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# CLOSURE PLAN FOR THE STORAGE PAD NORTH OF PLANT 6 U.S. DEPARTMENT OF ENERGY FEED MATERIALS PRODUCTION CENTER FERNALD, OHIO MARCH 1990

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**CLOSURE PLAN FOR THE**
**STORAGE PAD NORTH OF PLANT 6**
**U.S. DEPARTMENT OF ENERGY**
**FEED MATERIALS PRODUCTION CENTER**
**FERNALD, OHIO**

March, 1990

Submitted by:

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# CLOSURE PLAN FOR THE STORAGE PAD NORTH OF PLANT 6 U.S. DEPARTMENT OF ENERGY FEED MATERIALS PRODUCTION CENTER FERNALD, OHIO

## 1.0 INTRODUCTION

### 1.1 Background

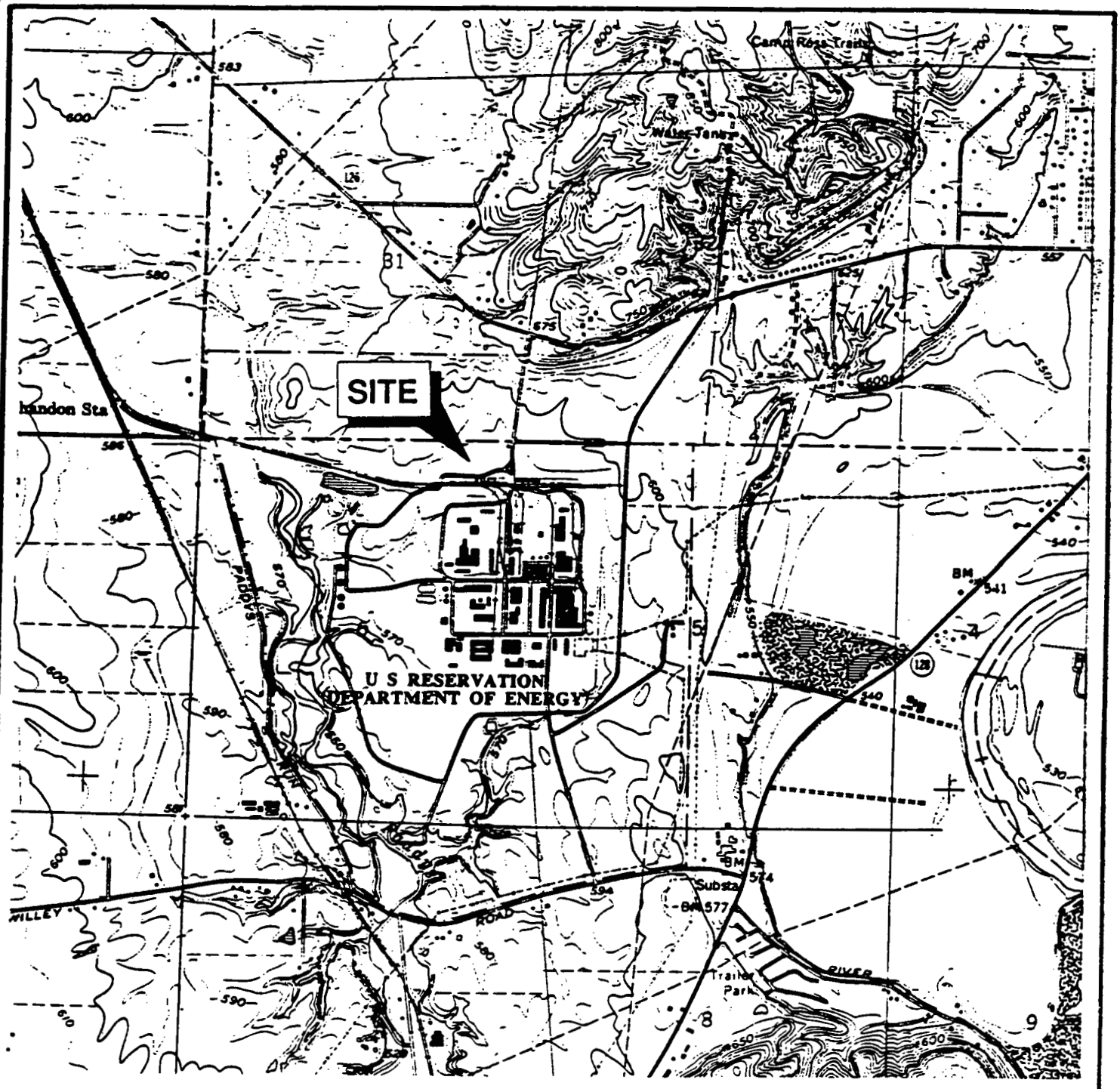
The Feed Materials Production Center (FMPC) is a U.S. Department of Energy (DOE) owned facility located near Fernald, in Hamilton County, Ohio (Figure 1). FMPC is operated for the purpose of producing metallic uranium fuel elements, target cores, and other uranium compounds for use at other DOE facilities in support of the U.S. defense program. The facility has been in operation at this site since approximately 1950.

Plant 6 was built to process uranium products and began operations in 1952. Plant 6 currently receives flat ingots from Plant 5 and pickles, inspects, crops, samples, and stages them for inspection. During these processes wastes are generated and treated at the Plant 6 sump/treatment facility. The filter cake and oily sludge created during wastewater treatment were collected and drummed, then stored on the Plant 6 Pad. These wastes are hazardous because of the possible presence of 1,1,1-trichloroethane and lead which were present in the processes at Plant 6.

Of the waste streams generated at Plant 6, the Storage Pad North of Plant 6 (Plant 6 Pad) was operated for the purpose of storing the waste oils and filter cake generated from the wastewater treatment system at the plant. The FMPC has identified the Plant 6 Pad as a hazardous waste storage unit in the September, 1989 FMPC RCRA Part A permit application. Because the pad is no longer in use, the pad must be closed in accordance with Ohio EPA RCRA closure requirements.

### 1.2 Purpose

This Closure Plan (closure plan) for the Storage Pad North of Plant 6 (Plant 6 Pad) is submitted in accordance with RCRA closure requirements. RCRA Closure Requirements found in Management of Hazardous Waste, Closure and Post-Closure section of the Ohio Administrative Code OAC 3745-55 (40 CFR Subpart G) require owners/operators of hazardous waste Treatment, Storage, or Disposal (TSD) facilities to have written and approved closure plans for those units.




SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET

QUADRANGLE LOCATION

| SITE LOCATION MAP<br>FEED MATERIALS PRODUCTION CENTER<br>FERNALD, OHIO | FIGURE |
|---|---|
| 6 | 1 |

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Environmental Resources Management

As required, this closure plan identifies the necessary steps that will be taken to completely close the Plant 6 Pad. Copies of this closure plan and any subsequent revisions will be kept at the facility until final closure has been completed and certified in accordance with OAC 3745-55-10 to 3745-55-15 (40 CFR 264.115).

## 1.3 Exclusions

During production operations at the FMPC, hazardous wastes are generated which may contain concentrations of uranium. Because of the potential for radioactive material to be mixed with hazardous waste, all samples will be tested for total uranium and uranium 235. Uranium waste is regulated under the Atomic Energy Act of 1954 and is not a RCRA regulated waste. Therefore, further discussion of the testing procedures is not appropriate and reporting the results of Uranium testing is not a requirement for closure under RCRA. However, the Department of Energy will provide Ohio EPA, for their information only, the results of any uranium testing associated with this closure.

Only the Resource Conservation and Recovery Act (RCRA) hazardous waste components of mixed waste are covered by this closure plan.

# 2.0 FACILITY DESCRIPTION

## 2.1 Waste Management Unit Description

As previously mentioned, Plant 6 was built in 1952 to process uranium ingots from Plant 5 (Figure 2). At Plant 6, the ingots are pickled, cropped, sampled, and staged for inspection. During these processes waste oils are generated. The waste oils generated from this plant are deemed hazardous because of the potential presence of 1,1,1-trichloroethane and lead.

In the past, the Storage Pad North of Plant 6 (Plant 6 Pad) was operated for the purpose of storing the waste oils and filter cake generated from Plant 6. The Feed Materials Production Center (FMPC) has identified the Plant 6 Pad as a hazardous waste storage unit in the September 1989 FMPC RCRA Part A permit application.

The Plant 6 Pad is a flat concrete pad 8 ft. wide by 40 ft. long (Figure 3). Drums (55-gallon) were stored on the pad on pallets, four drums on a pallet, two pallets high, until a lot of forty drums was accumulated. Once enough drums were accumulated, they were shipped from the Plant 6 Pad to another on-site storage location. The Plant 6 Pad is no longer used for waste storage.

The southern end of the pad is adjacent to the Plant 6 building. The east side of the pad is bound by a dike approximately 6-inches high. The area east of the dike is a gravel fill area, which gently slopes away from the pad toward a storm sewer approximately 25 feet away (Figure 4).

The western edge of the pad is adjacent to a concrete driveway. The driveway and the pad are separated by an expansion joint. The northern edge is adjacent to a concrete access road (Second Street) and is separated by another expansion joint.

The Plant 6 Pad was inspected on March 13, 1990 and was found to be in good condition with the exception of two cracks in the concrete (Figure 3). The dike along the eastern edge of the pad was in fair condition, breached by cracks in at least two locations. Two stains/residue were noted on the pad, one in the southern half and one in the northern half of the pad (Figure 3). The expansion joints between concrete slabs of the Plant 6 Pad and the Pad's edges appear to be in fair condition.

The Plant 6 Pad gently slopes downward from the south to the north. A dip in the pad approximately 6 feet south of the building along the western edge of the pad accumulates water during periods of rain (Figure 4). Surface water on the Plant 6 Pad would therefore flow from the south to the north (Figure 4). At the northern edge of the Plant 6 Pad, surface water would flow toward a storm sewer located approximately 25 feet east of the pad.

The Plant 6 Pad and the underlying soils could be contaminated through a combination of drum leaks, spills, and other transportation-related incidents. At the present time, no records of reported spills or leaks can be found at the FMPC confirming that these types of incidents have occurred.

## 2.2 Waste Inventory

According to FMPC records, only two types of waste were stored on the Plant 6 Pad. These waste types were designated Material Code 069, a wet filter cake waste and Material Code 039 an oily sludge, both of which are from the wastewater treatment system at Plant 6. Although analytical data from each drum of material generated and designated Material Code 069 and Material Code 039 are not available, random samples of the 069 waste currently in inventory at other on-site RCRA storage locations at the FMPC are available. Table 1 summarizes the laboratory analysis for RCRA metals in Material Code 069 waste. No other laboratory test results of the wastes are available at this time.

1,1,1-trichloroethane was used in the processes at Plant 6 and is suspected in the 069 waste, but its presence has never been confirmed through analysis of the waste. Lead is also a suspected contaminant in the 069 waste due to its presence in the processes at Plant 6. Lead has not been found in the analysis of the wastes above the EP Toxic limits.

## 2.3 Current Use

At the present time, RCRA wastes are not stored at the Plant 6 Pad. During the time the pad operated, drummed waste oils and filter cake (hazardous waste codes D008 and F002) were placed on the pad. Drums would be placed on the pad until a lot of 40 was accumulated. The lot would then be transferred to another on-site storage area.

