

**PROJECT SPECIFIC PLAN FOR EXCAVATION CONTROL
OF AREA 6 – FORMER PRODUCTION AREA
(SUPPLEMENT TO 20300-PSP-0011)**

DEMOLITION, SOIL AND DISPOSAL PROJECT

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



MAY 2005

U.S. DEPARTMENT OF ENERGY

**20600-PSP-0015
REVISION 0**

**PROJECT SPECIFIC PLAN FOR EXCAVATION CONTROL
OF AREA 6 – FORMER PRODUCTION AREA
(SUPPLEMENT TO 20300-PSP-0011)**

Document Number 20600-PSP-0015

Revision 0

May 2005

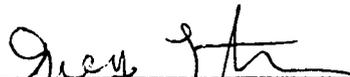
APPROVAL:



5/5/05

Jyh-Dong Chiou, Project Manager
Demolition, Soil and Disposal Project

Date

 FOR FRANK MILLER

5/5/05

Frank Miller, Characterization/Waste Management Manager
Demolition, Soil and Disposal Project

Date



5/5/05

Tom Buhrlage, Soil Sampling Manager
Demolition, Soil and Disposal Project

Date



5/5/05

Mike Frank, Real-Time Instrumentation Measurement Program Manager
Demolition, Soil and Disposal Project

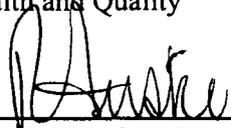
Date



5/5/05

Linda Barlow, Waste Acceptance Organization
Safety, Health and Quality

Date



5-5-05

Reinhard Friske, Quality Control
Demolition, Soil and Disposal Project

Date

FERNALD CLOSURE PROJECT

**Fluor Fernald, Inc.
P.O. Box 538704
Cincinnati, Ohio 45253-8704**

TABLE OF CONTENTS

	<u>Page</u>
1.0 Introduction.....	1-1
1.1 Purpose.....	1-1
1.2 Scope.....	1-1
1.3 Variance/Field Change Notice (V/FCN) Documentation	1-1
1.4 Key Personnel	1-2
2.0 Area-Specific Work Remaining Status	2-1
2.1 Area 6 FPA.....	2-1
2.1.1 History	2-1
2.1.2 Predesign	2-1
2.1.3 Excavation Control	2-2
2.1.3.1 ASCOCs.....	2-2
2.1.3.2 Excavation Types.....	2-2
2.1.3.3 Locations.....	2-3
2.1.4 Precertification.....	2-3
3.0 Instrumentation and Techniques	Sec. 3 & 4
3.1 Measurement Instrumentation and Techniques.....	Sec. 3 & 4
3.1.1 Real-Time	Sec. 3 & 4
3.1.1.1 Sodium Iodide Data Acquisition (RTRAK, RSS, GATOR, EMS).....	Sec. 3 & 4
3.1.1.2 HPGe Data Acquisition.....	Sec. 3 & 4
3.1.1.3 Excavation Monitoring System.....	Sec. 3 & 4
3.1.1.4 Radon Monitor	Sec. 3 & 4
3.1.2 Surface Moisture Measurements	Sec. 3 & 4
3.2 Real-Time Measurement Identification	Sec. 3 & 4
3.3 Real-Time Data Mapping.....	Sec. 3 & 4
3.4 Real-Time Surveying	Sec. 3 & 4
4.0 Predesign	Sec. 3 & 4
5.0 Excavation Control Measures	Sec. 5 & 6
5.1 Excavation Design Control Requirements	Sec. 5 & 6
5.1.1 Contamination Zone	Sec. 5 & 6
5.1.2 Floors, Roads and Foundations.....	Sec. 5 & 6
5.1.3 Real-Time Lift Scans.....	Sec. 5 & 6
5.1.4 Above-WAC Lift Scans.....	Sec. 5 & 6
5.2 Organic Screening and Physical Sampling Requirements	Sec. 5 & 6
5.2.1 Above-WAC Photoionization Detector (PID)/Gas Chromatograph (GC) Screening	Sec. 5 & 6
5.2.2 All Other Physical Sample Requirements	Sec. 5 & 6
5.2.3 PID Screening and Physical Sampling Procedures.....	Sec. 5 & 6
5.2.4 Physical Sample Identification	Sec. 5 & 6

