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**PROJECT SPECIFIC PLAN FOR OPERABLE UNIT  
5 SOUTHWEST FIELD INVESTIGATION  
REVISION 2 ADDENDUM DECEMBER 1993**

01/13/94

**DOE-FN/EPA  
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ADDENDUM  
OU5**

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**PROJECT SPECIFIC PLAN**  
**for**  
**OPERABLE UNIT 5 SOUTHWEST FIELD INVESTIGATION**

**REVISION 2**

WBS No. 50.03.25

Addendum to the  
Operable Unit 5 Work Plan  
Remedial Investigation/Feasibility Study

Prepared by  
Fernald Environmental Restoration Management Corporation

Prepared for  
U.S. Department of Energy  
Fernald Field Office

Under Contract DE-AC05-92OR21972

December 1993

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## 1.0 INTRODUCTION

This Project Specific Plan (PSP) was developed to determine if contaminants are present in subsurface soils, groundwater, and surface water near the southwestern boundary of the Fernald Environmental Management Project [FEMP (see Figure 1)]. Based on interpretation of an historical aerial photograph (April 6, 1954), the area (see Figure 1) appears to have been excavated. Block modeling performed by OU 2 suggests a contamination source in this former excavation area. Results of the sampling effort outlined in this PSP will be used to determine the environmental impacts the excavation and subsequent activities may have had on the subsurface in the area. The data acquired from this program will supplement existing Operable Unit (OU) 5 data and will be used in the Remedial Investigation Report (RI). This PSP is an addendum to the OU 5 RI/FS Work Plan.

This PSP has been developed under the specifications of the FEMP Sitewide Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ). The PSP will guide field personnel in collection of samples required to meet the project-specific data quality objectives (DQOs). All field operations and data handling procedures will be consistent with the FEMP SCQ; sections of the SCQ are incorporated into this PSP by reference.

## 2.0 DATA QUALITY OBJECTIVES

The logic flow process presents the rationale for the quality and type of data required, the technical defensibility of the data, and risk comprehension and minimization to ensure quality throughout the site remediation process.

The logic flow will help to identify areas of concern, the selection of equipment, quality assurance requirements, and analytical support levels (ASLs). The logic statement is considered part of the DQO process as a supporting document and is kept on file. The logic flow process consists of the following seven steps:

- 1) Statement of the problem,
- 2) Identification of a decision that addresses the problem,
- 3) Identification of the inputs that affect the decision,
- 4) Specification of the domain of the decision,
- 5) Development of logic statement,
- 6) Establishment of constraints on uncertainty, and
- 7) Optimization of design for obtaining data.

