began operating in the mid-1950s and remain active. Reference drawings of this unit are included in Attachments J-11-1 and J-11-2.

The floor drain system in Building 12 has conducted numerous wastes, including:

- acetylene
- adhesives
- ammonium hydroxide
- bleach
- cement
- chloride crystals
- cutting oil
- enamel
- epoxy
- fertilizer
- hydrochloric acid
- hydrogen
- ink
- insecticides
- isopropyl alcohol
- laundry detergent
- lubricants
- mineral spirits
- oils
- paints
- potassium
- resins
- sealants
- solvents
- 1,1,1-trichloroethane
- toluene
- xylene

(120) Instrument Shop Satellite Accumulation Area

The Instrument Shop Satellite Accumulation Area was a temporary container storage area located in Building 12 (see Figure J-1). The unit began operating in 1989 but has since been removed. The dimensions of the area are not known. A reference drawing of this satellite accumulation area is included in Attachment J-11-2.

The area contained 55-gallon steel drums either closed with bungs (17E) or with open tops, covers and locking rings (17H). These drums stored the daily accumulation of two wastestreams: rags/gloves and battery cells. This unit served as an active collection center until the drums were filled and removed from the area.

(121) Machine Shop Satellite Accumulation Area

The Machine Shop Satellite Accumulation Area is a temporary container storage area located on the south wall towards the west corner of Building 12 (see Figure J-1). The drums in this area are stored in two sections measuring 3 ft x 6 ft and 3 ft x 9 ft. The unit began operating in 1989 and remains active. A reference drawing of this unit is included in Attachment J-11-1.

The area contains 55-gallon steel drums either closed with bungs (17E) or with open tops, covers and locking rings (17H). These drums store the daily accumulation of five wastestreams:

- chips
- oil
- oily rags
- solvents
- spill clean-up

This unit serves as an active collection center until the drums are filled and removed from the area.

(122) Mercury Recycle Unit and Vent Hood

The Mercury Recycle Unit and Vent Hood are located in the Instrument Shop of Maintenance Building 12 (see Figure J-1). Together, these units act as a waste recycling operation. The system contains a mercury separator which operates under a vent hood using air and filters. This unit measures approximately 6 ft x 2 ft and is constructed of glass and metal. The unit has operated since 1952. A reference drawing of this unit is included in Attachment J-11-2.

The waste processed in the Mercury Recycle Unit and Vent Hood consists of mercury mixed with dirt, oil, and water from the laboratory and process areas.

(123) Paint Shop Satellite Accumulation Area

The Paint Shop Satellite Accumulation Area is a temporary container storage area located in the paint shop at the east end of Building 12 (see Figure J-1). This unit measures approximately 8 ft-9 inches by 4 ft and has operated since early 1990. A reference drawing of the unit is included in Attachment J-11-3.

The area contains 55-gallon carbon steel drums with open tops, covers, and locking rings (17H). The drums store the daily accumulation of paint thinner, rags, and gloves. This unit serves as an active collection center until the drums are filled and removed from the area.

(124) Paint Spray Booth in the Paint Shop

The Paint Spray Booth in the Paint Shop is located in Maintenance Building 12 (see Figure J-1). The paint booth consists of a large chamber made of sheet metal that contains conventional furnace and air conditioner type filters, an exhaust fan, and a roof vent. The paint spray booth measures approximately 23 ft x 14 ft. A reference drawing of the unit is included in Attachment J-N-3. The Paint Spray Booth has operated since 1952.

Wastes stored in this unit include liquid spray mist, collected dust particles, filter media and other typical paint materials.

Hazardous Waste Management Units

(125) Parts Cleaner in Welding Shop (Maintenance Bldg 12)

The Parts Cleaner in the Welding Shop is a chemical cleaner located on the south wall in Maintenance Building 12 (see Figure J-1). This unit consists of a cleaner and a vent hood. The unit measures approximately 2 ft-9 inches x 5 ft-11 inches x 5 ft-9 inches. A reference drawing of the parts cleaner is included in Attachment J-11-1. Ancillary equipment includes a hoist, compressed air service, and a vent hood. This unit operated from around 1952 until 1989.

This unit was used to clean radioactive contaminated machinery with (F001/F002) 1,1,1-trichloroethane. The unit is a HWMU because it stored spent 1,1,1-trichloroethane for more than 90 days after the unit was closed. The FEMP is not seeking a permit to operate this unit.

Laboratory -- Building 15

The Laboratory Building consists of numerous discrete laboratories and work areas. The entire building is classified as a SWMU but is excluded as a HWMU based on the laboratory sample exclusion rule.

The following SWMUs have been identified in the Laboratory:

- Lab Building
- Lab Maintenance Area
- Lab Maintenance Satellite Accumulation Area
- Mercury Recycling Unit
- Satellite Accumulation Area C-15
- Satellite Accumulation Area N-37
- Satellite Accumulation Area W-22A
- Satellite Accumulation Area W-50
- Silver Recycling Process and Storage
- Sump in Courtyard

Additionally, the following HWMUs have been identified in the Laboratory Building:

- Drum Storage Area Near Loading Dock (Lab Bldg)
- Drum Storage Area South of W-26 (Lab Bldg)

Solid Waste Management Units

(126) Lab Building

The Lab Building is located east of the Pilot Plant and south of Plant 8 (see Figure J-1). This building is made of concrete block and steel and measures approximately 260 ft wide x 300 ft long. The building has operated since 1952. A reference drawing of the Lab Building is included in Attachment J-12-1.

The building contains numerous materials, including the following:

- acetone
- acetonitrile
- ammonium hydroxide
- anhydrous hydrofluoric acid (AHF)
- butanol
- carbolic acid
- chloroform
- cyclohexane
- ethanol
- ethylacetate
- formic acid
- hydrochloric acid
- hydrofluoric acid
- laboratory samples
- mercury filter cakes
- mercury waste
- methanol
- nitric acid
- perchloric acid
- phosphoric acid
- potassium hydroxide
- rags
- sodium hydroxide
- soluble cyanide
- spent solvents
- sulfuric acid
- xylene

(127) Lab Maintenance Area

The Lab Maintenance Area was located by the dock elevator along the west wall in the basement of the Lab Building (see Figure J-1). The area measured approximately 4 ft x 13 ft. This satellite accumulation area was operated by the Maintenance Department from 1984 until April, 1990. A reference drawing of this unit is included in Attachment J-12-1.

The unit contained four 55-gallon carbon steel drums either closed with bungs (17E) or with open tops, covers, and locking rings (17H). These drums collected the daily accumulation of:

- ballasts containing PCBs
- rags and gloves
- PCBs
- spent solvents
- spill clean-up
- used oil

This container storage area served as an active collection center until the drums were filled and removed.

(128) Lab Maintenance Satellite Accumulation Area

The Lab Maintenance Satellite Accumulation Area was a temporary container storage area located on the west wall near the dock elevator in Building 15 (see Figure J-1). The dimensions of the area are not known. This area operated until 1989. A reference drawing is included in Attachment J-12-1.

The area contained 55-gallon steel drums either closed with bungs (17E) or with open tops, covers, and locking rings (17H). These drums stored the daily accumulation of four wastestreams:

- chloroform
- solids (rags, wipes, resins)
- waste acetone
- waste xylene

This area served as an active collection center until the drums were filled and removed.

(129) Mercury Recycling Unit

The Mercury Recycling Unit was located in lab room W-22 of Building 15 (see Figure J-1). This unit consisted of a glass beaker and a tube, and

was operated in a sink. The recycling operation was performed from 1988 to 1989. A reference drawing of the Mercury Recycling Unit is included in Attachment J-12-1.

The diffusion pumps of the mass spectrometer produced a mercury waste mixture which was placed into the glass beaker. The tube was inserted into the beaker and the beaker was placed in the sink. Aeration of the mixture through the tube caused impurities to rise and overflow the beaker. The mercury, which remained at the bottom of the beaker, was then reused. Approximately 400 pounds of waste were produced during the life of this unit.

(130) Satellite Accumulation Area C-15

Satellite Accumulation Area C-15 is a temporary container storage area located in area C-15 of Building 15 (see Figure J-1). The dimensions of this area are approximately 12 ft x 2 ft. The unit began operating in 1988 and remains active. A reference drawing of this unit is included in Attachment J-12-1.

This area contains 5-gallon, stainless steel safety cans and 14-gallon, carbon steel safety cans. These cans store the daily accumulation of:

- acetone
- chloroform
- filter paper and filter cakes
- lab wipes containing:
  - methanol
  - methylene chloride
  - solids
  - spent solvents
  - tributyl phosphate
- liquids
- rags
- resins
- xylene

The area may also store organic and metal waste from spills. This unit serves as an active collection center until the containers are filled and removed from the area.

(131) Satellite Accumulation Area N-37

The Lab N-37 Satellite Accumulation Area is a temporary container storage area located in the northeast corner of Building 15 (see Figure J-1). The dimensions of this area are approximately 15 ft x 5 ft. This unit began operating in 1989 and remains active. A reference drawing of this unit is included in Attachment J-12-1.

This area contains 5-gallon and 14-gallon steel cans. These cans store the daily accumulation of the following:

- acetonitrile
- cyclohexane/nitric acid
- methanol/nitric acid

This container storage area acts as an active collection center until the containers are filled and removed from the area. The maximum quantity of waste accumulated in this area is about 34 gallons.

(132) Satellite Accumulation Area W-22A

Satellite Accumulation Area W-22A is a temporary container storage area located in Building 15 (see Figure J-1). The dimensions of this area are approximately 3 ft x 9 ft. This unit began operating in 1989 and remains active. A reference drawing is included in Attachment J-12-1.

This area contains one 14-gallon drum, two plastic jugs, and one 5-gallon safety can. These containers store the daily accumulation of:

- cobalt trifluoride
- mercury
- methanol
- solids (rags, wipes, resins)

This container storage area serves as an active collection center until the containers are filled and removed from the area.

(133) Satellite Accumulation Area W-50

Satellite Accumulation Area W-50 is a temporary container storage area located in the W-50 area of Building 15 (see Figure J-1). The dimensions of this area are approximately 4 ft x 15 ft. This unit began operating in 1989 and remains active. A reference drawing of this area is included in Attachment J-12-1.

The unit contains 55-gallon, carbon steel drums with open tops, covers, and locking rings (17H). These drums are used to store the daily accumulation of:

- aerosol cans (paint)
- mercury spills
- filters tainted by lab samples
- waste oil from analytical equipment

This container storage area serves as an active collection center until the drums are filled and removed from the area.

(134) Silver Recycling Process and Storage

The Silver Recycling Unit is located in Room N-31 of Building 15 (see Figure J-1). The stainless steel unit measures approximately 2 ft high x 3 ft wide x 2 ft deep. This recycling unit was used from 1988 to 1990. A reference drawing of this unit is included in Attachment J-12-1.

This unit recycled silver compounds using etchant and photographic solutions (silver nitrate and silver sulfate). The wastes from this process were stored in the 5-gallon plastic carboys from which the original etchant had been removed. No more than 55 gallons of waste was stored in this unit during operation. All waste was removed from this unit in January, 1991.

(135) Sump in Courtyard

This sump is located in the courtyard between the center and north corridors of Building 15 (see Figure J-1). The sump is made of concrete lined with stainless steel and is divided into three sections. One section measures approximately 9 ft wide x 4 ft long and the other two sections both measure approximately 4 ft wide x 18 ft long. The sump is approximately 15 ft deep. A reference drawing of this unit is included in Attachment J-12-2. Ancillary equipment includes pipes, level gages, and sump pumps. The sump became operational in 1952 and remains active.

This sump serves as a central collection system for numerous sinks within the laboratories of Building 15. Wastewater collected in this sump may have included small quantities of chemicals used in the Lab Building.

Hazardous Waste Management Units

(136) Drum Storage Area Near Loading Dock (Lab Bldg)

This container storage and waste transfer area was located in an unpaved area adjoining the loading dock of the Laboratory, Building 15 (see Figure J-1). The unit measured approximately 76 ft long and was 40 ft wide at one end and 22 ft wide at the other end. A reference drawing is included in Attachment J-12-1. This unit operated from 1952 until 1983 and is presently covered by concrete from the expansion of the Lab loading dock.

This area stored 55-gallon drums which contained hazardous waste from various labs. Hazardous waste was stored in the area for time periods greater than 90 days.

(137) Drum Storage Area South of W-26 (Lab Bldg)

This container storage area was located in an unpaved area near the southwest corner of the Laboratory, Building 15 (see Figure J-1). This

area measured approximately 31 ft-8 inches x 41 ft and operated from 1983 until 1989. A reference drawing is included in Attachment J-12-1.

This area contained 55-gallon drums which stored hazardous wastes from the Laboratory Building. Drums of hazardous waste were stored in the area for time periods greater than 90 days.

Building 31 is located east of D Street next to the Truck Weigh Scale and south of First Street. Building 31 serves as a garage for the FEMP where maintenance is performed on vehicles and equipment used at the facility.

The following SWMUs have been identified in Building 31:

- Garage Satellite Accumulation Area
- Solid Waste Storage
- Sump and Tank

The following HWMUs have been identified in Building 31:

- UST #5
- Waste Oil Storage in Garage

Solid Waste Management Units

(138) Garage Satellite Accumulation Area

The Garage Satellite Accumulation Area is a temporary container storage area centered along the west wall of the Garage (see Figure J-1). This area measures approximately 4 ft x 16 ft and has operated since 1989. A reference drawing of this unit is included in Attachment J-13-1.

The area contains 55-gallon, carbon steel drums (17H) which store the daily accumulation of the following:

- floor sump clean-out sludge
- used oil
- solvent rags
- waste solvents/oils

This container storage area serves as an active collection center until the drums are filled and removed from the area.

(139) Solid Waste Storage

The Solid Waste Storage is container storage area that occupies two locations in Building 31 (see Figure J-1). A reference drawing of the unit is included in Attachment J-13-1.

The first Solid Waste Storage Area is located in the center of the west wall in Building 31. This area contains three 55-gallon, steel drums with open tops, covers, and locking rings (17H). These drums store the daily accumulation of used oil filters, glass, empty aerosol cans, and other non-hazardous waste. This unit began operating in 1988 and remains active.

The second Solid Waste Storage Area is located behind Building 31 on the southwest side. This unit contains six 55-gallon, steel drums with open tops, covers, and locking rings (17H). Four of these drums contain used oil filters and two contain oily sweepings. This unit began operating in 1990 and remains active.

(140) Sump and Tank

The Sump and Tank are located on the east side of Building 31 with the sump inside the garage and the tank outside (see Figure J-1). These units accumulate wastewater from the Building 31 Garage Area and discharge it to the FEMP wastewater treatment system. The concrete sump measures approximately 3 ft wide x 3 ft long. The depth of the sump is unknown. After the sump collects the liquids, they are pumped to the 500-gallon, aboveground, steel tank for accumulation. A reference drawing of these units is included in Attachment J-13-2. Ancillary equipment includes hoses and a submergible pump. The Sump and Tank both began operating in 1986 and remain active. Prior to 1988, these units received wastewater mixed with spent solvents and waste oil. The units currently receive waste oil only.

(141) UST #5

UST #5 is a wastewater treatment unit located east of Building 31 (see Figure J-1). The UST was used to store wastewater from an oil/water separator in the Garage. The tank was connected to the floor drain system in the building which discharged to the FEMP wastewater treatment system. This carbon steel tank measures approximately 2 ft-6 inches in diameter x 6 ft long. It has a capacity of 200 gallons and is covered by approximately 6 ft of soil and blacktop. A reference drawing of UST #5 is included in Attachment J-13-3. Ancillary equipment includes an oil separator inside Building 31 and associated piping. This tank operated from 1954 to 1986 and is now in the process of closure. The connection between the tank and the separator has been disconnected.

Wastewater mixed with the following materials accumulated in UST #5:

- gasoline and diesel fuel
- 1,1,1-trichloroethane
- waste oils

Although the UST is a wastewater treatment unit and is exempt from regulation as a HWMU, the tank was identified as a HWMU to the Ohio EPA and a closure plan was prepared for the unit. The unit will continue to be identified as a HWMU until the FEMP receives further direction from the Ohio EPA. The FEMP is not seeking a permit to operate this unit.

(142) Waste Oil Storage in Garage

The Waste Oil Storage in the Garage was a container storage area located along the west wall of the Garage (see Figure J-1). This unit measured approximately 10 ft x 10 ft and operated from 1953 until 1988. A reference drawing of this container storage area is included in Attachment J-13-1.

The area contained one 55-gallon, steel drum which stored waste oil from machinery maintenance. The oil was mixed with spent 1,1,1-trichloroethane (F001) which is a listed hazardous waste. The drum was stored in the area for more than 90 days. The FEMP is not seeking a permit to operate this unit.

The Heavy Equipment Building is divided into three sections. The center section is used for storage of equipment, tools and masonry supplies. The north section of the building is used to store emergency equipment and response gear. The south portion of the building is used for storage of forklifts, trucks, and other equipment used in the process area.

The following SWMUs have been identified in the Heavy Equipment Building:

- Floor Drains in North Portion of the Heavy Equipment Building
- Floor Drains in South Third of the Heavy Equipment Building
- Maintenance Shop Floor Drains and Sump
- Underground Storage Tank (UST) #17

Solid Waste Management Units

(143) Floor Drains in North Portion of the Heavy Equipment Building

The floor drains and associated piping from the north portion of the Heavy Equipment Building flowed to an oil/water separator (see Figure J-1). The floor drains and associated piping were ancillary equipment to the oil/water separator which is part of a wastewater treatment unit. The floor drain system began operating in 1954 and includes about 220 ft of pipe. In 1989, the drains were capped and covered with sealant to prevent drainage into the oil/water separator. A reference drawing of the floor drains is included in Attachment J-14-1. These floor drains carried wastes consisting of floor washings, spilled oil, and suspended solids in soapy water.

(144) Floor Drains in South Third of the Heavy Equipment Building

The floor drains and associated piping from the south third of the Heavy Equipment Building empty into the oil/water separator (see Figure J-1).

The floor drains and associated piping were ancillary equipment to the oil/water separator which is part of a wastewater treatment unit. The floor drain system began operating in 1954 and includes about 150 ft of pipe. In 1989, the drains were capped and covered with sealant to prevent drainage into the oil/water separator. A reference drawing of the floor drains is included in Attachment J-14-1. These floor drains carried waste consisting of floor washings, spilled oil, and suspended solids in soapy water.

(145) Maintenance Shop Floor Drains and Sump

The Maintenance Shop Floor Drains and Sump are located in the maintenance portion of Building 46 (see Figure J-1). The floor drains and associated piping were ancillary equipment to the oil/water separator which is part of a wastewater treatment unit. The floor drain system began operating in 1954 and includes about 100 ft of pipe. In 1989, the drains were capped and covered with sealant to prevent drainage into the oil/water separator. A reference drawing of the floor drains is included in Attachment J-14-1. These floor drains carried wastes that consisted of floor washings, spills of oil and/or fuel, and suspended solids in soapy water.

(146) Underground Storage Tank (UST) #17

UST #17 was an underground storage tank and wastewater treatment unit used to collect waste oil from an oil/water separator in Building 46. This unit operated from 1954 until 1990 and is located north of Building 46 (see Figure J-1). The cylindrical, carbon steel tank measured approximately 2 ft-6 inches in diameter x 6 ft long and had a capacity of 200 gallons. Ancillary equipment included associated piping. A reference drawing of the unit is included in Attachment J-14-1.

The tank was connected to the floor drain system in Building 46 which discharged to the FEMP wastewater treatment system. The tank stored waste oil and wastewater. Corrective action for underground storage tanks has been initiated under the direction of the Ohio State Fire Marshall.

Main Slag Building -- Building 55-A

Building 55 is a complex of two buildings (55-A and 55-B) connected to Plant 5 by an enclosed conveyor and slag processing system. During the recycling process, fragmented magnesium fluoride slag (MgF_2) was moved through the processing equipment in the two buildings, reformulated into usable liner material and transferred back to Plant 5 for reuse.

The following units in Building 55 have been identified as SWMUs:

- Building 55 Conveyor, Magnesium Fluoride Recovery Unit
- Building 55 Conveyor, Drum-out Station

Solid Waste Management Units

(147) Building 55 Conveyor, Magnesium Fluoride Recovery Unit

The Building 55 Conveyor, Magnesium Fluoride Recovery Unit is located in Building 55-A (see Figure J-1). This unit recycled and reprocessed the magnesium fluoride slag used as liner material for uranium derby castings in Plant 5. This unit is constructed of metal, transite, and concrete. The recovery unit is three stories tall and measures approximately 63 ft long x 33 ft wide x 80 ft high. The conveyor is about 50 ft long. A reference drawing of the unit is included in Attachment J-15-1. Ancillary equipment includes three drum-out stations, shaker screens, a ball mill, bucket elevators, air classifiers, sumps, and vacuum and dust collectors. This unit operated from 1957 to 1988.

The Building 55 conveyor system can be divided into two sections:

- Section 1 - Transferred used slag to the reprocessing area
- Section 2 - Conveyed recycled magnesium fluoride back to Plant 5 for use in derby liners

The conveyor moved fragmented magnesium fluoride slag from the Plant 5 Reduction Area Breakout Station to Building 55-A for reprocessing, passing

through Building 55-B. This material was transferred by an air pump to the appropriate tanks for reuse.

(148) Building 55 Conveyor, Drum-out Station

The Building 55 Conveyor, Drum-out Station is a waste processing unit located in the southeast corner of Building 55-A (see Figure J-1). The unit is made of sheet metal and measures approximately 3 ft wide x 3 ft long x 4 ft high. A reference drawing of the Drum-out Station is included in Attachment J-15-2. Ancillary equipment includes a vacuum pump, a hopper, and associated piping. The unit operated from 1957 to 1988.

The Drum-out Station was used for the collection of processed slag and casting material after it had been discarded by the Magnesium Fluoride Recovery Unit. The magnesium fluoride slag pieces handled by the Drum-out Station originated in the derby break-out stations in Plant 5. This unit drummed the waste material for disposal.

Building 66

Building 66, known as the "Old Drum Reconditioning Area", is located north of Plant 1, Building 1A. Steel drums were reconditioned in Building 66 so that they could be reused to transport and store materials on-site. The following procedures were performed here during drum reconditioning:

- dents were removed from the drums
- chimes (ring-like protrusions around the barrel) were regrooved
- paint was removed from the drums
- drums were inspected for holes, malformations, and dents
- drums failing inspection were scrapped and baled
- drums passing inspection were repainted and dried

The following SWMUs have been identified in Building 66:

- Aerosol Can Puncture Unit
- Copper Shredder
- Copper Shredder Baghouse
- Drum Baler
- Drum Baler Sump
- Drum Baler Hydraulic Fluid Tank, 66-D009A-TNK
- Oven
- Paint/Solvent Storage Area
- Paint Spray Booth

In addition, the following HWMUs have been identified in Building 66:

- Wheelabrator - Bldg 66
- Wheelabrator Dust Collector - Bldg 66

Solid Waste Management Units

(149) Aerosol Can Puncture Unit

The Aerosol Can Puncture Unit was a waste recycling unit located in

Building 66 (see Figure J-1). The unit consisted of a cylinder mounted on top of a 55-gallon steel drum. The cylinder contained a weight that drove the aerosol can onto a pin which punctured the can. Material remaining in the can drained into the 55-gallon drum. A reference drawing of the unit is included in Attachment J-16-1. The unit was installed in October, 1989, and disassembled shortly after in 1989.