Maximum waste inventory at the Plant 6 Pad will be zero at the time of closure. If, due to unforeseen circumstances

## TABLE 1

## ANALYTICAL RESULTS OF EP TOXIC METALS TESTING FOR MATERIAL CODE D069 (mg/l)

| Sample Number/Lot Mark | Code | Arsenic | Barium | Cadmium | Chromium | Lead | Selenium | Silver | Mercury |
|---|---|---|---|---|---|---|---|---|---|
| H093-965-D069-0194 | 21-46 | <0.2 | 0.569 | <0.002 | <0.02 | <0.05 | <0.2 | 0.03 | <0.0002 |
| H093-965-D069-0194 | 21-80 | <0.2 | <0.2 | <0.005 | <0.02 | <0.05 | <0.2 | <0.01 | <0.0002 |
| S070-FYC-D069-0116 | 22-76 | <0.2 | 0.25 | 0.158 | 0.21 | <0.05 | <0.2 | <0.01 | <0.0002 |
| S061-FTA-D069-6397 | 5-79 | <0.2 | 0.45 | 0.023 | 0.27 | 2.62 | <0.2 | <0.01 | <0.0002 |
| S070-FYC-D069-0116 | 22-48 | 1.5 | 0.388 | 0.039 | 0.06 | <0.5 | <0.2 | 0.59 | <0.0002 |
| S053-FTA-D069-6395 | 11-45 | 0.043 | 0.478 | 0.017 | 0.17 | <2.0 | | 1.37 | <0.0002 |
| H093-658-D069-0293 | 37-32 | 1.1 | 0.494 | 0.020 | 0.04 | <0.05 | <0.2 | 0.42 | <0.0002 |
| D690658D069 # 1 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 # 2 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 # 3 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 # 4 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 # 5 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 # 6 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 # 7 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 # 8 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 # 9 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 #10 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 #11 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 #12 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 #13 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 #14 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 #15 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 #16 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 #17 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 #18 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D069 #19 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D060 #20 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| D690658D060 #21 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| H068658M069 # 1 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |
| H068658M069 # 2 | | <1.0 | <25.0 | <0.2 | <1.0 | <1.0 | <0.1 | <1.0 | <0.1 |

RCRA wastes are present on the pad at the time closure is initiated, the waste will be removed to another on-site FMPC RCRA waste management and storage area unit prior to closure activities.

## 2.4 Security

As with all Department of Energy (DOE) facilities, plant security at the FMPC is strict. The entire inner uranium processing area, which includes Plant 6 and the adjoining Plant 6 Pad, is surrounded by chain link fencing and monitored by on-site security personnel. All employees and visitors enter through one of several guarded entrances into the facility.

# 3.0 CLOSURE ACTIVITIES

## 3.1 Closure Objectives

The objective of this Closure Plan (closure plan) of the Storage Pad North of Plant 6 (Plant 6 Pad) will be in accordance with performance standards in OAC 3745-66-11 (40 CFR 265.111). These standards include the following:

- Minimizing the need for further maintenance by decontaminating the storage pad. Post-closure maintenance of the pad is not required for TSD units closed clean.
- Controlling, minimizing, or eliminating, to the extent necessary to protect human health and the environment, the escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground or surface waters or to the atmosphere.
- The Plant 6 Pad and the underlying soils will be closed clean.

The Plant 6 Pad will be decontaminated to levels at or below acceptable limits, the underlying soils will be tested for contamination, the decontamination rinseates will be contained and tested, and the rinseates, soils and other waste generated during this process will be tested. If any of the above items are contaminated, as defined in Section 4.0 of this closure plan, they will be managed in accordance with applicable regulations.

## 3.2 Closure Methodology

Prior to all activities associated with soil sampling, pad cleaning, and rinseate sample collection, the Ohio EPA's facility inspector shall be contacted at least five (5) business days in advance of these critical closure activities.

Closure involves closing of one of the facility's RCRA TSD units, the Storage Pad North of Plant 6 (Figure 2). This plan addresses the procedures that will be followed to accomplish closure of the Plant 6 Pad, and constitutes only a partial closure of the entire complex. The Plant 6 Pad will be closed in accordance with Ohio EPA's approval of this closure plan.

The closure methodology of the Plant 6 Pad will be three fold:

- Ten initial soil samples will be collected from beneath the pad and adjacent areas for laboratory analysis of the RCRA characteristics listed in Table 2, Total Metal analysis of the metals listed in Table 3, EP Toxic analysis of the metals listed in Table 3, and analysis of a group of selected volatile and semi-volatile constituents listed in Table 4. During this initial soil testing,any total metal found at levels above background, any EP Toxic metal found above the maximum EP Toxic level listed in Table 3 and any volatile or semi-volatile organic compound found above analytical detection limits will be included in the verification sample analysis.

- The Plant 6 Pad will then be high-pressure washed, followed by verification testing of rinseate from the pad's surface to certify that the surface of the pad has been properly decontaminated.

- Verification samples of the soils beneath the pad will then be collected for laboratory analysis of lead, 1,1,1-trichloroethane and any targeted constituents found during the initial soil sampling effort. These samples will be taken at regular grid intervals across the pad.

## 3.3 Sampling

Samples will be taken to certify the proper closure of the Plant 6 Pad. These samples will include rinseate samples from the pad's surface after the pad has been high pressure washed and samples of the soil beneath the pad at regular grid intervals after the pad has been cleaned. An initial set of soil samples will be collected prior to pad cleaning activities to identify target compounds used in the verification sampling.

A sampling and analysis plan has been prepared for this closure plan and is attached and made part of this plan by reference as Attachment A - "Detailed Soil and Rinseate Sampling and Analysis Plan". The descriptions below are summaries of the detailed procedures described in Attachment A.

**TABLE 2**

**RCRA CHARACTERISTICS**

| Test | SW-846 Test Method |
|---|---|
| Flash Point | 1010 |
| Corrosivity | 9040 |
| Reactivity | 9010 (Cyanide)<br>9030 (Sulfide) |

**TABLE 3**

**EP TOXIC METALS CONCENTRATIONS [1]
AND TOTAL METALS ANALYSES**

| Metal | EP TOXIC Maximum Concentration (mg/1) | SW-846 Analytical Method |
|---|---|---|
| Arsenic | 5.0 | 6010 |
| Barium | 100.0 | 6010 |
| Cadmium | 1.0 | 6010 |
| Chromium | 5.0 | 6010 |
| Lead | 5.0 | 6010 |
| Mercury | 0.2 | 7470 |
| Selenium | 1.0 | 6010 |
| Silver | 5.0 | 6010 |

[1] From OAC 3745-51-24 (40 CFR 261.24)

TABLE 4

SELECTED VOLATILE
AND SEMI-VOLATILE ORGANIC COMPOUNDS
FOR INITIAL SOIL SAMPLE TESTING

| Compound | SW-846 Analytical Method | Practical Quantitation Limits Water µg/l | Practical Quantitation Limits Soil/Solid µg/kg |
|---|---|---|---|
| Acetone | 8240 | 100 | 100 |
| Benzene | 8240 | 5 | 5 |
| n-Butyl alcohol | None | N/A | N/A |
| Carbon disulfide | 8240 | 5 | 5 |
| Carbon tetrachloride | 8240 | 5 | 5 |
| Chlorinated fluorocarbons [1] | None | N/A | N/A |
| Chlorobenzene | 8240 | 5 | 5 |
| Chloroethane | 8240 | 10 | 10 |
| Chloromethane | 8240 | 10 | 10 |
| Cresols [1] | 8270 | 10 | 660 |
| Cresylic acid [1] | 8270 | 50 | 3300 |
| Cyclohexanone | None | N/A | N/A |
| 1,1-Dichloroethane | 8240 | 5 | 5 |
| 1,2-Dichloroethene | 8240 | 5 | 5 |
| trans-1,2-Dichloroethene | 8240 | 5 | 5 |
| 1,2-Dichlorethane | 8240 | 5 | 5 |
| o-Dichlorobenzene | 8270 | 10 | 660 |
| 2-Ethoxyethanol | 8240 | 5 [2] | 5 [2] |
| Ethyl acetate | None | N/A | N/A |
| Ethyl benzene | 8240 | 5 | 5 |
| Ethyl ether | 8240 | 5 [2] | 5 [2] |
| Isobutanol | 8240 | 100 | 100 |
| Methanol | 8240 | 5 [2] | 5 [2] |
| Methyl ethyl ketone | 8240 | 100 | 100 |
| Methyl isobutyl ketone | 8240 | 50 | 50 |
| Methylene chloride | 8240 | 5 | 5 |
| Nitrobenzene | 8270 | 10 | 66 |
| 2-nitropropane | 8240 | 5 [2] | 5 [2] |
| Pyridine | 8270 | 10 [2] | 660 [2] |
| Tetrachloroethylene | 8240 | 5 | 5 |
| Toluene | 8240 | 5 | 5 |
| 1,1,1-Trichloroethane | 8240 | 5 | 5 |
| 1,1,2-Trichloroethane | 8240 | 5 | 5 |
| Trichloroethylene | 8240 | 5 | 5 |
| 1,1,2-Trichloro -1,2,2-trifluoroethane | None | N/A | N/A |
| Trichlorofluoromethane | 8240 | 5 | 10 |
| Vinyl chloride | 8240 | 10 | 10 |
| Xylenes | 8240 | 5 | 5 |

[1] A class of chemicals and compounds. No single test is available.

[2] No established SW-846 Quantitative Limit. Values are estimated based on sensitivity of method for similar volatile compounds.

Note: Quantification limits depend on both matrix and interfering compounds.

### 3.3.1 Quality Assurance/Quality Control

Standard FMPC and the selected laboratory Quality Assurance (QA) and Quality Control (QC) programs will be used during this sampling program.

Duplicate soil samples will be taken for the units to confirm the laboratory's QA/QC program and document analytical precision. One duplicate soil sample will be taken for every five soil samples collected within the RCRA unit.

To reduce laboratory bias, the duplicate sample will be labeled and numbered in such a way that will not indicate that the sample is a duplicate or the location of the duplicate sample on the sampling grid. This information will be noted in the field log book for later use. Laboratory analyses shall follow SW-846 methods and the laboratory utilized by the FMPC to analyze RCRA unit samples shall show that it has a quality assurance/quality control plan for each parameter of interest.

The QA/QC procedures shall be similar to those in the Ohio EPA/Ohio Department of Health's "RCRA Laboratory Assurance Project Plan" (1983). Quality control procedures employed shall document the accuracy of the procedures. FMPC shall also require the contracted laboratory to run a matrix spike sample and a matrix spike duplicate sample.

### 3.3.2 Soil Samples

All soil samples collected as part of this closure process will be collected in accordance with the "Detailed Soil and Rinseate Sampling and Analysis Plan" made part of this Closure Plan as Attachment A.

Soil samples beneath the Plant 6 Pad will be collected through holes cut or cored into the concrete pad, exposing the soil underlying the pad. Detailed information about the location and soil sampling techniques is provided in Attachment A.

#### 3.3.2.1 Initial Soil Sampling Sets

In summary, an initial round of soil samples will consist of four sets of soil samples taken within the pad area at directed locations, one each at the two cracks and two seams found at the pad. Six additional sets of soil samples will be taken at directed locations (stains, cracks, etc.) within a five-foot perimeter area around the unobstructed sides of the pad. Two soil samples will be taken along the east side

of the pad, two will be taken along the west side of the pad, and two will be taken along the north side of the pad.

The soil samples will be tested for the RCRA characteristics listed in Table 2, Total Metal analysis of the metals listed in Table 3, EP Toxic analysis of the metals listed in Table 3 and analysis of a group of selected volatile and semi-volatile constituents listed in Table 4.

During this initial soil sampling, any total metal concentration found above background, any EP Toxic metal found above the maximum EP Toxic level listed in Table 3, and any volatile or semi-volatile organic compound found above analytical detection limits will be included in the verification sample analysis.

#### 3.3.2.2 Verification Soil Sampling Sets

In summary, once the results of the initial set of soil samples have been received and reviewed and the surface of the pad has been cleaned, soil samples will be collected from the pad area at regularly spaced grid intervals. A complete description of the grid design can be found in Attachment A.

Verification samples of the soils beneath the pad will be collected for laboratory analysis of lead, 1,1,1-trichloroethane and any targeted constituents found during the initial soil sampling effort.

#### 3.3.2.3 Background Soil Samples

Prior to initiating soil sampling at the Plant 6 Pad, 16 background soil samples will be collected and analyzed for total RCRA metals. The results from the laboratory analyses of these samples will be used at the Plant 6 Pad and other RCRA closures at the FMPC. A full description of the soil sampling methods for the collection of the background samples can be found in Attachment 1.