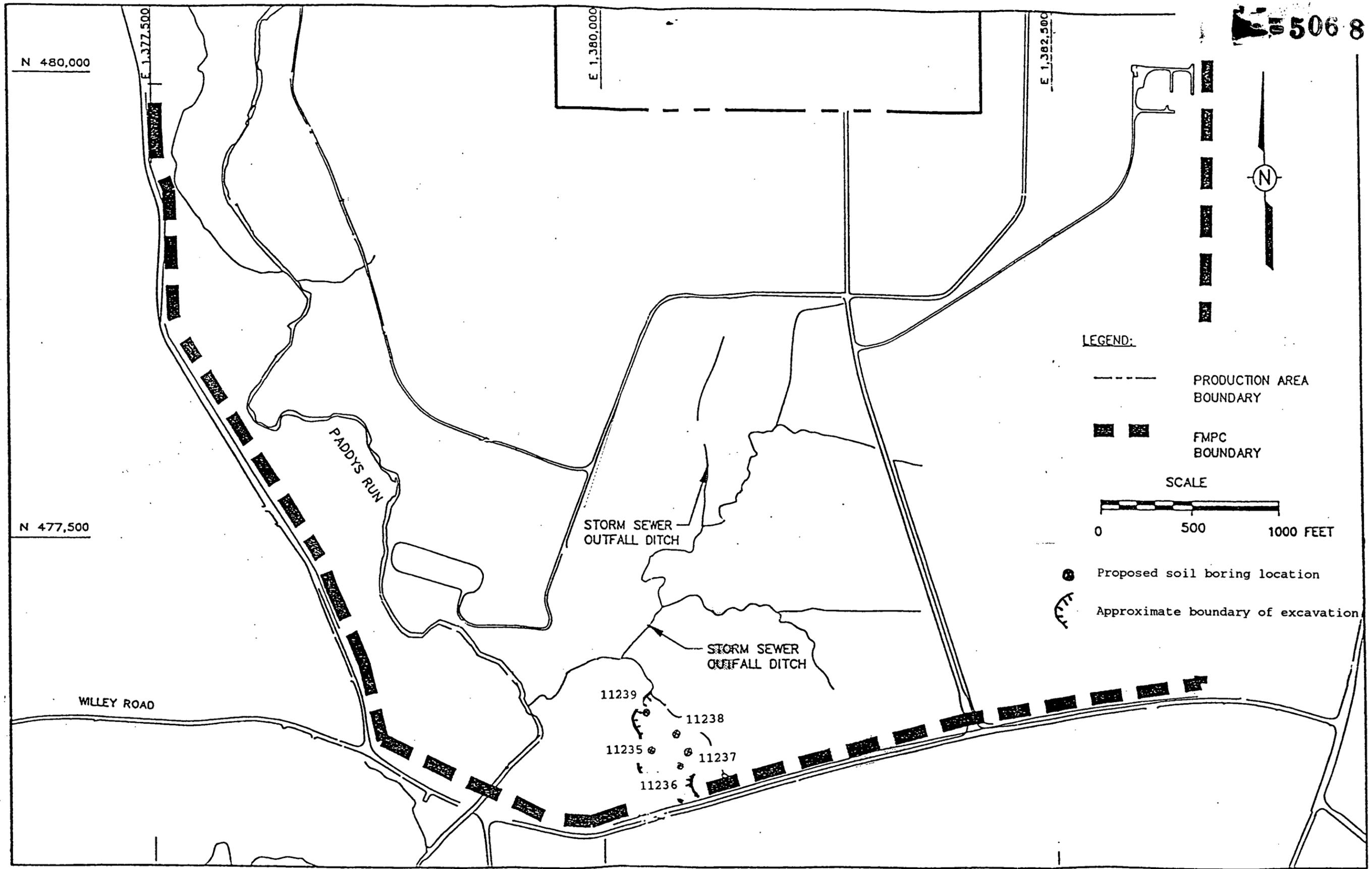


FIGURE 1. Operable Unit 5 Southwest Field Investigation, Fernald Environmental Management Project

2.1 STATEMENT OF THE PROBLEM

An aerial photograph taken on April 6, 1954 indicate the Southwest Field Area, located at the southernmost boundary of the FEMP, was used as a soil excavation site. Solid Block Modeling performed by OU 2 suggests that the area may be a major source of contamination to the South Plume.

To determine if the excavated area was also used for disposal and/or may be contributing to contamination in the South Plume, five soil borings will be completed in this area. Soil samples will be collected from the borings. Two groundwater seeps and the ditch on the eastern boundary of the excavation will also be sampled, if sufficient water is present. Additionally, groundwater samples from the underlying aquifer will be collected using the Hydropunch™ technique at one boring location. In the event significant volumes of perched water are encountered during drilling, the borings will be discontinued. At these locations, attempts will be made to collect perched water samples by bailing through the augers. Up to three additional borings and three shallow hand auger borings may be completed, as necessary, based upon progressive field information to provide the necessary characterization data.

Data from the preliminary screening of this area will be used to identify the need for additional investigation to determine the source of the South Plume. In order to allow timely decisions concerning the source of the South Plume and to include the data from the Southwest Field Investigation in the OU 5 RI, sampling activities must be initiated no later than December 16, 1993.

2.2 IDENTIFICATION OF A DECISION THAT ADDRESSES THE PROBLEM

The screening data will be used to decide if a modified path forward is needed to identify the source(s) of the South Plume. If the screening indicates this area is contaminated and may be a source of the South Plume, the information will direct the preparation of an amended RI/FS Project Specific Plan to determine the nature and extent of the contamination.

2.3 IDENTIFICATION OF THE INPUTS THAT AFFECT THE DECISION

The results of the soil, seep, and groundwater samples will be used as input to modify the path forward for determining the source(s) of the South Plume. The samples will be analyzed for total uranium by the on-site laboratory; water samples will also be analyzed for total and dissolved uranium by the on-site laboratory. The sampling locations will be determined from historical photographs, historical and current topographical information, and OU 2 and OU 5 draft RI information.

2.4 SPECIFICATION OF THE DOMAIN OF THE DECISION

In order to determine if disposal activity was conducted in the Southwest Field area, sampling is necessary within the area located north of Willey Road along the south property line of the FEMP upgradient of the highest concentrations of the South Plume.