(150) Copper Shredder

The Copper Shredder was a waste processing unit located southwest of and outside Building 66 (see Figure J-1). The shredder occupies approximately 448 ft^2 of floor space. The unit consists of a Saturn 36-22, 50 HP shredder; a Nelmor granulator (Model G1436 M-B); an air classifier; three apron conveyors; and a vacuum system. A reference drawing of the unit is included in Attachment J-16-2. The shredder began operating in approximately 1981 and operated for 3 to 4 years.

This unit shredded copper scrap, motor windings, and electrical wiring to be recycled. This process created a waste consisting of asbestos, copper dust, and insulation.

(151) Copper Shredder Baghouse

The Copper Shredder Baghouse was a waste handling unit located southwest of and outside Building 66 (see Figure J-1). The unit measures approximately 8 ft wide x 16 ft long and occupies an area of about 128 ft^2. The baghouse consists of a G-2-6015 Pangborn shaker made of sheet metal. Ancillary equipment includes two hoppers, a dust collector, and a blower. A reference drawing of the unit is included in Attachment J-16-2. The baghouse began operating in approximately 1981 and operated for 3 to 4 years in conjunction with the Copper Shredder.

This unit received wastes from the Copper Shredder consisting of asbestos, copper dust, and insulation.

(152) Drum Baler

The Drum Baler is a waste handling unit located in the northeast corner of Building 66 (see Figure J-1). The Drum Baler occupies an area of approximately 408 ft^2 and is made of steel plates and angle iron. A reference drawing of the unit is included in Attachment J-16-3. Ancillary equipment includes a hydraulic piston, and a hydraulic ram and piston. The unit began operating in the mid-1950s and remains active. The Drum Baler is used to compress scrap steel drums, cans, lids and rings into bales.

(153) Drum Baler Sump

The Drum Baler Sump is located in the northeast corner of Building 66 (see Figure J-1). This unit consists of an underground pit made of concrete and steel that contains hydraulic equipment. The sump measures approximately 3 ft-6 inches wide x 3 ft-6 inches long. The depth of this sump is unknown. A reference drawing of the unit is included in Attachment J-16-4. Ancillary equipment includes an electric pump and a portable hose. This unit began operating in the mid-1950s and remains active. Hydraulic oil from the equipment in the pit is collected in the sump.

(154) Drum Baler Hydraulic Fluid Tank, 66-D009A-TNK

The Drum Baler Hydraulic Fluid Tank, 66-D009A-TNK, is an outside, aboveground storage tank located at the northeast corner of Building 66 (see Figure J-1). This cylindrical, steel tank measures approximately 3 ft-8 inches in diameter x 7 ft-8 inches long. The tank has ceramic and asbestos coatings and is supported by I-beams. A reference drawing of this unit is not available. Ancillary equipment includes associated piping and motors. This tank has stored hydraulic fluid (oil) for the Drum Baler since 1952. This tank is classified as a SWMU because it has routinely leaked oil to the environment. The potential release area around the tank is made of concrete and measures approximately 8 ft x 23 ft.

(155) Oven

The Oven is a manufacturing process unit located in the northwest corner of Building 66 (see Figure J-1). The Oven measures approximately 9 ft x 36 ft and is made of steel plates and sheet metal. A reference drawing of the unit is included in Attachment J-16-2. Ancillary equipment includes burners, blowers, a conveyor, and a control panel. This unit operated from the mid-1950s until 1990.

The Oven was used to dry freshly painted drums. Paint wastes remained in the unit for more than 90 days after the Oven ceased operation, thereby classifying the unit as a SWMU.

(156) Paint/Solvent Storage Area

The Paint/Solvent Storage Area was a container storage area located on the north side of Building 66 (see Figure J-1). The dimensions of this area were approximately 10 ft x 6 ft. The area operated from the mid-1950s until 1990. All containers and wastes have been removed from the area. A reference drawing of the unit is included in Attachment J-16-5.

This storage unit stored paint, paint residue, and solvents. Typical materials that were stored in this area may have include black, red, and white drum enamels. These paints were solvent based until December, 1985. After this date, only water based paints were used. Typical solvents contained here may have included isopropanol, toluene, naphtha, and xylene. Signs of spillage are evident in this area.

(157) Paint Spray Booth

The Paint Spray Booth was a manufacturing process unit located in the west-central area of Building 66 (see Figure J-1). The booth measures approximately 14 ft x 14 ft and consists of structural steel angles and tees covered with 16 gauge steel panels. The unit contains an exhaust stack, vent fan, and a waterwash curtain which is cleaned between changes

in base paints. A reference drawing of the unit is included in Attachment J-16-2. The unit began operating in the mid-1950s. It is presently being closed and is not expected to reopen.

The booth was used for painting drums during a reconditioning operation. Both solvent-based and water-based paints were used in the unit. This unit is classified as a SWMU because paint wastes remained in the spray booth for more than 90 days after the unit was closed.

Hazardous Waste Management Units

(158) Wheelabrator - Bldg 66

The Wheelabrator is located in the southwest corner of Building 66 (see Figure J-1). This unit measures approximately 24 ft x 20 ft and is made of steel plates, sheet metal, and angle iron. A reference drawing of the Wheelabrator is included in Attachment J-16-6. Ancillary equipment includes:

- dust collector
- elevator
- main spindle
- power roller conveyor
- screw conveyor
- spinner
- squirrel cage

The Wheelabrator operated from the mid-1950s until approximately 1989.

This unit was used in the second stage of drum reconditioning. The unit removed paint from old, empty drums by abrasively blasting the drum with steel shot. Paint and grit wastes generated by this process were collected in a drum and held for residue characterization. Residue remaining in the unit has been classified as characterisitic hazardous waste due to the presence of cadmium (D006). The FEMP is not seeking a permit to operate

this unit.

(159) Wheelabrator Dust Collector - Bldg 66

The Wheelabrator Dust Collector is located in Building 66 (see Figure J-1). This unit functions as part of the drum reconditioning operation. The dust collector measures approximately 30 ft x 17 ft. A reference drawing of the unit is included in Attachment J-16-6. Ancillary equipment includes a control switch, a fan, a hopper, a motor and dust collector bags. This unit operated from the mid-1950s until approximately 1989.

The dust collector was used to collect grit blast and paint dust generated by the Wheelabrator drum reconditioning operation. The residue in the dust collector is characteristic hazardous waste because of the presence of lead and cadmium (D008, D006). Because the dust collector bag remained in the unit more than 90 days after the Wheelabrator ceased operation, the dust collector is considered a HWMU. The FEMP is not seeking a permit to operate this unit.

Decontamination Building -- Building 69

The Decontamination Building is located in the northeast corner of the FEMP. An outdoor yard is also associated with the building which includes a paved outdoor washing pad. The facility is used to decontaminate and decommission scrap metal, miscellaneous equipment, and vehicles prior to repair or disposition. Small equipment parts are treated in one or more of four tanks. Larger equipment is cleaned with acid or detergent sprays.

The following SWMUs have been identified in Building 69:

- Decontamination Building Floor Drains
- Decontamination Building Sump
- Waste Piles and Clean/Loadout Pad

Solid Waste Management Units

(160) Decontamination Building Floor Drains

Several floor drains are located in the Decontamination Building (see Figure J-1). A reference drawing of the unit is included in Attachment J-17-1. The floor drain system consists of a trough that is approximately 10 inches wide and 132 ft long. This system became operational in the 1950s and remains active. These floor drains are wastewater treatment units which discharge to the FEMP wastewater treatment system.

Scrap metal, miscellaneous equipment, and vehicles in need of repairs are washed in caustic or acid baths, sprayed with acid or a detergent solution, and/or steam cleaned in the Decontamination Building. The washwater and semi-solids from these baths discharge to the trenches in the facility. The wastes handled by these floor trenches include:

- characteristic hazardous waste corrosives
- semi-solids containing chromium or lead
- neutralized, dissolved, and suspended salts of the following three items in solution:

- nitric acid
- hydrochloric acid
- sodium hydroxide
- radioactive contaminated wastewater
- sodium silicate based commercial cleaners
- uranium metal
- uranium compounds

(161) Decontamination Building Sump

The Decontamination Building Sump collects wastewater from the floor drains in the building. This sump system consists of two sumps: one located in the west portion of Building 69, and one located outside the building (see Figure J-1). The indoor sump is made of concrete and measures approximately 5 ft in diameter. The depth of this sump is not known. The outdoor sump measures approximately 4 ft-6 inches in diameter x 7 ft-2 inches deep and has stainless steel (Type 347), welded construction. A reference drawing is included in Attachment J-17-2. Ancillary equipment includes a pump, a float, a pH meter, and an agitator. These sumps have operated since the 1950s.

The indoor sump receives wastewater from the trenches in the facility and pumps this wastewater to the outdoor sump. The outdoor sump receives wastewater from the indoor sump as well as rainwater and washwater from the concrete pad area surrounding Building 69. The wastewater received by these sumps may contain:

- characteristic hazardous waste corrosives
- semi-solids containing lead or chromium
- neutralized, dissolved, and suspended salts of the following three items in solution:
  - nitric acid
  - hydrochloric acid
  - sodium hydroxide
- radioactive materials
- sodium silicate based commercial cleaners

- uranium metal
- uranium compounds

(162) Waste Piles and Clean/Loadout Pad

The Waste Piles and Clean/Loadout Pad are waste handling areas immediately west of the Decontamination Building (see Figure J-1). The unit consists of a concrete pad approximately 7 ft x 6 ft and the associated piles of waste material temporarily stored next to the pad. A reference drawing of this unit is included in Attachment J-17-3. The concrete pad is used to decontaminate large pieces of equipment by spraying the equipment with acidic or basic solutions. The piles next to the pad may consist of many types of waste material, primarily metal, temporarily stored next to the pad before decontamination. The unit began operating in the 1950s and remains active.

Miscellaneous OU3 Units

The "miscellaneous units" are located in various areas throughout Operable Unit 3. These SWMUs and HWMUs are described under this category because their locations are unique. They cannot be categorized into broader groups with other units who share the same location.

The following SWMUs are described in the miscellaneous category:

- Chemical Warehouse Northeastern Area
- Chemical Warehouse Southern Area
- Ferrous Metal Scrap Pile
- Grit Blast Storage Area, East Tower
- Grit Blast Storage Area, West Tower
- K-65 Area, High Level Nitrate Storage Tank 18-A010
- Kelly Solid Waste Incinerator
- Other Scrap Piles/Salvage Materials/Areas
- Plant 1 Building 67 Area
- RI/FS 90 Day Storage
- Rust Building Satellite Accumulation Area
- Satellite Accumulation Area - Administration Building, EOC
- Satellite Accumulation Area - Health and Safety Building, X-ray/Photo
- Satellite Accumulation Area - Health and Safety Building, Instrument Shop
- Scrap Pile West of Building 65
- Security Solid Waste Incinerator
- Sewage Treatment Plant Incinerator
- Temporary Storage Tank 18-A004
- Temporary Storage Tank 18-A005
- Third Street Waste Pile

In addition, the following HWMUs are described in the miscellaneous section:

- Coal Pile Runoff Basin
- CP Storage Warehouse - Bldg 56 (Butler Bldg)

- Fire Training Facility
- HF Tank Car
- KC-2 Warehouse (Bldg 63)
- Nitric Acid Rail Car and Area

Solid Waste Management Units

(163) Chemical Warehouse Northeastern Area

The Chemical Warehouse Northeastern Area is a container storage area located northeast of the Building 30A warehouse lot (see Figure J-1). The area contains white, metal boxes which measure approximately 4 ft wide x 4 ft high x 6 ft long. The dimensions of this storage area are approximately 90 ft x 200 ft. The unit began operating in August, 1990, and remains active. A reference drawing of the Chemical Warehouse northeastern area is included in Attachment J-18-1.

The boxes in this area store construction waste such as wood, metal, concrete, soil, asbestos, and masonry.

(164) Chemical Warehouse Southern Area

The Chemical Warehouse Southern Area was a container storage area located south of the Building 30A warehouse lot (see Figure J-1). The area contained white, metal boxes which measured approximately 4 ft wide x 4 ft high x 6 ft long. The dimensions of this storage area were approximately 30 ft x 30 ft. The unit began operating in the mid-1960s. A reference drawing of the Chemical Warehouse Southern Area is included in Attachment J-18-1.

The boxes in this area stored construction waste such as wood, metal, concrete, soil, asbestos, and masonry. Boxes are no longer stored in this area.

(165) Ferrous Metal Scrap Pile

The Ferrous Metal Scrap Pile is a storage unit located north of Building 69 (see Figure J-1). The Ferrous Metal Scrap Pile contains approximately 7,600 metric tons of scrap metal stored on a controlled, curbed, concrete pad. The dimensions of the unit are approximately 210 ft x 65 ft. The scrap pile consists primarily of ferrous metal along with smaller quantities of aluminum, stainless steel, copper, brass, and nickel. The scrap includes but is not limited to vessels, wiring, cable, duct pipe, tubing, valves, grating, sheets, plates, and miscellaneous abandoned equipment. The materials are segregated according to the extent of radioactive contamination, type of metal (ferrous vs. non-ferrous), and the estimated degree of re-usability. A reference drawing of this unit is included in Attachment J-18-2. This storage unit has operated since 1984.

(166) Grit Blast Storage Area, East Tower

The Grit Blast Storage Area, East Tower is a waste storage area which was located at the base of the East Water Tower (see Figure J-1). This unit stored drums of lead-containing paint chips which resulted from the sand blasting of the tower, as well as steel 55-gallon drums containing soil mixed with lead. A reference drawing of this storage area is included in Attachment J-18-3.

Approximately 200 drums were stored at the base of the water tower. These drums were moved to the Plant 1 Pad within 90 days of generation.

(167) Grit Blast Storage Area, West Tower

The Grit Blast Storage Area, West Tower is a waste storage area which was located at the base of the West Water Tower (see Figure J-1). This unit stored drums of lead-containing paint chips which resulted from the sand blasting of the tower, as well as steel 55-gallon drums containing soil mixed with lead. A reference drawing of this storage area is included in Attachment J-18-4.

Approximately 330 drums were stored at the base of the water tower. These drums were moved to the Plant 1 Pad within 90 days of generation.

(168) K-65 Area, High Level Nitrate Storage Tank 18-A010

The K-65 Area, High Level Nitrate Storage Tank 18-A010 is an aboveground storage tank located west of the process area in the K-65 area (see Figure J-1). This cylindrical, steel tank has a capacity of approximately 500,000 gallons and measures approximately 60 ft in diameter and 24 ft high. A reference drawing of the tank is included in Attachment J-18-5. Ancillary equipment includes two pumps, a concrete dike and piping. The tank has operated since May, 1990. It was designed to store nitrate solutions, but has only held rainwater as of this date.

(169) Kelly Solid Waste Incinerator

The Kelly Solid Waste Incinerator (39A-003-INCN) is located in the Incinerator Building (Building 39) (see Figure J-1). This unit was used to dispose of solid, non-contaminated combustibles. The unit contains an incinerator chamber ("pyrolytic chamber") made of steel with an internal furnace firebrick lining for destroying burnable solids. The incinerator also contains a higher temperature trap ("thermal reactor") made of metal for destroying particulates. The unit occupies approximately 2,500 ft^2 of floor space. A reference drawing of the unit is included in Attachment J-18-6. Ancillary equipment includes a hopper, a storage bin, and a conveyor. The incinerator operated from January, 1980 until April 28, 1986.

The Kelly Solid Waste Incinerator burned cafeteria refuse, office trash, pallets, broken ingot boxes, and wood scraps from the carpentry shop.

(170) Other Scrap Piles/Salvage Materials/Areas

The Other Scrap Piles/Salvage Materials/Areas are waste storage areas located north and east of the Decontamination Pad in the northeast corner

of the process area (see Figure J-1). One of these piles is a metal scrap pile located northeast of Building 64. The dimensions of this pile are approximately 50 ft x 20 ft. Immediately north of this scrap pile is an area about 25 ft x 50 ft which is covered with wooden boxes containing asbestos fibers. North of the asbestos pile is a set of metal shelves on which cylindrical, uranium metal ingots have been placed. This area measures approximately 20 ft x 30 ft. Northeast of the Decontamination Pad is an area approximately 90 ft x 150 ft which is covered with various discarded items such as scrubbers, empty tanks, tools, tractors, and other vehicles. These scrap piles have been in use since approximately 1953. A reference drawing of this unit is included in Attachment J-18-2.

(171) Plant 1 Building 67 Area

The Plant 1 Building 67 Area is a container storage area located east and northeast of Building 67 (see Figure J-1). This storage area measures approximately 64 ft long x 30 ft wide and has operated since 1975. The area contains white, metal boxes which measure approximately 4 ft wide x 4 ft high x 6 ft long. These containers presently store construction waste from projects throughout the plant. A reference drawing of this unit is included in Attachment J-18-7.

(172) RI/FS 90 Day Storage Area

The RI/FS 90 Day Storage Area is a temporary container storage area located in Building 64 in the area between columns 6 and 9 (see Figure J-1). This unit occupies approximately 3,000 ft^2 of floor space and consists of three temporary, diked (herculite), secondary containment areas. The unit began operating on May 23, 1990, and remains active. A reference drawing of this area is included in Attachment J-18-8.

This area contains 55-gallon, steel drums which store the following:

- soil cuttings from RI/FS borings
- soil with HNu meter readings greater than 5 parts per million (ppm)

(173) Rust Building Satellite Accumulation Area

The Rust Building Satellite Accumulation Area is a temporary container storage area located in an explosion proof room in the northwest corner of Building 45 (see Figure J-1). This storage area measures approximately 6 ft x 4 ft and has operated since 1990. A reference drawing of this area is included in Attachment J-18-9.

The area contains two carbon steel, 55-gallon drums. These drums store the daily accumulation of three wastestreams: oils, paints, and thinners. This container storage area serves as an active collection center until the drums are filled and removed from the area. The maximum quantity of waste accumulated in this area is about 110 gallons.

(174) Satellite Accumulation Area - Administration Building, EOC

This container storage area is located on the first floor of the Administration Building in the Emergency Operations Center (EOC) (see Figure J-1). This area measures approximately 2 ft x 2 ft and has operated since approximately March, 1991. A reference drawing of the unit is included in Attachment J-18-10. This satellite accumulation area consists of a metal, flip-top wastebasket that collects used flashlight batteries.

(175) Satellite Accumulation Area - Health and Safety Building, X-ray/Photo

This container storage area is located in the Health and Safety Building on the first floor in Room 170 (see Figure J-1). This area measures approximately 3 ft wide x 1 ft long and has operated since June, 1991. A reference drawing of the unit is included in Attachment J-18-11. This unit consists of a plastic container that collects spent X-ray fixer.

(176) Satellite Accumulation Area - Health and Safety Building, Instrument Shop

This container storage area is located in the Health and Safety Building on the first floor in Room 165 (see Figure J-1). This area measures approximately 1 ft-10 inches wide x 1 ft-8 inches long and has operated since 1990. A reference drawing of the unit is included in Attachment J-18-11. This unit consists of a rubber wastebasket that collects used flashlight batteries.

(177) Scrap Pile West of Building 65

The Scrap Pile West of Building 65 is a waste storage area located just west of the northern portion of Building 65 (see Figure J-1). This pile, which measures approximately 20 ft x 50 ft, consists of scrap metal from various types of machinery and tools. A reference drawing of the Scrap Pile West of Building 65 is included in Attachment J-18-8. Scrap metal has been placed here since the 1950s.

(178) Security Solid Waste Incinerator

The Security Solid Waste Incinerator was originally located in the Administration Building in March, 1960. During the summer of 1961, the incinerator moved to the turnstile area of the guard house (see Figure J-1). In the spring of 1989, the entire unit was dismantled. This steel incinerator stood about 6 ft tall and was contained in an area approximately 5 ft x 5 ft. A reference drawing of the incinerator is included in Attachment J-18-12. The unit operated from 1960 to 1989 and was used to burn classified papers free of hazardous constituents.

(179) Sewage Treatment Plant Incinerator

The Sewage Treatment Plant Incinerator is located at the Sewage Treatment Plant east of the process area (see Figure J-1). The unit is made of concrete and steel and contains a brick liner. The incinerator occupies

an area approximately 30 ft x 20 ft. Ancillary equipment includes burners and control panels. This incinerator operated from March, 1954 until December, 1979, and burned approximately 180 ft^3 of waste material daily. This waste material consisted of uranium-contaminated and non-contaminated solid trash including office refuse, cardboard cartons and wooden pallets. A reference drawing of this unit is included in Attachment J-18-13.

(180) Temporary Storage Tank 18-A004

Temporary Storage Tank 18-A004 is an outside, aboveground tank located near the Bio-Surge Lagoon (see Figure J-1). This reinforced, rubber-bladder tank has a capacity of approximately 1,000,000 gallons. A reference drawing of the unit is included in Attachment J-18-8. Ancillary equipment includes pumps and associated piping. The unit has operated since October, 1987. This temporary storage tank receives wastewater for high concentration nitrate solutions feeding into the Biodenitrification process.

(181) Temporary Storage Tank 18-A005

Temporary Storage Tank 18-A005 is an outside, aboveground tank located near the Bio-Surge Lagoon (see Figure J-1). This reinforced, rubber-bladder tank has a capacity of approximately 1,000,000 gallons. A reference drawing of the unit is included in Attachment J-18-8. Ancillary equipment includes pumps and associated piping. The unit has operated since October, 1987. This temporary storage tank receives wastewater for low concentration nitrate solutions feeding into the biodenitrification process.

(182) Third Street Waste Pile

The Third Street Waste Pile is a waste storage area located northwest of Building 56 (see Figure J-1). The pile measures approximately 240 ft wide x 423 ft long x 20 ft high. The volume of material stored in the dirt pile has been estimated at 22,000 yd^3. Materials stored here include:

- o piping
- o rock
- o uranium-contaminated construction rubble (including large slabs and blocks of concrete)
- o uranium-contaminated soil

A reference drawing of the Third Street Waste Pile is included in Attachment J-18-8. Waste has been stored in this area since 1986.

Hazardous Waste Management Units

(183) Coal Pile Runoff Basin

The Coal Pile Runoff Basin is a surface impoundment located south of the Boiler Plant coal pile (see Figure J-1). The Coal Pile Runoff Basin consists of an excavation into compacted subgrade lined with crushed limestone. The basin measures approximately 107 ft long x 54 ft wide (5,778 ft^2). The unit is approximately 11 ft deep and has a capacity of about 210,774 gallons. A reference drawing of the Coal Pile Runoff Basin is included in Attachment J-18-14. Ancillary equipment includes two centrifugal pumps, pump discharge piping, inlet piping, and a pump well. This unit has operated since 1984.

The basin receives fly ash water and precipitation runoff from the nearby coal pile and wastewater from the Boiler Plant. This unit is classified as a HWMU because it received wastewater containing 1,1,1-trichloroethane in 1984. The FEMP is not seeking a permit to operate this unit.

(184) CP Storage Warehouse - Bldg 56 (Butler Bldg)

The CP Storage Warehouse - Bldg 56 (Butler Bldg) is a container storage area located west of the Boiler Plant (see Figure J-1). The CP Storage Warehouse is a pre-engineered, unheated building with ribbed metal siding and metal roofing. The building measures approximately 50 ft wide x 180

ft long. The concrete floor is approximately 6 inches thick. This building can store a maximum of 2,318 55-gallon drums (127,435 gallons). A reference drawing of the unit is included in Attachment J-18-15. The unit has operated since approximately 1956.