### 3.3.3 Pad Cleaning And Sampling

#### 3.3.3.1 Preparation

After the initial set of soil samples is taken and results have been received and reviewed as described in Section a.3.2.1, the pad will be sealed. All soil borings through the concrete, cracks and expansion joints greater than 1/8 inch wide found on the pad and along the edges of the adjacent areas will be sealed with portland cement grout. Sealing of the core holes and cracks will prevent any water

and/or potential contamination from the surface power washing from migrating into the cracks and into the underlying soil. Care will be used to fill only the crack, and the grout will be allowed to set at least 96 hours to cure and harden prior to power washing.

Once the cracks have been sealed with grout, a temporary dike will be installed along the edges of the pad to control and collect any excessive wash water created during the cleaning of the pad. The temporary dikes will be constructed of cement blocks placed on new polyethylene plastic sheeting. The plastic will be pulled up over the block along the inside face of the block and secured with small bricks or blocks along the outside face of the block.

Long lengths of 2 to 3 inch diameter sorbent booms will be placed along the inside bottom edge of the temporary block dike (western and northern edges) and along the seams between the permanent dike (eastern edge) and the building (southern edge).

### 3.3.3.2 Power Washing

Once all of the preparations have been made, the pad will be power washed with an ultra-high-pressure power washing device. The device will deliver ultra-high pressure potable water to a wand that will be used by site personnel to clean the pad. The southern end of the pad will be cleaned first, working downslope toward the northern edge of the pad.

The power washer is capable of delivering over 10,000 psi of water pressure at approximately 16 gpm water flow rate. At this pressure, the water jet is capable of removing a thin film of pad concrete, stains, and residue, leaving the pad in a clean state.

#### Water Handling

All water created during the Plant 6 Pad cleaning will flow toward the northern edge of the pad. The northern edge of the pad will be double blocked with two layers of sorbent booms placed along the inside edge of the blocks. During power washing, a peristaltic pump, centrifugal pump or similar type of device will be used to collect the water created during cleaning.

Each cleaning of the entire pad is expected to take approximately 1 hour to complete. At this rate, the volume of wash water is expected to total approximately 960 gallons per wash.

The wash water will be stored in 55 gallon drums and moved to a storage area until laboratory analysis of a sample of the composite power wash water is received. The sampling technique for the power wash water is explained in detail in Attachment A.

#### 3.3.3.3 Pad Surface Rinseate Samples

Once the pad has been cleaned by the power washer, field personnel will decide whether to clean the pad a second time or to collect a rinseate sample from the pad. The decision will be based on the ease of cleaning, condition of any stains and residue from the pad and the condition of the pad after cleaning.

A verification sample from the pad's surface will be collected by flooding deionized water along the surface of the pad near the southern edge of the pad and allowing it to flow toward the water collection point. The water will either flow naturally or will be squeegeed into the collection point near the northern edge of the pad, as described in Attachment 1, "Detailed Soil and Rinseate Sampling and Analysis Plan".

## 3.4 Equipment Decontamination

Prior to any sampling activities, all equipment used during the sampling effort will be properly decontaminated, reducing the possibility of cross contamination between other RCRA units. Once sampling has begun, all equipment used during the sampling will be decontaminated between each sample collection effort.

### 3.4.1 Other Materials

The plastic used to create the temporary dikes and the sorbents used to seal the temporary dike to the pad's surface will be temporarily stored in 55 gallon drums until the composite sample of the power wash water is received.

## 3.5 Health and Safety

Based on information available at this time, the following protective equipment may be used if required for the sampling:

Cotton coveralls
Safety boots

Nitrile gloves
Safety glasses
Boot covers
Saranex coveralls
Respirators

Modification to the protective equipment for sampling will depend on information supplied by FMPC, on-site evaluation and an assessment of risk. In addition, radioactivity levels measured by FMPC will be used to determine if the samples can be analyzed by the contract laboratory.

Additional screening may be required before shipment to the laboratory to further categorize the samples according to the level of radiation hazard. Radiation survey procedures and limits on samples prior to shipment will be in accordance with FMPC procedures and discussed in Section 1.3.

In addition, a site specific Health and Safety Plan will be developed for this closure activity, as required in OSHA 1910.120 (2) and will be followed during all closure activities. All personnel working at the Plant 6 Pad during closure activities will have completed Radiation Worker Training and OSHA 1910.120 training.

# 4.0 CLOSURE CERTIFICATION

## 4.1 Closure Standards

### 4.1.1 Initial Soil Samples

If the initial soil sampling sets (Section 3.3.2.1) are determined to be contaminated, the DOE shall submit, within thirty (30) days of receipt of the analytical results of those samples, a written supplementary sampling program for Ohio EPA approval. The supplementary sampling program will provide for continued sampling under the guidance of the Ohio EPA, SWDO, in an attempt to determine the full extent of contamination.

Following receipt of the supplementary sampling program laboratory results, a risk assessment may be prepared to determine possible alternative means and methods for the proper closure of the Plant 6 Pad.

Within thirty (30) days of the completion of the risk assessment, the DOE may file an amended closure plan providing for an alternate means of closure of the Plant 6 Pad.

### 4.1.2 Standard Of Clean For Soil Verification Samples

Soils beneath the pad will be considered non-hazardous if:

- The soil samples do not indicate any of the RCRA characteristics outlined in Table 2;
- The EP Toxic levels of lead and other tested RCRA metals are below the concentrations outlined in Table 3;
- 1,1,1-trichloroethane and the other targeted organic constituents selected from the results of the initial soil sample sets are below detection limits outlined in Table 4.

The soils beneath the Plant 6 Pad will be considered a solid waste if the laboratory analysis of the soil samples indicate that Total Metals are above the background levels established for the facility.

### 4.1.3 Standard of Clean For Pad Surface Rinseate

The Plant 6 Pad will be considered clean if the final rinseate water sample contains concentrations of EP TOX Metals, 1,1,1-trichloroethane and the targeted constituents selected from the results of the initial soil sample sets at or below the values listed in Table 5.

If the MCL (G) is less than the contaminant's analytical detection limit using the U.S. EPA SW-846 methods outlined in Table 4, the analytical detection limit for the SW-846 method shall be used.

### 4.1.4 Standard Of Clean For The Equipment Rinseate

The equipment will be considered clean if a sample of the final rinseate water contains concentrations of EP TOX metals, 1,1,1-trichloroethane and other targeted constituents are at or below the values listed in Table 5.

If the MCL(G) is less than the contaminant's analytical detection limit using the U.S. EPA SW-846 methods outlined in Table 4, the analytical detection limit for the SW-846 method shall be used.

## 4.2 Certification Inspections

Certification inspections by an independent engineer are an integral part of the closure certification activities. The major emphasis of closure inspections will be as follows:

- To ensure proper sample collection techniques are used throughout the closure process.
- To ensure that the pad is properly cleaned and decontaminated.
- To ensure that all rinseate water is properly stored, labeled and characterized.

## 4.3 Certification Documents

Certification documentation shall consist of but is not limited to a daily log of activities, field notes recorded.

TABLE 5

STANDARDS OF CLEAN FOR WATER AND RINSEATE
(mg/1)

| Compound | MCL(G) | Ohio EPA Standard |
|---|---|---|
| Acetone | | 1.0 |
| Benzene | 0.005 | |
| n-Butyl alcohol | | 1.0 |
| Carbon disulfide | | 1.0 |
| Carbon tetrachloride | 0.005 | |
| Chlorinated fluorocarbons [1] | | 1.0 |
| Chlorobenzene | | 1.0 |
| Chloroethane | | 1.0 |
| Chloromethane | | 1.0 |
| Cresols [1] | | 1.0 |
| Cresylic acid [1] | | 1.0 |
| Cyclohezanone | | 1.0 |
| 1, 1-Dichloroethane | | 1.0 |
| 1, 1-Dichloroethene | 0.007 | |
| trans-1, 2-Dichloroethene | | 1.0 |
| 1, 2-Dichlorobenzene | 0.005 | |
| 0-Dichlorobenzene | 0.01 | |
| 2-Ethoxyethanol | | 1.0 |
| Ethyl acetate | | 1.0 |
| Ethyl ether | | 1.0 |
| Isobutanol | | 1.0 |
| Methanol | | 1.0 |
| Methyl ethyl ketone | | 1.0 |
| Methyl isobutyl ketone | | 1.0 |
| Methylene chloride | | 1.0 |
| Nitrobenzene | | 1.0 |
| 2-nitropropane | | 1.0 |
| Pyridine | | 1.0 |
| Tetrachloroethylene | | 1.0 |
| Toluene | | 1.0 |
| 1,1,1-Trichloroethane | 0.2 | |
| 1,1,2-Trichloroethane | | 1.0 |
| Trichlorofluoromethane | | 1.0 |
| Vinyl chloride | 0.002 | |
| Xylenes (total) | 10.0 | |
| Arsenic | 0.05 | |
| Barium | 5.0 | |
| Cadmium | 0.01 | |
| Chromium | 0.05 | |
| Lead | 0.05 | |
| Mercury | 0.002 | |
| Selenium | 0.01 | |
| Silber | 0.05 | |

[1] A Class of chemicals and compounds. No single test is available.

by the owner and or the owner's representative during closure activities, copies of the laboratory analyses reports, copies of the hazardous waste manifests (if utilized), and chain of custody forms used for sample handling and tracking. All certification documentation shall be compiled and submitted in a report form with the Statement of Certification.

## 4.4 Statement Of Certification

The DOE and an independent registered engineer shall submit certification of closure. The certification will be worded as follows (OAC 3745-50-42):

> "...The hazardous waste management unit ... has been closed in accordance with the specification in the approved closure plan."

## 4.5 Post-Closure Plan

This section is not applicable to this closure plan. As noted in OAC 3745-55-10 (B), post-closure care and a post-closure plan are required only when closing hazardous waste surface impoundments, land treatment units, or landfills. Closure of the Storage Pad North of Plant 6 does not involve any of these types of units.

## 4.6 Notice In Deed

A notation in the property deed is required under OAC 3745-55-19 (B)(1) which involves post-closure care. Post-closure care is required only for hazardous waste disposal facilities, waste piles, and surface impoundments, as noted in OAC 3745-55-10 (B). Since post-closure care is not required when closing a container storage pad, a notation will not be made in the FMPC property deed.

## 5.0 CLOSURE SCHEDULE

The starting date for closure of the Plant 6 Pad depends on when the closure plan approval is received from Ohio EPA. It is anticipated that the FMPC will initiate closure of the Plant 6 Pad immediately upon receipt of the closure plan approval without modifications to the plan. Closure activities will be completed within 180 days from the date of approval from Ohio EPA.

The schedule for closure is provided in Table 6.

The Ohio EPA facility inspector will be contacted at least five business days in advance of certain critical activities so that the inspector may be present to observe these activities.

### 5.1 Extensions for Closure Time

An extension for closure is required only if the unit will not be completely closed clean within 180 days of final approval of the closure plan by Ohio EPA. The schedule presented in Table 6 indicates that closure is anticipated within this time frame. If additional time will be required to close the unit, the FMPC will make such a request in writing to the Ohio EPA, submitting a petition for an extension of the closure time.

**TABLE 6**

**Schedule for Closure of the Storage Pad North of Plant 6**

| Action | Cumulative Days to Complete |
|---|---|
| Approval of Closure Plan and Sampling Plans by Ohio EPA | 0 |
| Collect the initial set of soil samples (Section 3.3.2.1) | 20 |
| Seal cracks and joints in pad (Section 3.3.3.1) | 30 |
| Review analytical results from the initial set of soil samples and select target constituents | 50 |
| Power wash Plant 6 Pad (Section 3.3.3.2) | 55 |
| Collect pad surface rinseate sample (Section 3.3.3.3) | 75 |
| Review draft pad surface rinseate results | 110 |
| Complete verification sampling of soils beneath the pad (Section 3.3.2.2) | 125 |
| Complete all field work and review draft analytical data | 180 |
| Complete closure certification (Section 4.3) report by an independent professional engineer | 240 |

# 6.0 CLOSURE COST ESTIMATE

## 6.1 Closure Cost Estimate

This section is not applicable to this closure plan. The FMPC is a federally owned facility. According to OAC 3745-55-140 (C), the Federal Government is exempt from Financial Requirements, which includes submittal of a cost estimate for closure.