TABLE OF CONTENTS (Continued)

	<u>Page</u>
6.0 Precertification	Sec. 5 & 6
6.1 Initial Precertification NaI Scan at Base of Design Grade	Sec. 5 & 6
6.2 Precertification HPGe Measurements in 20 ppm FRL (Uranium) Areas.....	Sec. 5 & 6
6.3 Precertification HPGe Measurements in 82 ppm FRL (Uranium) Areas.....	Sec. 5 & 6
6.4 Delineating Hot Spots Following Precertification HPGe Measurements	Sec. 5 & 6
7.0 Quality Assurance/Quality Control Requirements.....	Sec. 7 through 11
7.1 Quality Control Samples - Real-Time Measurements and Physical Samples....	Sec. 7 through 11
7.2 Data Validation	Sec. 7 through 11
7.2.1 Physical Sample Data Validation	Sec. 7 through 11
7.2.2 Real-Time Data Verification/Validation	Sec. 7 through 11
7.3 Applicable Documents, Methods and Standards.....	Sec. 7 through 11
7.4 Surveillances	Sec. 7 through 11
7.5 Implementation and Documentation of Variance/Field Change Notices (V/FCN).....	Sec. 7 through 11
8.0 Safety and Health	Sec. 7 through 11
9.0 Equipment Decontamination.....	Sec. 7 through 11
10.0 Disposition of Wastes.....	Sec. 7 through 11
11.0 Data and Records Management.....	Sec. 7 through 11
11.1 Real-Time.....	Sec. 7 through 11
11.2 Physical Samples.....	Sec. 7 through 11

LIST OF TABLES

Table 2-1 Preliminary List of ASCOCs for Area 6 FPA
Table 2-2 Limits for Area 6 FPA Excavation Control COCs
Table 2-3 Excavation Monitoring/Sampling Requirements
Table 2-4 Physical Sample Analytical Requirements

LIST OF FIGURES

Figure 1-1 Area 6 Former Production Area
Figure 2-1 Discretely Bounded Areas (Above-WAC and Above-FRL)

LIST OF ACRONYMS AND ABBREVIATIONS

ASCOC	area-specific constituent of concern
ASL	analytical support level
COC	constituent of concern
DOE	U.S. Department of Energy
EMS	Excavation Monitoring System
FCP	Fernald Closure Project
FPA	Former Production Area
FRL	final remediation level
GC	gas chromatograph
HPGe	high-purity germanium (detector)
HWMU	hazardous waste management unit
µg/kg	micrograms per kilogram
MDC	minimum detectable concentration
mg/kg	milligrams per kilogram
NaI	sodium iodide
OMTA	OSDF Material Transfer Area
OSDF	On-Site Disposal Facility
pCi/g	picoCuries per gram
PID	photoionization detector
ppm	parts per million
PSP	Project Specific Plan
PWID	Project Waste Identification and Disposition Report
RSS	Radiation Scanning System
RTRAK	Real-Time Radiation Tracking System
RWP	Radiological Work Permit
SEP	Sitewide Excavation Plan
UST	underground storage tank
V/FCN	Variance/Field Change Notice
WAC	Waste Acceptance Criteria

1.0 INTRODUCTION

This Project Specific Plan (PSP) describes the data collection activities necessary to support the excavation control and precertification activities in Area 6 - Former Production Area (FPA, see Figure 1-1 for location). The format of this PSP differs from those previously submitted as this PSP only presents the specific information regarding Area 6 FPA. The general information that is routinely addressed in a PSP, can be found in 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation*. While this PSP has section headings similar to a full-length PSP, where the information in the section is identical to the information in the General PSP (20300-PSP-0011), a reference to this General PSP is made, and the information is not repeated.

1.1 PURPOSE

The purpose of this PSP is to provide specific direction regarding the excavation control and precertification of Area 6 FPA. Detailed information including reasons to sample, sample location, number of borings, depth intervals, and constituents of concern will be documented as outlined in Section 1.3.

1.2 SCOPE

The area included within the scope of this PSP is Area 6 FPA (see Figure 1-1). The schedule for implementation of this PSP is expected to begin in April 2005. Precertification prior to certification will follow upon completion of excavation in Area 6 FPA.

