

2885

R-027-204.2

**COLLECT UNCONTROLLED PRODUCTION AREA
STORMWATER RUNOFF REMOVAL ACTION
WORK PLAN FEBRUARY, 1992**

02/01/92

**50
ENCLOSURE
OU5**

2885

**COLLECT UNCONTROLLED PRODUCTION AREA STORMWATER RUNOFF
REMOVAL ACTION
WORK PLAN**

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

February, 1992

**Prepared by
Westinghouse Environmental Management Company of Ohio
Cincinnati, Ohio**

**for the
UNITED STATES DEPARTMENT OF ENERGY
FERNALD OFFICE**

TABLE OF CONTENTS

	<u>Page No.</u>
1.0 INTRODUCTION	1
2.0 BACKGROUND	2
2.1 Summary of Potential Threat	2
2.2 Removal Action	2
2.3 Related Actions	3
2.4 Integration with the Final Remedial Action	4
2.5 Roles of the Participants	5
3.0 SUPPORT ACTIVITIES	6
3.1 Project Planning Activities	6
3.2 Training Requirements	6
4.0 FIELD ACTIONS	7
4.1 General	7
4.2 Soil Management	8
5.0 SAMPLING AND ANALYSIS	9
6.0 HEALTH AND SAFETY PLAN	10
7.0 QUALITY ASSURANCE	11
8.0 SCHEDULED MILESTONE	12

LIST OF DRAWINGS & FIGURES

FIGURE 1	COLLECT UNCONTROLLED PRODUCTION AREA STORMWATER RUNOFF
DRAWING C-1	GRID INDEX
DRAWING C-2	SITE PLAN
DRAWING C-3	SITE PLAN
DRAWING C-4	SITE PLAN
DRAWING C-5	SITE PLAN

LIST OF ATTACHMENTS

ATTACHMENT 1 - PRE-EXCAVATION SOIL SAMPLING AND ANALYSIS PLAN

DRAWING C-6	SOIL SAMPLING LOCATION PLAN
DRAWING C-7	SOIL SAMPLING LOCATION PLAN
DRAWING C-8	SOIL SAMPLING LOCATION PLAN

ATTACHMENT 2 - POST-EXCAVATION SOIL MANAGEMENT AND DISPOSITION PLAN

1.0 INTRODUCTION

This removal action Work Plan is being submitted to the U. S. Environmental Protection Agency (U. S. EPA) for approval as required by the September 1991 Amended Consent Agreement as amended under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 120 and 106(a) between the U. S. EPA and the Department of Energy. The DOE has conducted a Removal Site Evaluation (RSE) to determine whether the conditions present for the Collect Uncontrolled Production Area Stormwater Runoff project warrant a removal action under CERCLA, consistent with Section 300.410 of the National Contingency Plan (NCP). A copy of the approved RSE is available to the U.S. EPA upon request. Based upon the information in the Removal Site Evaluation¹ the DOE has determined that a Time Critical Removal Action is appropriate. The proposed removal action is protective of human health and the environment and will be conducted in accordance with all CERCLA requirements. The scope for this removal action can be broadly defined as management of radioactively contaminated stormwater runoff from the production area. It involves intercepting and redirecting to the existing storm sewer/Storm Water Retention Basin (SWRB) system, stormwater which currently leaves the FEMP production area.

The Fernald Environmental Management Project (FEMP) production area includes those facilities previously utilized to produce high-purity uranium metals (for use at other Department of Energy (DOE) facilities) using various chemical and metallurgical processes. Past activities also include thorium processing and recycling fuel materials. The production area is confined within a 136 acre fenced area which is located in approximately the center of the 1050 acre site.

Analytical results indicate that elevated concentrations of uranium are present in the stormwater runoff from the production area. Most production area stormwater runoff is collected in storm sewers and discharged to the SWRB for settling prior to discharge via pumping to the Great Miami River. However, some contaminated stormwater from the perimeter of the production area is currently released to the environment by direct flow to Paddy's Run. The Remedial Investigation/ Feasibility Study (RI/FS) for Operable Unit 5, Environmental Media, has determined that leakage from Paddy's Run infiltrates into the regional aquifer. A removal action entitled "South Groundwater Contamination Plume", which addresses contamination in the aquifer, is currently being prepared.

This removal action is a component of Operable Unit 5. Activities performed under this work plan will be in accordance with the NCP and Appendix L of the CERCLA Sitewide Quality Assurance Project Plan (QAP_P), the FEMP Laboratory Analytical Methods Manual, and consistent with the guidance of Amended OSWER Directive 9360.0-03B, SUPERFUND REMOVAL PROCEDURES, REV. 3. The U.S. EPA is in the process of reviewing a draft of the Sitewide CERCLA

¹Removal Site Evaluation, Collect Uncontrolled Production Area Runoff, Fernald Site Office, U. S. Department of Energy, January 1992.

Quality Assurance Project Plan (QAP₃P) which covers all sitewide sampling and analysis activities. Upon approval, remaining sampling and analysis activities will be conducted consistent with the QAP₃P. The Consent Agreement under CERCLA Sections 120 and 106(a) requires a work plan to be submitted for implementation of Removal Action Number 16, the Collect Uncontrolled Production Area Stormwater Runoff Removal Action. This work plan satisfies that commitment.

2.0 BACKGROUND

2.1 Summary of Potential Threat

The majority of the stormwater runoff from the 136 acre fenced production area is collected in the existing storm sewer and discharged into the Storm Water Retention Basin for appropriate handling (see Figure 1). However, several perimeter subdrainage areas of the production area currently do not drain to the existing storm sewer system, but flow naturally away from the production area. This uncontrolled stormwater runoff contains various concentrations of uranium and other contaminants.

The uncontrolled stormwater runoff from the production area flows to Paddy's Run by means of various drainage ditches and culverts. Upon entering Paddy's Run the potential exists for these contaminants to migrate to the Great Miami Aquifer via infiltration. This aquifer is within the buried valley aquifer of the Great Miami River Basin, which has been designated a Sole-Source Aquifer by the U. S. EPA under Section 1424(e) of the Safe Drinking Water Act. Under this designation, the Regional Administrator of Region V of the U. S. EPA has determined that this aquifer is the sole or principal source of drinking water for this area. Contamination of Paddy's Run and/or the underlying aquifer may pose potential exposure risks to public health and the environment. A removal action entitled "South Groundwater Contamination Plume", which addresses contamination in the aquifer, is currently being prepared.

Exposure to the contaminants in the stormwater runoff can occur as a result of the release of these contaminants to Paddy's Run. The contaminants may then be discharged from Paddy's Run to the Great Miami River or the underlying sand and gravel aquifer. Paddy's Run is not used as a drinking water supply. Ingestion of sediment from the stream is considered a potential exposure pathway for children. Ingestion of groundwater from the aquifer underlying Paddy's Run is an additional potential exposure pathway. Other exposure pathways associated with the groundwater include ingestion of crops irrigated by the water, ingestion of beef from cattle exposed to uranium through water and crops and ingestion of milk from cows exposed to uranium through water and crops.

In July 1989, soil samples were collected at 38 sample point locations within the FEMP production area. At each sample point location, soil samples were extracted from the surface and at an approximate total depth of one foot below surface grade. Surface samples were analyzed for Thorium, Thorium-228, and Uranium-228, and Uranium activities, Uranium isotopes, and EP Tox Metals. Soil samples collected at the one-foot depth interval were analyzed for Total Uranium and Total Thorium concentrations. Based on these data, process knowledge, and reviews of site history and spill records, the soils in these areas were determined to be non-RCRA (WMCO:EC(SW):90-227, "RCRA DETERMINATION AND RADIOLOGICAL CHARACTERIZATION OF RUBBLE FROM STORM SEWER IMPROVEMENT PROJECT," June 7, 1990).

2.2 Removal Action

Currently, the storm sewer system from the production area flows by gravity to Manhole (MH) 34. A 14 inch dam in the 60 inch diameter storm sewer downstream of MH 34 diverts normal sewer flow into the wetwell of the Storm Sewer Lift Station (SSLS).

The SSLS pumps the normal dry weather flow in the storm sewer system to the Great Miami River via MH 175. A composite sample is taken on the SSLS discharge to MH 175. In addition, instrumentation provides for direct monitoring of pH, total suspended solids (TSS), and oil and grease. Alarms from the instruments are transmitted to the Water Plant where unusual events at MH 34 can be monitored and actions taken to divert the discharge to the General Sump for treatment.

During periods of heavy precipitation, the flow collected in the storm sewer system will overflow the 14 inch high dam in the 60 inch storm sewer and flow to the Storm Water Retention Basin. The overflow is directed by sluice gates into one of the two chambers of the SWRB. Under normal conditions, the collected water is allowed to settle in a quiescent condition for 24 hours and then discharged via pumping to the Great Miami River. The SWRB is designed to retain a 10-year/24-hour rainfall event (approximately 10.2 million gallons). This volume includes the flow which will result from the subject project.

In the event of a release, the discharge from the SWRB can be diverted to the General Sump or to the Bionitrification Surge Lagoon for further treatment, if necessary, by aligning the valving and activating the SWRB pumps.

The DOE is installing a 300 gallons per minute (gpm) trailer mounted interim wastewater treatment system which will treat SWRB/SSLS effluent prior to being discharged to the Great Miami River. This interim trailer mounted treatment unit will remain in operation until the Advanced Wastewater Treatment (AWWT) system comes on-line. The AWWT system will provide permanent treatment for a SWRB/SSLS combined flow of 700 gpm (e.g. the SSLS normal flow to the Great Miami River will be discontinued).