This unit stores spent materials from the Photo Lab Developer. The wastes contained here include silver-containing fixer which is a 55% aqueous mixture of ammonium and sodium thiosulfates, and lesser amounts of ammonium acetates and sulfites. Other wastes present include:

- glycerine
- hydroquinone
- methylaminoethanol
- methyliphenidone
- silver nitrate impregnated paper
- sodium hydroxide
- sodium sulfite
- trisodium phosphate

The unit contains eleven 5-gallon and two 10-quart containers of spent fixer. It also contains three 5-gallon pails of photographic paper containing silver nitrate.

The FEMP is seeking a permit to operate this unit. More detail on process information for this unit is included in Section D. A closure plan is included in Section I.

(185) Fire Training Facility

The Fire Training Facility is a landfill located due north of Building 63 (KC-2 Warehouse), outside the perimeter fence, on either side of the access road which is an extension of B Street (see Figure J-1). This unit measures approximately 105 ft wide x 134 ft long. The facility has operated since 1966 and closed in April, 1990. A reference drawing of the Fire Training Facility is included in Attachment J-18-16.

This facility provided general and special fire fighting training. Used oil and spent solvents generated at the facility were spread on the ground and ignited. The spent solvent was 1,1,1-trichloroethane, a listed hazardous waste. The Fire Training Facility is considered a HWMU because hazardous waste was disposed at the facility. The FEMP is not seeking a permit to operate this unit.

(186) HF Tank Car

The HF Tank Car, #OROX17501 is located at the end of the railroad spur immediately west of Building 12 (see Figure J-1). The metal railroad car has a capacity of about 110,000 pounds and measures approximately 10 ft wide x 34 ft long x 15 ft high. A reference drawing of this unit is included in Attachment J-18-17. The tank car began operating in approximately 1974 and remains active.

This unit currently contains approximately 4,400 gallons of 28% hydrofluoric acid. This hydrofluoric acid is a waste generated by the conversion of UO_3 (orange oxide) to UF_4 (green salt) in Plant 4. Because hydrofluoric acid is a corrosive characteristic hazardous waste (D002), the HF Tank Car is classified as a HWMU. The FEMP is not seeking a permit to operate this unit.

(187) KC-2 Warehouse (Bldg 63)

The KC-2 Warehouse (Bldg 63) is a container storage area located at the north end of the process area (see Figure J-1). The KC-2 Warehouse is approximately 82 ft wide and 346 feet long. The entire warehouse is enclosed. The east and west walls of the warehouse are made of concrete block with steel joists placed at 2 ft on center. The north and south walls of the building consist of fencing covered with ribbed, metal siding. The floor of the building consists of concrete that is approximately 8 inches thick. The interior of the KC-2 Warehouse is divided into 8 separate containment areas (Bays 1-8). Bays 1, 2, 3, 4 and 8 are not diked. Bays 5, 6 and 7 are each surrounded by 6 inch x 6 inch

dikes with 8 ft wide ramps to allow fork lift access into the diked area. The floor in Bays 5, 6, and 7 is coated with a hardened sealer to create an impervious surface. A break-down of each bay follows:

- Bay 1
  - storage capacity: 896 55-gallon drums (49,280 gallons)
- Bay 2
  - storage capacity: 896 55-gallon drums (49,280 gallons)
- Bay 3
  - storage capacity: 720 55-gallon drums (39,600 gallons)
- Bay 4
  - storage capacity: 457 55-gallon drums (25,520 gallons)
- Bay 5
  - storage capacity: 457 55-gallon drums (25,080 gallons)
- Bay 6
  - storage capacity: 464 55-gallon drums (25,520 gallons)
- Bay 7
  - storage capacity: 240 55-gallon drums (13,200 gallons)
- Bay 8
  - storage capacity: 128 55-gallons drums (7,040 gallons)

The KC-2 Warehouse began operating in 1957 and continues to operate today. A reference drawing of the warehouse is included in Attachment J-18-18.

The warehouse stores solid and liquid hazardous wastes generated from cleaning and operational processes on-site. The FEMP is seeking a permit to operate this unit. More detail on process information for this unit is included in Section D. A closure plan is included in Section I.

(188) Nitric Acid Rail Car and Area

The Nitric Acid Rail Car is located due east of Building 63 (KC-2 Warehouse) (see Figure J-1). This high-grade, stainless steel tank car has a capacity of approximately 100,000 pounds and measures approximately 10 ft wide x 40 ft long x 15 ft high. This unit operated from 1952 until about 1989. A reference drawing is included in Attachment J-18-19.

This tank car previously stored 12-normal (50-60%) nitric acid used at the FEMP. Based on recent analysis, the tank car now contains 50-100 gallons of 3-normal nitric acid. This unit is classified as a HWMU because the nitric acid is a characteristic corrosive hazardous waste(D002). The FEMP is not seeking a permit to operate this unit.

Pilot Plant

The Pilot Plant performed the following operations as part of thorium and uranium production:

- Reduction of uranium hexafluoride (UF_6) to uranium tetrafluoride (UF_4)
- Reduction of thorium
- Removal of zinc coating from thorium derbies under vacuum
- Production of thorium filter cakes for casting into derbies
- Production of uranium ingots
- Milling calcium fluoride (CaF_2) slag for pot liners
- Removal of residual magnesium fluoride (MgF_2) slag layer from uranium derbies by pellet blasting
- Thorium extraction by use of a kerosene/DAAP (diamyl-amyl phosphonate) solvent mixture
- Uranium extraction by use of tributyl phosphate/kerosene
- Production of various uranium and thorium compounds

The following SWMUs have been identified in the Pilot Plant facility:

- Pilot Plant Container Storage Area
- Pilot Plant Sump System
- Solvent Tank (SPCC #10B Tank 1)
- Solvent Tank (SPCC #10B Tank 2)
- Wastewater Holding Tank F-100
- Wastewater Holding Tank F-101

In addition, the following HWMUs have been identified in the Pilot Plant facility:

- Abandoned Sump West of Pilot Plant
- Barium Chloride Salt Treatment Facility
- Pilot Plant Warehouse Storage Pad (Bldg 68)
- Tank for Bulk Storage of Solvents, T-5
- Tank for Bulk Storage of Solvents, T-6

Solid Waste Management Units

(189) Pilot Plant Container Storage Area

The Pilot Plant Container Storage Area is located in the southwestern portion of the Pilot Plant, northeast of Building 19B and northwest of Building 68 (see Figure J-1). This area measures approximately 50 ft x 74 ft. The unit operated as a storage area from 1988 through 1991. A reference drawing of the Pilot Plant Container Storage Area is included in Attachment J-19-3.

The area previously contained white, metal boxes which measured about 4 ft wide x 4 ft high x 6 ft long. These boxes contained construction rubble and debris from construction activities at the FEMP. An estimated 80 boxes were stored at the Pilot Plant until January 16, 1991.

(190) Pilot Plant Sump System

The Pilot Plant contains several sumps in various locations throughout the plant (see Figure J-1). The Pilot Plant Sump System is used to collect wastewater and sludge from various areas, neutralize the wastewater, and recover uranium and thorium before discharging the water to the General Sump which is part of the FEMP wastewater treatment system. The sump system collects spilled or spent process materials from the wet area inside the Pilot Plant and from the tank pads and field basins outside the plant. Components of the sump system meet the definition of wastewater treatment units.

The process materials that may have been present in the wastewater when the facility was in production include:

- anhydrous hydrofluoric acid (AHF)
- anhydrous ammonia (ANH_3)
- calcia stabilized zirconia ($CaOZrO_2$)
- calcium
- charcoal

- diamyl-amyl phosphonate
- dicalite
- dilute hydrofluoric acid (DHF)
- flake caustic
- freon
- iron and silicon powder
- kerosene
- magnesium
- manganese
- nitric acid
- nitrogen
- Nu-Sal detergent
- oxalic acid
- perchloroethane
- potassium chloride
- sodium chloride
- sodium hydroxide
- tributyl phosphate

Although process waste has not been collected in these sumps since 1988, most sumps continue to collect and treat rainwater, washwater, and any other wastewaters sent to the system. A reference drawing of the Pilot Plant Sump System is included in Attachment J-19-4.

Individual elements of the Pilot Plant Sump System are described below.

(190.1) Ammonia Tank Pad Sump

The Ammonia Tank Pad Sump is located southwest of the Pilot Plant. The sump is made of metal/concrete and measures approximately 3 ft wide x 4 ft long. The depth of this sump is not known. Ancillary equipment includes piping and a pump. The sump became operational in 1986 and operated until 1988. The wastes received by this unit during production consisted of ammonia and rainwater.

(190.2) Annex (Return Cooling Water) Sump

The Return Cooling Water Sump is located outside the Pilot Plant Annex on the southeast side. The concrete sump measures approximately 5 ft-6 inches in diameter x 10 ft-3 inches deep. Ancillary equipment includes a pump and piping. The sump became operational in 1952 and remains active. Wastes received by this sump included wastewater from the water quench tank, the southeast and southwest dust collector pad floor drains, and from the catch basin east of the Pilot Plant Annex Building.

(190.3) Field Catch Basin Sump

The Field Catch Basin Sump is located south of the extraction area portion of the Pilot Plant. The sump measures approximately 4 ft-9 inches in diameter. The depth of the sump is unknown. A manhole served as the sump from 1951 to 1963 when a new manhole was installed. This new manhole was made using precast concrete manhole sections and had a diameter of about 48 inches. The new sump had a 35 gallons per minute (gpm), float-controlled pump made of cast iron. The connecting storm sewer line was built with vitrified clay sewer pipe. The new pump discharge line was made from cast iron. The former piping used 12 inch concrete tile. The new pump was removed in 1977 and in 1989, the effluent drain was plugged. The Field Catch Basin Sump is now inactive.

The wastes received by this unit consisted of surface and subsurface drainage from the Pilot Plant Storage Pad area.

(190.4) F-102 Sump

The F-102 Sump is located outside the Pilot Plant on the west side. The sump is composed of concrete and metal and measures approximately 9 ft wide x 4 ft-3 inches long. The depth of the sump is unknown. Ancillary equipment includes pumps. The sump became

operational in 1968.

This sump receives wastes from the following diked areas:

- Around Tank T-1 (Product Holding Tank)
- Around Tank W10 (Product Boildown Tank)
- Around Tanks F1-100 and F1-101
- Around Tanks T-2, T-3, T-4, T-5 and T-6
- Around Tanks TS-1 and TS-2 (organic tanks)
- Around the Caustic Receiving Tank
- Around the Scrubber Tower, Small Surge Tank, and Nitric Acid Receiving Tank
- Under the old Wheelabrator Dust Collector

(190.5) F-103 Clearwell (Contaminated) Sump

The F-103 Clearwell (Contaminated) Sump is located outside the Pilot Plant on the west side. The original tank for this sump was installed in 1952. This 8,000-gallon, stainless steel tank was installed underground in a concrete enclosure. In 1962, due to corrosion of the original tank, a 3,500-gallon, open, plastic-lined, carbon steel tank was installed as a replacement. This tank measured approximately 7 ft wide x 7 ft long with a sloped bottom (9 ft deep at one end to 10 ft deep at the other). The tank was lined with 0.055 inch thick, Fligid 55-A Thermal Laminate PVC. Ancillary equipment included a pump and a motor. In 1990, the sump was filled with concrete and taken out of service.

This sump received filtrate from the sump filters inside Building 13A. The effluent was sampled before leaving the sump. The wastes received by this unit consisted of:

- ammonium diuranate
- ammonium hydroxide
- copper sulfate
- hydrofluoric acid
- lime

- magnesium fluoride
- nitric acid
- sodium hydroxide
- stannic acid
- sulfuric acid
- uranium tetrafluoride

(190.6) F-104 Clearwell (Noncontaminated) Sump

The F-104 Clearwell (Noncontaminated) Sump is located outside the Pilot Plant on its west side. The original tank for this sump was installed in 1952. This 8,000-gallon, stainless steel tank was installed underground in a concrete enclosure. In 1962, due to corrosion of the original tank, a 3,500-gallon, open, plastic-lined, carbon steel tank was installed as a replacement. This tank measured approximately 7 ft wide x 7 ft long with a sloped bottom (9 ft deep at one end to 10 ft deep at the other). The tank was lined with 0.055 inch thick, Fligid 55-A Thermal Laminate PVC. Ancillary equipment included a pump and a motor. In 1990, the sump was filled with concrete and taken out of service.

This sump received filtrate from the sump filters inside Building 13A. The wastes received by this unit consisted of:

- filter press filtrate, neutralized
- rainwater runoff
- scrubber liquor, neutralized
- steam condensate from process heat exchange equipment
- Winlo process filtrate, neutralized

(190.7) Hydrogen Fluoride Scrubber F-5 Sump

The Hydrogen Fluoride Scrubber F-5 Sump is located in the wet area of the Hydrogen Fluoride Scrubber. The sump is made of metal and measures approximately 2 ft wide x 2 ft long. The depth of this sump is unknown. Ancillary equipment includes a pump. The sump

became operational in 1968 and remains active.

This sump receives waste from the diked area of the Hydrogen Fluoride Scrubber and from the extraction area floor trench. The waste received by this unit consists of uranium tetrafluoride and hydrogen fluoride.

(190.8) Northeast Pad Sump

The Northeast Pad Sump was located in the Northeast Pad Collection Sump Area outside the Pilot Plant. The dimensions and construction materials of this sump are not known. The sump became operational around 1968 but has since been removed. No other information is available for this sump.

(190.9) Process Area F-1 Sump

The Process Area F-1 Sump is located near the northwest corner of the Pilot Plant wet area. The sump is made of concrete and acid brick and measures approximately 1 ft-7 inches wide x 2 ft-2 inches long. The depth of this sump is unknown. The sump became operational in 1968 and remains active.

During operations, this sump received process waste from the wet area. The wastes received by this unit consisted of spent hydrofluoric acid and nitric acid mixed with uranium or thorium. This sump possibly could have handled other materials used in the plant including:

- flake caustic
- kerosene
- magnesium oxide
- nitrogen
- oxalic acid
- sodium chloride
- sodium hydroxide

- tributyl phosphate

(190.10) Process Area F-2 Sump

The Process Area F-2 Sump is located in the west-central portion of the Pilot Plant wet area. The sump is made of concrete and acid brick and measures approximately 1 ft-7 inches wide x 2 ft-2 inches long. The depth of this sump is unknown. Ancillary equipment includes a pump. The sump became operational in 1968 and remains active.

During operations, this sump received process waste from the wet area. The wastes received by this unit consisted of spent hydrofluoric acid and nitric acid mixed with uranium or thorium. This sump possibly could have handled other materials used in the plant including:

- flake caustic
- kerosene
- magnesium oxide
- nitrogen
- oxalic acid
- sodium chloride
- sodium hydroxide
- tributyl phosphate

(190.11) Process Area F-3 Sump

The Process Area F-3 Sump is located in the southwest portion of the Pilot Plant wet area. The sump is made of concrete and acid brick and measures approximately 1 ft-7 inches wide x 2 ft-2 inches long. The depth of this sump is unknown. The sump became operational in 1968 and remains active.

During operations, this sump received process waste from the wet area. This waste consisted of spent hydrofluoric acid and nitric

acid mixed with uranium or thorium. This sump possibly could have handled other materials used in the plant including:

- flake caustic
- kerosene
- magnesium oxide
- nitrogen
- oxalic acid
- sodium chloride
- sodium hydroxide
- tributyl phosphate

(190.12) Process Area F-4 Sump

The Process Area F-4 Sump is located in the extraction area in the southwest portion of the Pilot Plant wet area. The sump is made of concrete and acid brick and measures approximately 1 ft-7 inches wide x 2 ft-2 inches long. The depth of this sump is unknown. Ancillary equipment includes a pump. The sump became operational in 1968 and remains active.

During operations, this sump received process waste from the wet area. This waste consisted of spent hydrofluoric acid and nitric acid mixed with uranium or thorium. The sump possibly could have received other materials used in the plant including:

- flake caustic
- kerosene
- magnesium oxide
- nitrogen
- oxalic acid
- sodium chloride
- sodium hydroxide
- tributyl phosphate

(191) Solvent Tank (SPCC #10B Tank 1)

Solvent Tank (SPCC #10B Tank 1) (TS-1) is an outside, aboveground storage tank located in the southwest segment of the process area, off the southwest corner of Building 13A (see Figure J-1). Tank 1 is located within Dike 10B. This cylindrical, stainless steel (SS347) tank has a capacity of 2,200 gallons and measures approximately 6 ft-6 inches in diameter x 6 ft-1 inch high. With legs included, the tank stands roughly 12 ft-7 inches tall. Reference drawings of this unit are included in Attachments J-19-1 and J-19-2. Ancillary equipment includes flanges, nozzles, associated piping, a ladder, and a level indicator. This tank began operating in 1954 and remains active. The tank currently stores extraction solvents made up of diamyl-amyl phosphonate, kerosene, and thorium.

(192) Solvent Tank (SPCC #10B Tank 2)

Solvent Tank (SPCC #10B Tank 2) (TS-2) is an outside, aboveground storage tank located in the southwest segment of the process area, off the southwest corner of Building 13A (see Figure J-1). The tank is located within Dike 10B. This cylindrical, stainless steel (SS347) tank has a capacity of 2,200 gallons and measures approximately 6 ft-6 inches in diameter x 6 ft-1 inch high. With legs included, the tank stands roughly 12 ft-7 inches tall. Reference drawings of the unit are included in Attachments J-19-1 and J-19-2. Ancillary equipment includes flanges, nozzles, associated piping, a ladder, and a level indicator. The tank began operating in 1954 and remains active. The tank currently stores extraction solvent composed of diamyl-amyl phosphonate, kerosene, and thorium.

(193) Wastewater Holding Tank F-100

Wastewater Holding Tank F-100 is an outside, aboveground storage tank located near the southwest corner of Building 13A (see Figure J-1). This cylindrical, stainless steel (SS034L) tank has a capacity of 8,225 gallons. A reference drawing of this unit is included in Attachment J-19-3. Ancillary equipment includes a pump, associated piping, and a level

indicator. The unit was installed in 1951 and remains active. Tank F-100 is presently used to store wastewater.

(194) Wastewater Holding Tank F-101

Wastewater Holding Tank F-101 is an outside, aboveground storage tank located near the southwest corner of Building 13A (see Figure J-1). This cylindrical, stainless steel (SS304L) storage tank has a capacity of 8,225 gallons. A reference drawing of this unit is included in Attachment J-19-3. Ancillary equipment includes pumps, associated piping, and a level indicator. The tank has been in service since 1951, and is currently used as a holding tank for wastewater.

Hazardous Waste Management Units

(195) Abandoned Sump West of Pilot Plant

This temporary sump is located on the southwest side of the Pilot Plant (see Figure J-1). The sump consists of a steel-lined, concrete cylinder approximately 2 ft in diameter and 14 ft deep. A reference drawing is included in Attachment J-19-3. Ancillary equipment includes a pump and piping. This unit operated from the early 1950s until around 1989.

This sump was built to remove liquids from inside the drain floors of the Pilot Plant and was used during the renovation of the Pilot Plant in 1969. The sump has a strong solvent odor and is filled with a thick liquid containing some solids. The sump contains high concentrations of total metals: lead, copper, chromium, and nickel. The Abandoned Sump West of the Pilot Plant is classified as a HWMU because the total level of metals in the sump are likely to fail the TCLP for metals, thus making the contents of the sump a characteristic hazardous waste. The FEMP is not seeking a permit to operate this unit.

(196) Barium Chloride Salt Treatment Facility

The Barium Chloride Salt Treatment Facility was a chemical treatment unit designed to convert a characteristic hazardous waste barium chloride (D005) into a non-hazardous, water insoluble, barium sulfate. This unit was located in the west side of the Pilot Plant (see Figure J-1). The unit occupied an area of approximately 75 ft x 50 ft and contained four stainless steel tanks and two carbon steel plate and frame filter presses with paper filters. The tank names, capacities, and uses are as follows:

- Tank D-1
  - 1,069 gallon capacity
  - used for salt dissolution
- Tank F13A-164
  - 2,142 gallon capacity
  - used for precipitating
- Tank D-15
  - 750 gallon capacity
  - used for storing barium sulfate
- Tank W-10
  - 2,000 gallon capacity
  - used for stripping ammonia from barium sulfate filtrate

A reference drawing of this unit is included in Attachment J-19-5. This unit operated from December, 1985 to March, 1986, and processed 18,500 pounds of material. The unit is a HWMU because barium chloride is a characteristic hazardous waste (D005). The FEMP is not seeking a permit to operate this unit.

(197) Pilot Plant Warehouse Storage Pad (Bldg 68)

The Pilot Plant Warehouse Storage Pad is a container storage area located in Building 68 (see Figure J-1). The Pilot Plant Warehouse is a pre-engineered metal building covered by a metal roof. The floor of the building consists of 8 inch thick, reinforced concrete. The hazardous waste storage area in Building 68 is located in the center of the building and measures approximately 7 ft wide by 62 ft long. This area is surrounded by 4 inch wooden curbing. A reference drawing of this unit is

included in Attachment J-19-6. This area has operated since 1953.

This area stores primarily 55-gallon steel drums containing hazardous waste. The storage capacity of this area is 180 55 gallon drums (9,900 gallons). The FEMP is seeking a permit to operate this unit. More detail on process information for this unit is included in Section D. A closure plan is included in Section I.

(198) Tank for Bulk Storage of Solvents, T-5

The Tank for Bulk Storage of Solvents, T-5, is an outside, aboveground storage tank located west of the Pilot Plant (see Figure J-1). This stainless steel tank (SS304L) has a capacity of 10,000 gallons and measures approximately 14 ft-7 inches tall x 10 ft in diameter. The tank is elevated approximately 2 ft above the concrete pad on steel I-beams and is surrounded by a dike with a containment capacity of approximately 15,420 gallons. A reference drawing of this tank is included in Attachment J-19-7.

From 1984 to 1989, this tank stored solvent (F001), a blend of 1,1,1-trichloroethane, mineral spirits and water. The maximum inventory stored in Tank T-5 was approximately 7,954 gallons. The FEMP is not seeking a permit to operate this unit.

(199) Tank for Bulk Storage of Solvents, T-6

The Tank for Bulk Storage of Solvents, T-6, is an outside, aboveground storage tank located west of the Pilot Plant (see Figure J-1). This stainless steel (SS304L) tank has a capacity of 10,000 gallons and measures approximately 14 ft-7 inches tall x 10 ft in diameter. The tank is elevated approximately 2 ft above the concrete pad on steel I-beams and is surrounded by a dike with a containment capacity of approximately 15,420 gallons. A reference drawing of the tank is included in Attachment J-19-7.

This tank stored spent solvent (F001) 1,1,1-trichloroethane from 1984 to 1989. The maximum inventory stored in Tank T-6 was approximately 4,877 gallons. The FEMP is not seeking a permit to operate this unit.

Tank Farm

The Tank Farm is located on the west side of Building 12 (Maintenance Building). Tanks in the Tank Farm were used to store various liquids required in production operations at the FEMP. When production ceased, some of these tanks were emptied and abandoned. The empty tanks are located in the northern portion of the Tank Farm in an area known as the "Old Tank Farm". Plans have been made to remove these abandoned tanks.

The following SWMUs have been identified in the Tank Farm:

- Construction Waste Storage Area
- Tank 17
- Tank 18

The following HWMU has been identified in the Tank Farm:

- Tank Farm Sump

Solid Waste Management Units

(200) Construction Waste Storage Area

The Construction Waste Storage Area is located on the western portion of the New Tank Farm lot. The unit includes four areas, A-D, west of Building 19A along B Street (see Figure J-1). The Construction Waste Storage Area measures approximately 150 ft x 110 ft and has operated since 1989. A reference drawing of the unit is included in Attachment J-20-1.