## 6.2 Financial Assurance Mechanism For Closure

This section is not applicable to this closure plan. The FMPC is a federally owned facility. According to OAC 3745-55-40 (C), the Federal Government is exempt from Financial Requirements, which includes submittal of a financial assurance mechanism.

## 6.3 Post-Closure Cost Estimate

This section is not applicable to this closure plan. The FMPC is a federally owned facility. According to OAC 3745-55-40 (C), the Federal Government is exempt from Financial Requirements, which includes submittal of a post-closure cost estimate.

## 6.4 Financial Assurance Mechanism For Post-Closure Care

This section is not applicable to this closure plan. The FMPC is a federally owned facility. According to OAC 3745-55-40 (C), the Federal Government is exempt from Financial Requirements, which includes submittal of a financial assurance mechanism for post-closure care.

## 6.5 Liability Requirements

This section is not applicable to this closure plan. The FMPC is a federally owned facility. According to OAC 3745-55-40 (C), the Federal Government is exempt from Financial Requirements, which includes submitting proof of liability in the event of an accident.

**ATTACHMENT A**

**DETAILED SOIL AND RINSEATE SAMPLING AND ANALYSIS PLAN**

March, 1990

U.S. Department of Energy
Feed Materials Production Center
7400 Willey Road
Fernald, Ohio 45030

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# ATTACHMENT A

## DETAILED SOIL AND RINSEATE SAMPLING AND ANALYSIS PLAN FOR THE PLANT 6 PAD

### 1.0 INTRODUCTION

Five different categories of samples will be taken during closure activities at the Plant 6 Pad. They include:

- Ten initial soil samples will be collected from beneath the pad and adjacent areas for laboratory analysis of the RCRA characteristics listed in Table A-1, Total Metal analysis of the metals listed in Table A-2, EP Toxic analysis of the metals listed in Table A-2 and analysis of a group of selected volatile and semi-volatile constituents listed in Table A-3. Any total metal analysis found above background, any EP Toxic metal found above the maximum EP Toxic level listed in Table 3 and any volatile or semi-volatile organic compound found above analytical detection limits during this initial soil testing will be included in the verification sample analysis.

- Verification samples of the rinseate from the pad's surface will be collected to verify that the surface of the pad has been properly decontaminated.

- Verification samples of the soils beneath the pad will be collected and analyzed for lead, 1,1,1-trichloroethane and any targeted constituents found during the initial soil sampling effort.

- A composite sample of the power wash water collected during cleaning of the Plant 6 Pad will be collected and analyzed for EP TOX lead, 1,1,1-trichloroethane and any targeted constituents found during the initial soil sampling effort.

- A composite sample of the equipment rinseate collected during equipment decontamination will be taken and analyzed for EP TOX lead, 1,1,1-trichloroethane and any targeted constituents found during the initial soil sampling effort.

**TABLE A-1**

**RCRA CHARACTERISTICS**

| Test | SW-846 Test Method |
|---|---|
| Flash Point | 1010 |
| Corrosivity | 9040 |
| Reactivity | 9010 (Cyanide)<br>9030 (Sulfide) |

**TABLE A-2**

**EP TOXIC METALS ANALYSES AND HOLDING TIMES**

| RCRA Metals | SW-846 Detection Method | Holding Time |
|---|---|---|
| Arsenic | 6010 | 6 months |
| Barium | 6010 | 6 months |
| Cadmium | 6010 | 6 months |
| Total Chromium | 6010 | 6 months |
| Lead | 6010 | 6 months |
| Mercury | 7470 | 28 days |
| Selenium | 6010 | 6 months |
| Silver | 6010 | 6 months |
| Volatile Organic Scan | | 14 days |

TABLE A-3

SELECTED VOLATILE
AND SEMI-VOLATILE ORGANIC COMPOUNDS
FOR INITIAL SOIL SAMPLE TESTING

| Compound | SW-846 Analytical Method | Practical Quantitation Limits Water µg/l | Practical Quantitation Limits Soil/Solid µg/kg |
|---|---|---|---|
| Acetone | 8240 | 100 | 100 |
| Benzene | 8240 | 5 | 5 |
| n-Butyl alcohol | None | N/A | N/A |
| Carbon disulfide | 8240 | 5 | 5 |
| Carbon tetrachloride | 8240 | 5 | 5 |
| Chlorinated fluorocarbons [1] | None | N/A | N/A |
| Chlorobenzene | 8240 | 5 | 5 |
| Chloroethane | 8240 | 10 | 10 |
| Chloromethane | 8240 | 10 | 10 |
| Cresols [1] | 8270 | 10 | 660 |
| Cresylic acid [1] | 8270 | 50 | 3300 |
| Cyclohexanone | None | N/A | N/A |
| 1,1-Dichloroethane | 8240 | 5 | 5 |
| 1,2-Dichloroethene | 8240 | 5 | 5 |
| trans-1,2-Dichloroethene | 8240 | 5 | 5 |
| 1,2-Dichlorethane | 8240 | 5 | 5 |
| o-Dichlorobenzene | 8270 | 10 | 660 |
| 2-Ethoxyethanol | 8240 | 5 [2] | 5 [2] |
| Ethyl acetate | None | N/A | N/A |
| Ethyl benzene | 8240 | 5 | 5 |
| Ethyl ether | 8240 | 5 [2] | 5 [2] |
| Isobutanol | 8240 | 100 | 100 |
| Methanol | 8240 | 5 [2] | 5 [2] |
| Methyl ethyl ketone | 8240 | 100 | 100 |
| Methyl isobutyl ketone | 8240 | 50 | 50 |
| Methylene chloride | 8240 | 5 | 5 |
| Nitrobenzene | 8270 | 10 | 66 |
| 2-nitropropane | 8240 | 5 [2] | 5 [2] |
| Pyridine | 8270 | 10 [2] | 660 [2] |
| Tetrachloroethylene | 8240 | 5 | 5 |
| Toluene | 8240 | 5 | 5 |
| 1,1,1-Trichloroethane | 8240 | 5 | 5 |
| 1,1,2-Trichloroethane | 8240 | 5 | 5 |
| Trichloroethylene | 8240 | 5 | 5 |
| 1,1,2-Trichloro -1,2,2-trifluoroethane | None | N/A | N/A |
| Trichlorofluoromethane | 8240 | 5 | 10 |
| Vinyl chloride | 8240 | 10 | 10 |
| Xylenes | 8240 | 5 | 5 |

[1] A class of chemicals and compounds. No single test is available.

[2] No established SW-846 Quantitative Limit. Values are estimated based on sensitivity of method for similar volatile compounds.

Note: Quantification limits depend on both matrix and interfering compounds.

## 2.0 QUALITY ASSURANCE/QUALITY CONTROL

Standard FMPC and the selected laboratory Quality Assurance (QA) and Quality Control (QC) programs will be used during this sampling program.

Duplicate soil samples will be taken for the units to confirm the laboratory's QA/QC program and document analytical precision. One duplicate soil sample will be taken for every five soil samples collected within the RCRA unit.

To reduce laboratory bias, the duplicate sample will be labeled and numbered in such a way that will not indicate that the sample is a duplicate or the location of the duplicate sample on the sampling grid. This information will be noted in the field book for later use. Laboratory analyses shall follow SW-846 methods and the laboratory utilized by the FMPC to analyze RCRA unit samples shall show that it has a quality assurance/quality control plan for each parameter of interest.

The QA/QC procedures shall be similar to that in the Ohio EPA/Ohio Department of Health's "RCRA Laboratory Assurance Project Plan" (1983). Quality control procedures employed shall document the accuracy of the procedures. FMPC shall also request a matrix spike sample and a matrix spike duplicate sample be run by the contracted laboratory.

# 3.0 SOIL SAMPLING PROCEDURES

## 3.1 Sampling Technique

Prior to all concrete coring and soil sampling activities and after all work is completed at one location, all sampling and coring equipment will be properly decontaminated following the procedures outlined in Section 10.0.

To be able to sample the native soils below the reinforced concrete pads, FMPC proposes to use a jack hammer, concrete coring machine or concrete saw to core through the concrete. The selection of proper methods, or combination of methods will be made by the site RCRA Engineer.

Prior to the concrete coring operations, site blueprints will be reviewed to determine if there are any known underground utilities, pipes, wires or other similar structures which, if breached, would cause a safety problem. These underground structures will be well marked at the unit.

A core hole will be advanced through the concrete, cutting through reinforcement bars and other obstructions in the concrete. Coring will continue until the top of the base gravel (the gravel below the concrete but above the native soil) is reached.

Once the base gravel is reached, all concrete chips will be removed from the hole by hand, wearing clean heavy latex coated work gloves. All of the concrete chips and other material produced as a result of this coring operation will be collected at the site, placed in properly labeled 55 gallon drums, and temporarily stored in an approved RCRA storage unit at FMPC until an analysis can be made for a final RCRA determination.

### 3.1.1 Sample Collection Methodology

A decontaminated stainless steel bucket auger will be advanced through the base gravel and the native soil by hand. Auguring will begin near the top of the base gravel and continue through to the native soil. If the base gravel is too large to allow augering, the gravel may be removed by hand, using clean latex gloves. Once the top of the native soil is reached, augering will continue, using the bucket auger.

Three sample sets will be taken at each sample location with a bucket auger. The sample sets will be taken at depth intervals of 0 to 1 foot, 1 to 2 feet, and 2 to 3 feet as measured from native soil level or auger refusal, which ever occurs first.

Clean latex gloves will be utilized whenever contact with a sample or the sampling equipment is imminent. The soil samples will be placed from the auger into 4-ounce wide mouth glass jars with Teflon-lined lids, using a clean stainless steel spatula and eliminating as much headspace in the jar as possible, sealed and stored in an ice-filled cooler until transferred to the sample processing station. A notation in the logbook and laboratory analysis report shall note the headspace in each of the sample jars.

### 3.1.2 Core Hole Plugging

Once the soil sample is collected from the hole, the core and soil bore will be filled with portland cement grout to a level slightly higher than the surrounding concrete, reducing ponding and promoting runoff.

## 3.2 Soil Sample Locations

### 3.2.1 Initial Soil Sampling Sets

An initial round of soil samples will consist of four sets of soil taken within the pad area at directed locations. One soil sample will be collected at each of the two cracks in the pad and one will be collected from each of the two expansion joints that dissect the pad (Figure 3 of the Closure Plan). These soil samples will be collected by coring or boring through the pad and sampling from the native soil underlying the pad as described in Section 3.1.

In addition to the four initial soil samples taken within the pad, six additional sets of soil samples will be taken at directed locations within a five-foot perimeter area around the unobstructed sides of the pad. Two will be taken from the east side of the pad, two will be taken from the west side of the pad, and two will be taken from the north side of the pad at directed locations (i.e. stains, cracks, etc.)

### 3.2.2 Verification Soil Sampling Sets

Once the results of the initial set of soil samples have been received and reviewed and the surface of the pad has been cleaned, soil samples will be collected from the pad area to certify that the underlying soils are clean. These soil samples will be collected at regularly spaced grid intervals.

#### 3.2.2.1 Sampling Grid Design

Verification samples will be collected at locations within a grid system established for the Plant 6 Pad. The Storage Pad is approximately 320 square feet (8 feet x 40 feet).

The vertical depth for the sampling effort shall be a maximum of three (3) feet measured from the soil surface or auger refusal, which ever comes first.

### 3.2.2.2 Grid Interval

In compliance with the Ohio EPA, Division of Solid Hazardous Waste Management's "Closure Plan Review Guidance" document dated 2-8-88 the grid interval equation shall be used to determine grid intervals at this RCRA unit. The equation is:

$$GI = \sqrt{(A \cdot \pi / GL)}$$

Where:

GI = Grid interval (feet).
A = Area to be gridded (feet $^2$).
GL = Length of area to be gridded (feet).

The grid interval calculation for the concrete pad, based on the dimensions given in Section 3.2.2.1 is as follows:

$$GI = \sqrt{(320 \cdot \pi / 40)}$$
$$= 5.0 \text{ feet (length)}$$

$$GI = \sqrt{(320 \cdot \pi / 8)}$$
$$= 11.2 \text{ feet (width)}$$

To simplify gridding, eight 8-foot wide by 5-foot long grids will be established on the pad (Figure 3 of the Closure Plan). One sample will be taken at the center of each grid interval.