The plan for controlling the stormwater runoff is to collect the stormwater within the production area that currently discharges outside the production area limits and redirect this runoff to the existing storm sewer system (see Figure 1). Methods for redirecting these flows shall include intercepting the runoff with trench drains and curbs, and the addition of pipe and catch basin components. (Further details are included in Section 4.1, Field Actions).

2.3 Related Actions

The underlying groundwater has been determined to be contaminated with inorganic and organic chemical compounds. To date the following actions have been taken to mitigate this problem:

A Storm Water Retention Basin (SWRB) was constructed and placed into operation in October 1986 to retain contaminated stormwater runoff

from the FEMP production area. This runoff had previously flowed to Paddy's Run via the storm sewer outfall ditch. Construction of an additional chamber to the SWRB was completed in December of 1988. The expanded SWRB is designed to retain the runoff from a 10-year/24-hour rainfall event and therefore greatly reduces the volume of contaminated stormwater from the FEMP production area discharged to Paddy's Run. This flow is believed to have been the major source of uranium contamination to the South Groundwater Contamination Plume.

In 1988 a project was completed to control the stormwater runoff from the Plant 1 storage pad area (PA 40-86602-Surface Water Control of Plant 1 Storage Pad). Prior to the completion of this project, stormwater runoff from several portions of the Plant 1 Storage Pad and adjacent areas flowed to Paddy's Run via drainage ditches. The implementation of this project redirected the stormwater flows from these areas of the Plant 1 Storage Pad to the site storm sewer system. This was accomplished via a combination of actions. A portion of the storage pad was modified to include a curb around the periphery to keep stormwater confined to the existing pad drainage system. The existing drainage line from this pad area was redirected from its previous termination point to the Storm Sewer System. Northern perimeter sections of the storage pad that previously flowed outward over grassy areas to the west and north through drainage ditches to Paddy's Run were redirected to the Storm Sewer System. This was accomplished by plugging the culvert that led away from the area and reversing the drainage ditch flow. A new storm sewer inlet was then added to the existing storm sewer system to intercept this flow.

In the past, the DOE disposed of wastes in a series of pits located west of the production area. Most of the surface area stormwater runoff from the pits is collected in a clearwell and treated prior to being pumped to the Great Miami River. A removal action entitled "Waste Pit Area Stormwater Runoff Control" is currently underway to address the contaminated runoff which flows from the Waste Pit perimeter areas to Paddy's Run.

Another project, Storm Sewer Improvements - Plantwide, is a two fold project that addresses stormwater runoff from the production area as defined by the inner security fence line. One aspect of this project will expand the existing storm sewer system so that runoff from all portions of the production area are collected and channeled to the Storm Water Retention Basin. A second portion of this project will provide for the rehabilitation and/or repair several sections of the existing storm sewer system. The portion of this project which involves the expansion of the existing system is being completed as CERCLA Removal Action Number 16, Collect Uncontrolled Production Area Stormwater Runoff, and is the subject of this Removal Action Work Plan.

2.4 Integration with the Final Remedial Action

The Collect Uncontrolled Production Area Stormwater Runoff Removal Action is consistent with all final remedial action alternatives for Operable Unit 5. The final remedial action alternatives that are being considered most likely include the following:

Soil Removal, Treatment, and On-Site Disposal
Groundwater Extraction and Treatment

The final remedial activities will require some degree of stormwater runoff/sediment control and will benefit from the implementation of this removal action.

The Collect Uncontrolled Production Area Stormwater Runoff Removal Action will be implemented in advance of any of the alternatives for final remediation of Operable Unit 5. Therefore, no scheduling conflicts are anticipated.

2.5 Roles of the Participants

The DOE, as the lead agency, will coordinate and execute this removal action. The U.S. EPA and the Ohio Environmental Protection Agency (Ohio EPA) roles have been one of providing guidance and participation in the preparation of the CERCLA 120 Consent Agreement and technical information exchanges.

The U.S. EPA has approval authority for this Work Plan.

The Ohio EPA will provide guidance and participate in the development and review of the Work Plan.

Advanced Sciences, Inc. (ASI), as a contractor to DOE, is conducting the RI/FS program and through their subcontractor, International Technology (IT) Corporation, providing analytical services.

RUST Engineering, as a contractor to WEMCO, will provide construction management for the Removal Action.

Westinghouse Environmental Management Company of Ohio (WEMCO), as the FEMP Management and Operating Contractor, is responsible for implementing this Removal Action in a manner consistent with this U. S. EPA approved work plan and DOE and regulatory guidance. Associated WEMCO departments will oversee and direct quality assurance procedures, safety and health procedures, and necessary compliance issues.

A. M. Kinney, Inc., as the design consultant, is responsible for the preparation of the design plans and specifications.

The contractor for construction and installation will be determined through the DOE bid and award process.

3.0 SUPPORT ACTIVITIES

3.1 Project Planning Activities

Activities that will be undertaken prior to the actual site work are planning, training, design, and management of the removal actions preparatory efforts. These activities are required to render the area reasonably free of hazards to personnel and/or the environment.

The following distinct engineering phases will be performed by WEMCO to provide the necessary definition for development of accurate scope, cost, and schedule documents:

a. Project Planning

Included in this activity will be the preparation of detailed task listings and delineation of responsibilities. Specific items will be made available to the U.S. EPA upon completion of the engineering phases of the scope of work. These items will include a cost estimate and detailed schedule indicating project planning activities.

b. Design of Removal Action

Definitive design documents will be prepared for the removal action construction work.

c. Training of Personnel

WEMCO will provide training for all personnel involved in accordance with the Occupational Safety and Health Administration (OSHA) standards found in 29 CFR 1910.120.

d. Bid and Award/Construction Management

All bid and award documents will be prepared for the removal action construction work along with the procurement of all equipment, materials and subcontractors necessary to complete the removal action construction work.

3.2 Training Requirements

All personnel directly involved with the planning and implementation of this removal action will be trained in accordance with the Occupational Safety and Health Administration standards found in 29 CFR 1910.120, the standard operating procedures for the work involved, and with the requirements of the approved work plan. In addition, all personnel will successfully complete the required safety training sessions set forth by WEMCO including, but not limited to radiation worker training, nuclear criticality training, respirator training with fit testing, and FEMP procedures developed and approved to implement this removal action.

4.0 FIELD ACTIONS

4.1 General

Construction of this project will include concrete drainage trenches, curbs, and utilization or modification of existing topographic features to collect the production area perimeter stormwater runoff. Stormwater collected will be redirected to the storm sewer system. Drawings C-2, C-3, C-4, and C-5 have been prepared based on drawings from the preliminary design package to illustrate the field actions involved in this removal action. It should be noted that the current design package is not complete and may require modification. The design of this project, to date, has been completed by A. M. Kinney, Inc. with oversight by WEMCO.

Wetlands on the FEMP site have been delineated as part of the RI/FS. This project will not impact any wetlands as currently delineated.

The implementation of this system will consist of separate types of construction activities. These activities and a brief explanation of each are detailed below and are similarly discussed in the Health and Safety Plan:

Installation of Drainage Trenches and Curbs

This portion of the removal action will involve trenching and excavation activities that will facilitate the installation of storm sewer sections, drainage trenches, and curbs.

Operations and Maintenance

After construction is complete and after WEMCO completes the start-up testing period, the system will be operated and maintained by WEMCO Site Services. WEMCO Site Services will be responsible for the operation and maintenance of the system. Existing WEMCO utilities operators will control this system. The Utility Engineers will be assigned as the supervisor responsible for this system and will be available on site at all times. As the project will be an expansion to the existing system, existing Site Standard Operating Procedures (SOPs) will cover the operation of the system. No new SOPs are envisioned.

4.2 Soil Management

Soil excavated for the installation of trench drains, curbs, storm sewer lines and concrete structures shall be utilized as backfill to the maximum extent possible as specified in the Removal Action Pre-excavation Soil Sampling and Analysis Plan (Attachment 1). Excess material will be handled according to the Removal Action Disposition of Excess Soil (Attachment 2).

5.0 SOIL SAMPLING AND ANALYSIS PLAN

The stormwater runoff from portions of the production area have been determined to have elevated concentrations of uranium, warranting this removal action. In addition, sampling and analysis of the soils in areas that will be involved in construction activities has been performed.

Pre-excavation soil sampling and analysis will be performed to support the implementation of this removal action. A copy of the specific sampling and analysis plan is presented as Attachment 1.

6.0 HEALTH AND SAFETY PLAN

The work to be performed will be consistent with the Health and Safety Plan prepared for this removal action. The plan identifies, evaluates, and controls all identified safety and health hazards. In addition, it provides for emergency response for hazardous operations. The plan is consistent with 29 CFR 1910.120 and the FEMP Site Health and Safety Plan. Safety documentation will be prepared according to FMPC-2116 Topical Manual, "Implementing FMPC Policies and Procedures for System Safety Analysis." FMPC-2116 has been prepared to implement DOE Order 5481.1B "Safety Analysis and Review System" and DOE/OR-901 "Guidance for Preparation of Safety Analysis Reports."

The specific Health and Safety Plan for this removal action will be available to government agencies and subcontractors upon written request to DOE-F0.