To include the conclusions of the Southwest Field area investigation in the OU 5 RI, sampling activities must be initiated no later than December 16, 1993. This schedule is necessary to allow analyses to be conducted, evaluated, and incorporated into a report format in a timely manner.

2.5 DEVELOPMENT OF LOGIC STATEMENT

The resulting data from this investigation will be used to determine if and how to modify the path forward for determining the source and nature of extent of the contamination causing the South Plume.

2.6 ESTABLISH CONSTRAINTS ON THE UNCERTAINTY

The need for the samples and the distribution of sampling points were determined on the basis of a review of the aerial photographs and a site walkover. This data will be combined with data from other operable units to assure that all areas of soil contamination will be addressed in the RI/FS process. If contamination is confirmed, a more thorough site investigation will be conducted to support the RI/FS; this potential future site investigation will be completed under the terms of a separate PSP.

2.7 OPTIMIZE A DESIGN FOR OBTAINING QUALITY DATA

The number of soil samples collected in the Southwest Field area will be variable and dependent upon the thickness of the overlying glacial till, the depth to groundwater, and field screening results. Soil samples will be collected continuously and samples collected at the following depths from each of the five borings, and as required, the three contingency borings will be analyzed for total uranium:

- |                 |   |
|-----------------|---|
| 0.0 to 0.5 feet | 9.0 to 9.5 feet                               |
| 1.0 to 1.5 feet | 12.0 to 12.5 feet                             |
| 2.5 to 3.0 feet | 15.0 to 15.5 feet                             |
| 6.0 to 6.5 feet | 18.0 to 18.5 feet                             |
|                 | 20.0 to 20.5 feet or first encounter of water |

Field screening using hand-held detectors will be conducted during the drilling process. All split-spoon samples will be initially screened using both a photoionization detector (PID) and hand-held radiological instrumentation. Biased soil samples collected from locations exhibiting elevated field readings will be analyzed for total uranium by the on-site laboratory.

The soil, groundwater, and surface water samples collected from the Southwest Field area will be analyzed for total uranium at the on-site FEMP laboratory at ASL B. Groundwater and surface water will also be analyzed for dissolved uranium by the on-site FEMP laboratory at ASL B.

## 2.8 SUMMARY

Five borings will be completed and soil, groundwater, and surface water will be collected in the excavated area in the Southwest Field. Three deep borings and three hand auger borings will be sampled as contingency locations. Samples will be analyzed for total uranium at an ASL B by the on-site FEMP laboratory. Table 1 summarizes the sampling objectives of the Southwest Field Investigation.

**TABLE 1**  
**DATA OBJECTIVES FOR SOIL SAMPLING PROGRAM**

Activities	Collect soil, groundwater, and surface water samples from the Southwest Field.
Objectives	Provide screening level information in support of the OU 5 RI.
Prioritized Data Uses	Provide screening level information to determine the presence or absence of contaminated media or waste disposal.
Appropriate Analytical Levels	PID (organics) screening and GM (Radiological) field screening: ASL A; Total uranium and dissolved uranium: ASL B. Rinsates will be collected at a frequency of one in 20 washings.
Constituents of Concern	Total and dissolved uranium
Level of Concern	Preliminary remediation goals for radionuclides.
Required Detection Limits	Specified in the SCQ.
Critical Samples	All samples will be critical to verify the presence or absence of contamination.

## 3.0 PROJECT ORGANIZATION

An Environmental Restoration Management Contract (ERMC) has been implemented at the FEMP site to manage the restoration activities, with Fernald Environmental Restoration Management Corporation (FERMCO), a wholly-owned subsidiary of Fluor Daniel, Inc., currently serving as the ERMC. FERMCO, reporting directly to the Department of Energy-Fernald Field Office (DOE-FN), will act as the main contractor for FEMP activities and coordinator of technical support and remediation subcontractors. Under the current FERMCO organizational structure, primary responsibility for implementation of the OU 5 work plan addenda will be the specific responsibility of the OU 5 Engineering Department Manager.

This PSP has been developed to fulfill data needs for the OU 5 RI. The OU 5 Engineering Department Manager has full responsibility and authority for the content and specifications in this PSP. Any changes to the activities specified in this PSP must have the approval of the OU 5 Engineering Department Manager prior to implementation.

Field activities are to be conducted by the FEMP Site Media Sampling Group of the Environmental Safety and Health Division with technical support from the Site Characterization Group of the Environmental Division. The Site Media Sampling staff will assign unique sample numbers for all samples collected. Field activities include sample collection, handling, documentation, preservation, and shipment and management of subcontracted drilling services. All sampling personnel have the responsibility for adhering to the SCQ.