The Construction Waste Storage Area stores drums that contain standard construction waste gathered during construction projects around the FEMP.

(201) Tank 17

Tank 17 is an outside, aboveground tank located in the Tank Farm (see Figure J-1). This cylindrical sump tank measures approximately 33 ft in

diameter x 25 ft high. The tank is made of concrete and metal. A reference drawing of the unit is included in Attachment J-20-2. Ancillary equipment includes a pump and associated piping. This tank has processed wastewater from the Tank Farm Sump since the 1950s. Materials processed by this unit have included liquids such as:

- calcium hydroxide
- dilute hydrofluoric acid (DHF)
- lime-treated acidic wastewater
- rainwater runoff
- wastewater

(202) Tank 18

Tank 18 is an outside, aboveground storage tank located northeast of the New Main Metal Tank Farm (see Figure J-1). This cylindrical, steel, rubber-lined tank measures approximately 12 ft in diameter x 37 ft long. A reference drawing of this tank is included in Attachment J-20-2. Ancillary equipment includes valves and associated piping. This unit began operating in 1953 and remains active.

Tank 18 was used to store dilute hydrofluoric acid (DHF), a waste product from the conversion of UO_3 to UF_4, and neutralized hydrofluoric acid.

Hazardous Waste Management Units

(203) Tank Farm Sump

The Tank Farm Sump is a surface impoundment located in the Old Tank Farm area north of Plant 4 (see Figure J-1). Impervious clay lined with gravel forms the north wall of the unit. A limestone ditch forms the south wall. Presently, the upper portion of the north wall is missing. The surface dimensions of the five-sided sump are approximately 24 ft x 27 ft x 11 ft x 18 ft x 14 ft. The catchment basin under and around the Old Tank Farm drains into this sump. This basin measures approximately 165 ft x 135 ft.

A reference drawing of Tank Farm Sump is included in Attachment J-20-2. Ancillary equipment includes a pump and piping. This sump has been in service since the mid-1950s.

During production, this sump was used to collect and neutralize hydrogen fluoride, a waste product produced in Plant 4 which is a corrosive, characteristic hazardous waste (D002), rainwater, tank car rinse water and Old Tank Farm surface runoff. The sump is currently used to collect and neutralize rainwater and surface run-off from the Old Tank Farm area. The FEMP is not seeking a permit to operate this unit.

Wastewater Treatment System

The Wastewater Treatment System at the FEMP collects process wastewaters, sanitary sewage, and stormwater throughout the facility and treats these wastewaters before discharge to the Great Miami River. The overall treatment system consists of four separate wastewater treatment "sub-systems:"

- the contaminated General Sump for treatment of process wastewaters
- the non-contaminated General Sump for non-contaminated process wastewater
- the stormwater system
- the sanitary wastewater treatment system

Effluent for all of the treatment sub-systems is combined at Manhole 175 and discharged to the Great Miami River under NPDES permit.

The following SWMUs have been identified in the Wastewater Treatment System:

- Biodenitrification Treatment System
- General Sump, Boildown Water Tank F18-6A
- General Sump, Filtered Water Tank F18-1
- General Sump, Filtered Water Tank F18-6B
- General Sump, Lime Slurry Tank F3A-3
- General Sump, Neutralized Raffinate Tank T-18X-2500
- General Sump, Raffinate Neutralization Tank F2E-603
- General Sump, Receiving Tank F18E-2
- General Sump, Receiving Tank F18E-3
- General Sump, Water Tank F18-2
- General Sump, Water Tank F18-3
- General Sump, Water Tank F18-4
- General Sump, Water Tank T-18X-1000
- General Sump, Water Tank T-18X-1100
- General Sump, Water Tank T-18X-1300
- General Sump, Water Tank T-18X-1500

- General Sump, Water Tank T-18X-2900
- Sanitary Sewage Treatment Plant
- Stormwater Retention Basins

Additionally, the following HWMUs have been identified in the Wastewater Treatment System:

- Bio-Surge Lagoon
- Sludge Drying Beds

Solid Waste Management Units

(204) Biodenitrification Treatment System

The Biodenitrification Treatment System is a wastewater treatment unit located near Plant 2/3 and Plant 8 (see Figure J-1). The unit consists of four carbon steel, fluidized bed bioreactors. Each reactor consists of a tank approximately 4 ft in diameter x 52 ft long capable of processing about 200 gallons of wastewater per minute. The treatment system was built and tested in 1986. Further demonstration testing took place in 1987 after which the unit became operational. The unit was closed from April, 1990 through September, 1990, to increase the capacity of the system from two to four reactors. The unit is currently in operation. A reference drawing of this unit is not available.

The Biodenitrification Treatment System processes wastewater from the process area after treatment in the General Sump to reduce the nitrate/nitrogen content. Each bioreactor contains a fluidized bed of pulverized anthracite coal which contains a thin film of denitrifying bacteria. Wastewater high in nitrates is routed through the bioreactors where the bacteria consume the nitrates. Methanol, sulfuric acid and phosphoric acid are added to the system to maintain the proper conditions for supporting the nitrate-consuming bacteria. The Biodenitrification Treatment System treated the following approximate quantities of wastewater from 1987-1990:

- 1987 - 22,669,300 gallons
- 1988 - 45,584,000 gallons
- 1989 - 39,599,600 gallons
- 1990 - 19,648,400 gallons

(205) General Sump, Boildown Water Tank F18-6A

The General Sump Boiler Tank F18-6A (TK-8) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 56,000 gallons and measures approximately 20 ft in diameter x 25 ft high. A reference drawing of the unit is included in Attachment J-21-12. Ancillary equipment includes associated piping, pumps, and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, to store stormwater runoff.

(206) General Sump, Filtered Water Tank F18-1

The General Sump Filtered Water Tank F18-1 (TK-1) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 20,500 gallons and measures approximately 15 ft in diameter x 15 ft-6 inches high. A reference drawing is included in Attachment J-21-1. Ancillary equipment includes flanges, couplings, associated piping, pumps, and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, to hold filtered wastewater from the Refinery Sump.

(207) General Sump, Filtered Water Tank F18-6B

The General Sump Filtered Water Tank F18-6B (TK-14) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 56,000 gallons and measures approximately 20 ft in diameter x 25 ft high. A reference drawing of the unit is included in Attachment J-21-12. Ancillary equipment includes associated piping, pumps, and controls. The tank has

been in service since 1953 and is currently used, as a wastewater treatment unit, to hold stormwater diverted to the Surge Lagoon.

(208) General Sump, Lime Slurry Tank F3A-3

The General Sump Lime Slurry Tank F3A-3 is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, steel tank has a capacity of 14,000 gallons. A reference drawing of the unit is included in Attachment J-21-2. Ancillary equipment includes associated piping, pumps, and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, to store lime slurry. Process materials handled by this tank include variable amounts of water and calcium hydroxide.

(209) General Sump, Neutralized Raffinate Tank T-18X-2500

The General Sump, Neutralized Raffinate Tank T-18X-2500 (TK-5) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, stainless steel (SS304L) tank has a capacity of 50,000 gallons. A reference drawing of the unit is included in Attachment J-21-3. Ancillary equipment includes associated piping, pumps, controls, and a high level sensor with an alarm. This tank has served as a holding tank for neutralized raffinate transferred from Tank F2E-603 from the mid-1950s until the mid-1980s. The principle process material handled by this unit was uranyl nitrate raffinate (nitric acid). Tank T-18X-2500 is currently scheduled to be removed and disassembled.

(210) General Sump Raffinate Neutralization Tank F2E-603

This General Sump Raffinate Neutralization Tank F2E-603 (TK-12) is an outside, aboveground treatment tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, steel tank has a capacity of 16,800 gallons and measures approximately 16 ft-6 inches in diameter x 10 ft-6 inches high. Reference drawings of this unit are included in Attachments J-21-2 and J-21-4. Ancillary equipment includes flanges, couplings,

associated piping, pumps, controls, and a high level sensor with an alarm. The unit served as a neutralization tank for acidic uranyl nitrate raffinate from 1955 until the mid-1980s. During this time the tank handled variable amounts of uranyl nitrate raffinate and hydrated lime. Tank F2E-603 is currently empty.

(211) General Sump Receiving Tank F18E-2

The General Sump Receiving Tank F18E-2 (TK-6) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 56,000 gallons and measures approximately 20 ft in diameter by 24 ft high. A reference drawing of the unit is included in Attachment J-21-5. Ancillary equipment includes flanges, associated piping, pumps, and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, to hold wastewater from the Water Plant Treatment Sump and the Chemical Feed Sump. The tank is also used when the storm sewer is diverted because of a spill.

(212) General Sump Receiving Tank F18E-3

The General Sump Receiving Tank F18E-3 (TK-7) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 56,000 gallons and measures approximately 20 ft in diameter x 24 ft high. A reference drawing of the unit is included in Attachment J-21-5. Ancillary equipment includes flanges, associated piping, pumps and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, to receive tank for wastewater from the Water Plant Treatment Sump and from boiler plant blowdown.

(213) General Sump Water Tank F18-2

The General Sump Water Tank F18-2 (TK-2) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This

cylindrical, steel tank has a capacity of 20,000 gallons and measures approximately 15 ft in diameter x 15 ft-6 inches high. Reference drawings of the unit are included in Attachments J-21-1 and J-21-6. Ancillary equipment includes flanges, couplings, associated piping, pumps, and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, to collect and store variable amounts of wastewater.

(214) General Sump Water Tank F18-3

The General Sump Water Tank F18-3 (TK-3) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 20,000 gallons and measures approximately 15 ft in diameter x 15 ft-6 inches high. Reference drawings of the unit are included in Attachments J-21-1 and J-21-6. Ancillary equipment includes flanges, couplings, associated piping, pumps, and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, to collect and store variable amounts of wastewater.

(215) General Sump Water Tank F18-4

The General Sump Water Tank F18-4 (TK-4) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, steel tank has a capacity of 5,000 gallons and measures approximately 7 ft-6 inches in diameter x 15 ft-6 inches high. A reference drawing of the unit is included in Attachment J-21-7. Ancillary equipment includes flanges, couplings, valves, associated piping, pumps, and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, to collect and store wastewater.

(216) General Sump Water Tank T-18X-1000

The General Sump Water Tank T-18X-1000 (TK-10) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This

cylindrical, steel tank has a capacity of 15,000 gallons and measures approximately 12 ft in diameter x 17 ft high. A reference drawing of the unit is included in Attachment J-21-3. Ancillary equipment includes pipes, pumps, and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, to store filtered wastewater from Plant 8.

(217) General Sump Water Tank T-18X-1100

The General Sump Water Tank T-18X-1100 (TK-11) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 15,000 gallons and measures approximately 12 ft in diameter x 17 ft high. A reference drawing of the unit is included in Attachment J-21-3. Ancillary equipment includes pumps, pipes, and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, to store filtered wastewater from Plant 8.

(218) General Sump Water Tank T-18X-1300

The General Sump Water Tank T-18X-1300 is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 25,000 gallons. A reference drawing of the unit is included in Attachment J-21-3. Ancillary equipment includes pipes, pumps, and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, to store filtered wastewater from Plant 8.

(219) General Sump Water Tank T-18X-1500

The General Sump Water Tank T-18X-1500 was an outside, aboveground storage tank located in the Plant 2/3 area (see Figure J-1). The unit has been removed from service and is currently being disassembled for use as scrap. The dimensions, capacity, and construction material of this tank are not known. The tank was used from the 1950s until either late 1989 or early

1990. During its active service life, Tank T-18X-1500 was a wastewater treatment unit. A reference drawing is included in Attachment J-21-3.

(220) General Sump Water Tank T-18X-2900

The General Sump Water Tank T-18X-2900 (TK-9) is an outside, aboveground storage tank located southeast of Plant 2/3 (see Figure J-1). This cylindrical, carbon steel tank has a capacity of 56,000 gallons and measures approximately 18 ft in diameter x 30 ft high. A reference drawing of the unit is included in Attachment J-21-2. Ancillary equipment includes pipes, pumps and controls. The tank has been in service since 1953 and is currently used, as a wastewater treatment unit, as a receiving and holding tank for wastewater transferred from Tanks F18E-2 and F18E-3.

(221) Sanitary Sewage Treatment Plant

The Sanitary Sewage Treatment Plant is a wastewater treatment unit located on the east edge of the FEMP (see Figure J-1). The facility contains two outside settling basins constructed of concrete shell with steel internals, two trickling filters, associated sumps, one sludge digester and a chlorine contact unit located within a building that measures approximately 20 ft wide x 27 ft long. The entire Sanitary Sewage Treatment Plant occupies an area of about 124,250 ft^2 and has boundaries approximately 350 ft wide x 355 ft long. Ancillary equipment includes a sanitary sewer lift station with associated sump pumps and piping. A reference drawing of this unit is included in Attachment J-21-10.

Sanitary sewage is collected from the FEMP and treated in the plant at a maximum rate of 300,000 gallons per day. The Sanitary Sewage Treatment Plant began operating in 1952 and remains active.

(222) Stormwater Retention Basins

The Stormwater Retention Basins are surface impoundments located south of the FEMP parking lot (see Figure J-1). These units are used to capture

stormwater and hold it until the water can be tested and discharged. The units consist of two open basins excavated into the earth, each constructed in the same manner. At the bottom of each basin is an 18 inch bentonite and soil liner. Covering the liner is a layer of sand with a drainage system to collect any leakage. Over the drainage system is a synthetic, flexible membrane liner which is resistant to ultraviolet light and oils/solvents. The west basin measures approximately 182 ft wide x 546 ft long x 11 ft deep and has a capacity of approximately 6.5 million gallons. The east basin measures approximately 270 ft wide x 300 ft long x 15 ft deep and has a capacity of approximately 4 million gallons. Ancillary equipment consists of a transfer pumping station and two underdrain sumps, one for each basin, with associated pumps. The normal discharge rate is about 160 gallons per minute (gpm) and the maximum rate is about 300 gpm. The expected sediment, based on previous tests, is approximately 15,000 lbs per year. A reference drawing of the retention basins is included in Attachment J-21-8. The west basin has operated since November, 1986. The east basin has operated since December 28, 1988.

Hazardous Waste Management Units

(223) Bio-Surge Lagoon

The Bio-Surge Lagoon is a surface impoundment located west of the production area in the waste storage area (see Figure J-1). The lagoon covers an area of approximately 160,000 ft^2 and is approximately 9 ft deep. The unit has a capacity of about 8 million gallons. The lagoon was constructed from a clay-bentonite mixture with four 6 inch valved underdrains. A 40 mil, high density, polyethylene liner covers the clay-bentonite. A 12 inch sand layer covers the liner and includes a drainage system with a second final layer of an XR5 liner covering the sand. The Bio-Surge Lagoon has been designed to handle a flow of 150 gallons per minute. A reference drawing of the unit is included in Attachment J-21-9. This unit has operated since September, 1986.

The Bio-Surge Lagoon receives wastewater from the General Sump and from the Clearwell. The lagoon temporarily stores this wastewater until it can be processed by the Biodenitrification Treatment System. In September, 1987, the lagoon was estimated to contain between 4 and 5 million gallons of wastewater. The lagoon also collects an estimated 915,000 lbs of solids per year. This unit is classified as a HWMU because it received wastewater containing more than 25 ppm of 1,1,1-trichloroethane listed hazardous waste in 1986. The FEMP is not seeking a permit to operate this unit.

(224) Sludge Drying Beds

The Sludge Drying Beds are surface impoundments located east of the production area in the Sewage Treatment Plant (see Figure J-1). The Sludge Drying Beds are grouped into two large units. Together, these units measure approximately 79 ft wide x 92 ft long. The Sludge Drying Beds consist of concrete walls, a sand bed, a splash pad, and an underdrain system made of vitrified clay pipes. Reference drawings of this unit are included in Attachments J-21-10 and J-21-11. Ancillary equipment includes sump pumps and trickling filters. One set of Sludge Drying Beds was built in 1952. The second set was added in 1955. Since this time, one of the beds has been covered and is not active.

The Sludge Drying Beds receive digested sludge from the anaerobic digester through splash pads that spread the sludge over the sand beds. Water is drained into the underdrain system. The Sludge Drying Beds are a HWMU because wastewater containing more than 25 ppm of 1,1,1-trichloroethane listed hazardous waste was treated by this system in 1987. The FEMP is not seeking a permit to operate this unit.

OPERABLE UNIT 1

Operable Unit 1 (OU1) consists of Waste Pits 1-6, the Clearwell, the Burn Pit, berms, liners and soils within the operable unit boundary.

The following SWMUs have been identified in OU1:

- Burn Pit
- K-65 Satellite Accumulation Area
- Waste Pit No. 1
- Waste Pit No. 2
- Waste Pit No. 3
- Waste Pit No. 6

In addition, the following HWMUs have been identified in OU1:

- Clearwell
- Experimental Treatment Facility (ETF)
- Waste Pit No. 4
- Waste Pit No. 5

Solid Waste Management Units

(225) Burn Pit

The Burn Pit is a disposal unit for combustible items. It is located in the northwest corner of the site between Waste Pit No. 3 and Waste Pit No. 4 (see Figure J-1). The Burn Pit was an excavation site with an approximate surface area of 35,000 ft^2. A reference drawing of this unit is included in Attachment J-22-1. The Burn Pit operated from the late 1950's until approximately 1969 when the unit was retired from active service and covered with clay. Wastes burned in the pit included boxes and wooden pallets. Noncombustible items such as laboratory glassware, miscellaneous metal containers (other than drums), and graphite crucibles were also disposed of in the Burn Pit.

(226) K-65 Satellite Accumulation Area

The K-65 Satellite Accumulation Area is a container storage area located northwest of the K-65 silos (see Figure J-1). This storage area measures approximately 4 ft x 4 ft and has operated since 1990. A reference drawing of this area is included in Attachment J-22-1.

This storage area contains 55-gallon steel drums. These drums store groundwater purged from Well 1031 located northwest of and near the K-65 Silos. The water in the drums could contain radioactive waste with small amounts of naturally occurring materials such as precious metals, heavy metals and radium.

(227) Waste Pit No. 1

Waste Pit No. 1 is a disposal unit primarily for dry solid wastes located in the northwest corner of the facility (see Figure J-1). This two-acre unit consists of a large basin excavated into the existing blue clay with portions of the bottom lined with an additional four feet of clay. The capacity of the pit was expanded in 1957 when excavated spoil material from the ongoing construction of Pit No. 2 was used to elevate the berm an additional five feet on the west side. This last modification brought the maximum depth of the pit to 17 ft and the final capacity to 40,000 yd^3. A reference drawing of Pit No. 1 is included in Attachment J-22-1.

Waste Pit No. 1 received the following waste streams:

- brick
- magnesium fluoride slag
- neutralized waste filter cake
- scrap graphite
- sump cakes from the production facility
- sump liquor

From 1958 to 1959, the pit was also used as a settling basin for effluent from Pit No. 2. The current volume of waste in the pit is estimated at

40,000 yd^3. Pit No. 1 operated from 1952 to 1959 and was subsequently covered.

(228) Waste Pit No. 2

Waste Pit No. 2 is a disposal unit primarily for dry solid wastes located northeast of Pit No. 1 in the northeast portion of the facility (see Figure J-1). This one-acre unit consists of a basin excavated into the existing blue clay. The maximum depth of the pit is approximately 13 feet with a total capacity of 13,000 yd^3. A reference drawing of Pit No. 2 is included in Attachment J-22-1.

Waste Pit No. 2 received the following waste streams:

- brick
- magnesium fluoride slag
- neutralized waste filter cake
- scrap graphite
- sump cakes from production plants
- sump liquor

Raffinate residues were also placed in Waste Pit No. 2 between 1958 and 1959 during which time the pit functioned as a settling basin. Pit No. 2 operated from 1957 until mid-1964 and was subsequently covered.

(229) Waste Pit No. 3

Waste Pit No. 3 is a disposal unit primarily for wet solid wastes located in the northwest section of the facility north of the Clearwell (see Figure J-1). This unit covers approximately 6.8 acres and consists of a basin excavated into the underlying layer of blue clay with the inner slopes lined with a minimum of 12 inches of clay. In 1965, the pit capacity was increased to 248,500 yd^3 by adding two feet to the existing pit walls, which also increased the maximum depth of the pit to 27 feet. The total volume of material placed in Pit No. 3 is approximately 227,000 yd^3. A reference drawing of the pit is included in Attachment J-22-1.

Waste Pit No. 3 began operating in 1959. From 1959 through 1968, Pit No. 3 was used as a settling basin for liquid effluent and slurries, primarily lime-neutralized raffinates. During the late 1960's, the pit also received slag leach residues until the construction of Waste Pit No. 5. From 1975 to 1977, filter cake and fly ash were used to fill the pit. Waste Pit No. 3 ceased operation in 1977 and was subsequently covered.

(230) Waste Pit No. 6

Waste Pit No. 6 is a disposal unit for wet and dry solid wastes located in the northwest section of the facility adjacent to Waste Pit No. 4 and Waste Pit No. 5 (see Figure J-1). Waste Pit No. 6 consists of an excavation cut into existing soils and lined with a 60 mil elastomeric membrane liner on the base and side slopes. This unit covers approximately 3/4 acre with a maximum depth of 30 feet. The estimated total volume of Waste Pit No. 6 is 14,000 yd^3. A reference drawing of the pit is included in Attachment J-22-2. This unit began operating in 1979 and has remained inactive since early 1985. The pit surface is presently covered with up to 2 ft of standing water to reduce the release of fugitive emissions.

Waste Pit No. 6 received the following solid wastes:

- asbestos
- filter cake
- process residues containing elevated levels of uranium
- slag (MgF_2)
- uranium tetrafluoride (UF_4)

Hazardous Waste Management Units

(231) Clearwell

The Clearwell is a surface impoundment located west of the production area in the waste pit area (see Figure J-1). The Clearwell has a surface area

of approximately 30,600 ft^2 and a capacity of about 4 million gallons. The unit is roughly a four-sided structure that is approximately 25 ft deep. The Clearwell is lined with blue clay. A reference drawing of the unit is included in Attachment J-22-1. A 6 inch pipe extends from the west end of Pit No. 5 to the Clearwell. This pipe transports wastewater from Waste Pit No. 5 to the Clearwell. Another 6 inch pipe currently transports Clearwell effluent to the Bio-Surge Lagoon. The Clearwell has operated since 1952.

This unit currently receives surface runoff from the majority of the surfaces of Waste Pits 1, 2, and 3, as well as excess stormwater from Waste Pit No. 5. Prior to March, 1987, the Clearwell served as a final settling basin for process wastewater being discharged to the Great Miami River.

The Clearwell has received clarified process effluent via Waste Pit No. 3 or Waste Pit No. 5. This unit potentially contains:

- aluminum
- arsenic
- barium
- calcium
- cobalt
- cyanide
- calcium fluoride
- iron
- magnesium
- mercury
- radioactive materials
- trichloroethane
- PCBs (Aroclors 1248 and 1254)
- vanadium

The Clearwell has been declared a HWMU because it received wastewater combined with more than 25 ppm of 1,1,1-trichloroethane, a listed hazardous waste, from the General Sump via the process area sump systems

between 1980 and 1986. The Clearwell discharged the following quantities of waste between 1980 and 1986:

- 1980 - 23,514,000 gallons
- 1981 - 19,173,000 gallons
- 1982 - 40,936,000 gallons
- 1983 - 38,214,000 gallons
- 1984 - 49,079,500 gallons
- 1985 - 57,421,000 gallons
- 1986 - 25,804,000 gallons

Approximately 1.5 million gallons of water remain in the Clearwell with an estimated 11 ft of sediment. The FEMP is not seeking a permit to operate this unit.