## 3.3 Sample Analysis

### 3.3.1 Initial Soil Samples

The initial soil samples collected from beneath the pad and adjacent areas for laboratory analysis of:

- RCRA characteristics (Table A-1);
- Total metals analysis of the metals listed in Table A-2;
- EP Toxic metals listed in Table A-2 and;
- A selected group of volatile and semi-volatile constituents listed in Table A-3.

All analytical methods will follow the methods outlined in SW-846, when applicable, as outlined in the respective tables.

The laboratory results of this initial round of soil sampling will be used to determine if the constituents in addition to total and EP toxic lead and 1,1,1-trichloroethane should be tested during verification sampling. Any total metal analysis found above the background levels established for the site (Section 3.3.3), any EP Toxic metal found above the maximum EP Toxic level listed in Table A-2 and any volatile or semi-volatile organic compound found above analytical detection limits during this initial soil testing will be included in the verification sample analysis.

### 3.3.2 Verification Samples

Soil samples collected for the purpose of verifying the condition of the soils below the Plant 6 Pad will be analyzed for total and EP Toxic lead, 1,1,1-trichloroethane, and any constituents found above analytical detection limits during the initial soil sampling. All analytical methods will follow SW-846, if applicable.

### 3.3.3 Background Soil Samples

FMPC proposes to collect a total of sixteen soil sample sets at the facility for use as background samples for this and other RCRA units at the facility. These samples will be used for statistical comparison of background levels for RCRA metals at this and other RCRA units.

The 16 background soil samples will be collected from 16 different, relatively undisturbed locations around the facility. Each location will represent a random location around the site, taking care that all USDA soil types are sampled.

Each soil sample set will consist of a soil sample taken at a depth between 0-1 foot, 1-2 feet, and 2-3 feet, or auger refusal at each of the sixteen locations. Decontamination of sampling equipment, soil sampling techniques, and laboratory analysis will follow the guidelines specified in Section 10.0 of this sampling plan.

Background samples (in compliance with the Ohio EPA "Closure Plan Review Guidance," dated 2-8-88) shall be used to statistically compare the natural condition of the soils beneath the Plant 6 Pad.

Soils in the area of the RCRA unit shall be considered hazardous if they exceed the EP Toxic limits set forth in

Table A-2. The soil beneath the Plant 6 Pad will be considered a solid waste if the results of the total metals analysis is above the mean of the background samples plus two standard deviations.

Background soil samples shall be from the same type of soil horizon material as the comparison sample. Background samples shall in the same USDA soil type and taken in areas minimally affected by facility operations.

## 4.0 WATER AND RINSEATE SAMPLING

### 4.1 Power Wash Water Sample

After the initial set of soil samples have been collected at the site, the storage pad will be cleaned. During the cleaning process, approximately 960 gallons of water will be generated per cleaning cylce. This water will be pumped for the collection from a point at the northern edge of the Plant 6 Pad, along a temporary dike constructed on the pad to contain the wash water, into 55 gallon drums.

Once the cleaning of the pad is completed, 1000 ml of water from each of the drums will be collected and composited into a properly decontaminated glass container. Once all of the drums have been sampled, the composite water sample will be immediately placed in the proper laboratory containers and stored in an ice-filled cooler until transferred to the sample processing station.

A sample of the water used to power wash the surface of the Plant 6 Pad will be collected and analyzed after the pad has been cleaned. Water will be allowed to flow through the machine and will be collected at the jet nozzle at the end on the cleaning wand.

### 4.2 Pad Surface Rinseate Sample

Once the pad has been cleaned, the surface of the concrete pad will then be flooded with deionized water and allowed to soak. The resulting solution will be brushed, wiped or squeegeed towards a northern perimeter collection point.

A single water sample will be collected with a properly decontaminated peristaltic pump or other suitable device for determination as to the cleanliness of the pad. Samples will be immediately placed in the proper laboratory containers and stored in an ice-filled cooler until transferred to the sample processing station.

A sample of the deionized water used as the rinseate for the Plant 6 Pad verification will be collected and analyzed. The sample will be collected by pouring deionized water from the source into a proper sampling bottle.

### 4.3 Equipment Rinseate Sample

A composite sample of the rinseate collected from the decontamination of the sampling and cleaning equipment will be collected for laboratory analysis. Approximately 2000 ml of water from each of the drums will be collected and composited into a properly decontaminated glass container. Once all of the drums have been sampled, the composite water sample will be immediately placed in the proper laboratory

containers and stored in an ice-filled cooler until transferred to the sample processing station.

A sample of the deionized water used as to decontaminate the equipment during the Plant 6 Pad closure will be collected and analyzed. The sample will be collected by pouring deionized water from the source into a proper sampling bottle.

## 4.4 Other Materials Samples

At this time, the FMPC proposes that no samples of the sorbents or plastic sheeting, gloves, concrete chips, etc. be taken. Procedures for properly collecting a representative sample these items are not well defined in SW-846. However, if the rinseate sample from the surface of the pad, the verification soil samples and the power wash water composite sample are clean, then the materials used in the cleaning and sampling of the pad should be considered clean.

## 4.5 Water and Rinseate Analysis

All water samples and rinseate samples collected during the closure of the Plant 6 Pad will be analyzed for EP Toxic lead, 1,1,1-trichloroethane, and any constituents found during the initial soil sampling. All analytical methods will follow SW-846, if applicable.

## 5.0 SAMPLE HANDLING PROCEDURES

### 5.1 Sample Bottles

Prior to the beginning of any sampling effort, sampling bottles will be ordered from the laboratory performing the analysis. All sample bottles will arrive at the site in a clean condition. Once the sample jars arrive at the site, the jars will be inspected, the lids tightened and the jars removed from any styrofoam containers until ready for shipment.

Water samples collected for volatile and semi-volatile organic compounds will be collected in 40 ml vials with teflon septa. Water samples will be filled to the brim and sealed in the 40 ml vials without any headspace. Soil samples collected for EP Toxic Metals, volatile and semi-volatile organic compounds will be collected in individual 4 ounce glass jars with teflon liners in the lids, eliminating as much headspace as possible.

Water collected for EP Toxic metal analysis will be collected in laboratory supplied glass jars. Soil samples collected for EP Toxic metals will be collected in 4 ounce jars with teflon lids, eliminating as much headspace as possible.

Water collected for Total RCRA metals will be filtered using a 0.40 micron filter and properly preserved in the field. Soil collected for Total RCRA metals analysis will be placed in 4 ounce glass jars with teflon lids, eliminating as much headspace as possible.

### 5.2 On-Site Handling Procedure

Once the sample has been placed inside the sample jar, the jar will be sealed, labeled and logged onto the chain of custody form as specified in the sample procedures attachment. Delivery will be via overnight carrier or equivalent method.

The sample will then be sealed and placed inside a 4-mil-thick polyethylene bag, one sample per bag. The sealed bag will then be placed inside a metal can with noncombustible, absorbent cushioning material (such as vermiculite) to prevent breakage, one bag per can. The can will be closed and sealed with clips or tape to hold the lid securely. If appropriate and as required by D.O.T., the can shall be labeled with:

Name and Address of originator
"Flammable solid, N.O.S. UN 1325"
(and the appropriate radioactive labels and markings)

The metal can(s) will then be placed inside a strong outside container (thermal chest). To prepare for shipping the words "Flammable solid, N.O.S. UN 1325, Cargo Aircraft Only;" if more than 1 qt. net per outside package then "Limited Quantity, Laboratory Samples, Net Weight _____" and "Radioactive" label shall be indicated on shipping papers and the outside of the shipping container. The words "This side up" or "This end up" shall also appear on the container. An authorized FMPC supervisor shall sign the shipper certification.

## 5.3 Shipping Procedures

FMPC personnel shall stand by for possible carrier request to open shipping containers for inspection or to modify packaging. FMPC shall notify the carrier before packing to ascertain local packaging requirements. FMPC personnel shall also remain in the departure area until the carrier is on its way.

The shipping container (thermal chest) shall be certified as to the 4°C temperature at time of sample placement into the container.

## 5.4 Field Logbook

An up-to-date field logbook will document all information pertinent to the field survey and sampling. The logbook will be bound with consecutively numbered pages that are 8-1/2 by 11 inches. At a minimum the entries in the logbook will include the following:

- Weather conditions
- Location of sampling point
- Name and address of field contact
- Producer of waste and address
- Type of process producing waste
- Type of waste
- Suspected waste composition, including concentrations
- Number and volume of sample taken
- Purpose of sampling (e.g., closure)
- Description of sampling point and sampling methodology
- Date and time of collection
- Collector's sample identification number(s)
- Sample description and how transported (e.g., name of laboratory, UPS, Federal Express)
- References, such as maps or photographs of the sampling site
- Field observations

- Any field measurements made (e.g., pH,flammability)
- Signatures of personnel responsible for observations
- Names of sampling personnel

The logbook will record sufficient information so that anyone can reconstruct the sampling without reliance on the collector's memory. Also, the logbook shall be stored safely.

## 5.5 Chain Of Custody

To establish the documentation necessary to trace sample possession from the time of collection, a chain-of-custody record (Figure A-1) will be filled out and accompany every sample. The record shall contain the following information:

- Sample number
- Signature of collector, date and time of collection
- Waste type
- Signature of persons involved in the chain of possession
- Inclusive dates of possession

A sample analysis request sheet (Figure A-2) and sample label (Figure A-3) will accompany the sample on delivery to the laboratory. The field portion of this form will be completed by the person collecting the sample and shall include most of the pertinent information noted in the logbook. The laboratory portion of this form shall be completed by laboratory personnel and shall include the following information:

- Name of person receiving the sample
- Laboratory sample number
- Date and time of sample receipt
- Sample allocation
- Analyses to be performed

The sample shall be delivered to the laboratory for analysis as soon as practicable to meet sample holding time limits. Samples collected for closure will not exceed the holding times listed in Table A-2.

The sample shall be delivered to the person in the laboratory authorized to receive the samples.
Additional documentation to be used is listed in the sampling procedures. The documents include items such as:

- Sampling Deviation/Special Handling Requirements
- Sample Weight Ticket
- Sampling Equipment Cleaning Check-off sheet
- Laboratory Sample Label

- Sample Seal
- Custody Transfer Record

Sample analysis results will be returned to:
The Westinghouse Materials Company of Ohio
Post Office Box 398704
Cincinnati, Ohio 45239

# FMPC
# CHAIN-OF-CUSTODY RECORD

| DATE: | NAME OF SAMPLER(S): | REMARKS: |
|---|---|---|
| | | |

| ITEM NUMBER | SAMPLE NUMBER | SAMPLE LOCATION | TIME AND TYPE OF SAMPLE (All samples are water samples unless otherwise noted) | | | | TYPE AND NUMBER OF CONTAINERS | | | | LAB DESTINATION | COMMENTS AND SPECIAL REQUESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | COMPOSITED | | GRAB | OTHER | | | | | | |
| | | | FROM | TO | | | 1 GAL P | 1 QT P | 1 QT G | OTHER | | |
| 1 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |
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| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |

| RELINQUISHED BY | BADGE NO. | ITEM NUMBERS | TIME | DATE | RECEIVED BY | BADGE NO. |
|---|---|---|---|---|---|---|
| | | | | | | |
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| NO. | DISTRIBUTION OF COPIES |
|---|---|
| 1 | White - ALQA - Extension 6548 |
| 2 | Pink - Receiver #3 |

FIGURE A-1

FMPC
**REPORT OF CHEMICAL ANALYSES**
*(NOTE: Write Firmly — Part 4 must be legible.)*

Lab. Nos. _____

Lot No. _____

Analyses Requested _____

ANALYTICAL DATA

| LAB. NO. | IDENTIFICATION | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
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TERIAL:

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TE SAMPLED:

BMITTED BY:

MARKS:

| DISTRIBUTION OF COPIES |
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| Originator |
| Extra Copy |
| Quality Assurance |
| Analytical (RECORD COPY) |

Approved By _____ Date of Report _____

FIGURE A-2

FMPC

TYPE OF MATERIAL:

TYPE OF SAMPLE:

LOT NUMBER OR IDENT.:

DATE:

TIME:

NET WT.:

P.O. NO./ENRICHMENT

FMPC-PRO-301 (REV. 2/6/96)

FIGURE A-3

## 6.0 WASTE MANAGEMENT

Waste material generated by the sampling activities will be disposed of according to the existing FMPC procedures. This waste may include, but is not limited to, plastic ground cloths, disposable protective clothing, retrieval lines, disposable toweling, and plastic tubing. Unless preliminary radiological information to be supplied by FMPC indicates the sampling locations are contaminated, all waste generated during sampling will be assumed suspect RCRA. Currently, there is no Department of Energy (DOE) or commercial treatment or disposal facility that will accept mixed waste from this site. The three DOE facility most likely to accept it in the future are:

A. Nevada Test Site
B. Oak Ridge Gaseous Diffusion Plant K - 1435 Incinerator
C. Idaho National Engineering Laboratory Incinerator

The FMPC site is not licensed for treatment of mixed waste, therefore all generated waste will be stored on-site in RCRA approved storage until such time as a permanent solution is available.