At the completion of field activities, OU5 will prepare a report which includes copies of all field forms, data sheets, and activity logs, as well as a written summary of the field activities noting any variances from either this PSP or SCQ procedures. Appropriate SCQ forms (D-1 through D-13), Appendix B of the SCQ, must also be completed for data validation and submitted to the FEMP laboratory as part of the field activity.

#### 4.0 FIELD SAMPLING PLAN

Based on interpretation of an historical aerial photograph, an area immediately north of Willey Road and west of the South Access Road had been excavated in the early 1950s (see Figure 1). To determine if the area had been used for disposal and could be the source of the South Plume, five deep borings and three shallow borings will be completed in the excavated area with soil, groundwater, and surface water samples collected from the area and analyzed by the on-site FEMP laboratory for total uranium. Water samples will also be analyzed for dissolved uranium by the on-site laboratory.

##### 4.1 DEEP SOIL BORINGS AND GROUNDWATER SAMPLE COLLECTION

Five soil borings will be advanced using a conventional hollow-stem auger rig and a 3-inch split spoon sampler. Soil samples will be collected continuously; soil borings will be terminated if perched water is encountered. A sample of the perched water will be collected from the augers, if sufficient volumes of water are encountered. Up to three contingency borings will be completed if perched water is encountered in any of the five borings. Locations of the contingency borings will be determined in the field, as needed.

Continuous samples will be collected until perched groundwater or the top of the Great Miami Aquifer is encountered. Each six-inch sample segment will be field screened using a photoionization detector (PID) and a pancake frisker, as outlined in the SCQ, Section 5 and Appendix K. Field data will be recorded by the lead geologist on Lithologic Logs and Field Activity Logs (FALs).

Samples collected from intervals of 0.0 to 0.5 feet, 1.0 to 1.5 feet, 2.5 to 3.0 feet, 6.0 to 6.5 feet, 9.0 to 9.5 feet, 12.0 to 12.5 feet, 15.0 to 15.5 feet, 18.0 to 18.5 feet, and 20.0 to 20.5 feet will be placed in 250 mL precleaned glass containers (see Table 2) and submitted to the on-site laboratory for total uranium analysis (TAL 50.03.25A, Appendix B). If field screening indicates elevated levels of either organic or radiological contamination, then the six-inch interval with the highest screening results per boring will be analyzed in addition to the specified intervals. Analytical results are requested within one week of sample receipt. Samples not submitted for analysis will be containerized and archived.

If perched groundwater is encountered in any boring, a groundwater sample will be collected from the boring. A 2-inch 0.010 slot polyvinyl chloride (PVC) screen and PVC riser will be placed in the auger; the sample will be collected from the screen using a bailer. The sample will be placed in a 1,000 mL plastic or glass container and acidified to a pH of less than 2 standard units with nitric acid. The sample will be analyzed for total uranium by the on-site laboratory (TAL 50.03.25B, Appendix B). A groundwater sample will also be collected from each boring using a bailer and filtered for analysis of dissolved uranium (TAL 50.03.25B, Appendix B) by the on-site FEMP laboratory.

A Hydropunch II™ will be used to collect a groundwater sample from the top of the Great Miami Aquifer at Boring 11235. If perched groundwater is encountered in Boring 11235, then the Hydropunch II™ sample will be collected from one of the contingency borings. The borehole will be sampled continuously to the top of the Great Miami Aquifer as described above. The borehole will then be advanced without sampling until groundwater is encountered. The Hydropunch II™ sample will be collected 10 feet below the water level within the Great Miami Aquifer. A sample will also be collected and filtered for dissolved uranium analysis. The samples will be placed in 1,000 mL plastic or glass containers and acidified to a pH of less than 2 standard units with nitric acid and analyzed for total (unfiltered sample) and dissolved uranium (filtered sample) by the on-site laboratory (TAL 50.03.25B, Appendix B).

All boreholes will be abandoned using Volclay grout emplaced with a tremie line. Grout will be emplaced to within 30-inches of the ground surface; concrete will be added to the surface of each borehole.