This PSP is not considered a work authorization document (for implementation of fieldwork) per SH-0021, Work Permits. Work authorization documents directing the implementation of fieldwork, per SH-0021, may include applicable Environmental Services procedures, Fluor Fernald work permits, Radiological Work Permit, penetration permits, and other applicable permits.

1.3 VARIANCE/FIELD CHANGE NOTICE (V/FCN) DOCUMENTATION

The Variance/Field Change Notice (V/FCN) process is utilized to document the occurrence of two situations. The first is to document a change in protocol occurring when a modification in the characterization approach is required [e.g., a different decision process for defining the extent of contamination or for verifying that soil is below-waste acceptance criteria (WAC) or below-final remediation level (FRL) concentrations]. Factors that will be considered under special circumstances

include safety of the workers, cost effectiveness, the need for a timely response, and impending weather conditions. This type of V/FCN requires agency approval prior to implementation.

The second situation requiring a V/FCN is to provide documentation of sampling and analytical activities and to provide variable information that is dependent upon field conditions and cannot be specified initially in this PSP. As part of the excavation control process, the collection of physical samples will be documented in applicable field logs and with V/FCNs. Additionally, the Data Group Form, FS-F-5157 will be generated per Procedure EW-1021, Preparation of the Project Waste Identification and Disposition (PWID) Report, following the generation of data from the analysis of physical samples. In this situation the use of this V/FCN form is not used to document a change in the protocol of this PSP, but is used to document sampling and analytical activities in order to demonstrate that these activities are compliant with the protocols of this PSP.

If a V/FCN is required, the Characterization Manager will document the change and requirements through the V/FCN process in accordance with Section 7.5 of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation*.

1.4 KEY PERSONNEL

Reference Section 1.4 of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation*.