7.0 QUALITY ASSURANCE

The overall quality assurance program at the FEMP is described in the site Quality Assurance Program Plan (QAPP), PL-3014. The Quality Assurance Plan is based on the criteria specified in ASME NQA-1, Federal EPA Guideline QAMS-005/80 and DOE Orders 5700.6 and 5400.1. Detailed requirements are implemented by the WEMCO Site Policies and Procedures Manual, FMPC-2054, by WEMCO Departmental Procedures and Topical Manuals. Sample and analysis activities will be conducted consistent with the RI/FS QAPP. The U. S. EPA is in the process of reviewing a draft Sitewide Quality Assurance Project Plan (QAP_p) covering all sitewide sampling and analysis activities. Upon approval, remaining sampling and analysis activities will be conducted consistent with the Sitewide QAP_p. A project specific Quality Assurance Plan will be provided by that Subcontractor prior to initiating field activities.

8.0 SCHEDULED MILESTONE

Completion of this Removal Action as defined by the installation of curbing and trench drains around the perimeter of the production area and containment of all identified contaminated soils resulting from the excavation and construction activities will be on or before December 31, 1993.

REMOVAL ACTION NO. 16
 COLLECT UNCONTROLLED PRODUCTION AREA STORMWATER RUNOFF

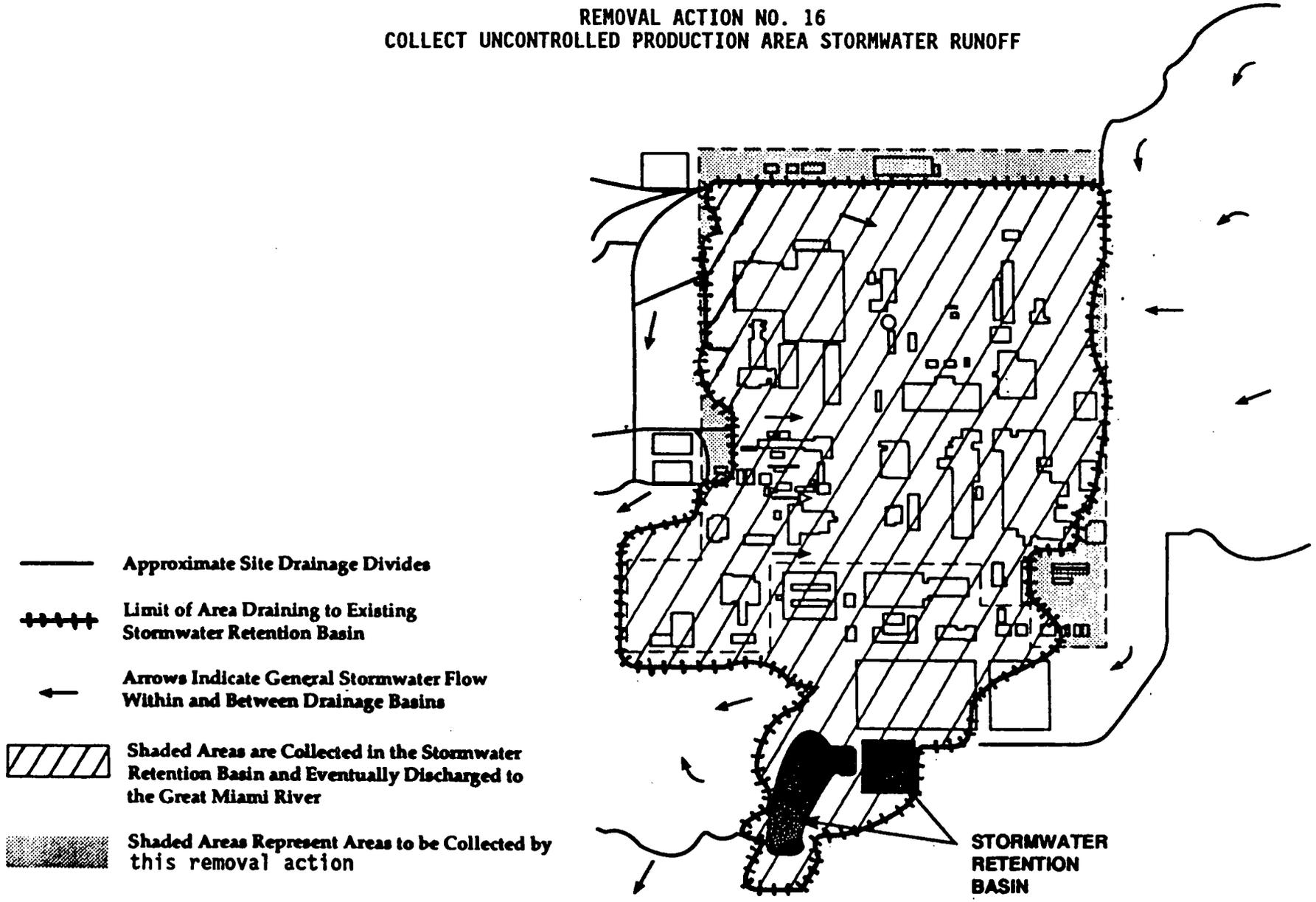


Figure 1

27

2885

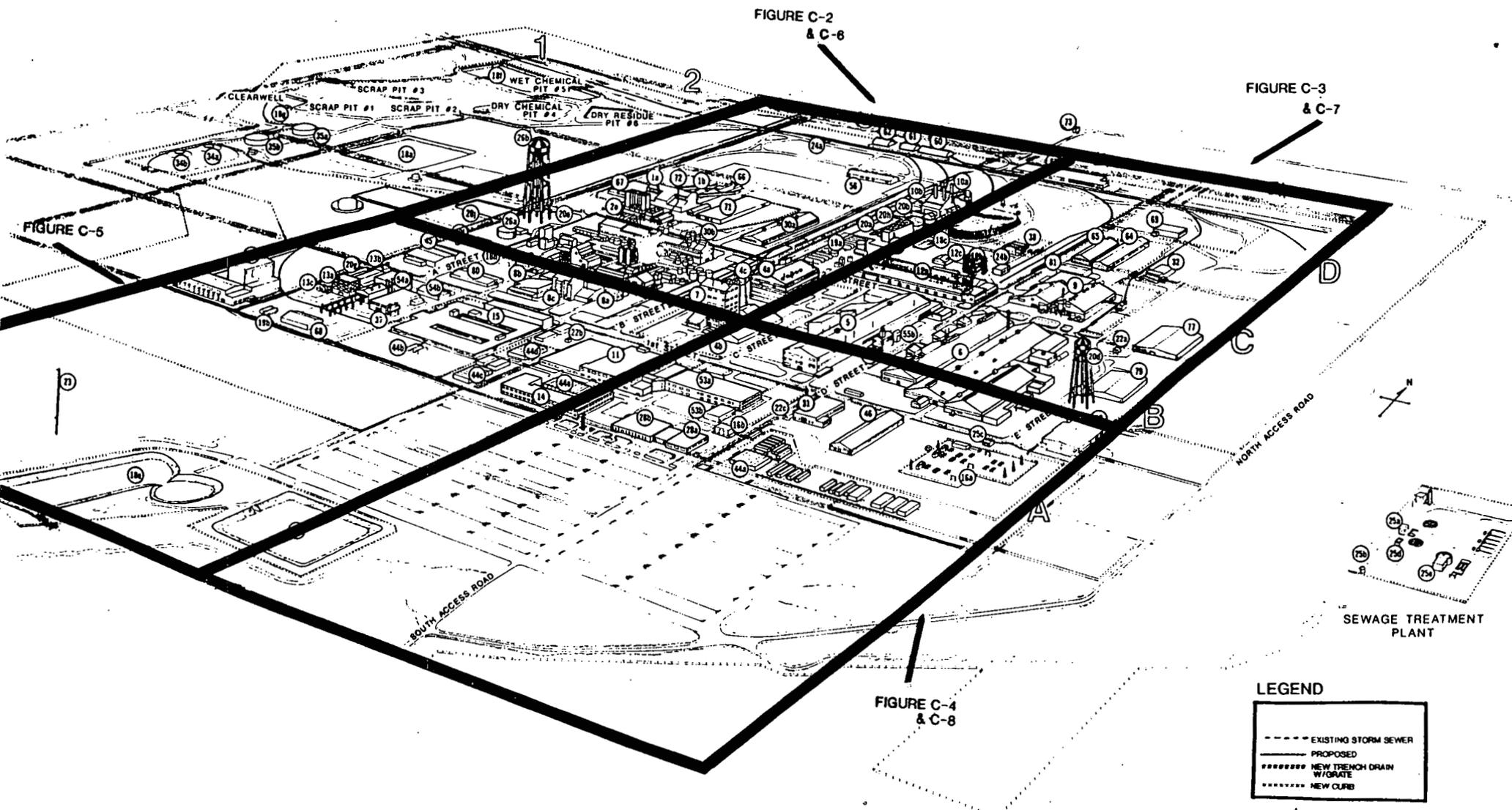


FIGURE C-2
& C-6

FIGURE C-3
& C-7

FIGURE C-6

FIGURE C-4
& C-8

LEGEND

- EXISTING STORM SEWER
- PROPOSED
- NEW TRENCH DRAIN W/GRADE
- NEW CURB

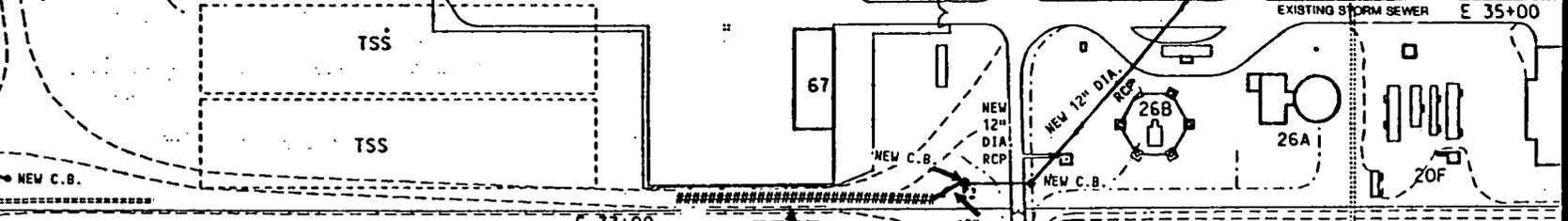
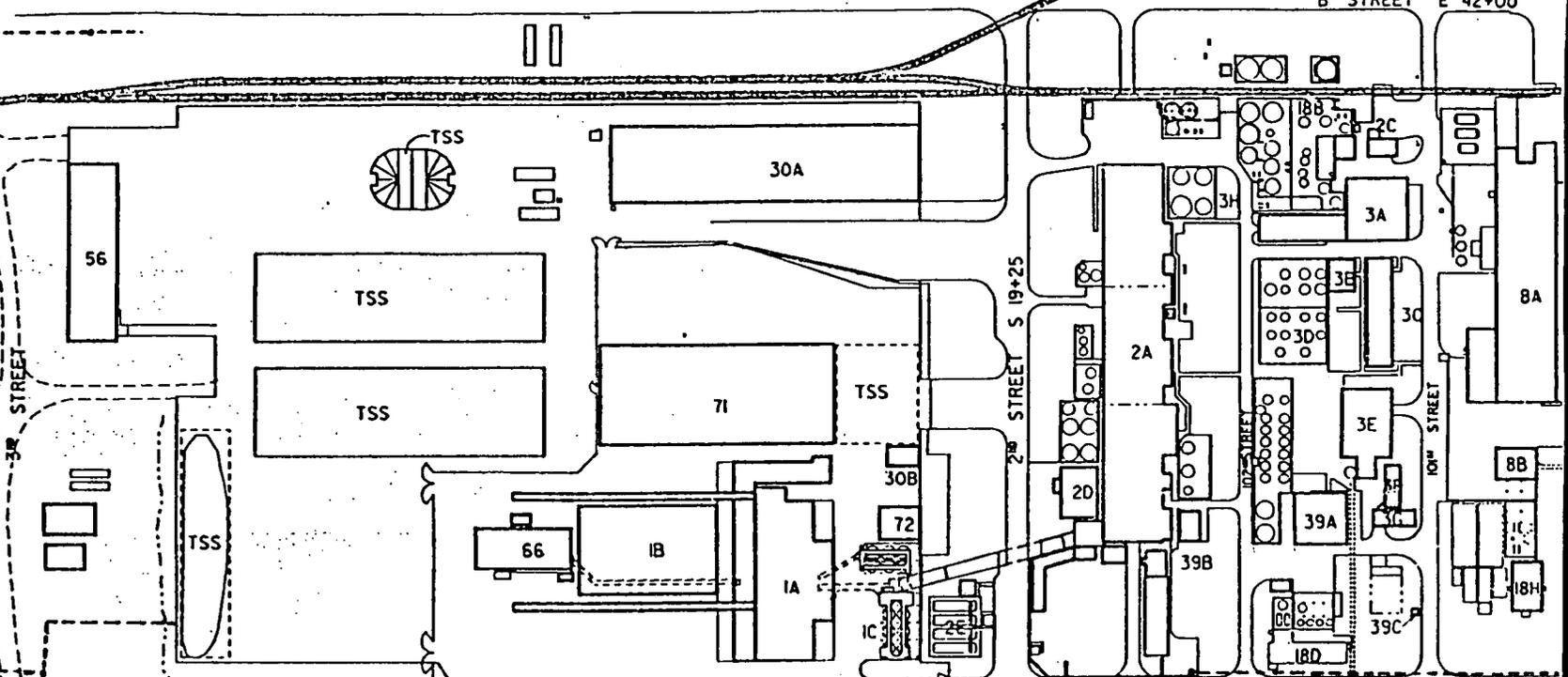
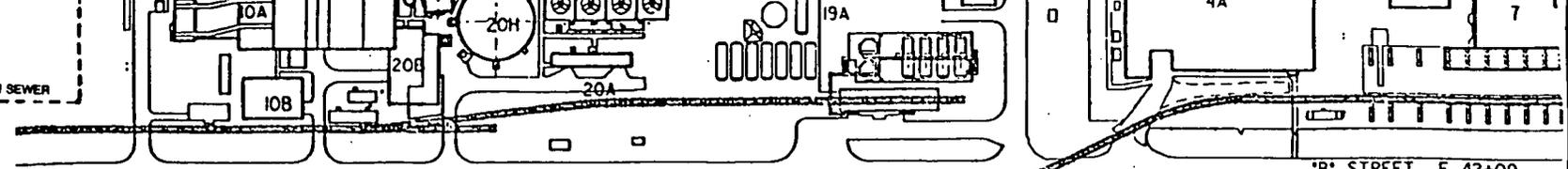
GRID INDEX C-1