(232) Experimental Treatment Facility (ETF)

The Experimental Treatment Facility is a physical treatment unit located southeast of Waste Pit No. 5 (see Figure J-1). This aboveground unit consists of a sand/gravel filter bed for dewatering, covered by a greenhouse type structure for both thermal drying and protection from precipitation. Ancillary equipment includes a leachate collection system and an underground piping system. This unit measures approximately 20 ft wide x 48 ft long. The capacity of the Experimental Treatment Facility is about 2,400 ft^3. A reference drawing of the ETF is not available.

In November, 1984, the ETF received approximately 12,000 gallons of wet residue from Waste Pit No. 5. After a few weeks, the treatment process had reduced the material to approximately 2,400 gallons of dry residue. The Experimental Treatment Facility was not used again. The unit is currently covered with tarpaulin held in place by cinder blocks.

The ETF is a HWMU because it received waste residue from Waste Pit No. 5. This pit was known to receive 1,1,1-trichloroethane, a listed hazardous waste. The FEMP is not seeking a permit to operate the Experimental Treatment Facility.

(233) Waste Pit No. 4

Waste Pit No. 4 is a landfill located in the northeast portion of the waste pit area, southeast of Waste Pit No. 5 (see Figure J-1). The surface dimensions of the pit are approximately 170 ft x 320 ft x 400 ft x 320 ft. The pit is approximately 24 ft deep and is lined by one foot of clay on the sides and bottom. The perimeter of the pit is surrounded by a drainage ditch and an earthen berm to provide engineered run-on/run-off control. A reference drawing of the unit is included in Attachment J-22-3. The pit was constructed in 1960 and was used for waste disposal until 1986 when it was placed on inactive status. The pit has since been covered with fill material (soil and rocks) overlaid with 2 ft of clay compacted to 1 x 10^{-7} cm/s permeability and covered with a 45 mil reinforced, chlorosulphonated, polyethylene (Hypalon) liner. The volume of the cover material is approximately 13,000 yd^3.

Waste Pit No. 4 potentially contains the following materials:

- acetone
- 2-butanone
- construction rubble containing asbestos & paints
- dust collector residues
- FEMP process residues
- metal nitrates of ore containing:
  - aluminum
  - arsenic
  - calcium
  - copper
  - iron
  - molybdenum
  - silicon
- methylene chloride
- organophosphorus pesticides including:
  - ethyl parathion
  - methyl parathion
  - malathion

- toluene
- 1,1,1-trichloroethane
- trichloroethene
- trichloride waste salt containing:
  - barium
  - calcium nitrate
  - fluoride
  - lime
  - magnesium fluoride
  - neutralized raffinate
  - nitric acid
  - PCBs
  - silver
  - tetrachloroethene
  - thorium
  - trailer cake
  - uranium
  - vanadium
- semi-volatile and inorganic compounds including
  - anthracene
  - benzo (a) anthracene
  - benzo (a) pyrene
  - benzo (b) fluoranthene
  - benzo (k) fluoranthene
  - chloroform
  - chrysene
  - fluoranthene
  - phenanthrene
  - pyrene
- uranium tetrafluoride (UF_4)
- uranium trioxide (UO_3)
- U_3O_8 (black oxide)
- waste graphite

This waste pit contains an estimated 53,000 yd^3 or 143,000,000 pounds of

waste material. This total includes approximately 6.7 million pounds of uranium, 136,000 pounds of thorium, and 23,500 pounds of low level radioactive waste containing barium chloride salt that was deposited between May, 1981, and April, 1983.

Waste Pit No. 4 is classified as a HWMU because of the disposal of barium chloride, a characteristic hazardous waste (D005), in the waste pit. The FEMP is not seeking a permit to operate Waste Pit No. 4. The pit has undergone interim closure certified by the Ohio EPA with final closure deferred to the CERCLA program.

(234) Waste Pit No. 5

Waste Pit No. 5 is a surface impoundment located at the northeast corner of the waste pit area (see Figure J-1). This unit covers approximately 4.2 acres or 184,000 ft^2 and was constructed by the cut and fill method wherein excavated material was used to build a dike and neighboring pit walls. The pit was then lined with a 60 mil elastomeric membrane liner. The total capacity of the pit is approximately 115,000 yd^3. The maximum depth of the pit is about 30 feet. A reference drawing of the unit is included in Attachment J-22-4. Waste Pit No. 5 operated from 1968 until 1987. The unit is currently exposed except for the partial covering provided by accumulated rainwater.

The volume of waste contained in Waste Pit No. 5 is approximately 102,500 yd^3. Until 1983, waste slurries including neutralized raffinate, neutralized slag leach residue, and sump sludge were pumped to Waste Pit No. 5 via direct pipeline from Plant 2/3 and from the General Sump for settling of solids. From 1983 until 1987, wastewater from the production area that had been treated in the General Sump flowed across Waste Pit No. 5 to the Clearwell prior to discharge to the Great Miami River.

Waste Pit No. 5 has been classified as a HWMU because of the presence of 1,1,1-trichloroethane (F001/F002) in wastewater from the process area. Between 1980 and 1986, wastewater in Waste Pit No. 5 contained more than

25 ppm of 1,1,1-trichloroethane. Waste Pit No. 5 received the following quantities of wastewater in 1980-1986:

- 1980 - 16,350,100 gallons
- 1981 - 15,327,900 gallons
- 1982 - 23,781,000 gallons
- 1983 - 23,735,000 gallons
- 1984 - 33,145,327 gallons
- 1985 - 28,315,100 gallons
- 1986 - 28,631,000 gallons

The FEMP is not seeking a permit to operate Waste Pit No. 5.

OPERABLE UNIT 2

Operable Unit 2 (OU2) consists of the Fly Ash Piles, Southfield Disposal Area, Lime Sludge Ponds, Sanitary Landfill, berms, liners, and soil within the operable unit boundary.

The following SWMUs have been identified in OU2:

- Sanitary Landfill
- Southfield Disposal Area

CERCLA Remediation Storage Area

- Decontamination Pad and Tanks
- Empty Drum Storage Area
- Oil Storage Shed

The following HWMUs have been identified in OU2:

- Lime Sludge Ponds

CERCLA Remediation Storage Area

- Equipment Storage Area
- Well Drilling Storage Area

Solid Waste Management Units

(235) Sanitary Landfill

The Sanitary Landfill was a landfill for solid wastes. The landfill is located on a three-acre tract outside the northwest corner of the process area (see Figure J-1). The landfill consists of 17 individual cells, five of which are full and out of service. The remaining 12 cells were never used. The one-acre, five cell unit is excavated into the soil with a deposition area located adjacent to the cells. Each of the five cells contains approximately 2,000 yd^3 of solid waste. A 2 ft layer of compacted soil covers each of the five cells. The total volume of material contained in the Sanitary Landfill is estimated at between 16,000 and 18,000 yd^3. Materials which were disposed of in the landfill include:

- cafeteria waste
- construction rubble
- double-bagged and bulk quantities of asbestos
- non-burnable, sanitary wastes generated at the FEMP

A reference drawing of the Sanitary Landfill is included in Attachment J-23-1. This unit was operated from 1954 until 1986 and is currently covered with soil and vegetation.

(236) Southfield Disposal Area

The Southfield Disposal Area is located south of the Stormwater Retention Basins and west of the Active Fly Ash Pile (see Figure J-1). The area occupies approximately 11 acres, is typically covered by vegetation, and lacks defined boundaries. This unit collected waste from 1954 until 1968. A reference drawing of this area is included in Attachment J-23-1.

The Southfield Disposal Area is reported to have been used as a burial site for construction rubble that contained low levels of radioactivity.

CERCLA Remediation Storage Area

The CERCLA Remediation Storage Area is located immediately west of Waste Pit No. 5. The area is an on-site headquarters for field personnel working on the remedial investigation/feasibility study (RI/FS) at the FEMP. Samples required for the RI/FS are taken from various location in the FEMP, brought to trailers in this area, and prepared for shipment off-site. The CERCLA Remediation Storage Area also contains a staging area and a cleaning facility for storing and cleaning the drilling rigs, augers, and other equipment used to collect the samples.

The SWMUs described below are specifically located in the CERCLA Remediation Storage Area of Operable Unit 2.

(237) Decontamination Pad and Tanks

The Decontamination Pad and Tanks is an aboveground storage tank unit in the northwest portion of the CERCLA Remediation Storage Area (see Figure J-1). This unit consists of two tanks, a decontamination pad and a sump. The two cylindrical, carbon steel tanks have capacities of about 1,000 gallons and measure approximately 4 ft in diameter and 10 ft long. The concrete pad measures approximately 20 ft wide x 20 ft long. The pad is surrounded by a 6 inch concrete curb and has three steel grates for drainage. The drainage flows into a concrete sump that measures approximately 4 ft wide x 4 ft long. The depth of this sump is unknown. A reference drawing of this unit is included in Attachment J-23-2. This unit has operated since March, 1990.

The tanks in this unit store wastewater from decontamination of workers and equipment. The quantity of waste stored here is approximately 800 gallons.

(238) Empty Drum Storage Area

The Empty Drum Storage Area is a container storage area in the northwest portion of the CERCLA Remediation Storage Area (see Figure J-1). Although this unit lacks defined boundaries, it occupies an open land area of approximately 1650 ft^2. The unit has operated since 1990. A reference drawing of this unit is included in Attachment J-23-3.

This unit is generally used to store empty 55-gallon, steel drums until needed. However, some of these drums contained used safety equipment. Other wastes present include contaminated concrete and grout.

(239) Oil Storage Shed

The Oil Storage Shed is a container storage area in the northwest portion of the CERCLA Remediation Storage Area (see Figure J-1). The unit consists of a wooden storage shed with a wooden floor. The shed measures

approximately 8 ft wide x 10 ft long x 7 ft tall. A reference drawing of the unit is included in Attachment J-23-5. This unit has operated since March, 1990.

The Storage Shed contains 55-gallon steel drums either closed with bungs or with open tops, covers and locking rings. These drums store waste oil and virgin oil. This shed contains approximately 165 gallons of waste oil.

Hazardous Waste Management Units

(240) Lime Sludge Ponds

The two Lime Sludge Ponds (North and South) are surface impoundments located immediately west of the FEMP West Water Tower (see Figure J-1). The Lime Sludge Ponds have a combined surface area of approximately 40,000 ft^2. A reference drawing of the sludge ponds is included in Attachment J-23-4.

The North Lime Sludge Pond measures approximately 100 ft wide x 200 ft long. This pond is now covered by water to a depth of 1 ft to 7 ft. The sludge depth is estimated at 8 ft. Using this information, the sludge volume is estimated to be about 5,000 yd^3. The volume of the berm material is estimated to be 1,100 yd^3.

The North Lime Sludge Pond became operational in 1984 and remains active. Spent lime sludge from FEMP water treatment plant operations (lime-alum sludge and boiler plant blowdown) is pumped to this pond and allowed to settle. This pond has been filled to about 90% capacity.

The South Lime Sludge Pond measures approximately 100 ft wide x 200 ft long. This pond is now overgrown with grass and shrubs. Borehole information collected in 1988 indicates the depth of the South Pond to be approximately 11 ft-6 inches. Using this information, the sludge volume

is estimated to be about 11,500 yd^3. The volume of the berm material is estimated to be 2,800 yd^3. The South Lime Sludge Pond received spent lime-alum sludge from 1954 until 1964 when it was deactivated. The pond was reactivated in 1988, but the flow to the pond since that time has been insignificant.

The Lime Sludge Ponds are HWMUs because the ponds received wastewater treatment sludge from wastewater containing more than 25 ppm of 1,1,1-trichloroethane, a listed hazardous waste, in 1984. The FEMP is not seeking a permit to operate this unit.

CERCLA Remediation Storage Area

The HWMUs described below are specifically located in the CERCLA Remediation Storage Area of Operable Unit 2.

(241) Equipment Storage Area

The Equipment Storage Area is a container storage area in the western portion of the CERCLA Remediation Storage Area (see Figure J-1). This unit occupies an area approximately 45 ft x 145 ft and consists of mostly open ground with vegetation. This area has operated since March, 1990. The wastes accumulated here include oil filters, clutch plates, mud, drums, pallets, wood, used oil, metal, pipes, and lead acid batteries. A reference drawing of this area is included in Attachment J-23-5.

This unit is a HWMU because the area stored hazardous waste, such as lead acid batteries (D008), for more than 90 days. The FEMP is not seeking a permit to operate this unit.

(242) Well Drilling Storage Area

The Well Drilling Storage Area is a container storage area located in the northeast corner of the CERCLA Remediation Storage Area (see Figure J-1).

The dimensions of this unit are approximately 29 ft x 56 ft. This unit has operated since 1986. A reference drawing of the Well Drilling Storage Area is included in Attachment J-23-5.

This area is a HWMU because it stored materials that have been identified as RCRA hazardous waste for more than 90 days. The FEMP is not seeking a permit to operate this unit.

J-2 RELEASES

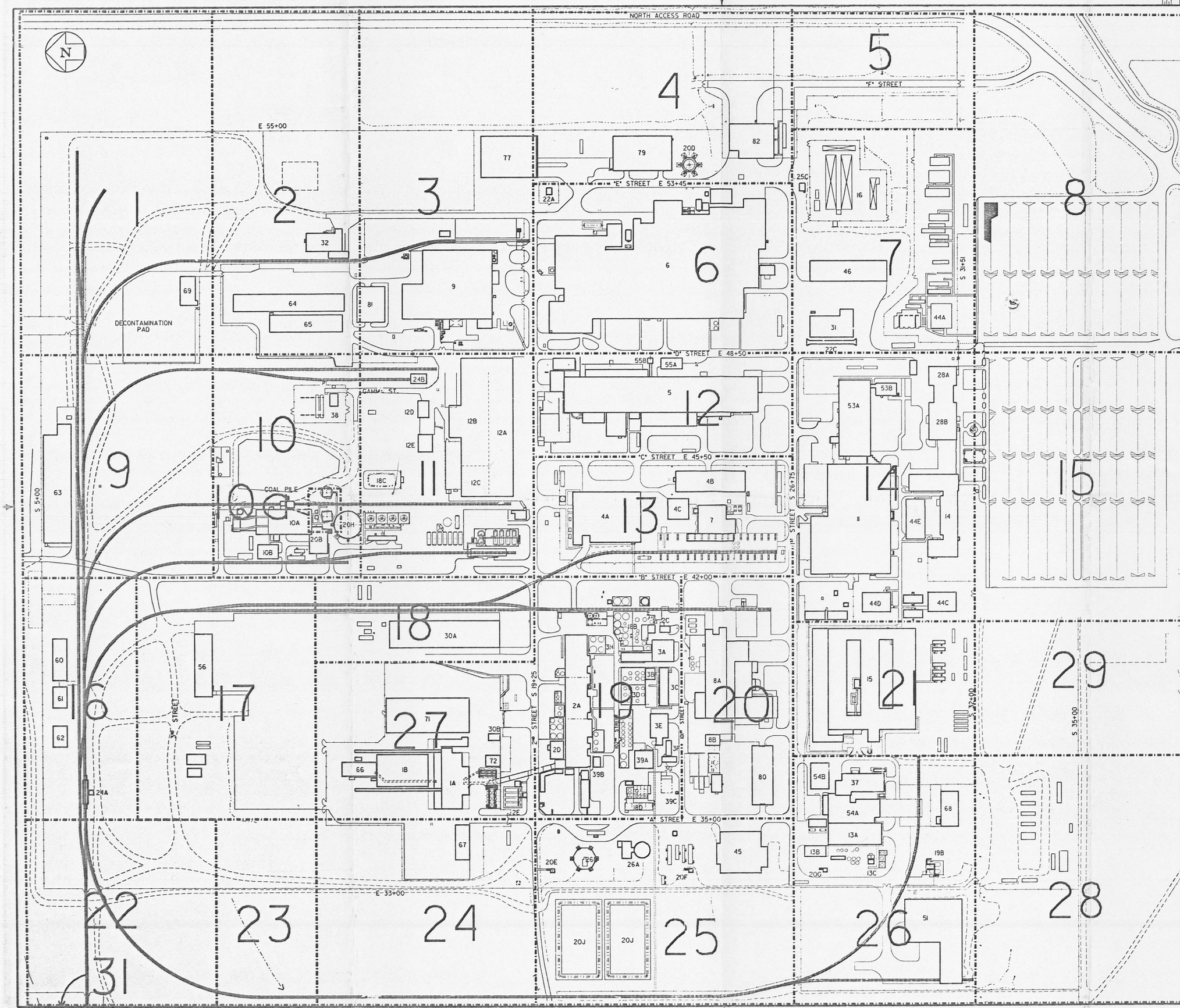
J-2a Characterize Releases

The CERCLA Consent Agreement provides for the integration of CERCLA response actions and RCRA corrective action. Specifically, Section VIII of the Consent Agreement states:

> "The Parties intend to integrate into this comprehensive Agreement U.S. DOE's CERCLA response obligations and RCRA corrective action obligations that relate to the release(s) of hazardous substances, pollutants, contaminants, or hazardous constituents covered by this Agreement. Therefore, the Parties intend that activities covered by this Agreement will be deemed to achieve compliance with CERCLA, 42 U.S.C §9601 et seq.; to satisfy the corrective action requirements of Sections 3004(u) and 3004(v) of RCRA, 42 U.S.C. §§6924(u) and 6924(v) for a RCRA permit, and Section 3008(h) of RCRA, 42 U.S.C. §6928(h) for interim status facilities; and to meet or exceed all applicable or relevant and appropriate Federal and State laws and regulations, to the extent required by Section 121 of CERCLA, 42 U.S.C. §9621. Based on the foregoing, the Parties intend that any removal or remedial action(s) selected, implemented and completed under this Agreement shall be deemed by the Parties to be protective of human health and the environment such that remediation of releases covered by this Agreement shall obviate the need for further corrective action under RCRA."

The FEMP intends to investigate releases from SWMUs identified in Section J-1a as part of the remedial investigation/feasibility study required for each operable unit identified under the CERCLA program. If corrective action is required for SWMUs and HWMUs identified in Section J-1a, the corrective action will be part of the CERCLA program.

SECTION J:
FIGURES



BALLOON LEGEND	
PIV	POST INDICATOR VALVE
SMH	SANITARY MANHOLE
EMH	ELECTRICAL MANHOLE
TMH	TELEPHONE MANHOLE
CB	STORM SEWER CATCH BASIN
MH	STORM SEWER MANHOLE
HFH	HIGH PRESSURE FIRE HYDRANT
LFH	LOW PRESSURE FIRE HYDRANT

ABBREVIATION LEGEND	
ST	STORM SEWERS
SD	SUB-SURFACE DRAINAGE
SN	SANITARY SEWERS
FOI	HIGH PRESSURE FIRE LINES
DW	LOW PRESSURE FIRE LINE/ POTABLE WATER
LS	LIVE STEAM
CN	STEAM CONDENSATE
WS	COOLING WATER SUPPLY
WR	COOLING WATER RETURN
CE	CONTAMINATED SEWER
FT	FILTRATE OR EFFLUENT
TW	PROCESS WATER
DF	DEIONIZED FEED
PW	DEIONIZED WATER
BR	BRINE
RW	RAW WATER
VE	VENT LINES
SL	SUMP LIQUOR
FG	FUEL GAS
G	ELECTRIC GROUND
——	ACTIVE LINE
------	ABANDONED LINE

GRID	DRAWING NUMBER
1	22C-5500-P-00660
2	22C-5500-P-00661
3	22C-5500-P-00662
4	22F-5500-P-00663
5	22A-5500-P-00664
6	22F-5500-P-00665
7	22H-5500-P-00666
8	22H-5500-P-00667
9	22C-5500-P-00668
10	22C-5500-P-00669
10A	22C-5500-P-00706
11	22C-5500-P-00670
12	22E-5500-P-00671
13	22E-5500-P-00672
14	22H-5500-P-00673
15	22H-5500-P-00674
16	22B-5500-P-00675
17	22B-5500-P-00676
18	22B-5500-P-00677
19	22D-5500-P-00678
20	22D-5500-P-00679
21	22G-5500-P-00680
22	22B-5500-P-00681
23	22B-5500-P-00682
24	22B-5500-P-00683
25	22D-5500-P-00684
26	22G-5500-P-00685
27	22B-5500-P-00686
28	22A-5500-P-00687
29	22A-5500-P-00688
30	22A-5500-P-00689
31	22A-5500-P-00690

SYMBOL LEGEND

- POST INDICATOR VALVE (PIV)
- FIRE HYDRANT (FH)
- MANHOLE (MH)
- CATCH BASIN (CB)
- LIGHT POLE
- PIPE SUPPORT
- ELECTRICAL MANHOLE
- TELEPHONE MANHOLE
- STREET WASHERS
- VALVE BOX
- MONITORING WELL

ALL UNDERGROUND (FG) LINES ARE ABANDONED WITH THE EXCEPTION @ B & FIRST ST. TO THE SERVICE BLDG. AND CG & E MAIN SUPPLY TO THE MAIN GAS HOUSE BLDG. *22A (ALL OTHER FG LINES ARE ABOVE GROUND.)

FERNALD UNDERGROUND UTILITES

THIS COMPOSITE DRAWING CONTAINS INFORMATION TAKEN FROM ENGINEERING DRAWINGS FROM 1951 TO THE PRESENT WHICH ARE PRESENTLY ON FILE IN THE FERNALD SITE ENGINEERING DEPARTMENT. NOTE: UNDERGROUND UTILITIES WHICH ARE NOT OF RECORD IN THE FERNALD SITE ENGINEERING DEPARTMENT ARE NOT DISPLAYED IN THESE COMPOSITE DRAWINGS.