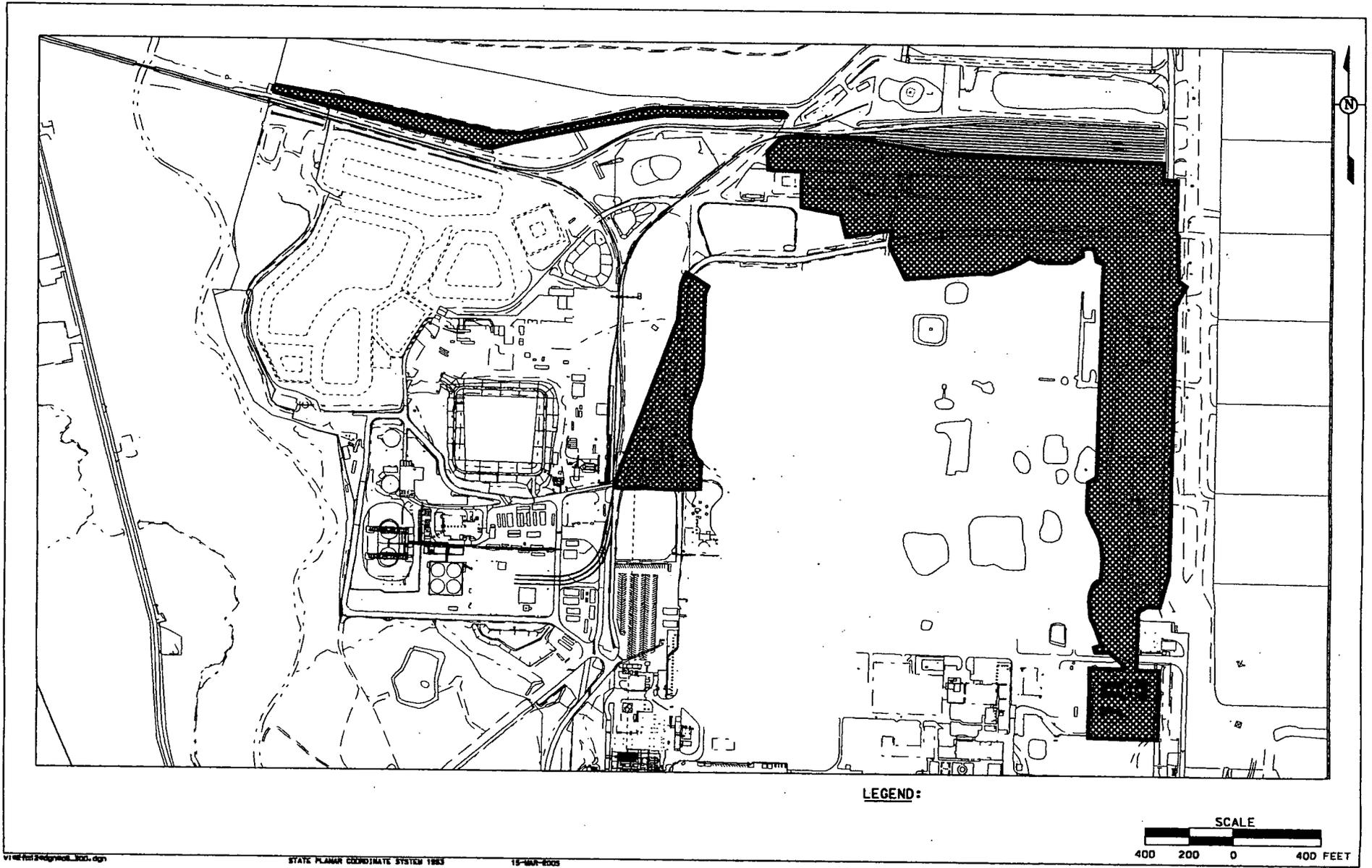


FIGURE 1-1. AREA 6 FORMER PRODUCTION AREA

5938

2.0 AREA-SPECIFIC WORK REMAINING STATUS

2.1 AREA 6 FPA

2.1.1 History

Area 6 FPA lies in the northwest, northeast, and eastern portion of the FPA. Within Area 6 the following facilities were located: On-Site Disposal Facility (OSDF) Material Transfer Area (OMTA) Bulk Debris Staging Area, three Quonset Hut Slabs, KC-2 Warehouse footprint, West OMTA, Main Electrical Switchyard, Plant 6 Warehouse (Building 79), Finished Products Warehouse (Building 77), Building 78, and the OMTA Soil Staging Area (OMTA Debris Stockpile). Various utilities, slabs, footers, and foundations comprise this area. The area is bound by several different remediation areas, as can be seen in Figure 1-1.

There have been two Hazardous Waste Management Units (HWMUs) identified within the area defined by this document. These are the areas including the Plant 6 Warehouse (Building 79), and the KC-2 Warehouse. These were closed by Decontamination and Dismantling as above-grade structures.

A historical reference to the existence of a potential underground storage tank (UST) at the Former Administration Building has been found. So far, the existence of this UST has remained unconfirmed.

Based on historical process knowledge and soil contaminant concentration levels identified during the Operable Unit 5 Remedial Investigation/Feasibility Study, two areas within the boundaries of Area 6 FPA were identified as having a potential for containing Resource Conservation and Recovery Act characteristic waste. These areas were the footprints of the KC-2 Warehouse and the Scrap Metal Pile. Physical sampling conducted during the predesign investigation of these areas ruled out these areas as characteristic areas.

2.1.2 Predesign

This supplemental PSP differs from the typical supplemental PSP because predesign activities are complete. The predesign investigations of Area 6 FPA were completed as described in Section 2.3 of the Excavation Plan for Area 6 FPA, 20602-PL-0001. Therefore, the required subsections for this section per 20300-PSP-0011 are not applicable and are not listed.

2.1.3 Excavation Control

2.1.3.1 ASCOCs

The preliminary list of area-specific constituents of concern (ASCOCs), found in the Sitewide Excavation Plan (SEP) Table 2-7, data from the predesign investigations associated with Area 6 FPA, and historical information resulted in the primary and secondary constituents of concern (COCs) presented in Table 2-1.

The data collected in Area 6 FPA was compared to the OSDF WAC. The only constituent above-WAC in Area 6 FPA was total uranium. The designed depth for above-FRL total uranium extends below all other above-FRL contamination with the exception of one above-FRL beryllium area in the southeastern portion of Area 6 FPA, near Building 79, and one above-FRL aroclor-1254 area in the Main Electrical Switchyard (see Figure 2-1). Therefore, the only constituents controlling excavation in Area 6 FPA are total uranium, beryllium, and aroclor-1254, which are also listed in Table 2-2.