2885



EXISTING STORM SEWER

EXISTING STORM SEWER



EXISTING STORM SEWER

EXISTING STORM SEWER E 35+00

E 35+00

NEW TRENCH DRAIN W/GRATE

NEW 12" DIA. RCP

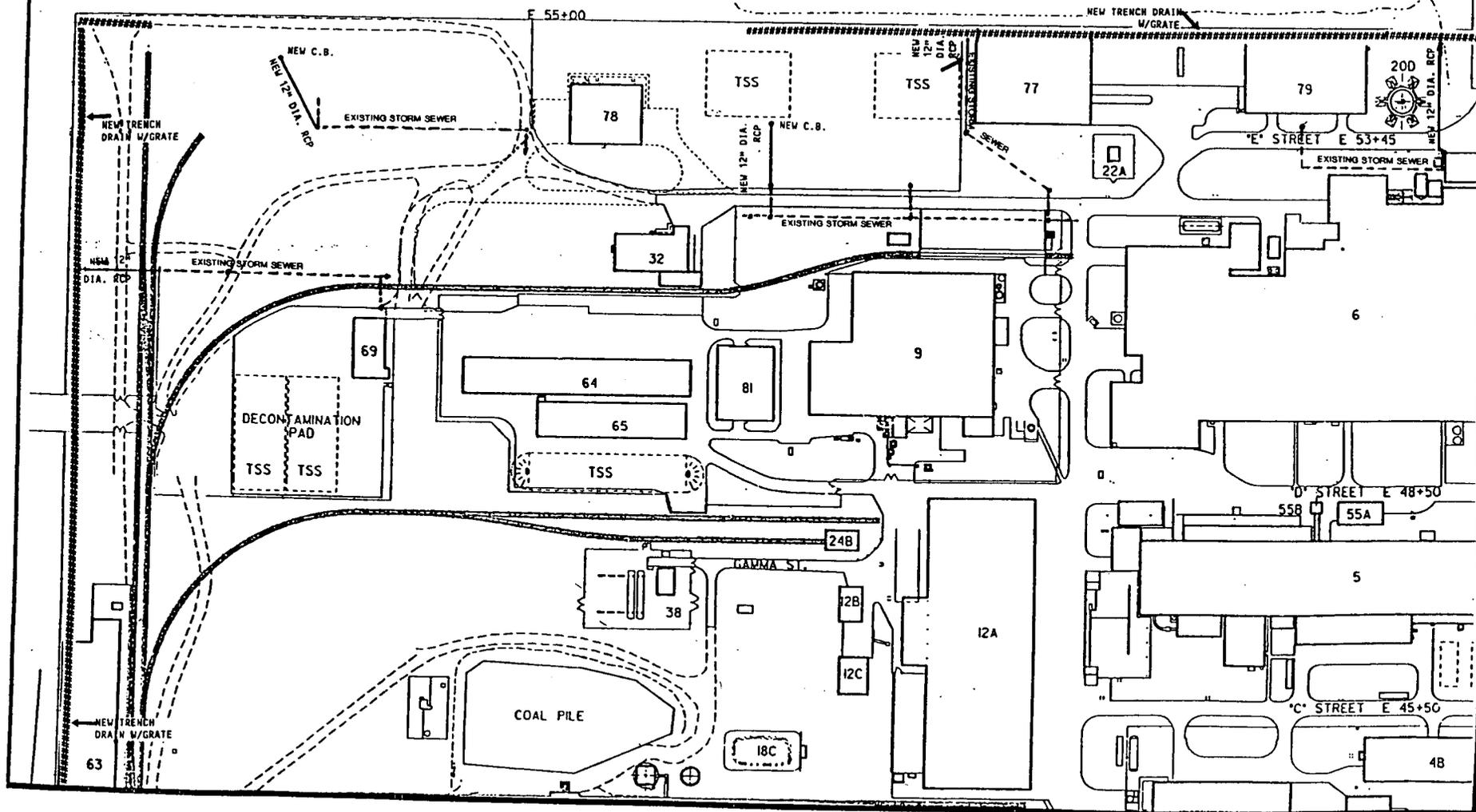
NEW 12" DIA. RCP

61

2005

C-2

UNCONTROLLED PRODUCTION AREA
STORMWATER RUNOFF

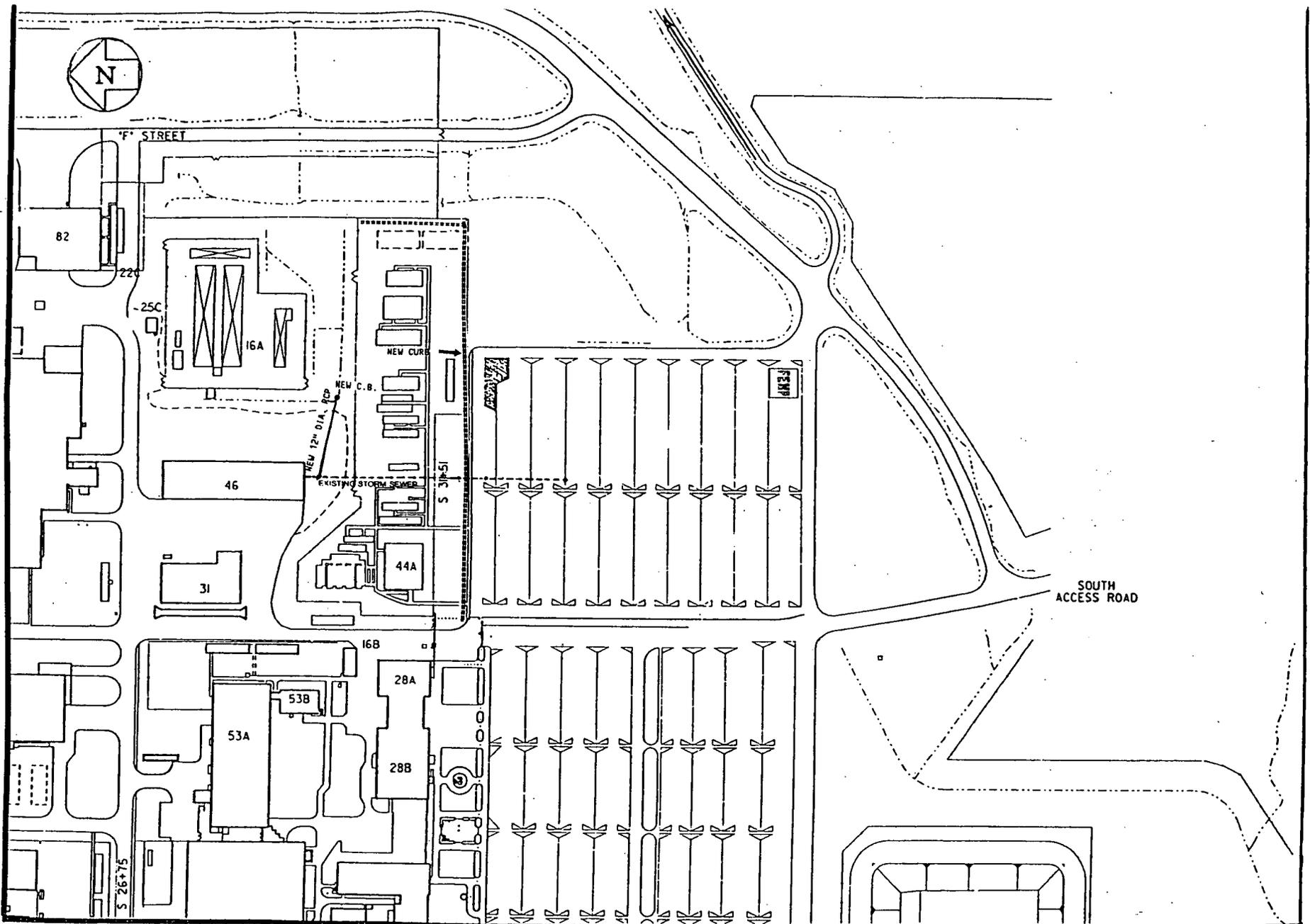


C-3

UNCONTROLLED PRODUCTION AREA
STORMWATER RUNOFF

20

2885

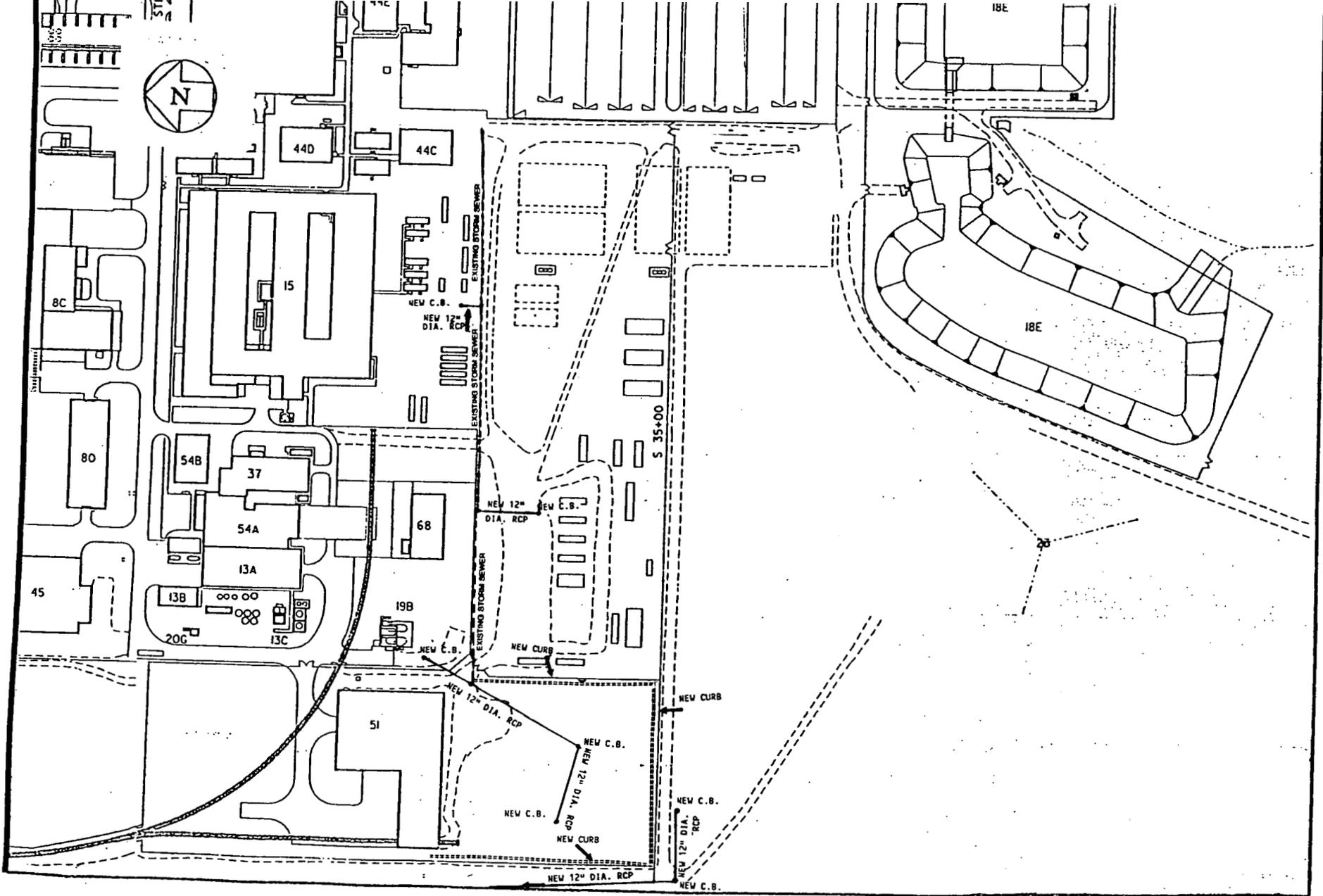


UNCONTROLLED PRODUCTION AREA
 STORMWATER RUNOFF

C-4

2885

21



C-5

UNCONTROLLED PRODUCTION AREA
STORMWATER RUNOFF

22

2885

PRE-EXCAVATION SOIL SAMPLING AND ANALYSIS PLANFEMP COLLECT UNCONTROLLED PRODUCTION AREA STORMWATER RUNOFF PROJECT1.0 Introduction

As part of the Storm Sewer Improvements - Plantwide Project (WBS 1.1.2.4.0.3), uncontrolled runoff from the Fernald Environmental Management Project (FEMP) production area will be redirected to the existing storm sewer collection system. Currently, a majority of the fenced production area runoff is collected by the existing storm sewer system and transported by means of catch basins, manholes, drain inlets, and a pipe network to a single 60 inch diameter pipe, which discharges to the Storm Water Retention Basin (SWRB). Several subdrainage areas at the perimeter of the fenced production area exhibit uncontrolled stormwater flows. Methods for redirecting uncontrolled flows include intercepting the flow with trench drains and curbs, and the addition of pipe and catch basin components.