NOV 22 '91

2483

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

MASTER GRID 233 of UNDERGROUND UTILITY PLANS

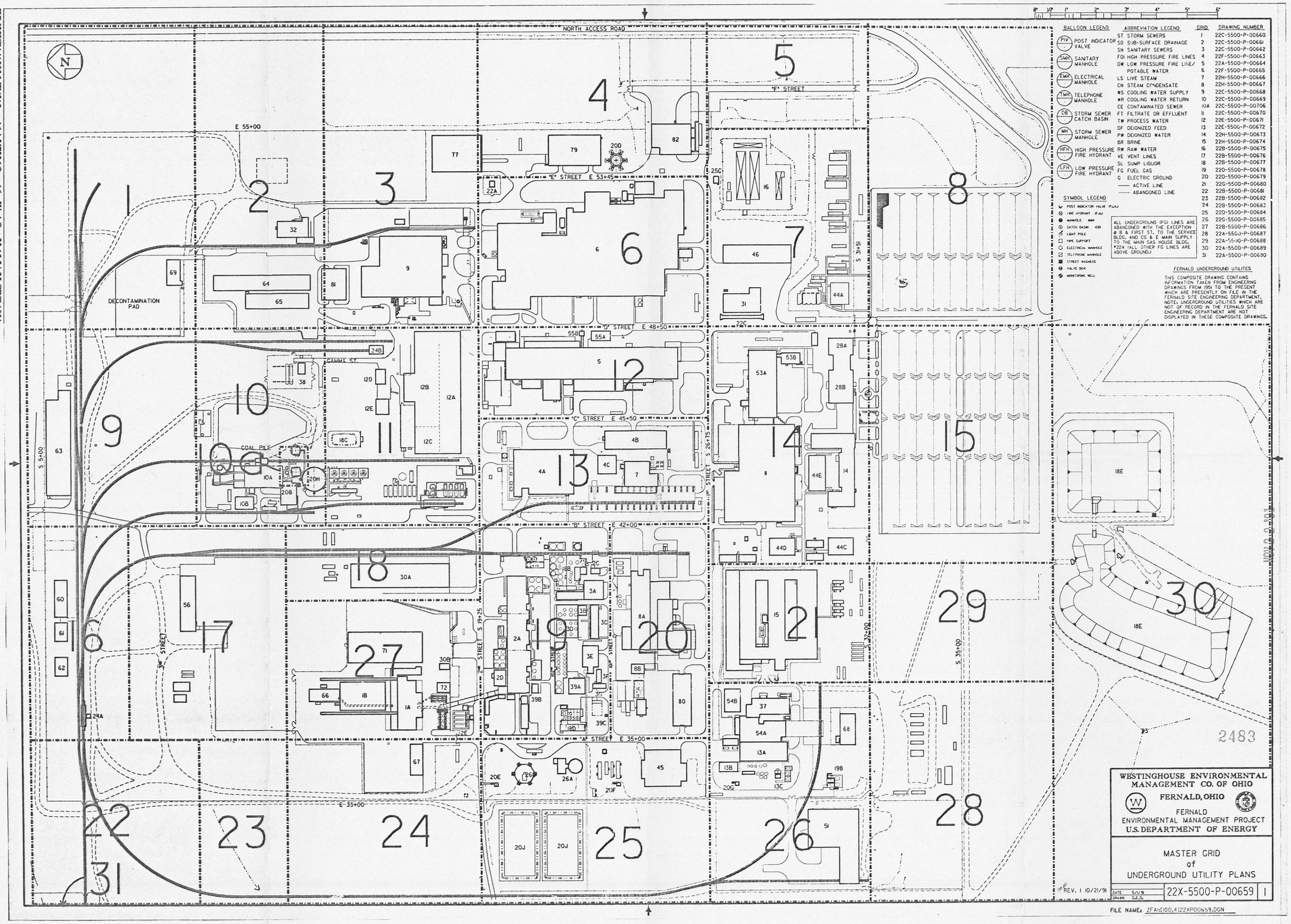
REV. 1 10/21/91

DATE 5/1/91
DRAWN G.E.S.

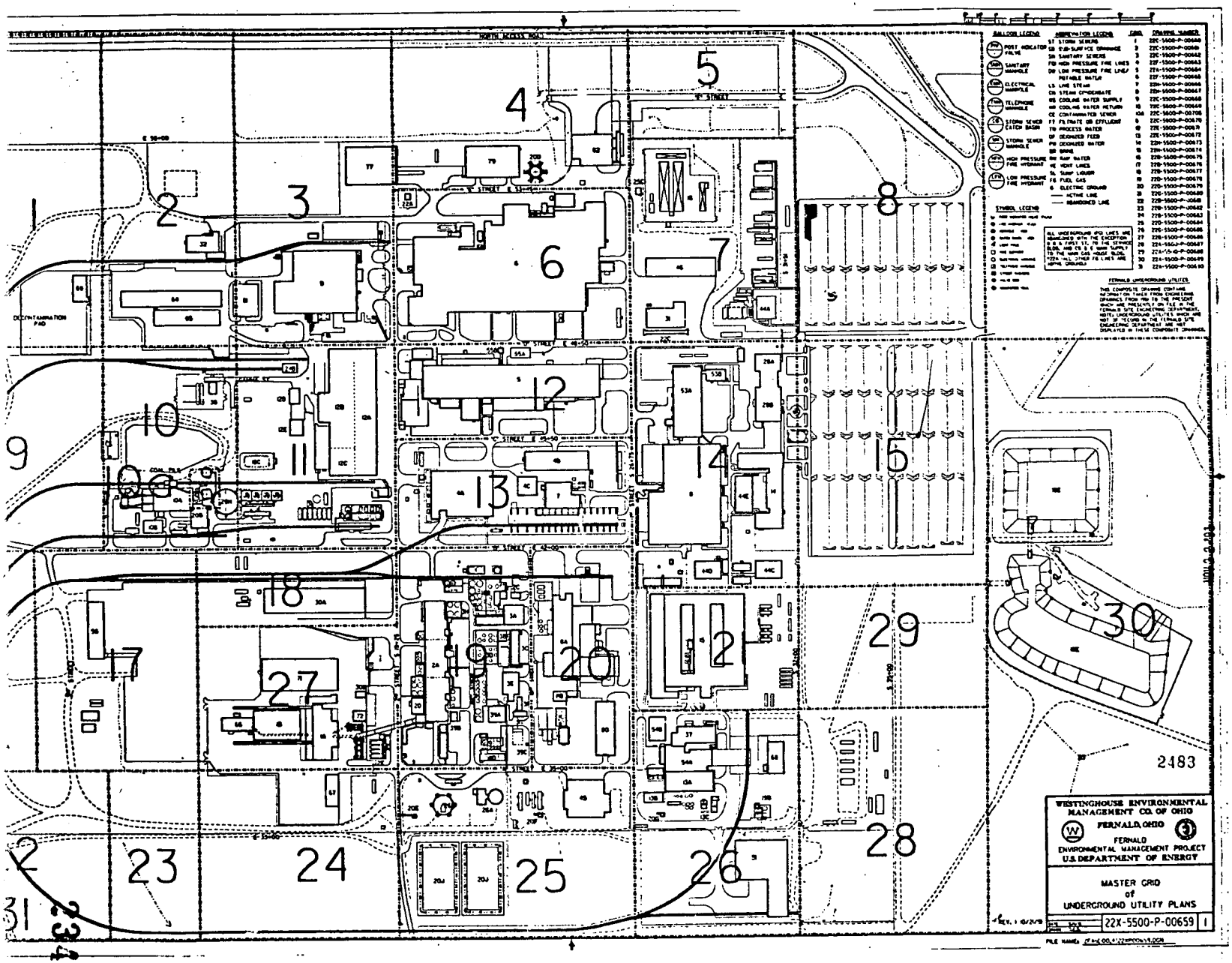
22X-5500-P-00659 | 1

FILE NAME: ZFA1:[100,41]22XP00659.DGN

WM22XP141903.ME(318.sys16c) V72366@sys16c. Wed Oct 23 15:24:25 CDT 1991

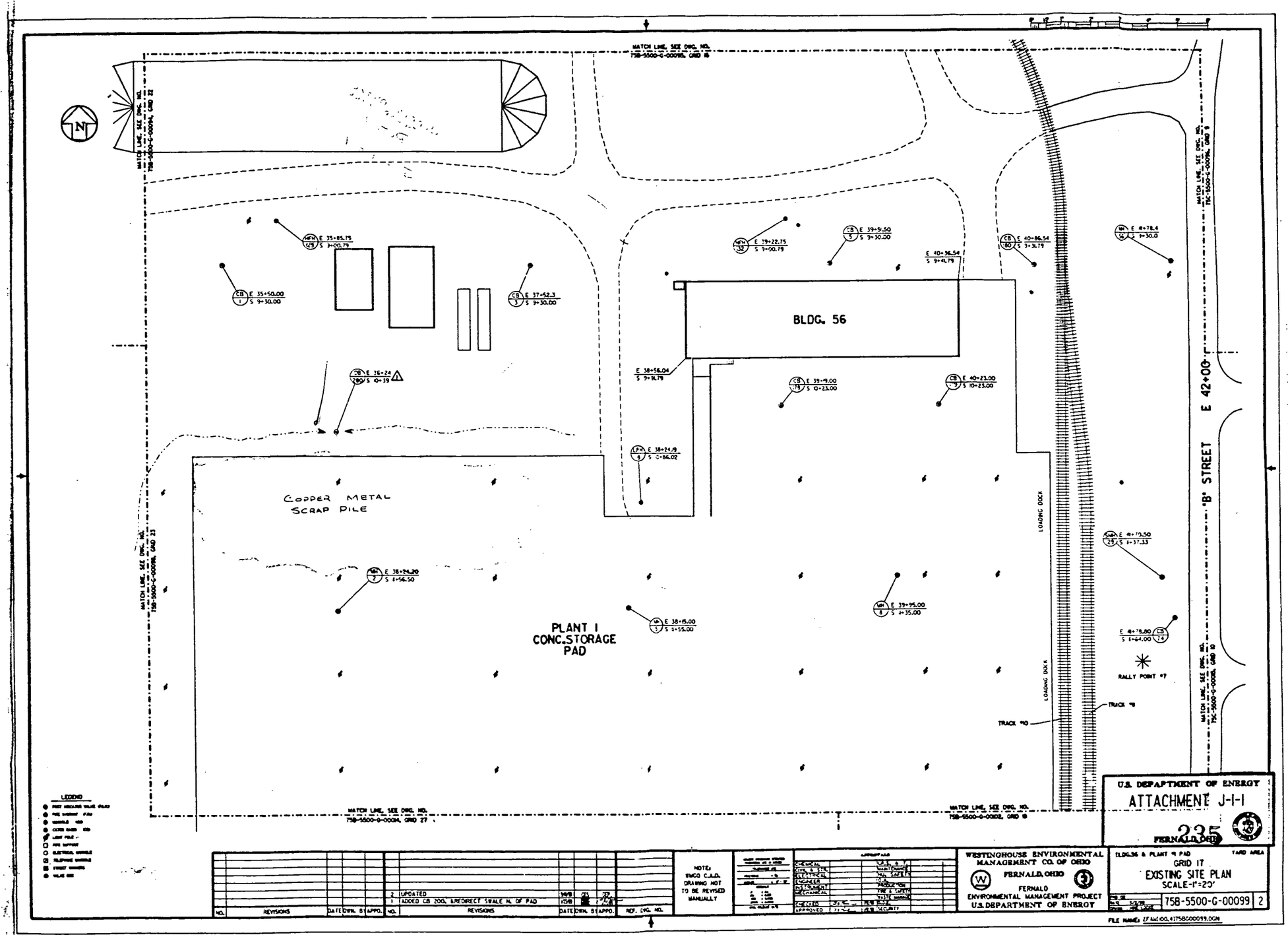


BALLOON LEGEND	ABBREVIATION LEGEND	GRID	DRAWING NUMBER
PIV POST INDICATOR VALVE	ST STORM SEWERS	1	22C-5500-P-00660
SMH SANITARY MANHOLE	SD SUB-SURFACE DRAINAGE	2	22C-5500-P-00661
EMH ELECTRICAL MANHOLE	SN SANITARY SEWERS	3	22C-5500-P-00662
TMH TELEPHONE MANHOLE	FQI HIGH PRESSURE FIRE LINES	4	22F-5500-P-00663
CB STORM SEWER CATCH BASIN	DW LOW PRESSURE FIRE LINE/ POTABLE WATER	5	22A-5500-P-00664
MH STORM SEWER MANHOLE		6	22F-5500-P-00665
HFH HIGH PRESSURE FIRE HYDRANT	LS LIVE STEAM	7	22H-5500-P-00666
LFH LOW PRESSURE FIRE HYDRANT	CN STEAM CONDENSATE	8	22H-5500-P-00667
	WS COOLING WATER SUPPLY	9	22C-5500-P-00668
	WR COOLING WATER RETURN	10	22C-5500-P-00669
	CE CONTAMINATED SEWER	10A	22C-5500-P-00706
	FT FILTRATE OR EFFLUENT	11	22C-5500-P-00670
	TW PROCESS WATER	12	22E-5500-P-00671
	DF DEIONIZED FEED	13	22E-5500-P-00672
	PW DEIONIZED WATER	14	22H-5500-P-00673
	BR BRINE	15	22H-5500-P-00674
	RW RAW WATER	16	22B-5500-P-00675
	VE VENT LINES	17	22B-5500-P-00676
	SL SUMP LIQUOR	18	22B-5500-P-00677
	FG FUEL GAS	19	22D-5500-P-00678
	G ELECTRIC GROUND	20	22D-5500-P-00679
	—— ACTIVE LINE	21	22G-5500-P-00680
	------ ABANDONED LINE	22	22B-5500-P-00681
		23	22B-5500-P-00682
		24	22B-5500-P-00683
		25	22D-5500-P-00684
		26	22G-5500-P-00685
		27	22B-5500-P-00686
		28	22A-5500-P-00687
		29	22A-5500-P-00688
		30	22A-5500-P-00689
		31	22A-5500-P-00690


WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY
MASTER GRID of UNDERGROUND UTILITY PLANS
22X-5500-P-00659
2483

2483

SECTION J:
ATTACHMENT J-1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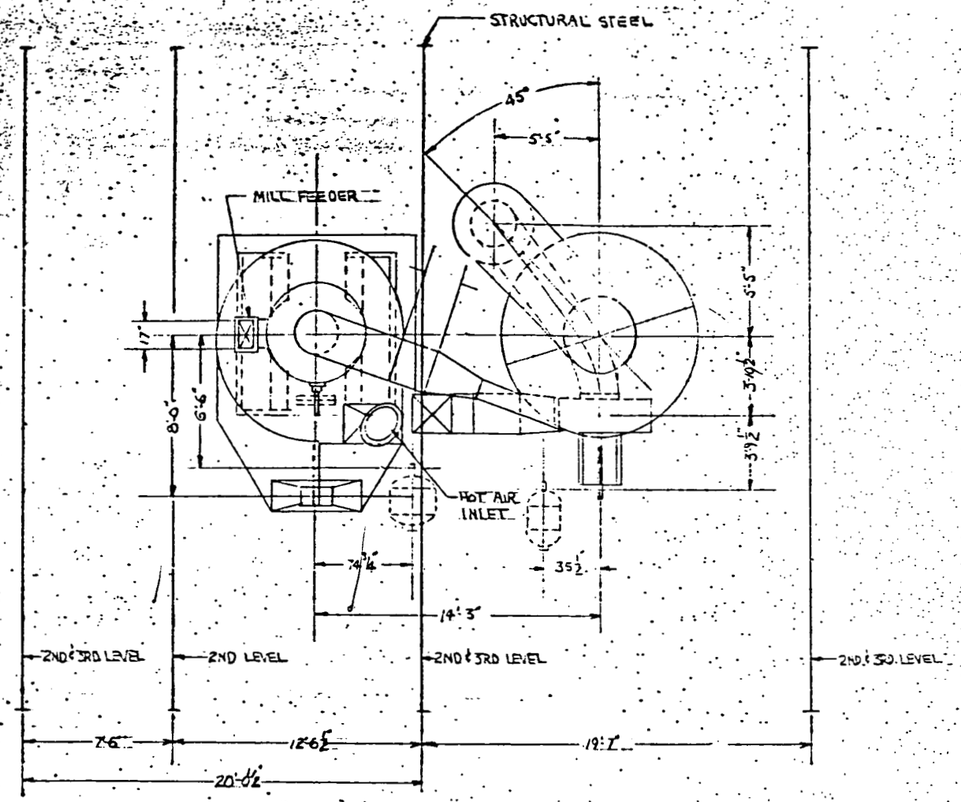
MATCH LINE, SEE DWG. NO. 758-5500-G-00094, GRID 23
MATCH LINE, SEE DWG. NO. 758-5500-G-00094, GRID 27
MATCH LINE, SEE DWG. NO. 758-5500-G-00102, GRID 18
MATCH LINE, SEE DWG. NO. 758-5500-G-00098, GRID 9
MATCH LINE, SEE DWG. NO. 758-5500-G-00098, GRID 10
N
E 35+85.19 S 9+00.79
E 35+50.00 S 9+30.00
E 37+52.3 S 9+30.00
E 36+24 S 0+39
E 39+22.75 S 9+00.79
E 39+9.50 S 9+30.00
E 40+36.54 S 9+41.79
E 40+86.54 S 9+34.79
E 4+78.4 S 9+30.0
BLDG. 56
E 38+56.04 S 9+34.79
E 39+9.00 S 0+23.00
E 40+23.00 S 10+23.00
E 38+24.19 S 0+86.02
COPPER METAL SCRAP PILE
E 38+24.20 S 1+56.50
E 38+15.00 S 1+55.00
PLANT I CONC. STORAGE PAD
E 39+95.00 S 4+35.00
LOADING DOCK
LOADING DOCK
E 4+79.50 S 1+37.33
E 4+78.80 S 1+64.00
RALLY POINT #7
TRACK #8
TRACK #10
"B" STREET
E 42+00
LEGEND
U.S. DEPARTMENT OF ENERGY
ATTACHMENT J-1-1
235
FERNALD, OHIO
NO. REVISIONS DATE DWN. BY APPD.
2 UPDATED
1 ADDED CB 200, & REDIRECT SWALE N. OF PAD
REF. DWG. NO.
NOTE: ENVCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY
APPROVALS
CHEMICAL
CIVIL & SITE
ELECTRICAL
ENGINEER
PLANT ENGINEER
MECHANICAL
CHECKED
APPROVED
WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY
BLDG.56 & PLANT 1 PAD
YARD AREA
GRID 17
EXISTING SITE PLAN
SCALE-1"=20'
758-5500-G-00099
2
FILE NAME: EF km100.41758G00099.DGN



TITAN MILL ARRANGEMENT
SEE SKETCH NO. M1-65A.

U.S. DEPARTMENT OF ENERGY
ATTACHMENT J-1-2
FERNALD, OHIO

INDEX CODE			
PL. & AR.	ORIG.	CL.	SER. NO.
01B	5502	M	00542

0 ½ 1 2 3
SCALE FOR THIS DRAWING

236

NATIONAL LEAD COMPANY OF OHIO
FERNALD, OHIO
DEPARTMENT: MECHANICAL

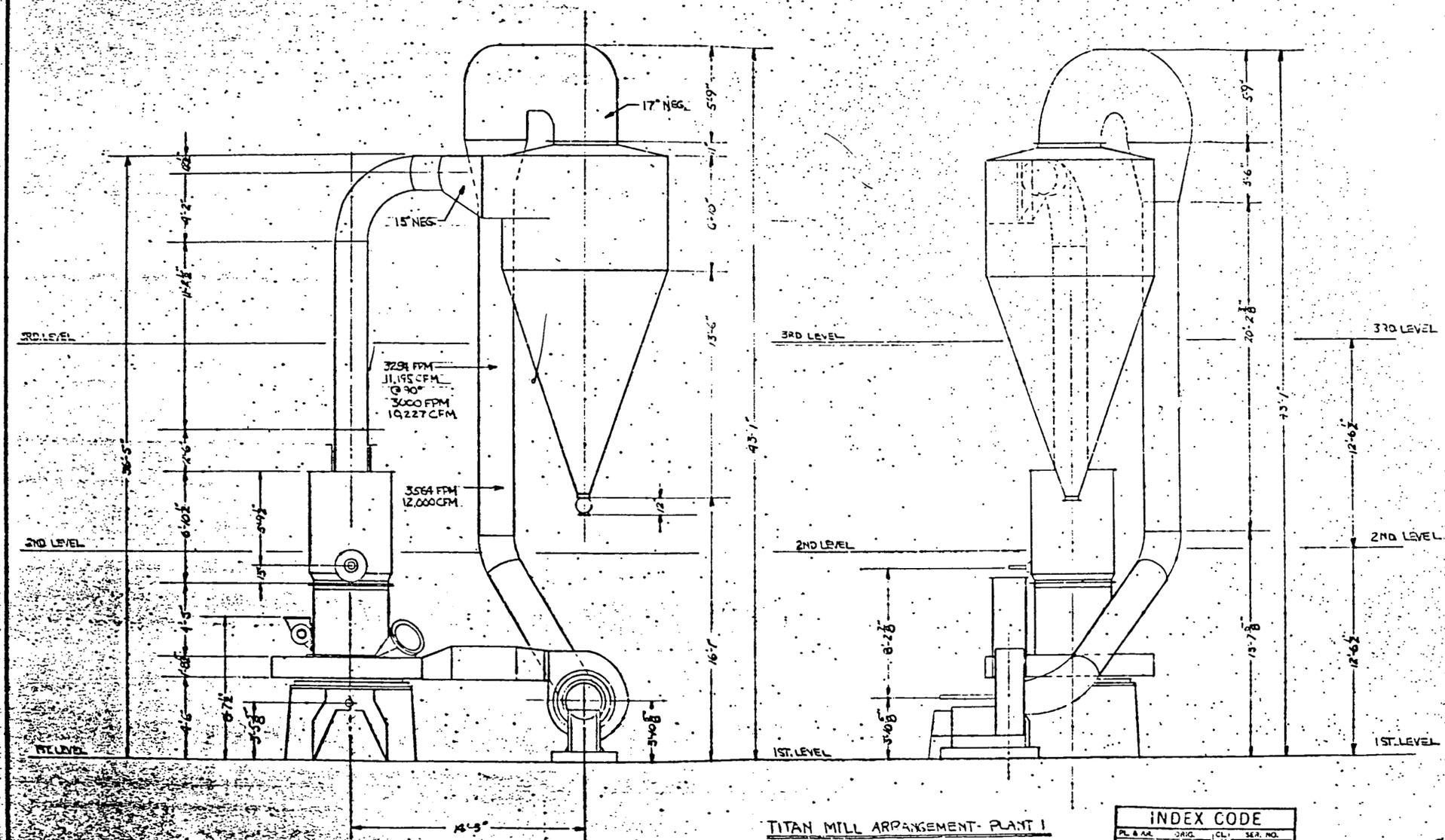
SCALE
DATE
CHANGE
DRAWN BY
APPROVED BY

SK. NO. M1-65B

JUN 6 '91

PLANT 1 TITAN MILL

25



TITAN MILL ARRANGEMENT- PLANT I

INDEX CODE			
PL. & AR.	ORIG.	CL.	SER. NO.
01B	5502	M	00541

237

U.S. DEPARTMENT OF ENERGY

ATTACHMENT J-I-2

FERNALD, OHIO

NATIONAL LEAD COMPANY OF OHIO
FERNALD, OHIO
DEPARTMENT: MECHANICAL

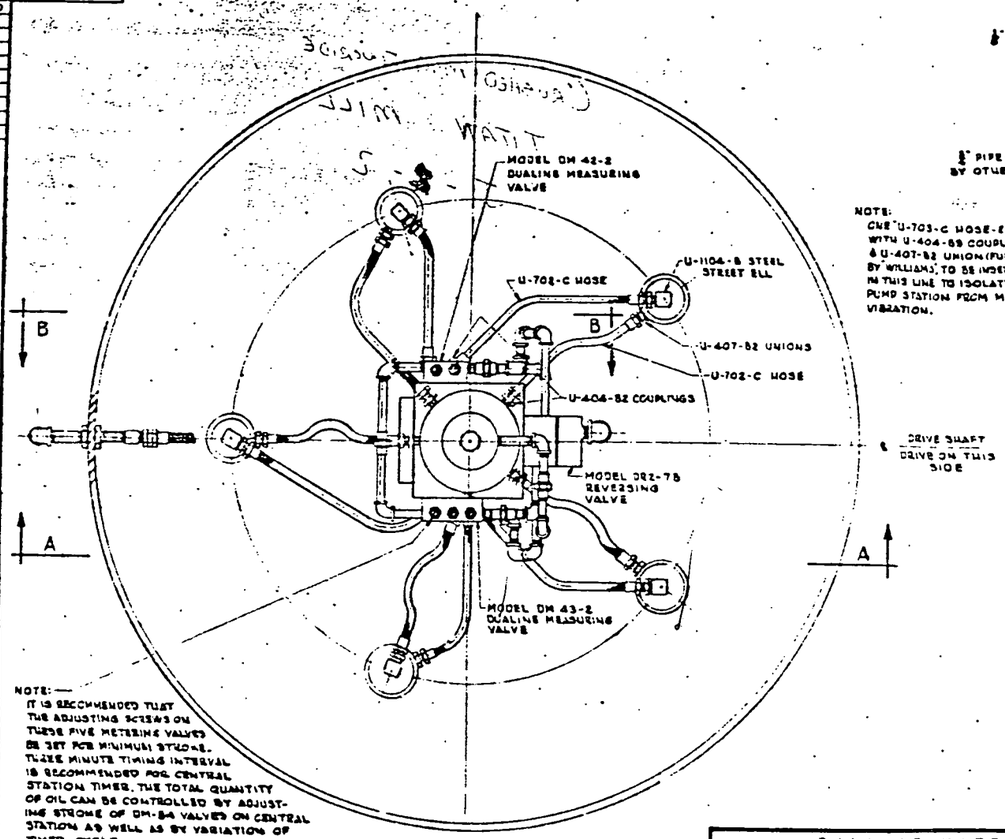
SCALE
DATE
CHARGE
DRAWN BY
APPROVED BY

SK. NO. MI-65A

PLANT I TITAN MILL

JUN 6 '91

1-4328

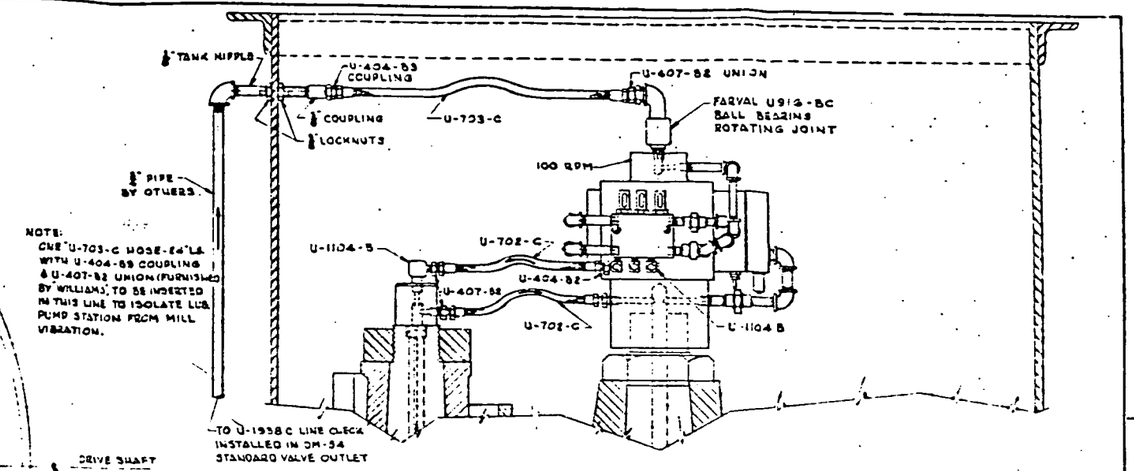


NOTE:—
IT IS RECOMMENDED THAT THE ADJUSTING SCREWS ON THESE FIVE METERING VALVES BE SET FOR MINIMUM STROKE. THREE MINUTE TIMING INTERVAL IS RECOMMENDED FOR CENTRAL STATION TIMER. THE TOTAL QUANTITY OF OIL CAN BE CONTROLLED BY ADJUSTING STROKE OF DM-84 VALVES ON CENTRAL STATION AS WELL AS BY VARIATION OF TIMER CYCLE.