TABLE 2



OPERABLE UNIT 5 SOUTHWEST FIELD INVESTIGATION,  
 FEMP, SAMPLING SUMMARY

SAMPLE MEDIA	SAMPLE INTERVAL	ANALYSIS	SAMPLE CONTAINER	PRESERVATIVE	HOLD TIME
Soil, Deep Borings	0.0-0.5 ft *	Total Uranium	1-250 ml	None	1 year
	1.0-1.5 ft	Total Uranium	1-250 ml	None	1 year
	2.5-3.0 ft	Total Uranium	1-250 ml	None	1 year
	6.0-6.5 ft	Total Uranium	1-250 ml	None	1 year
	9.0-9.5 ft	Total Uranium	1-250 ml	None	1 year
	12.0-12.5 ft	Total Uranium	1-250 ml	None	1 year
	15.0-15.5 ft	Total Uranium	1-250 ml	None	1 year
	18.0-18.5 ft	Total Uranium	1-250 ml	None	1 year
	20.0-20.5 ft	Total Uranium	1-250 ml	None	1 year
Soil, Shallow Borings	High Screen per boring	Total Uranium	1-250 ml	None	1 year
Surface water	N/A	Total Uranium	1000 mL glass or plastic	Nitric Acid to < 2	6 months
	N/A	Dissolved Uranium	1000 mL glass or plastic	Filtered, Nitric Acid to < 2	6 months
Groundwater	N/A	Total Uranium	1000 mL glass or plastic	Nitric Acid to < 2	6 months
	N/A	Dissolved Uranium	1000 mL glass or plastic	Filtered, Nitric Acid to < 2	6 months
Rinsates **	N/A	Total Uranium	1000 mL glass or plastic	Nitric Acid to < 2	6 months

\* Intervening sample intervals will be containerized for archive.  
 \*\* Rinsates collected at rate of 1 per 20 decontamination events.  
 N/A = Not Applicable

#### 4.2 SHALLOW CONTINGENCY BORINGS

If field screening of the soil samples collected from the deep borings indicate contamination, then three shallow hand auger borings will be completed. Locations of the shallow borings will be identified in the field based on topography and field screening results of the deep borings. Borings will be sampled continuously until hand auger refusal or a minimum of two feet. Samples will be collected and containerized at 6-inch intervals and field screened for volatile organics and radiological constituents. The sample exhibiting the highest field screen will be analyzed for total uranium (TAL 50.03.25A, Appendix B) by the on-site FEMP laboratory at a requested turnaround time of one week.

#### 4.3 SURFACE WATER

Provided sufficient volumes of water are present in the seeps originating on the western side of the excavated area, filtered and unfiltered surface water samples will be collected from the seeps as specified in the SCQ, Appendix K.4.3. A filtered and unfiltered surface water sample will also be collected from the ditch on the eastern boundary of the excavated area near the culvert at Willey Road. Samples will be placed in 1,000 mL plastic or glass containers and acidified to a pH of less than 2 standard units with nitric acid. The samples will be analyzed for total (unfiltered sample) and dissolved uranium (filtered sample) by the on-site laboratory (TAL 50.03.25B, Appendix B) with a requested turnaround of one week.

#### 4.4 GENERAL SAMPLING REQUIREMENTS

##### 4.4.1 Land Surveying

The horizontal and vertical coordinates of each sample location will be surveyed to the nearest 0.01 foot relative to the State Planar Coordinates by a registered professional land surveyor. Surveyed points will be integrated into the existing FEMP Geographic Information System (GIS) and incorporated into the site database.

##### 4.4.2 Decontamination

Prior to sampling at each location, sampling equipment shall be decontaminated according to Level II Decontamination Procedures outlined in Appendix K.11 of the SCQ. Level III Decontamination shall be completed for equipment exhibiting gross contamination as determined by field screening data. Cleaning will be performed at the existing off-site cleaning pad or designated local decontamination area.

##### 4.4.3 Calibration of Field Equipment

All field screening equipment used during this investigation shall be operated and calibrated according to manufacturers' specifications. Written logs of equipment calibration are maintained by personnel in charge of performing the instrument calibrations.

#### 4.4.4 Sample Handling and Shipping

A unique sample number shall be assigned to each collected sample. Each sample shall be affixed with a label containing information specified on Form 7-2, Appendix B of the SCQ.

Sample custody procedures outlined in the SCQ shall be adhered to throughout the sample handling process from field collection to delivery of samples to the laboratory. Collection data, chain-of-custody, and analytical parameters requested for each sample analyzed by the on-site laboratory shall be documented on a Site-Wide Analysis Request/Custody Record (SWAR/CR).

In addition to the custody records, a Sample Collection Log shall be completed which summarizes all samples collected from a single borehole. All field work shall be documented daily using the Field Activity Log (FAL).

Immediately following collection, water samples will be acidified to a pH of less than 2 standard units using nitric acid. No preservation is required for soil samples being analyzed for total uranium.