In July 1989, soil samples were collected at 38 sample point locations within the FEMP production area. At each sample point location, soil samples were extracted from the surface and at an approximate total depth of one foot below surface grade. Surface samples were analyzed for Thorium, Thorium-228, and Uranium-228, and Uranium activities, Uranium isotopes, and EP Tox Metals. Soil samples collected at the one-foot depth interval were analyzed for Total Uranium and Total Thorium concentrations. Based on these data, process knowledge, and reviews of site history and spill records, the soils in these areas were determined to be non-RCRA (WMC0:EC(SW):90-227, "RCRA DETERMINATION AND RADIOLOGICAL CHARACTERIZATION OF RUBBLE FROM STORM SEWER IMPROVEMENT PROJECT," June 7, 1990).

2.0 Purpose of Pre-Excavation Sampling

Pre-excavation soil sampling and characterization is required to: 1) identify areas where personnel may be exposed to hazardous substances during construction activities, so that appropriate health and safety measures can be taken to protect the workers; 2) provide data that may be used for RCRA characterization of wastes generated during soil excavation activities; 3) provide data complimentary to the RI/FS database for the FEMP. Soil Sampling Locations are shown in Figures C-6, C-7, and C-8.

PRE-EXCAVATION SOIL SAMPLING AND ANALYSIS PLAN (Cont.)3.0 Identification of Contaminants

Based on the July 1989 soil analytical data, the following radiological characterizations were made:

- Soils in the northwest quadrant of the FEMP production area are generally Category I*, with the exception of surface soil samples collected at sample point locations SSI-30 and SSI-26, which were determined to be Category II*.
- Soils in the southwest quadrant of the FEMP production area are generally Category I*, with the exception of surface soil samples collected at sample point location SSI-21 and SSI-22, which were determined to be Category II*.
- Soils in the northeast quadrant of the FEMP production area were determined to be Category II* (SSI-1, SSI-3, SSI-5, and SSI-6) and Low Level Wastes (SSI-2, SSI-7, and SSI-10).
- Soils in the southeast quadrant of the FEMP production area are generally Category II* wastes.

*Note: Category I soils are those that exhibit an average concentration of depleted uranium of < 35 pCi/g or natural thorium of < 10 pCi/g, and determined not to be RCRA hazardous waste.

Category II soils are those that exhibit average concentrations of depleted uranium of < 100 pCi/g or natural thorium of < 50 pCi/g, and determined not to be RCRA hazardous waste.

Low Level Waste soils are those that exhibit an average concentration of depleted uranium of > 100 pCi/g or natural thorium of > 50 pCi/g, and determined not to be RCRA hazardous waste.

Based on process knowledge, EP Tox Metals data, and reviews of site history and spill records, the soils were determined to be non-RCRA. EP Tox Metals data were found to be below regulatory limits for all sample point locations. However, since the EP Tox analytical methods have been replaced by the Toxicity Characteristics Leachate Procedure (TCLP), additional soil samples should be collected and analyzed by TCLP methods to confirm or negate the previous RCRA determinations.

4.0 Sample Field Site

A total of 42 discrete sample point locations are proposed for this project. Sample point locations SP-1 through SP-14 are located within the proposed trench drain excavation area parallel to the northern fenced boundary of the FEMP production area. Sampling point location SP-12⁴ through SP-26 are located within the proposed trench drain excavation area

parallel to the western boundary of the FEMP production area adjacent to Building 67. Sample point location SP-27 through SP-38 are located within the proposed trench drain area parallel to the eastern boundary of the FEMP production area adjacent to Buildings 77, 79, and 82. Lastly, sample point locations SP-39 through SP-42 are located within the proposed trench drain excavation parallel to the fenceline between the RUST Trailer Complex and Buildings 46 and 316A. The sample point locations, illustrated by Figures C-6, C-7, and C-8 and listed in Table 1, were derived using guidelines provided in EPA Document No. 230/02-89-042, "Methods for Evaluating Attainment of Cleanup Standards, Volume 1, Soils and Solid Media." Sample point locations for Hazardous Substance List (HSL) analysis were selected based on their geographical proximity to and topographical relationship with known or suspected Hazardous Waste Management Units/Solid Waste Management Units (HWMU/SWMU). Table 2 shows the sampling analytical parameters.

PRE-EXCAVATION SOIL SAMPLING AND ANALYSIS PLAN (Cont.)

5.0 Sample Collection And Analysis

Soil samples, at each sample point location, will be collected using a stainless steel hand auger or coring device (with Lexan core inserts) at one foot interval from the ground surface to an approximate total depth of three feet below surface grade or the total depth of the storm sewer trench drain excavation, whichever is greater. A portion of each soil sample will be retained in clean glass jars sealed with aluminum foil lids for field screening of volatile organic compounds using a photoionization detector (PID). The soil samples will be stored at room temperature for a period of at least 15 minutes to allow for volatilization of the organic compounds prior to PID measurement.

The sample exhibiting the greatest PID reading at each sample point location will be retained in glass jars sealed with Teflon-lined Closures (TLC) and will be analyzed for TCLP - Full List analyses. The soil sample exhibiting the greatest PID reading at sample point locations SP-3, SP-6, SP-10, SP-11, SP-15, SP-23, SP-27, SP-29, SP-30, SP-38, and SP-42 will also be retained in glass jars sealed with TLC for Hazardous Substance List (HSL) - Plan analyses. If PID readings are equivalent for each soil sample within a given sample point location, then a soil sample will be collected at the randomized depth indicated in Table 1 and retained for TCLP - Full List and/or HSL - Plus analyses.

Each soil sample will also be field screened for radiological contaminants using a portable radiation detection device. The soil sample exhibiting the greatest radiation detection reading at each sample point location will be retained in glass or plastic jars for total uranium and thorium analysis. If radiation detection readings are equivalent for each soil sample within a given sample point location, then a soil sample will be collected at the randomized depth indicated in Table 1 and retained for the previously mentioned radiological analyses.

For Quality Assurance/Quality Control (QA/QC) purposes, trip, field and rinseate blanks will be collected on a daily basis. The QA/QC samples will be analyzed for TCLP - Full List and/or HSL - Plus and radiological constituents.

The work to be performed and outlined in the pre-excavation sampling and analysis plan will be accomplished in accordance with the Health and Safety Plan for the Storm Sewer Improvements Project and Appendix L of the QAP₃P.

PRE-EXCAVATION SOIL SAMPLING AND ANALYSIS PLAN (Cont.)

TABLE 1
Sample Point Locations for Pre-Excavation Sampling and Analysis Plan
Collect Uncontrolled Production Area Stormwater Runoff Project

Phase I Sample Point	Area	Distance From Origin	Rand. Depth	Sample Point Description
1	North	202'	2.6'	-----
2	North	215'	0.2'	-----
3	North	262'	1.6'	Northwest of Bldg. 24A.
4	North	485'	2.8'	North of Bldg. 60
5	North	606'	3.0'	-----
6	North	635'	2.4'	-----
7	North	711'	2.3'	South of Fire Training Facility.
8	North	819'	0.3'	North of Bldg. 63
9	North	858'	2.2'	North of Bldg. 63
10	North	1114'	1.0	Northeast of Decontamination Pad
11	North	1219'	0.2'	-----
12	North	1561'	1.7'	-----
13	North	1587'	1.6'	-----
14	North	1622'	2.9'	-----
15	West	14'	2.3'	Northwest of Bldg. 20E
16	West	58'	1.4'	-----
17	West	80'	2.9'	-----
18	West	114'	0.3'	West of Bldg. 67
19	West	121'	0.2'	West of Bldg. 67.
20	West	134'	1.7'	West of Bldg. 67
21	West	141'	2.2'	Northwest of Bldg. 67

Notes:

1. The origin for the North sample area is assumed to be the intersection of the fenceline indicating the north-northwestern boundary of the FEMP Process Area and the southernmost fork of the west-southwestern railroad line.
2. The origin for the West sample area is assumed to be the intersection of the fenceline indicating the western boundary of the FEMP Process Area and the East Gate (entrance) to the K-65 area.
3. Randomized sample depths were calculated using EPA guidance protocol. In reality, samples with randomized depths of 0.1 to 0.9 feet will be collected from the 0'-1' soil core materials, randomized depths of 1.1 to 1.9 feet will be collected from the 1'-2' soil core materials, and randomized depths of 2.1 to 2.9 feet will be collected from the 2'-3' soil core materials.

PRE-EXCAVATION SOIL SAMPLING AND ANALYSIS PLAN (Cont.)

TABLE 1 CONT.
Sample Point Locations for Pre-Excavation Sampling and Analysis Plan
Collect Uncontrolled Production Area Stormwater Runoff Project

Phase I Sample Point	Area	Distance From Origin	Rand. Depth	Sample Point Description
22	West	143'	3.0'	Northwest of Bldg. 67
23	West	163'	2.6'	Northwest of Bldg. 67
24	West	176'	1.6'	.....
25	West	184'	1.6'	.....
26	West	200'	0.2'	.....
27	East	44'	2.3'	Southeast of East Water Tower
28	East	185'	1.4'	East of Bldg. 79
29	East	257'	2.9'	Northeast of Bldg. 79
30	East	364'	0.3'	East of Bldg. 77
31	East	388'	0.2'	East of Bldg. 77
32	East	428'	1.7'	.....
33	East	451'	2.2'	.....
34	East	457'	3.0'	.....
35	East	521'	2.6'	.....
36	East	563'	1.6'	.....
37	East	589'	1.6'	.....
38	East	639'	0.2'	.....
39	South	8'	2.6'	.....
40	South	34'	0.3'	.....
41	South	51'	0.2'	.....
42	South	67'	1.6'	.....