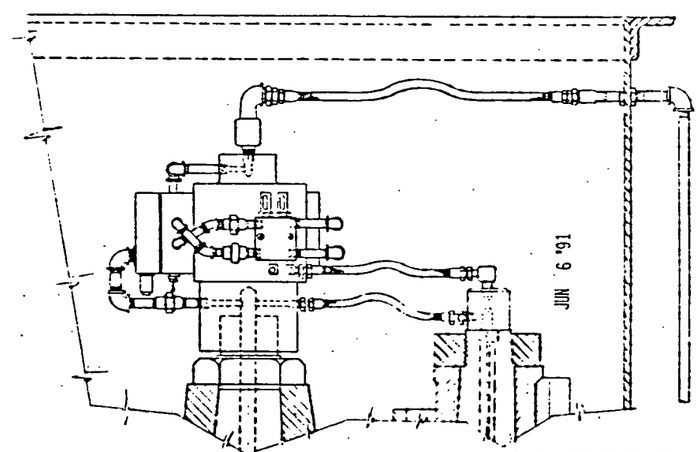
PLAN

FARVAL TIMER DATA

SERIAL NO F-1918 TYPE 13
440 V 60 CYCLE DIAL 1 HR.
PINS-20 DWG. NO E 74461.
MFR. PARAGON ELECTRIC CO.
TWO RIVERS, WISC.



SECTION 'A-A'



SECTION 'B-B'

0 ½ 1 2 3
SCALE FOR THIS DRAWING

BILL OF MATERIAL

ITEM	QUANITY	MATERIAL CODE NO.	DESCRIPTION	NLO STOCK NO
HOSE	10	U-702-C		B 5425
HOSE	1	U-703-C	24 LG. ALL PURPOSE DOUBLE BRAIDED	
UNION	11	U-407-B2		X 3355 A
COUPLING	10	U-404-B2		X 3355
BALL JOINT		U-913-BC		BE 4135
VALVE	1	DM43-2	DUALINE MEASURING VALVE	
VALVE	3	DM42-2	DUALINE MEASURING VALVE	
VALVE	1	DRZ-78	REVERSING VALVE	
STREET ELL	10	U-1104-B	STEEL STREET ELL	
ROTL JOINT	1	U 913-BC	FARVAL BALL BEARING ROTATING JOINT.	

U.S. DEPARTMENT OF ENERGY
ATTACHMENT J-I-2
FERNALD, OHIO

INDEX CODE
01B5500P1C093+

238

NATIONAL LEAD COMPANY OF OHIO
FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO

U.S. ATOMIC ENERGY COMMISSION

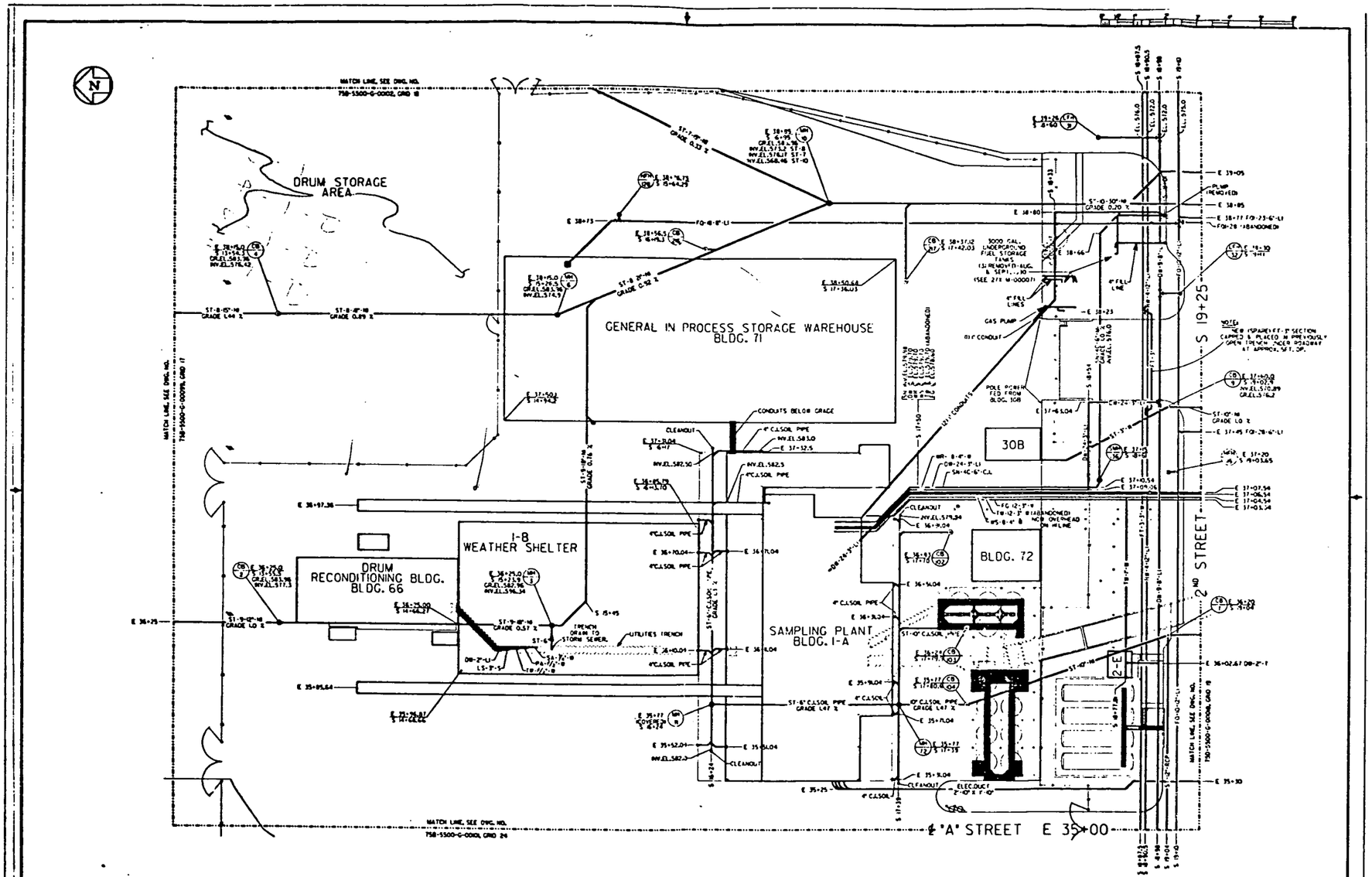
PLANT 1
WILLIAMS TITAN ROLLER MILL
FARVAL SYSTEM
PLAN & SECTIONS

ENGINEERING DIVISION

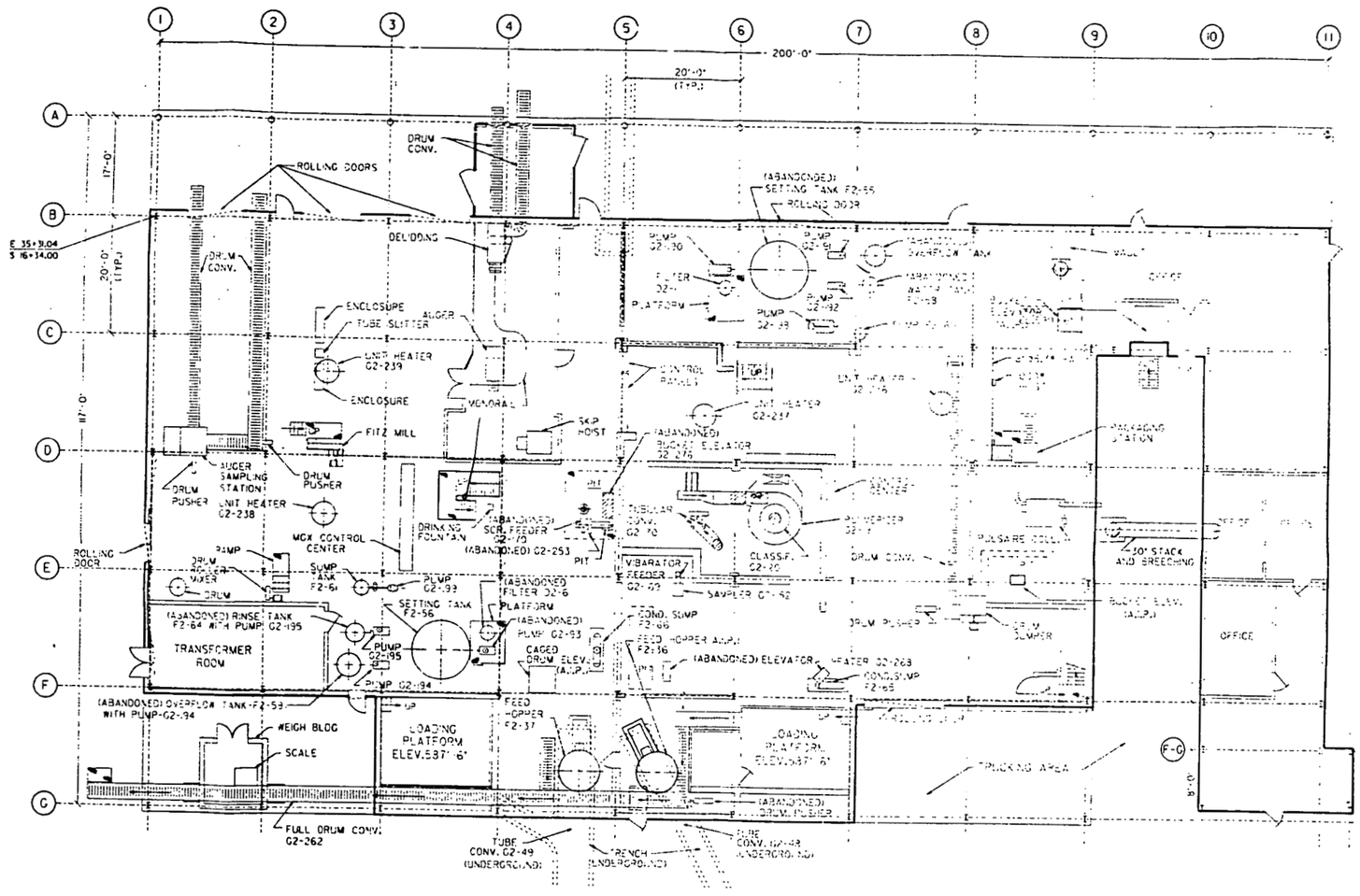
PROJ NO. J-312 CP.
DATE OCT 11, 1953
SCALE 3"=1'-0"
DWG. NO. 1-4328
0

REF. DWG. NO.	REF. DWG. TITLE	NO.	REVISIONS	DATE	BY
49-B-2222	LUB. SYSTEM 3H TITAN ROLLER MILL				

JUN 6 '91


DRUM STORAGE AREA
GENERAL IN PROCESS STORAGE WAREHOUSE BLDG. 71
I-B WEATHER SHELTER
DRUM RECONDITIONING BLDG. BLDG. 66
SAMPLING PLANT BLDG. I-A
BLDG. 72
30B
2-E
S 19+25
2ND STREET
℄ "A" STREET E 35+00
MATCH LINE, SEE DWG. NO. 750-5500-G-00001, GRID 18
MATCH LINE, SEE DWG. NO. 750-5500-G-00001, GRID 17
MATCH LINE, SEE DWG. NO. 750-5500-G-00001, GRID 24
MATCH LINE, SEE DWG. NO. 750-5500-G-00001, GRID 19
(IN NOT TO SCALE REDUCED DRAWING)
WESTINGHOUSE MAT'LS. CO. OF OHIO
FERNALD, OHIO
FEED MATERIALS PRODUCTION CENTER
U.S. DEPARTMENT OF ENERGY
GRID 27
UNDERGROUND UTILITIES
SCALE 1"=20'
228-5500-P-00686
0
U.S. DEPARTMENT OF ENERGY
ATTACHMENT J-1-3
239
FERNALD, OHIO

SEP 25 '91



FLOOR PLAN

NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.
					2	REDRAWN ON CAD			

REF. DWG. NO.
01X-5500-A-01248
01X-5500-A-01247
01X-5500-A-01246

NOTE: HMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

APPROVALS

CHEMICAL	
CIVIL & STR.	MAINTENANCE
ELECTRICAL	HEALTH & SAFETY
ENGINEER	
INSTRUMENT	PROCESS
MECHANICAL	FIRE & SAFETY
	PROJ. MANAGER
CHECKED	DATE
APPROVED	

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

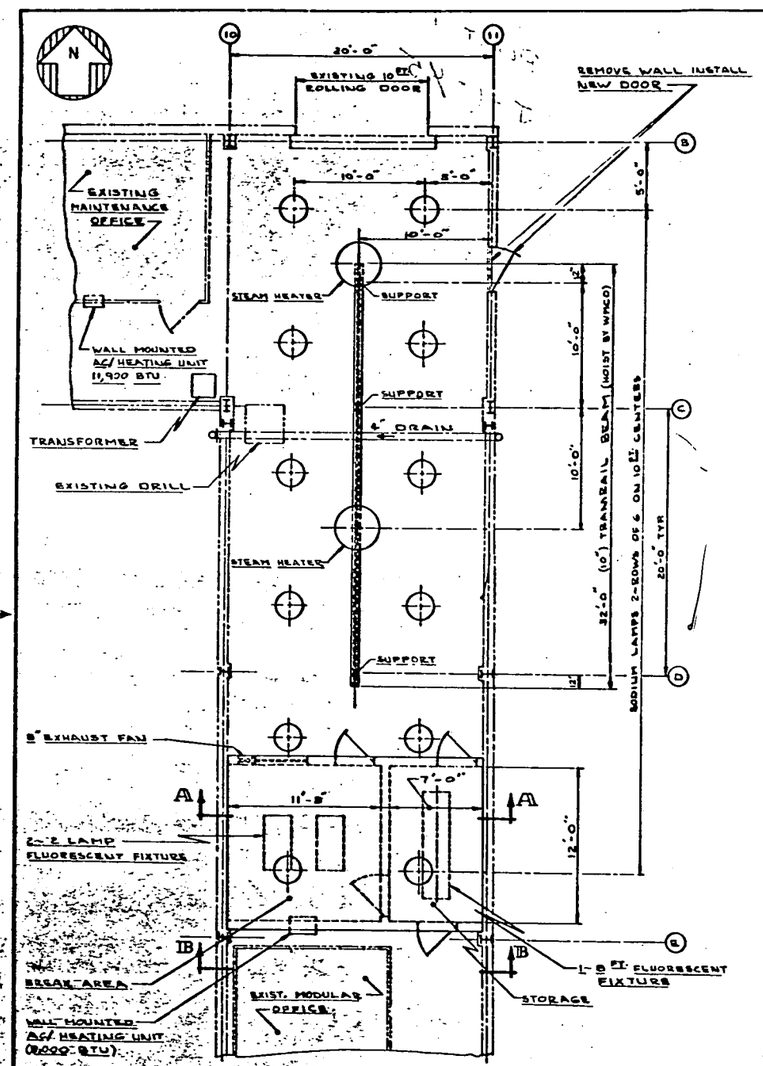
U.S. DEPARTMENT OF ENERGY
ATTACHMENT J-1-4
FERNALD, OHIO

PLANT 1A — FIRST FLOOR
PREPARATION PLANT
FLOOR PLAN
1/8" = 1'-0"

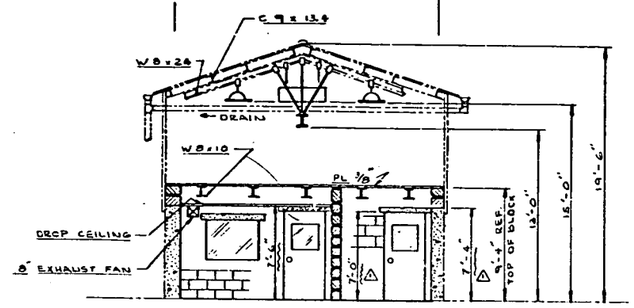
240

01X-5500-A-01245 | 2

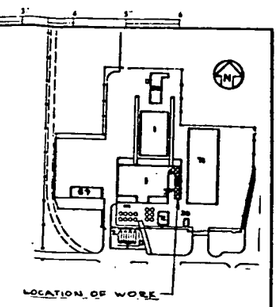
FILE NAME:



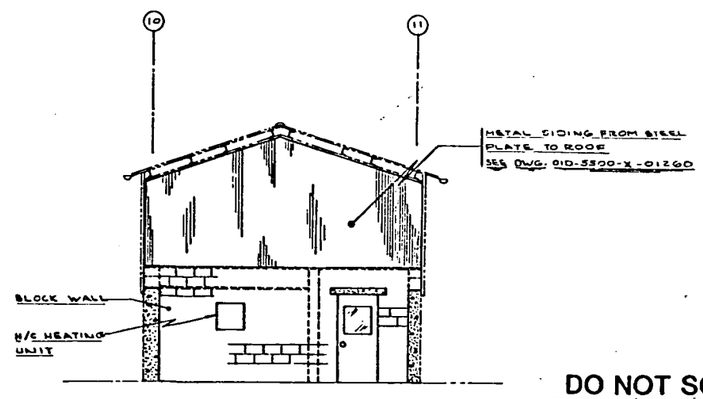
PLAN - THAW TUNNEL
SCALE 1/4" = 1'-0"



SECTION A-A
SCALE 1/4" = 1'-0"



PLOT PLAN



SECTION IB-IB
SCALE 1/4" = 1'-0"

DO NOT SCALE
REDUCED DRAWING

SEP 10 '01

NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.	REF. DWG. TITLE
					2	AS BUILT (RES 692)	9/10/01	D.D.T.	LCS	01D-5500-P-01260	SECTIONS-ELEVATIONS-DETAILS
					1	CHANGED DIM. 7'-5" to 7'-4" & 7'-6" to 7'-0"	9/10/01	D.D.T.	SHP	01D-5500-P-01261	ELEVATIONS

APPROVALS

CHEMICAL			R.S.A.M.		
CIVIL & STR.			MAINTENANCE		
ELECTRICAL			NU SAFETY		
ENGINEER			I.O.A.		
INSTRUMENT			PRODUCTION		
MECHANICAL			PROD. TECH.		
			WASTE MANAGE.		
CHECKED					
APPROVED					

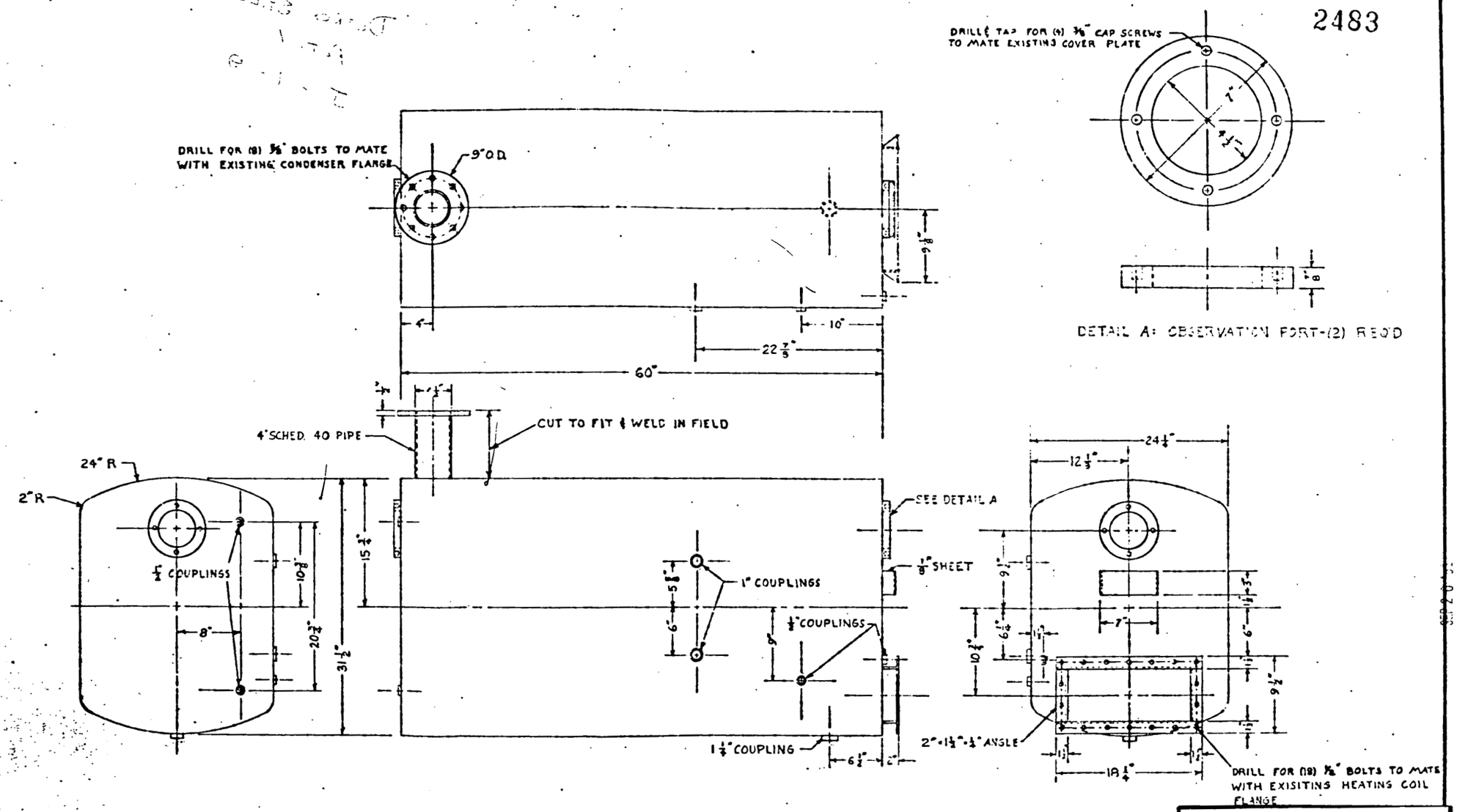
WESTINGHOUSE MAT'LS. CO. OF OHIO
FERNALD, OHIO
FEED MATERIALS PRODUCTION CENTER
U.S. DEPARTMENT OF ENERGY