Screening, storage, and delivery to the on-site laboratory will be completed by the Sample Processing Laboratory (SPL). Samples designated for archiving will be properly handled by the Site Media Sampling personnel.

### 5.0 QUALITY ASSURANCE SAMPLE COLLECTION

Field equipment rinsate samples shall be collected at a frequency of 1 per 20 washings following requirements specified in the SCQ, Appendix K.5.4. Following collection of the rinsate samples, subsequent analytical samples collected using the rinsed equipment will be documented by unique sample numbers on the FALs. Equipment rinsate samples will be analyzed for parameters outlined in TAL 50.03.25A (Appendix B).

### 6.0 PROJECT REQUIREMENTS FOR SURVEILLANCE AND AUDITS

To verify compliance with the SCQ and project-specific requirements, the FEMP project manager and designated FEMP Quality Control (QC) organization shall be responsible for scheduling and conducting inspections. The Environmental Protection Agency may conduct external audits of FEMP activities covered by the 1991 Amended Consent Agreement, as required.

At a minimum, inspections shall consist of monitoring/observing ongoing project activity and work areas to verify item and activity conformance to specified requirements. Inspections shall be scheduled, planned, and documented. Refer to Section 12 of the SCQ for additional details.

At a minimum, audits shall consist of evaluation of the quality assurance (QA) program and procedures, effectiveness of the implementation, and review of associated project documentation. Audits shall cover applicable laboratory activities, field operations and documentation, and final reports. Auditing shall be performed in accordance with DOE guidelines and the SCQ.

## 7.0 INVESTIGATION-DERIVED WASTE HANDLING AND DISPOSITION

Performance of this field work will generate contaminated sampling equipment, contaminated drilling equipment, contaminated personal protective equipment, and decontamination wastes.

### 7.1 DECONTAMINATION WASTES

Decontamination of sampling equipment shall be performed at the FEMP Decontamination Area or a local decontamination location. Fluids and any solid materials generated during equipment decontamination will be containerized for treatment and/or disposal at the General Sump following analytical testing.

### 7.2 PERSONAL PROTECTIVE EQUIPMENT

Contaminated personal protective equipment shall be placed in designated disposal containers, labeled, and transported to the interim storage location for the respective wastes.

### 7.3 DRILL CUTTINGS

Soil cuttings will be placed in 55-gallon steel drums labeled with proper lot codes established by Materials Control and Accountability. The drums will be handled in accordance with Removal Action 17 (Improved Storage of Soils and Drums) protocols and procedures.

## 8.0 HEALTH AND SAFETY CONSIDERATIONS

Prior to implementation of field work involving drilling, a FEMP Penetration Permit will be obtained. The permit process involves comparing proposed locations to the underground utility site database. No drilling will be conducted without a valid Penetration Permit being obtained prior to performance of the work.

Health and safety coverage of the field program will be provided by a technician monitoring the activities of the field crew. Proper equipment to be used for health and safety monitoring and personnel protection and criteria for the selection of monitoring equipment and protective clothing are outlined in the Project Specific Health and Safety Plan contained in Appendix C.

## 9.0 PROJECT SCHEDULE

In order to include the data resulting from this investigation in the OU 5 RI submittal in February 1994, sample collection must be completed by December 22, 1993, necessitating sample collection will beginning on December 16, 1993.

**APPENDIX A**  
**DATA QUALITY OBJECTIVE SUMMARY FORM**

### DQO SUMMARY FORM

Revision:  
Effective Date:

1.A Task/Description: OU5# \_\_\_\_\_

Southwest Field Investigation WBS 50.03.25

1.B. Project Phase: (Circle the appropriate selection.)

RI FS RD RA OTHER (specify) \_\_\_\_\_

1.C. DQO No.: SL-011 DQO Reference No.: \_\_\_\_\_

2. Media Characterization: (Circle the appropriate selection.)

Air Biological Groundwater Sediment Soil

Waste Waste water Surface water Other (specify) \_\_\_\_\_

3. Data Use with Analytical Support Level (A-E): (Circle the appropriate Analytical Support Level selection(s) beside each applicable Data Use.)

Site Characterization A B C D E Risk Assessment A B C D E Evaluation of  
Alternatives A B C D E Engineering Design A B C D E Monitoring during  
remediation activities A B C D E  
Other A B C D E (Explain) \_\_\_\_\_

4.A. Drivers: CERCLA

4.B. Objective: Characterize soil contamination on the FEMP in and around the South Pasture Area and determine if contamination is present which may be contributing to the South Plume.