### 6.1 RCRA Determination Criteria For Closure Waste

The power wash water will be considered non-hazardous if the composite water sample contains concentrations of EP TOX lead and other targeted metals at or below the EP Toxic levels outlined in Table 3 of the Closure Plan, and 1,1,1-trichloroethane and other targeted volatile and semi-volatile constituents are at or below the public drinking water maximum contaminant level (MCL) as outlined in Table 5 of the Closure Plan.

## 7.0 SAMPLING EQUIPMENT

The following equipment may be required. Quantities required will be determined by the sampling coordinator based on preliminary inspection of the Plant 6 Pad.

- Bailers
- Coliwasa samplers
- Weighted bottle samplers
- Plastic ground cloths
- Retrieval lines
- Nonphosphate detergent
- Funnel (stainless steel, glass)
- Long-handled scraper (stainless steel, glass)
- Spatula (stainless steel, glass)
- Sample bottles for liquid and solid samples
- Portable pump
- Tygon tubing
- Deionized water
- Sample label
- Peristaltic

This is not intended to be a comprehensive list and may be added to or deleted from as judged appropriate by the sampling coordinator.

## 8.0 REPORT OF FINDINGS

A report of findings, including the laboratory analysis data and assessment of contamination levels, will be prepared by FMPC. This report will include the following information:

- The total number of samples taken
- The location of each sample taken
- The date and time each sample was obtained
- The type of analysis performed on each sample
- The concentration of each metal and organic in each sample

## 9.0 HEALTH AND SAFETY

Based on information available at this time, the following protective equipment may be used for the sampling if required:

- Cotton coveralls
- Safety boots
- Nitrile gloves
- Respirators
- Safety glasses
- Boot covers
- Saranex coveralls

Modification to the protective equipment for sampling will depend on information supplied by FMPC, on-site evaluation and an assessment of risk. In addition, radioactivity levels measured by FMPC will be used to determine if the samples can be analyzed by the contract laboratory. Additional screening may be required on the samples before shipment to the laboratory to further categorize the samples according to the level of hazard. Radiation survey procedures and limits on samples prior to shipment will be in accordance with FMPC procedures.

In addition, a site specific Health and Safety Plan will be developed for this closure activity, as required in OSHA 1910.120 (2) and will be followed during all closure activities. All personnel working at the Plant 6 Pad during closure activities will have completed Radiation Worker Training and OSHA 1910.120 training.

## 10.0 DECONTAMINATION PROCEDURES FOR SAMPLING EQUIPMENT

### 10.1 General Information

All equipment used during the effort will be properly decontaminated, reducing the possibility of cross contamination between other RCRA units. Once sampling has begun, all equipment used during the sampling will be decontaminated between each sample collection effort. Enough additional equipment will be available to continue sampling while decontamination is being performed on the used sample equipment. After sampling has been completed at each sampling location, all sampling equipment will also be properly decontaminated, reducing the chance of cross contamination and contact contamination by the sampling equipment outside the RCRA unit.

Any equipment utilized during this sampling activity shall be scraped and washed to remove waste residues. The residues shall be managed as hazardous waste, containerized and stored at an approved RCRA storage unit at the FMPC. Also any vehicles utilized for this sampling activity shall be managed in such a way as to not distribute waste residues on their tires outside of the RCRA unit area.

Prior to beginning the decontamination procedures, all personnel involved with sampling will inspect their clothing. Clean or new disposable coveralls will be used when clothing has visible soil/mud stains. Clean latex gloves will be worn during the entire decontamination process and during the handling of any equipment. During the final rinsing of the equipment, a new pair of latex gloves will be used to reduce the potential for cross contamination between the dirty wash area and the clean rinse area.

### 10.2 Equipment Decontamination Procedures

Proper decontamination will consist of a three-staged procedure. The dirty wash stage will consist of scrubbing the equipment with a dedicated brush in clean potable water to remove all visible mud and soil. The equipment will then be scrubbed with a second dedicated brush using a soap solution made up of deionized water and laboratory-grade non-phosphate soap. Each piece of equipment will then be rinsed with deionized water to remove any visible soap solution.

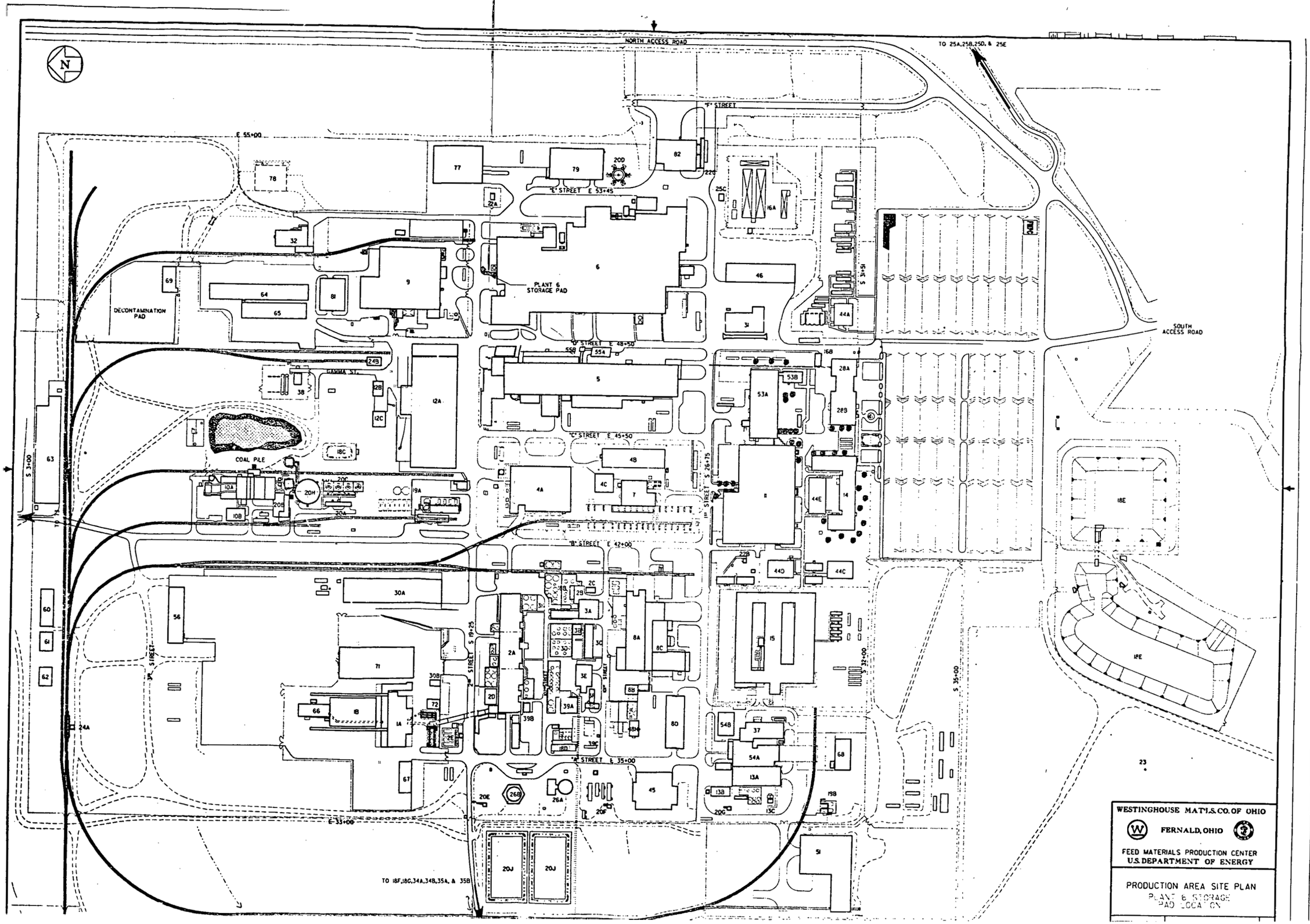
After decontamination in the dirty wash area, the equipment will be processed through the clean rinse area. The clean rinse stage will consist of spraying the equipment with a non-phosphate based detergent on all exposed and accessible

areas of the equipment. The equipment will then be rinsed using deionized water. Next, the equipment will be rinsed with hexane, followed by a triple rinse with deionized water. A sample will be taken of the final rinse to detect any possible contamination or cross-contamination.

If the equipment is not immediately needed, it will be protected from dust and weather by wrapping the equipment in new plastic polyethylene sheeting.

### 10.3 Collection and Handling of Equipment Rinseate

All liquids and solids produced as a result of decontaminating sampling equipment will be collected at the unit, placed in properly labeled 55 gallon drums, and stored in an approved RCRA storage unit at FMPC.