Notes:

1. The origin for the West sample area is assumed to be the intersection of the fenceline indicating the western boundary of the FEMP Process Area and the East Gate (entrance) to the K-65 area.
2. The origin for the East sample area is assumed to be the intersection of the fenceline indicating the eastern boundary of the FEMP Process Area and the northeast corner of the RIMIA Bldg. (Bldg. 82)
3. The origin for the South sample area is assumed to be the intersection of the fenceline (separating the RUST Trailer Complex and Buildings 46 and 16A) and a point parallel to the northeast corner of the access road between Buildings 46 and 16A.
4. Randomized sample depths were calculated using EPA guidance protocol. In reality, samples with randomized depths of 0.1 to 0.9 feet will be collected from the 0'-1' soil core materials, randomized depths of 1.1 to 1.9 feet will be collected from the 1'-2' soil core materials, and randomized depths of 2.1 to 2.9 feet will be collected from the 2'-3' soil core materials.

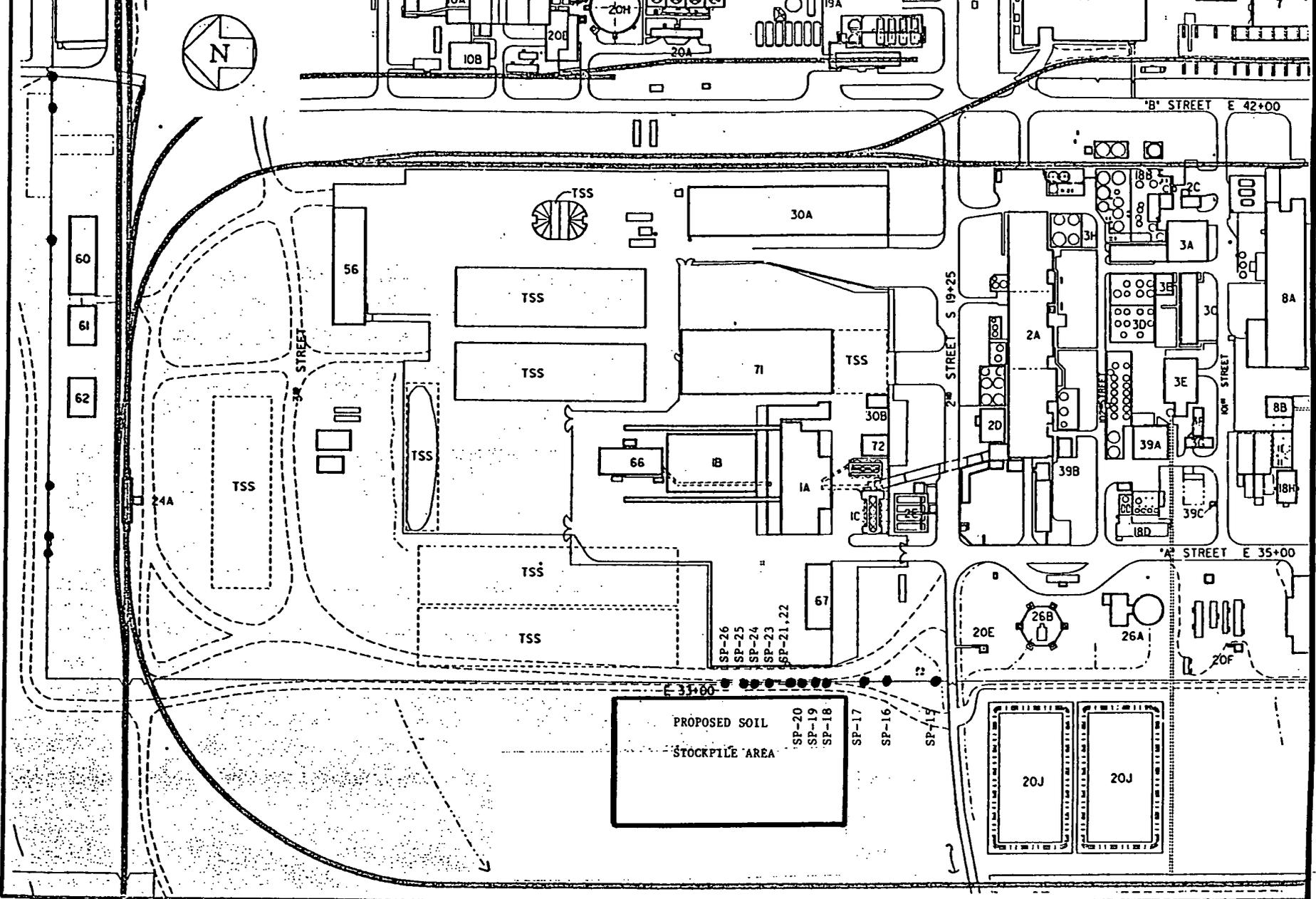
PRE-EXCAVATION SOIL SAMPLING AND ANALYSIS PLAN (Cont.)

Table 2
Analytical Parameters for Collect Uncontrolled Production Area
Stormwater Runoff Removal Action Work Plan

Analysis Requested	Sample Matrix	# of Samples	Sample Type
TCLP Full List	Soil	42	Grab
TCLP Full List	Soil	4	Duplicate
TCLP Volatiles	Water	7*	Trip Blank
TCLP Volatiles	Water	7*	Field Blank
TCLP Full List	Water	7*	Rinseate Blank
HSL Plus	Soil	11	Grab
HSL Plus	Soil	1	Duplicate
HSL Volatiles	Water	2*	Trip Blank
HSL Volatiles	Water	2*	Field Blank
HSL Plus	Water	2*	Rinseate Blank
Total U/Th	Soil	42	Grab
Total U/Th	Soil	4	Duplicate
Total U/Th	Water	7*	Trip Blank
Total U/Th	Water	7*	Field Blank
Total U/Th	Water	7*	Rinseate
Alpha/Beta Screen	Soil	104	Grab & Duplicate
Alpha/Beta Screen	Water	48*	QA/QC Blanks

* Trip, field and rinseate blanks will be collected for each sampling interval (daily basis). It is estimated that sampling activities will require a total of 7 working days. The number of QA/QC samples and Alpha/Beta screen samples will be modified in agreement with the actual number of working days to complete the sampling activities.