5. Site Information (Description):

Surface and subsurface soil in the glacial overburden and surface water (seeps) in the South Pasture area. One groundwater sample will be collected from the Great Miami Aquifer.

DQO SUMMARY FORM

Revision:
Effective Date:

DQO Number: SL-011

6.A. Data Types with appropriate Analytical Support Level Equipment Selection and SCQ Reference:
(Place and "X" to the right of the appropriate box or boxes selecting the type of analysis or analyses required. Then select the type of equipment to perform the analysis if appropriate. Please include a reference the SCQ Section.)

- 1. pH, Temperature, Specific Conductance, Dissolved Oxygen
2. Uranium X, Radiologic, Metals, Cyanide, Silica
3. BTX, TPH, Oil/Grease
4. Cations, Anions, TOC, TCLP, CEC, COD
5. VOA, ABN, Pesticides, PCB
6. Other (specify)

6.B. Equipment Selection and SCQ Reference:

Equipment Selection

- ASL A PID, Pancake GM SCQ Section: Appendix G Table G-3
ASL B Lab analytical procedures SCQ Section: Appendix G Table G-3
ASL C SCQ Section:
ASL D SCQ Section:
ASL E SCQ Section:

7.A. Sampling Methods: (Circle the appropriate selection.)

- Biased Composite Environmental Grab Grid
Intrusive Non-Intrusive Phased Source

Other (specify):

DQO SUMMARY FORM

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Revision:  
Effective Date:

DQO Number: SL-011

7.B. Sample Work Plan Reference: (List the samples required. Reference the work plan or sampling plan guiding the sampling activity, as appropriate.)

Background samples: CERCLA/RCRA Background Soil Study, March 1993

7.C. Sample Collection Reference: (Please provide a specific reference to the SCQ Section and subsection guiding sampling collection procedures.)

Sample Collection Reference: Section 6, Appendix K, Subsection K.5

8. Quality Assurance/Control Samples: (Place an "X" to the right of the appropriate selection(s).)

8.A. Field Quality Assurance Samples:

Trip Blanks	__	Container Blanks	__
Field Blanks	__	Duplicate Samples	__
Equipment Rinsate Samples	<u>X</u>	Split Samples	__
Preservative Blanks	__	Performance Evaluation Samples	__
Other (specify)	_____		

8.B. Laboratory Quality Control Samples:

Method Blank	__	Matrix Duplicate/Replicate (Matrix Spike	__
		Duplicates)	
Matrix Spike	__	Surrogate Spikes	__
Other (specify)	_____		

9. Other: Please provide any other germane information that may impact the data quality or gathering of this particular objective, task or data use.

DATA QUALITY OBJECTIVE  
LOGIC FLOW PROCESS WORKSHEET

5008

Southwest Field Investigation

1. STATEMENT OF THE PROBLEM

An aerial photograph taken on April 6, 1954 indicate the Southwest Field Area, located at the southernmost boundary of the FEMP, was used as a soil excavation site. Solid Block Modeling performed by OU 2 suggests that the area may be a major source of contamination to the South Plume.

To determine if the excavated area was also used for disposal and/or may be contributing to contamination in the South Plume, five soil borings will be completed in this area. Soil samples will be collected from the borings. Two groundwater seeps and the ditch on the eastern boundary of the excavation will also be sampled, if sufficient water is present. Additionally, groundwater samples from the underlying aquifer will be collected using the Hydropunch™ technique at one boring location. In the event significant volumes of perched water are encountered during drilling, the borings will be discontinued. At these locations, attempts will be made to collect perched water samples by bailing through the augers. Up to three additional borings and three shallow hand auger borings may be completed, as necessary, based upon progressive field information to provide the necessary characterization data.

Data from the preliminary screening of this area will be used to identify the need for additional investigation to determine the source of the South Plume. In order to allow timely decisions concerning the source of the South Plume and to include the data from the Southwest Field Investigation in the OU 5 RI, sampling activities must be initiated no later than December 16, 1993.

2. IDENTIFICATION OF A DECISION THAT ADDRESSES THE PROBLEM

The screening data will be used to decide if a modified path forward is needed to identify the source(s) of the South Plume. If the screening indicates this area is contaminated and may be a source of the South Plume, the information will direct the preparation of an amended RI/FS Project Specific Plan to determine the nature and extent of the contamination.