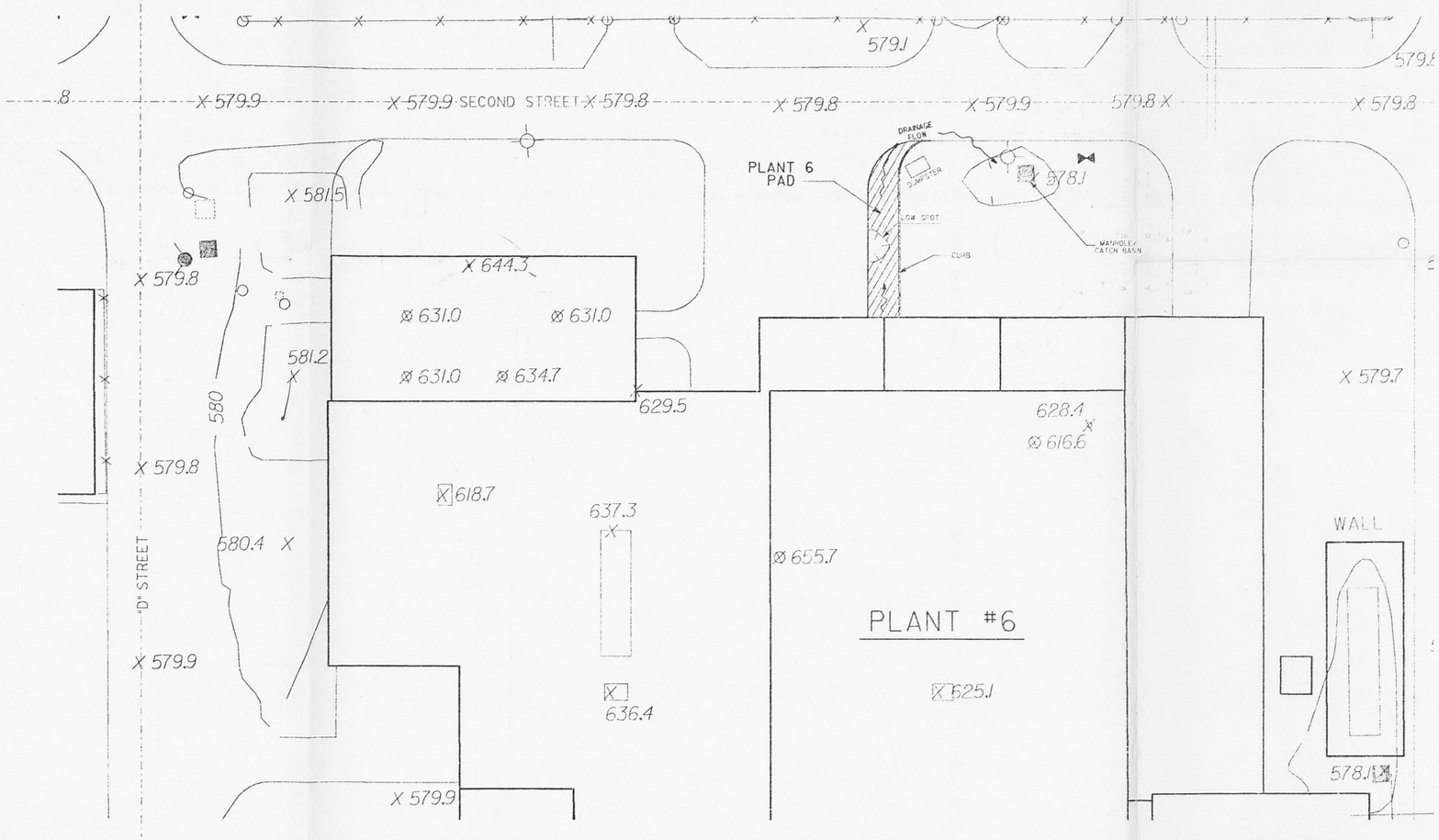



## FMPC BUILDING IDENTIFICATION

| | |
|---|---|
| 00 | GENERAL |
| 1 | PREPARATION PLANT |
| 1B | PLANT 1 STORAGE BLDG. |
| 2A | ORE REFINERY PLANT |
| 2B | LIME HANDLING BLDG. |
| 2C | BULK LIME HANDLING BLDG. |
| 2D | METAL DISSOLVER BLDG. |
| 2E | NFS STORAGE AND PUMP HOUSE |
| 3A | MAINTENANCE BLDG. |
| 3B | OZONE BLDG. |
| 3C | CONTROL HOUSE |
| 3D | NAR TOWERS |
| 3E | HOT BARRENATE BLDG. |
| 3F | DISTILLATION PUMP RECOVERY |
| 3G | REFRIGERATION BLDG. |
| 3H | REFINERY SUMP |
| 4A | GREEN SALT PLANT |
| 4B | PLANT 4 WHSE. |
| 4C | PLANT 4 MAINTENANCE BLDG. |
| 5 | METALS PRODUCTION PLANT |
| 6 | METALS FABRICATION PLANT |
| 7 | PLANT 7 |
| 8A | RECOVERY PLANT |
| 8B | MAINTENANCE BLDG. |
| 8C | ROTARY KILN/DRUM RECONDITIONING BLDG. |
| 9 | SPECIAL PRODUCTS PLANT |
| 12A | BOILER PLANT |
| 12B | BOILER PLANT MAINTENANCE BLDG. |
| | SERVICE BLDG. |
| 12A | MAIN MAINTENANCE BLDG. |
| 12B | CYLINDER STORAGE BLDG. |
| 12C | LUMBER STORAGE BLDG. |
| 13A | PILOT PLANT WET SIDE |
| 13B | PILOT PLANT MAINTENANCE BLDG. |
| 13C | SUMP PUMP HOUSE |
| 14 | ADMINISTRATION BLDG. |
| 15 | LABORATORIES |
| 16A | MAIN ELECTRICAL STATION |
| 16B | ELECTRICAL SUBSTATION |
| 18A | SURGE LAGOON |
| 18B | GENERAL SUMP |
| 18C | COAL PILE RUNOFF BASIN |
| 18D | BOON EVAPORATION TOWERS |
| 18E | STORM WATER RETENTION BASIN |
| 18F | PIT 5 SLUDGE GATE |
| 18G | CLEARWELL PUMP HOUSE |
| 18H | BON EFFLUENT TREATMENT FACILITY |
| 19A | MAIN METAL TANK FARM |
| 19B | PILOT PLANT AMMONIA TANK FARM |
| 20A | VALVE CONTROL BLDG. |
| 20B | FILTER/CHEMICAL BLDG. |
| 20C | COOLING TOWERS |
| 20D | ELEVATED POTABLE STORAGE TANK |
| 20E | WELL HOUSE #1 |
| 20F | WELL HOUSE #2 |
| 20G | WELL HOUSE #3 |
| 20H | PROCESS WATER STORAGE TANK |
| 21A | LIME SILO #1 |
| 22A | BAG WASH BLDG. |
| 22B | SEWER LIFT STATION |
| 22C | TRUCK SCALE |
| 22 | METEOROLOGICAL TOWER |
| 24A | RAILROAD SCALE HOUSE |
| 24B | RAILROAD ENGINE HOUSE |
| 24C | INCINERATION BLDG. |
| 25B | WHSE #79 |
| 25C | SEWAGE LIFT STATION BLDG. |
| 25D | CHLORINATION BLDG. |
| 25E | LOGISTICS CONTROL BLDG. |
| 26A | PUMP HOUSE/HP FIRE PROTECTION |
| 26B | ELEVATED WATER STORAGE TANK |
| 27A | RETURN BLDG. |
| 27B | HUMAN RESOURCES BLDG. |
| 30A | CHEMICAL WHSE. |
| 30B | DRUM STORAGE WHSE. |
| 3 | ENGINE HOUSE/GARAGE |
| 3C | MAIN DRUM STORAGE (NORTH) |
| 34A | KILN STORAGE TANK (NORTH) |
| 34B | KILN STORAGE TANK (SOUTH) |
| 35A | METAL OXIDE STORAGE TANK (NORTH) |
| 35B | METAL OXIDE STORAGE TANK (SOUTH) |
| 37 | PILOT PLANT ANNEX |
| 38 | PROPANE STORAGE |
| 39A | INCINERATOR BLDG. |
| 39B | SHELTER STORAGE BLDG. |
| 39C | INCINERATOR BLDG. SPRINKLER RISER HOUSE |
| 44A | TRAILER COMPLEX (6 PLEX) |
| 44B | |
| 44C | TRAILER COMPLEX (7 PLEX S) |
| 44D | TRAILER COMPLEX (7 PLEX N) |
| 44E | TRAILER COMPLEX (10 PLEX) |
| 45 | PILOT ENG. BLDG. |
| 46 | HEAVY EQUIPMENT BLDG. |
| 51 | 6 TO 4 REDUCTION FACILITY #2 |
| 53A | DISSOLVER BLDG. |
| 53B | IN-VIVO BLDG. |
| 54A | 6 TO 4 REDUCTION FACILITY #1 |
| 54B | PILOT PLANT WHSE. |
| 55A | SLAG RECYCLING BLDG. |
| 55B | SLAG RECYCLING HYDROELEVATOR |
| 56 | CP STORAGE WHSE. |
| 60 | QUONSET HUT #1 |
| 61 | QUONSET HUT #2 |
| 62 | QUONSET HUT #3 |
| 63 | KO-2 WHSE. |
| 64 | THORIUM WHSE. |
| 65 | COLD PLANT 5 WHSE. |
| 66 | DRUM RECONDITIONING BLDG. |
| 67 | PLANT 1 THORIUM WHSE. |
| 68 | PILOT PLANT WHSE. |
| 69 | DECONTAMINATION BLDG. |
| 7 | GENERAL IN PROCESS STORAGE WHSE. |
| 72 | DRUM STORAGE BLDG. |
| 73 | FIRE DEGRADE TRAINING CENTER BLDG. |
| 77 | FINISHED PRODUCT WHSE. |
| 78 | 3 & 3 PILOT PLANT CONSTRUCTION |
| 79 | PLANT 6 WHSE. |
| 80 | PLANT 8 WHSE. |

842

JUL 3 1 '90

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JUL 3 1 '90

| 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

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± 1/16
ANGLES ± 0° - 30'
DECIMALS
.X ± 0.1
.XX ± 0.03
.XXX ± 0.005
.XXXX ± 0.0010
DWG. RELEASE DATE

| APPROVALS | | | |
|---|---|---|---|
| CHEMICAL | | I.R.S. & T. | |
| CIVIL & STR. | | MAINTENANCE | |
| ELECTRICAL | | NU. SAFETY | |
| ENGINEER | | O.A. | |
| INSTRUMENT | | PRODUCTION | |
| MECHANICAL | | FIRE & SAFETY | |
| | | WASTE MANAG. | |
| CHECKED | | D.O.E. | |
| APPROVED | | SECURITY | |

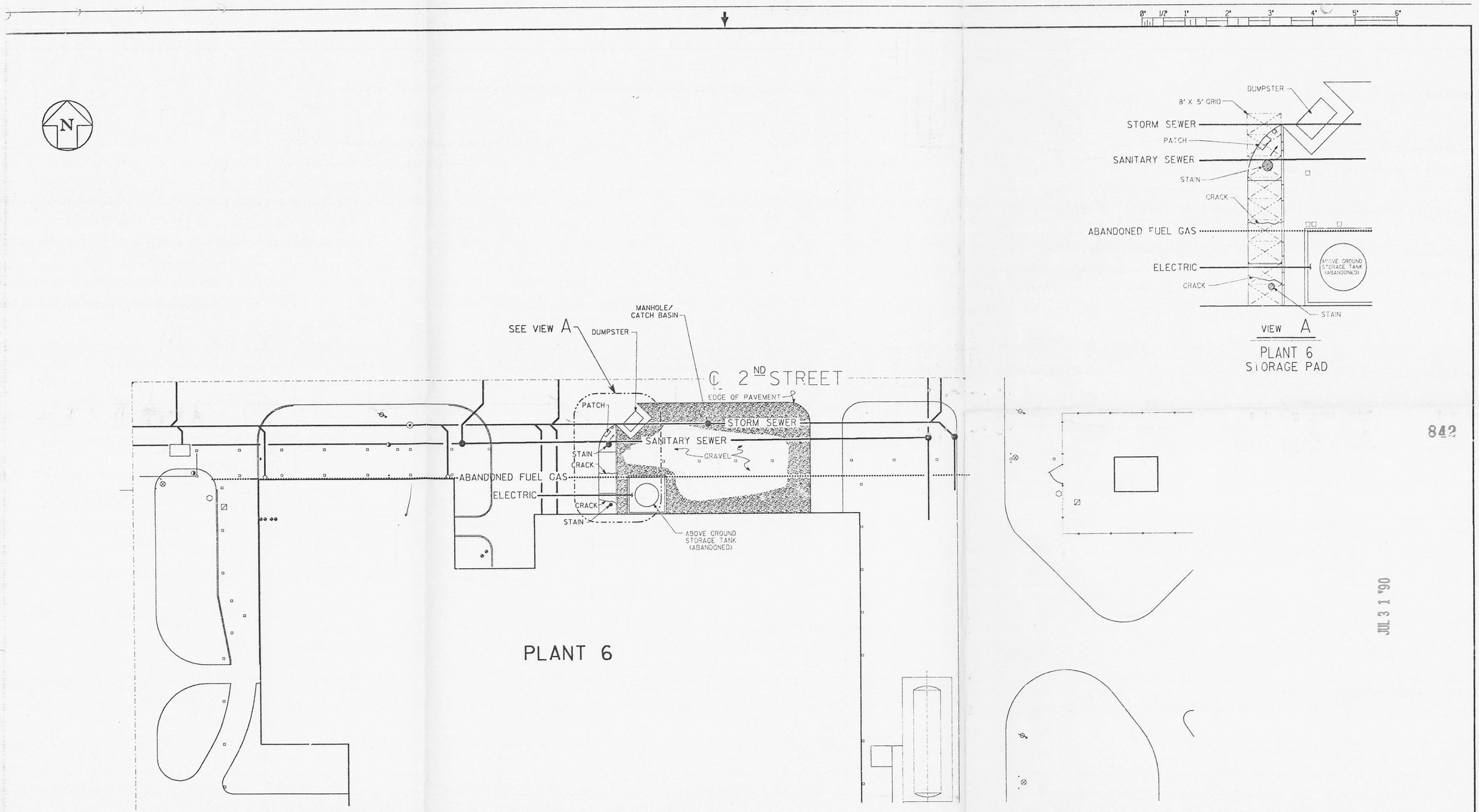
WESTINGHOUSE MAT'LS. CO. OF OHIO
FERNALD, OHIO
FEED MATERIALS PRODUCTION CENTER
U.S. DEPARTMENT OF ENERGY