SP-6
SP-5
SP-4
SP-3
SP-2
SP-1



PROPOSED SOIL
STOCKPILE AREA

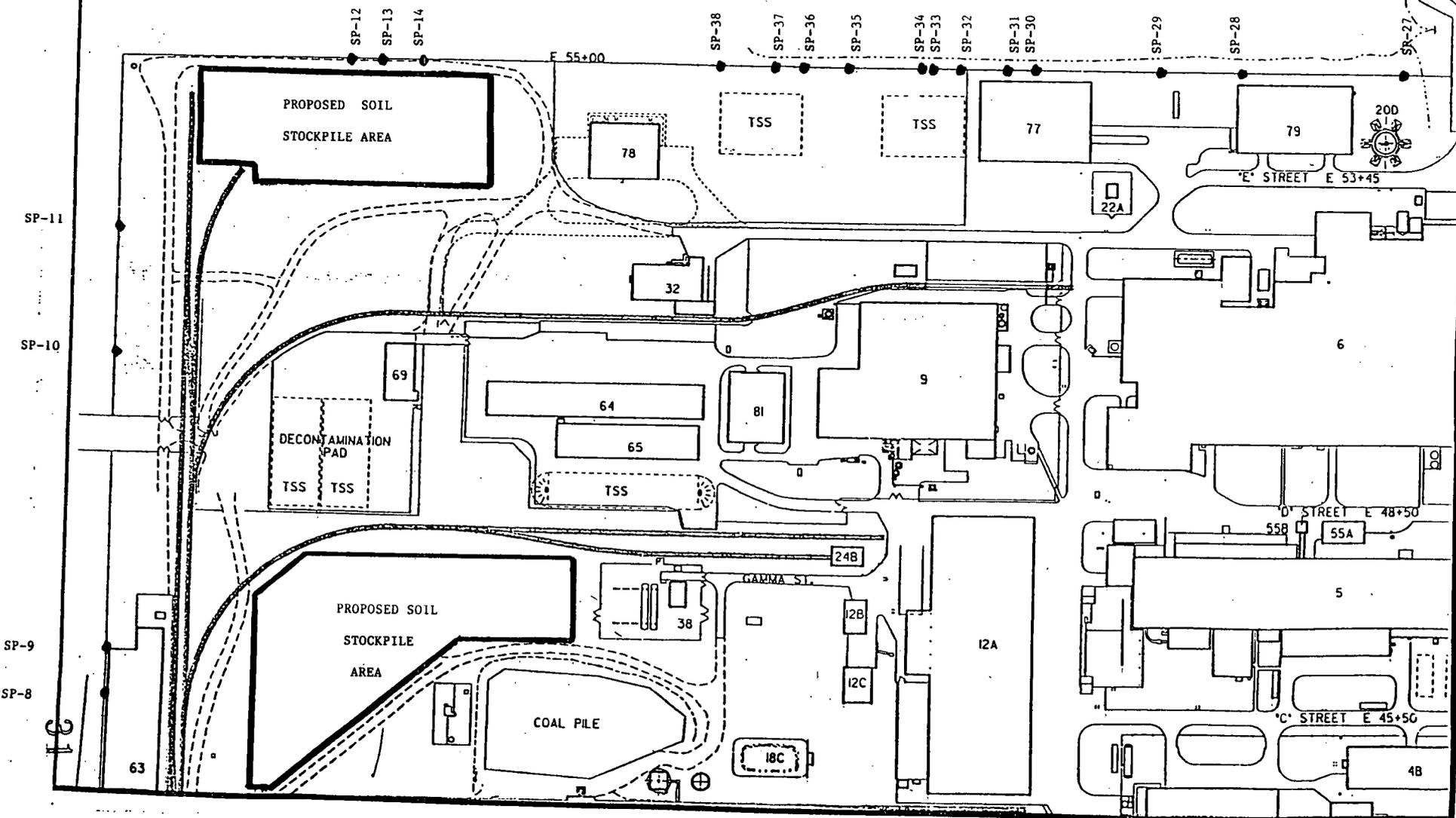
SP-20
SP-19
SP-18
SP-17
SP-16
SP-15

UNCONTROLLED PRODUCTION AREA
STORMWATER RUNOFF

C-6

30

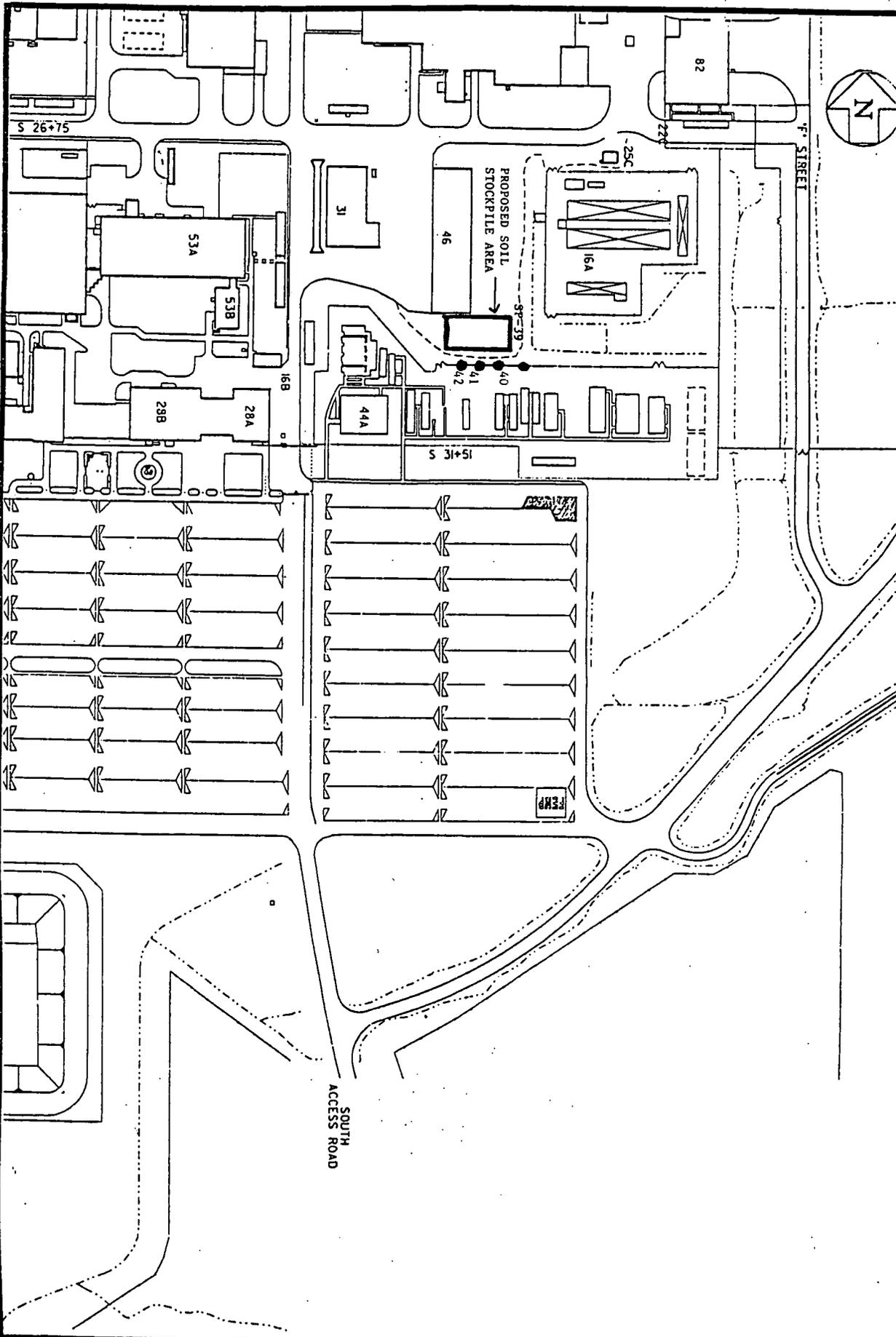
2885



2885

C-7

UNCONTROLLED PRODUCTION AREA



UNCONTROLLED PRODUCTION AREA
STORMWATER RUNOFF

SOUTH
ACCESS ROAD

F STREET

S 26+75

C-8

288
51

32

POST-EXCAVATION SOIL MANAGEMENT AND DISPOSITION PLAN1.0 Post-Excavation Activities1.1 Excavated Soil Management

All excavated soil materials and excess soil materials will be managed in accordance with Removal Action No. 17 from the Amended Consent Agreement, "Improved Storage of Soil and Debris." Excavated soil materials and excess soil materials will be stockpiled at a site located in close proximity to the trench drain excavation until a RCRA and/or radiological determination has been made. A total of four (4) unique soil stockpiles will be created. Excavated soils from a given trench drain excavation area (areas listed in Table 1) will not be combined with soils from another excavation area. Soil stockpile segregation will eliminate the need for post-excavation sampling.

In order to allow for drainage of runoff away from the soil stockpiles, area with the greatest relative elevation will be selected for soil stockpile sites.

A chain-link fence will be erected at the perimeter of each soil stockpile in accordance with FEMP waste management plans. Each soil stockpile will be managed by FEMP Operations personnel placing a heavy, nonpermeable tarpaulin on the ground in the area where the soil will be stockpiled. The perimeter of the tarpaulin will be fastened to the ground by stakes or other appropriate means. Soil will be piled radially from the center of the tarpaulin, with a maximum lateral extent to no less than 3 feet from the edge of the tarpaulin. Each soil stockpile will be completely covered using a heavy, nonpermeable tarpaulin. The tarpaulin cover will be weighted at its perimeter and intermittently over its surface area to avoid disturbance by wind. The tarpaulins (ground cover and soil pile cover) will be disposed of in accordance with the disposition or determination for each soil stockpile as indicated in Section 1.2.

1.2 Disposition of Soil Stockpiles

The disposal requirements for each soil stockpile will be evaluated separately. Stockpiled soil will be dispositioned as follows:

- Category I - A stockpile exhibiting average concentrations of depleted uranium of < 35 pCi/g or natural thorium of < 10 pCi/g, and determined not to be RCRA hazardous waste shall be returned to an uncontrolled state and made available for unrestricted use within the FEMP Controlled Area. In order to prevent wind and runoff erosion, the entire stockpile will be covered with sod or other suitable vegetation.

POST-EXCAVATION SOIL MANAGEMENT AND DISPOSITION PLAN (Cont.)

- Category II - A stockpile exhibiting an average concentration of depleted uranium of < 100 pCi/g or natural thorium of < 50 pCi/g, and determined not to be RCRA hazardous waste shall be returned to an uncontrolled state and made available for unrestricted use within the FEMP Controlled Area. In order to prevent wind and runoff erosion, the entire stockpile will be covered with sod or other suitable ground cover vegetation.
- Low Level Waste - A stockpile exhibiting an average concentration of depleted uranium of > 100 pCi/g or natural thorium of > 50 pCi/g, and determined not to be RCRA hazardous waste shall be containerized and dispositioned as low-level radioactive waste.
- Mixed Hazardous Waste - A stockpile exhibiting average concentration of depleted uranium of > 100 pCi/g or natural thorium of > 50 pCi/g, and determined to be RCRA hazardous waste shall be containerized, stored and managed as mixed waste.

REFERENCE LIST

The following documents have been used as a reference in the body and/or the attachments of this work plan:

1991 Amended Consent Agreement, U. S. Environmental Protection Agency Region V
In the Matter of U. S. Department of Energy Feed Materials Production Center

Removal Site Evaluation, Collect Uncontrolled Production Area Runoff, Fernald
Site Office, U. S. Department of Energy, January 1992.

National Contingency Plan

OSWER Directive 9360.0-03B, Superfund Removal Procedures, Rev. 3

Safe Drinking Water Act

WMCO:EC(SW):90-227, RCRA Determination and Radiological Characterization of
Rubble From Storm Sewer Improvement Project, June 7, 1990.

29 CFR 1910.120

FEMP Site Health and Safety Plan

FMPC-2116 Topical Manual, Implementing FMPC Policies and Procedures for System
Safety Analysis

FEMP Quality Assurance Program Plan (QAPP), PL-3014

ASME NQA-1

QAMS-005/80

DOE Order No. 5700.6

DOE Order No. 5400.1

WEMCO Site Procedures Manual FMPC-2054

EPA Document No. 230/02-89-042, Methods for Evaluating Attainment of Cleanup
Standards, Volume 1, Soils and Solid Media

Sitewide CERCLA Quality Assurance Project Plan (QAP₃P)