PLANT 1
MAINTENANCE SHOP
THAW TUNNEL
PLAN - SECTIONS

PROJ. NO. 25472
DATE 1-28-87
DRAWN BY T.J.P.N.
01D-5500-M-01259 2

U.S. DEPARTMENT OF ENERGY
ATTACHMENT J-I-5
241
FERNALD, OHIO

2483



GENERAL NOTES

1. MAT'L: 10 GA. #304 OR #347 STAINLESS STEEL SHEET.
2. ALL HELI-ARC WELDING.
3. REUSE EXISTING COVER PLATE & GLASS ON OLD TANK FOR THE OBSERVATION PORTS.
4. TANK IS TO BE MOUNTED ON EXISTING 3" CHANNEL SUPPORTS USING 1½"×1½"×¼" ANGLE IRON.
5. REUSE EXISTING LEVEL GUAGE.
6. COUPLINGS WELDED TO TANK ARE TO BE STAINLESS STEEL

S.S TANK FOR DETREX SOLVENT STILL - PLANT 1

U.S. DEPARTMENT OF ENERGY

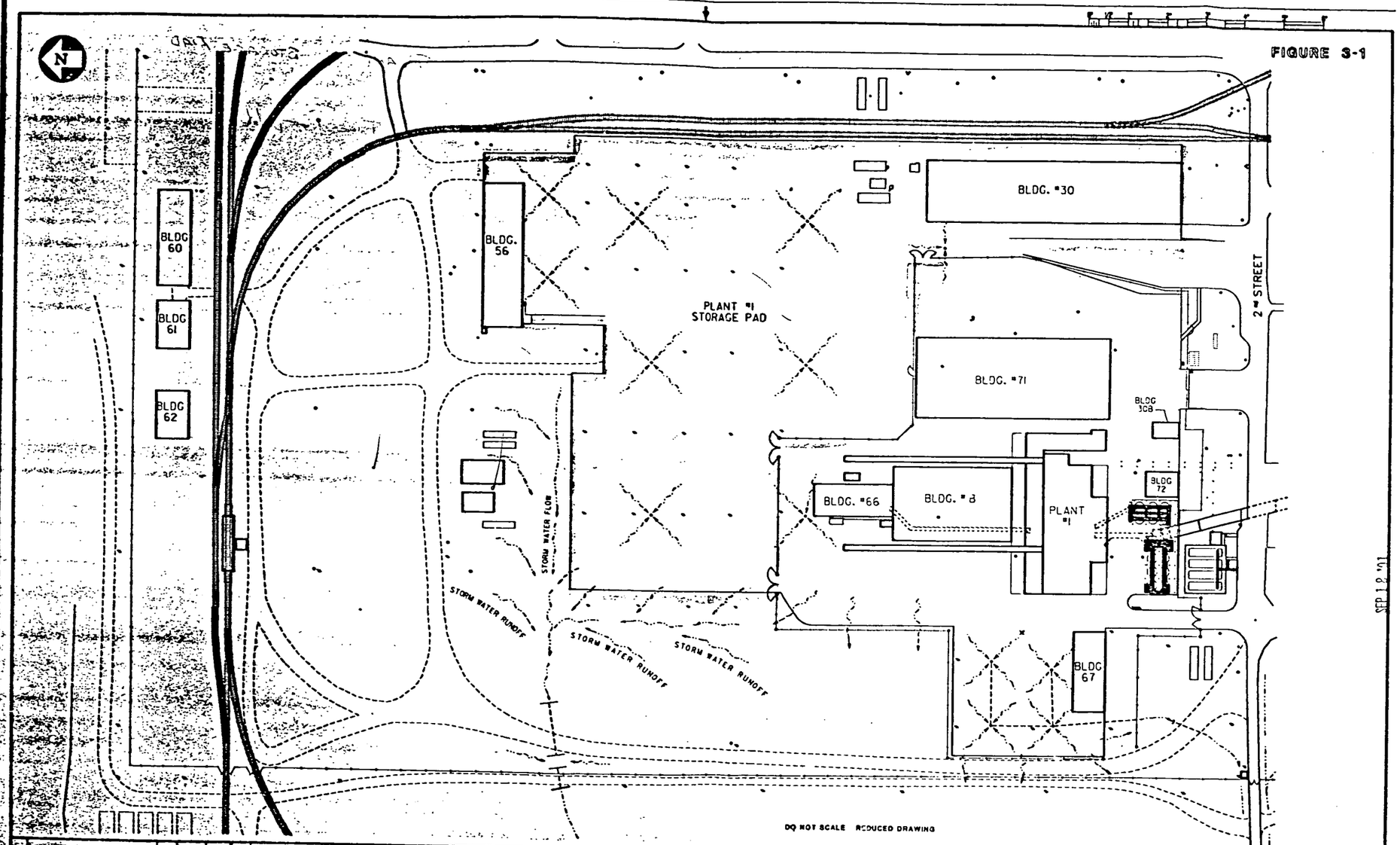
ATTACHMENT J-1-6

242

FERNALD, OHIO

PL. & RT.	CHG.	CL.	SEQ. NO.
01X	5506	M	00979

FIGURE 3-1



NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.

NOTE: WMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

APPROVALS

CHEMICAL			E.R.S. & T.
CIVIL & STR.			MAINTENANCE
ELECTRICAL			NUL SAFETY
ENGINEER			Q.A.
INSTR.&CNTL			PRODUCTION
MECHANICAL			FIRE & SAFETY
			WASTE MANAGE
CHECKED			D.O.E.
APPROVED			SECURITY

WESTINGHOUSE MAT'LS. CO. OF OHIO
FERNALD, OHIO
FEED MATERIALS PRODUCTION CENTER
U.S. DEPARTMENT OF ENERGY

PLANT #1 STORAGE AREA
STORAGE PAD LAYOUT
STORM WATER FLOW, PAST
SCALE - 1" = 50'-0"

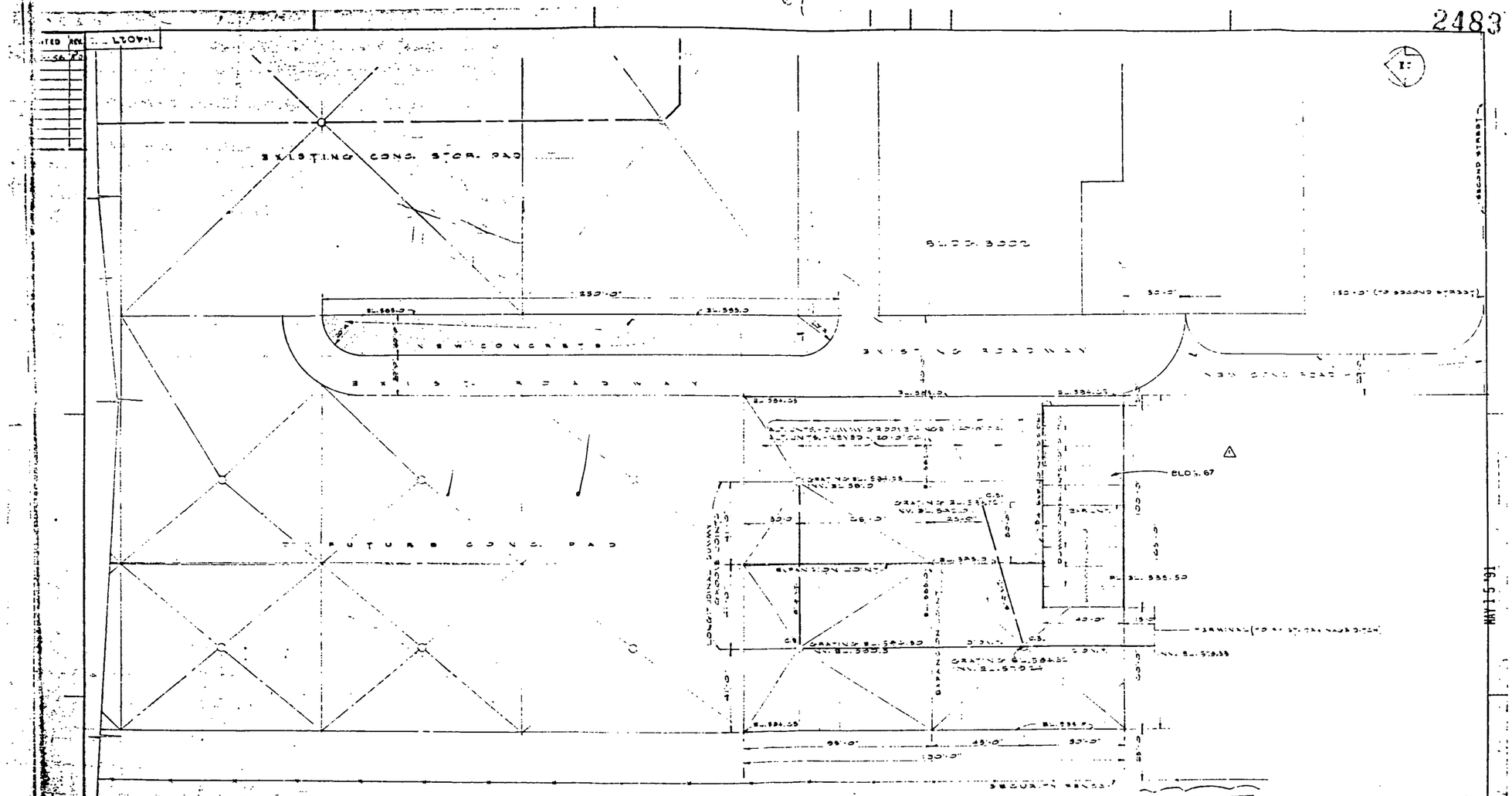
DATE 9-27-90
DRAWN MR. LOVE
01X-5500-G-01331 | 0

FILE NAME: ZFA:00,4DIR\0013.DGN

U.S. DEPARTMENT OF ENERGY
ATTACHMENT J-1-7
FERNALD, OHIO

BUILDING 67

2483



DO NOT SCALE REDUCED DRAWING

REF. DWG. NO.	REF. DWG. TITLE	NO.	REVISIONS	DATE	BY
		4			
		3			
		2			
		1	ADDED BLDG. 67 AND INDEX CODE		

INDEX CODE

SYS	CODE	SEQ	SUB NO.
67X	5500	6	00002

01X 5500 600673

NATIONAL LEAD COMPANY OF OHIO
FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO

U.S. ATOMIC ENERGY COMMISSION

PLAN - EMPTY DRUM STORAGE WAREHOUSE & PAD.

DEPARTMENT PRODUCTION

B.M.

DRAWN N.S.U.

DATE 11-03-53

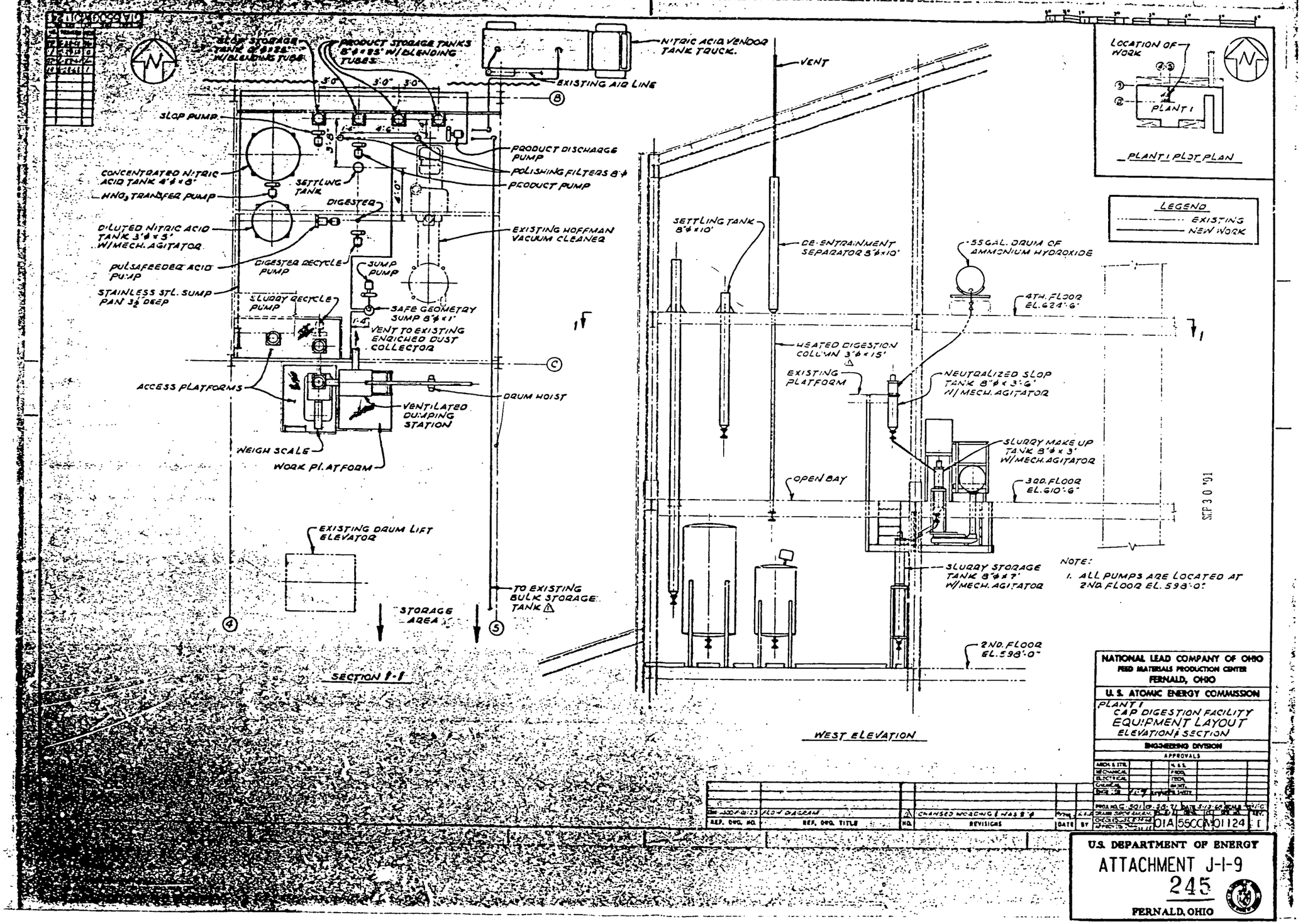
SCALE 1"=20'-0"

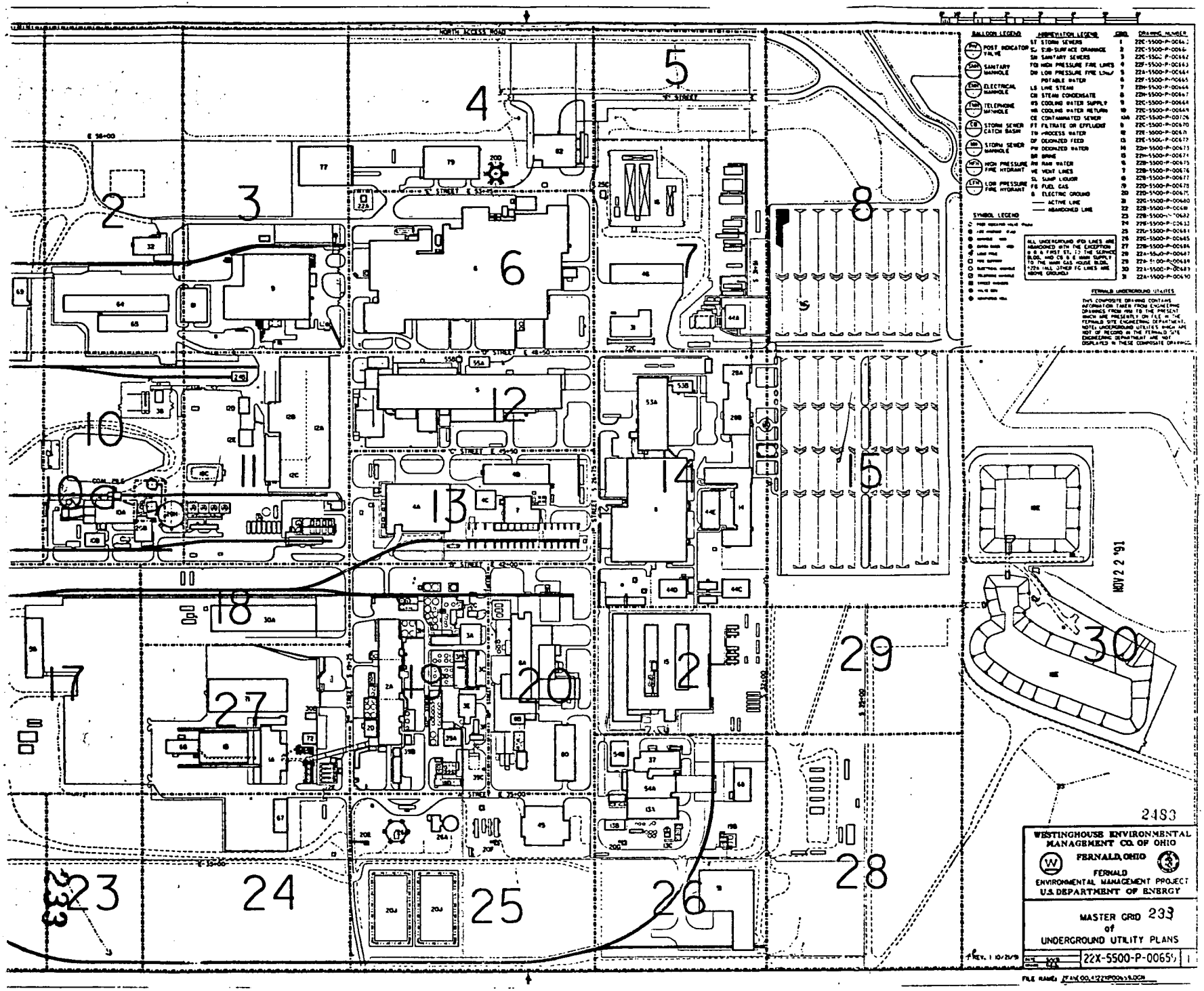
DWG. NO. 1-4027

REV. 1

U.S. DEPARTMENT OF ENERGY
ATTACHMENT J-1-8
244
FERNALD, OHIO

MAY 1 5 '91


SLOP STORAGE TANK 8'ϕ x 25' W/BLENDING TUBE
PRODUCT STORAGE TANKS 8'ϕ x 25' W/BLENDING TUBES
NITRIC ACID VENDOR TANK TRUCK.
EXISTING AIR LINE
VENT
SLOP PUMP
PRODUCT DISCHARGE PUMP
POLISHING FILTERS 8'ϕ
PRODUCT PUMP
CONCENTRATED NITRIC ACID TANK 4'ϕ x 6'
SETTLING TANK
HNO3 TRANSFER PUMP
DIGESTER
DILUTED NITRIC ACID TANK 3'ϕ x 3' W/MECH. AGITATOR
EXISTING HOFFMAN VACUUM CLEANER
PULSAFEEDER ACID PUMP
DIGESTER RECYCLE PUMP
SUMP PUMP
STAINLESS STL. SUMP PAN 3½' DEEP
SLUDGE RECYCLE PUMP
SAFE GEOMETRY SUMP 8'ϕ x 1'
VENT TO EXISTING ENRICHED DUST COLLECTOR
ACCESS PLATFORMS
VENTILATED DUMPING STATION
DRUM HOIST
WEIGH SCALE
WORK PLATFORM
EXISTING DRUM LIFT ELEVATOR
TO EXISTING BULK STORAGE TANK
STORAGE AREA
SECTION 1-1
SETTLING TANK 8'ϕ x 10'
DE-ENTRAINMENT SEPARATOR 5'ϕ x 10'
55 GAL. DRUM OF AMMONIUM HYDROXIDE
4TH. FLOOR EL. 624'-6"
HEATED DIGESTION COLUMN 3'ϕ x 15'
EXISTING PLATFORM
NEUTRALIZED SLOP TANK 8'ϕ x 3'-6" W/MECH. AGITATOR
SLURRY MAKE UP TANK 8'ϕ x 3' W/MECH. AGITATOR
OPEN BAY
3RD. FLOOR EL. 610'-6"
SLURRY STORAGE TANK 8'ϕ x 7' W/MECH. AGITATOR
2ND. FLOOR EL. 598'-0"
WEST ELEVATION
LOCATION OF WORK
PLANT 1
PLANT 1 PLOT PLAN
LEGEND
EXISTING
NEW WORK
NOTE:
1. ALL PUMPS ARE LOCATED AT 2ND. FLOOR EL. 598'-0"
SEP 30 '61
NATIONAL LEAD COMPANY OF OHIO
FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO
U.S. ATOMIC ENERGY COMMISSION
PLANT 1
CAP DIGESTION FACILITY
EQUIPMENT LAYOUT
ELEVATION & SECTION
ENGINEERING DIVISION
APPROVALS
FLOW DIAGRAM
CHANGED WORDING & HAS 8'ϕ
REF. DWG. NO.
REF. DWG. TITLE
NO.
REVISIONS
DATE
BY
01A
55CCN
01124
1
U.S. DEPARTMENT OF ENERGY
ATTACHMENT J-I-9
245
FERNALD, OHIO


NORTH ACCESS ROAD
BALLOON LEGEND
POST INDICATOR VALVE
SANITARY MANHOLE
ELECTRICAL MANHOLE
TELEPHONE MANHOLE
STORM SEWER CATCH BASIN
STORM SEWER MANHOLE
HIGH PRESSURE FIRE HYDRANT
LOW PRESSURE FIRE HYDRANT
ABBREVIATION LEGEND
SYMBOL LEGEND
FERNALD UNDERGROUND UTILITIES
NOV 2 2 '91
2483
WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY
MASTER GRID 233 of UNDERGROUND UTILITY PLANS
22X-5500-P-0065
233

2483