PLANT 6
STORAGE PAD
SCALE 1" = 20'

DATE 3/27/90
DRAWN MIKE LOCKE

FIGURE - 4

FILE NAME: ZFA:E100.41LENNY.DGN

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JUL 3 1 '90

| REVISIONS | DATE | DWN. BY | APPD. | NO. | REVISIONS | DATE | DWN. BY | APPD. | REF. DWG. NO. |
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NOTE: WMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± 1/32
ANGLES ± 0° - 30'
DECIMALS
.X ± 0.1
.XX ± 0.03
.XXX ± 0.005
.XXXX ± 0.0050
ORIG. RELEASE DATE

| APPROVALS | | | |
|---|---|---|---|
| CHEMICAL | | I.R.S. & T. | |
| CIVIL & STR. | | MAINTENANCE | |
| ELECTRICAL | | NU. SAFETY | |
| ENGINEER | | O.A. | |
| INSTRUMENT | | PRODUCTION | |
| MECHANICAL | | FIRE & SAFETY | |
| | | WASTE MANAGE | |
| CHECKED | | D.O.E. | |
| APPROVED | | SECURITY | |

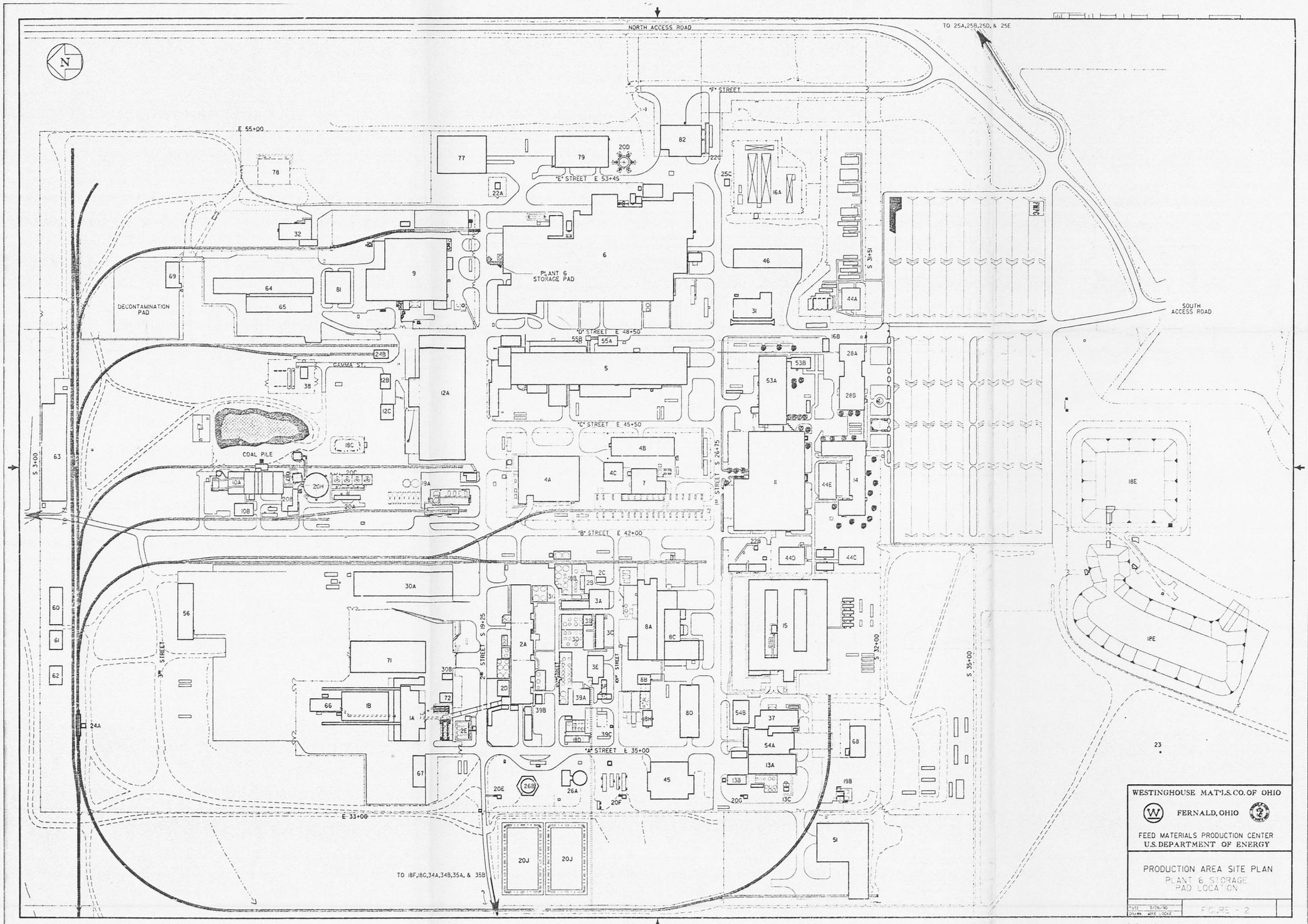
WESTINGHOUSE MAT'LS. CO. OF OHIO
FERNALD, OHIO
FEED MATERIALS PRODUCTION CENTER
U.S. DEPARTMENT OF ENERGY

PLANT 6
STORAGE PAD

DATE 3-21-90
DRAWN J. KING

FIGURE - 3

FILE NAME: ZFA1:[100,4]KING6.DGN




FILE NAME: 25A1000.4PROTMAPLON

## FMPC BUILDING IDENTIFICATION

| | |
|---|---|
| 00 | GENERAL |
| 1A | PREPARATION PLANT |
| 1B | PLANT 1 STORAGE BLDG. |
| 2A | ORE REFINERY PLANT |
| 2B | LIME HANDLING BLDG. |
| 2C | BULK LIME HANDLING BLDG. |
| 2D | METAL DISSOLVER BLDG. |
| 2E | NFS STORAGE AND PUMP HOUSE |
| 3A | MAINTENANCE BLDG. |
| 3B | OZONE BLDG. |
| 3C | CONTROL HOUSE |
| 3D | NAR TOWERS |
| 3E | HOT BARRANATE BLDG. |
| 3F | DIGESTION LIME RECOVERY |
| 3G | REFRIGERATION BLDG. |
| 3H | REFINERY SUMP |
| 4A | GREEN SALT PLANT |
| 4B | PLANT 4 ANSEL |
| 4C | PLANT 4 MAINTENANCE BLDG. |
| 5 | METALS PRODUCTION PLANT |
| 6 | METALS FABRICATION PLANT |
| 7 | PLANT 7 |
| 8A | RECOVERY PLANT |
| 8B | MAINTENANCE BLDG. |
| 8C | ROTARY KILN/CHLM RECONDITIONING BLDG. |
| 9 | SPECIAL PRODUCTS PLANT |
| 10A | BOILER PLANT |
| 10B | BOILER PLANT MAINTENANCE BLDG. |
| 11 | SERVICE BLDG. |
| 12A | MAIN MAINTENANCE BLDG. |
| 12B | CYLINDER STORAGE BLDG. |
| 12C | LUMBER STORAGE BLDG. |
| 13A | PILOT PLANT WET SIDE |
| 13B | PILOT PLANT MAINTENANCE BLDG. |
| 13C | SUMP PUMP HOUSE |
| 14 | ADMINISTRATION BLDG. |
| 15 | LABORATORIES |
| 16A | MAIN ELECTRICAL STATION |
| 16B | ELECTRICAL SUBSTATION |
| 18A | SURGE LAGOON |
| 18B | GENERAL SUMP |
| 18C | COAL PILE RUNOFF BASIN |
| 18D | BIODENITRIFICATION TOWERS |
| 18E | STORM WATER RETENTION BASIN |
| 18F | PIT 5 SLUDGE GATE |
| 18G | CLEARWELL PUMP HOUSE |
| 18H | BDN EFFLUENT TREATMENT FACILITY |
| 19A | MAIN METAL TANK FARM |
| 19B | PILOT PLANT AMMONIA TANK FARM |
| 20A | VALVE/CONTROL BLDG. |
| 20B | FILTER/CHEMICAL BLDG. |
| 20C | COOLING TOWERS |
| 20D | ELEVATED POTABLE STORAGE TANK |
| 20E | WELL HOUSE #1 |
| 20F | WELL HOUSE #2 |
| 20G | WELL HOUSE #3 |
| 20H | PROCESS WATER STORAGE TANK |
| 20I | LIME SLURRY TNTS |
| 22A | GAS METER BLDG. |
| 22B | SEWER LIFT STATION |
| 22C | TRUCK SCALE |
| 23 | METEOROLOGICAL TOWER |
| 24A | RAILROAD SCALE HOUSE |
| 24B | RAILROAD ENGINE HOUSE |
| 25A | INCINERATION BLDG. |
| 25B | MH #179 |
| 25C | SEWAGE LIFT STATION BLDG. |
| 25D | GAS DISTRIBUTION BLDG. |
| 25E | DIGESTER CONTROL BLDG. |
| 26A | PUMP HOUSE-HP FIRE PROTECTION |
| 26B | ELEVATED WATER STORAGE TANK |
| 28A | SECURITY BLDG. |
| 28B | HUMAN RESOURCES BLDG. |
| 30A | CHEMICAL WHSE. |
| 30B | DRUM STORAGE WHSE. |
| 31 | ENGINE HOUSE/GARAGE |
| 32 | MAGNESIUM STORAGE BLDG. |
| 34A | K-65 STORAGE TANK (NORTH) |
| 34B | K-65 STORAGE TANK (SOUTH) |
| 35A | METAL OXIDE STORAGE TANK (NORTH) |
| 35B | METAL OXIDE STORAGE TANK (SOUTH) |
| 37 | PILOT PLANT ANNEX |
| 38 | PROPANE STORAGE |
| 39A | INCINERATOR BLDG. |
| 39B | SHELTER STORAGE BLDG. |
| 39C | INCINERATOR BLDG. SPRINKLER RISER HOUSE |
| 44A | TRAILER COMPLEX (6 PLEX) |
| 44B | |
| 44C | TRAILER COMPLEX (7 PLEX S) |
| 44D | TRAILER COMPLEX (7 PLEX N) |
| 44E | TRAILER COMPLEX (10 PLEX) |
| 45 | RUST ENG. BLDG. |
| 46 | HEAVY EQUIPMENT BLDG. |
| 51 | 6 TO 4 REDUCTION FACILITY #2 |
| 53A | O.S. & H. BLDG. |
| 53B | N-VIVO BLDG. |
| 54A | 6 TO 4 REDUCTION FACILITY #1 |
| 54B | PILOT PLANT WHSE. |
| 55A | SLAG RECYCLING BLDG. |
| 55B | SLAG RECYCLING HITZ/ELEVATOR |
| 56 | CP STORAGE WHSE. |
| 60 | QUONSET HUT #1 |
| 61 | QUONSET HUT #2 |
| 62 | QUONSET HUT #3 |
| 63 | KC-2 WHSE. |
| 64 | THORIUM WHSE. |
| 65 | OLD PLANT 5 WHSE. |
| 66 | DRUM RECONDITIONING BLDG. |
| 67 | PLANT 1 THORIUM WHSE. |
| 68 | PILOT PLANT WHSE. |
| 69 | DECONTAMINATION BLDG. |
| 71 | GENERAL IN PROCESS STORAGE WHSE. |
| 72 | DRUM STORAGE BLDG. |
| 73 | FIRE BRIGADE TRAINING CENTER BLDG. |
| 77 | FINISHED PRODUCT WHSE. |
| 78 | D & D BLDG. (NOT CONSTR.) |
| 79 | PLANT 6 WHSE. |
| 80 | PLANT 8 WHSE. |
| 81 | PLANT 9 WHSE. |
| 82 | RECEIVING/INCOMING MATL'S INSPECTION BLDG. |

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