3. IDENTIFICATION OF THE INPUTS THAT AFFECT THE DECISION

The results of the soil, seep, and groundwater samples will be used as input to modify the path forward for determining the source(s) of the South Plume. The samples will be analyzed for total uranium by the on-site laboratory; water samples will also be analyzed for total and dissolved uranium by the on-site laboratory. The sampling locations will be determined from historical photographs, historical and current topographical information, and OU 2 and OU 5 draft RI information.

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DATA QUALITY OBJECTIVE  
LOGIC FLOW PROCESS WORKSHEET CONT.

4. SPECIFICATION OF THE DOMAIN OF THE DECISION

In order to determine if disposal activity was conducted in the Southwest Field area, sampling is necessary within the area located north of Willey Road along the south property line of the FEMP upgradient of the highest concentrations of the South Plume.

To include the conclusions of the Southwest Field area investigation in the OU 5 RI, sampling activities must be initiated no later than December 16, 1993. This schedule is necessary to allow analyses to be conducted, evaluated, and incorporated into a report format in a timely manner.

5. DEVELOPMENT OF LOGIC STATEMENT

The resulting data from this investigation will be used to determine if and how to modify the path forward for determining the source and nature of extent of the contamination causing the South Plume.

6. ESTABLISH CONSTRAINTS ON THE UNCERTAINTY

The need for the samples and the distribution of sampling points were determined on the basis of a review of the aerial photographs and a site walkover. This data will be combined with data from other operable units to assure that all areas of soil contamination will be addressed in the RI/FS process. If contamination is confirmed, a more thorough site investigation will be conducted to support the RI/FS; this potential future site investigation will be completed under the terms of a separate PSP.

7. OPTIMIZE A DESIGN FOR OBTAINING QUALITY DATA

The number of soil samples collected in the Southwest Field area will be variable and dependent upon the thickness of the overlying glacial till, the depth to groundwater, and field screening results. Soil samples will be collected continuously and samples collected at the following depths from each of the five borings, and as required, the three contingency borings will be analyzed for total uranium:

- |                 |   |
|-----------------|---|
| 0.0 to 0.5 feet | 9.0 to 9.5 feet                               |
| 1.0 to 1.5 feet | 12.0 to 12.5 feet                             |
| 2.5 to 3.0 feet | 15.0 to 15.5 feet                             |
| 6.0 to 6.5 feet | 18.0 to 18.5 feet                             |
|                 | 20.0 to 20.5 feet or first encounter of water |

Field screening using hand-held detectors will be conducted during the drilling process. All split-spoon samples will be initially screened using both a photoionization detector (PID) and hand-held radiological instrumentation. Biased soil samples collected from locations exhibiting elevated field readings will be analyzed for total uranium by the on-site laboratory.

The soil, groundwater, and surface water samples collected from the Southwest Field area will be analyzed for total uranium at the on-site FEMP laboratory at ASL B. Groundwater and surface water will also be analyzed for dissolved uranium by the on-site FEMP laboratory at ASL B.

DATA QUALITY OBJECTIVE NUMBER  
REQUEST FORM

5068

Please complete the following and send to DQO Coordinator.

To be completed by the Sampling Project Team Leader:

1. Date Requested: December 8, 1993
2. Project Name: Southwest Field Investigation WBS 50.03.25
3. Area to be Sampled: The Southwest Field area
4. Media to be Sampled (If more than one, please Specify): Soil, groundwater, surface water
5. Purpose for sampling: Determine if radiological material was buried in the Southwest Field Area
6. Existing DQOs that completely or partially fulfill the sampling requirements: None
7. Sampling Project Team Leader's Name and Phone Number:  
Dennis J. Carr 738-0003
8. Sampling Project Team Members: To be assigned by Site Characterization/Data Management and Site Media Sampling

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FOR ENV USE ONLY

DQO No. Assigned:

Name of Assignor:

Comments:

**APPENDIX B**  
**TARGET ANALYTE LISTS**

5068

# SOUTHWEST FIELD INVESTIGATION

SOIL AND RINSATE SAMPLES

## TAL 50.03.25 A

FEMP RI/FS - LIMITED RADIOLOGICAL - ANALYTICAL PARAMETERS

### RADIOLOGICAL

1	Total Uranium
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024

# SOUTHWEST FIELD INVESTIGATION

SURFACE WATER AND GROUNDWATER SAMPLES

## TAL 50.03.25 B

FEMP RI/FS – LIMITED RADIOLOGICAL – ANALYTICAL PARAMETERS

### RADIOLOGICAL

1	Dissolved Uranium
2	Total Uranium

025

**APPENDIX C**  
**PROJECT SPECIFIC HEALTH AND SAFETY PLAN**