2.1.3.2 Excavation Types

The types of excavation identified in Area 6 FPA are those that are either above-WAC (driven by total uranium) or above-FRL (driven by total uranium, beryllium, or aroclor-1254). The only constituents controlling excavation in Area 6 FPA are total uranium, beryllium, and aroclor-1254.

Real-time scanning for total uranium will be performed for both above-WAC uranium areas and above-FRL uranium areas per 20300-PSP-0011, Section 5.1. Physical sampling for excavation control of above-FRL beryllium and aroclor-1254 contamination will be performed per 20300-PSP-0011, Section 5.2.

Although, as formerly stated, the existence of a UST at the Former Administration Building has remained unconfirmed; should a UST be discovered at the Former Administration Building or in any other location during the excavation process, the UST will be closed and the surrounding area will be sampled as appropriate in accordance with SEP requirements. Closure of a UST involves removing the USTs contents and residues, removing the tank structures and equipment, and removing contaminated soil from the UST excavation. Attainment of soil FRLs and completion of final closure will be demonstrated during certification of the area.

Table 2-2 lists the excavation control COCs and their limits. Tables 2-3 and 2-4 address the excavation monitoring and sampling requirements, as well as the physical sample volumes, preservation requirements, and analysis information.

2.1.3.3 Locations

The list of above-WAC areas (see Figure 2-1) and COCs are as follows:

Above-WAC Areas	COC
Designed Above-WAC Area	Total Uranium

The list of above-FRL areas (see Figure 2-1) and COCs are as follows:

Discrete Above-FRL Areas	COC
Southeastern portion of Area 6 – FPA	Beryllium
Main Electrical Switchyard	Aroclor-1254

2.1.4 Precertification

Precertification will be performed per 20300-PSP-0011, Section 3.0 and Section 6.0.

**TABLE 2-1
PRELIMINARY LIST OF ASCOCs FOR AREA 6 FPA**

<u>Primary COCs</u>	<u>Plant 6 Warehouse (Building 79 - HWMU-37)</u>
<ul style="list-style-type: none"> • Radium-226 • Thorium-232 • Total Thorium • Total Uranium 	<ul style="list-style-type: none"> • Arsenic • Barium • Cadmium • Chromium* • Lead • Mercury • Selenium • Silver • Benzene • Carbon tetrachloride • Chlorobenzene • Chlordane • 1,1-dichloroethene • Tetrachloroethene • Trichloroethene • Vinyl chloride
<u>Secondary COCs</u>	
<ul style="list-style-type: none"> • Aroclor-1254 • Aroclor-1260 • Arsenic • Benzo(a)pyrene • Beryllium • 1,2-Dichloroethene • Dibenzo(a,h)anthracene • Dieldrin • Lead • Tetrachloroethene • Trichloroethene • Technetium-99 	

* Total chromium was initially analyzed as an indicator. Had the total chromium result exceeded the FRL for Cr⁺⁶, then Cr⁺⁶ would have been analyzed.

**TABLE 2-2
LIMITS FOR AREA 6 FPA EXCAVATION CONTROL COCS**

<u>Area 6 COCs</u>	<u>WAC</u>	<u>FRL</u>	<u>MDC</u>
Primary			
Uranium	1030 mg/kg	82.0 mg/kg	8.2 mg/kg
Uranium (high leachability)	1030 mg/kg	20.0 mg/kg	2.0 mg/kg
Radium-226	----	1.7 pCi/g	0.17 pCi/g
Radium-228	----	1.8 pCi/g	0.18 pCi/g
Thorium-228	----	1.7 pCi/g	0.17 pCi/g
Thorium-232	----	1.5 pCi/g	0.15 pCi/g
Secondary			
Beryllium	----	1.5 mg/kg	0.15 mg/kg
Aroclor-1254	----	130 µg/kg	13 µg/kg

µg/kg - micrograms per kilogram

MDC - minimum detectable concentration

mg/kg - milligrams per kilogram

**TABLE 2-3
EXCAVATION MONITORING/SAMPLING REQUIREMENTS**

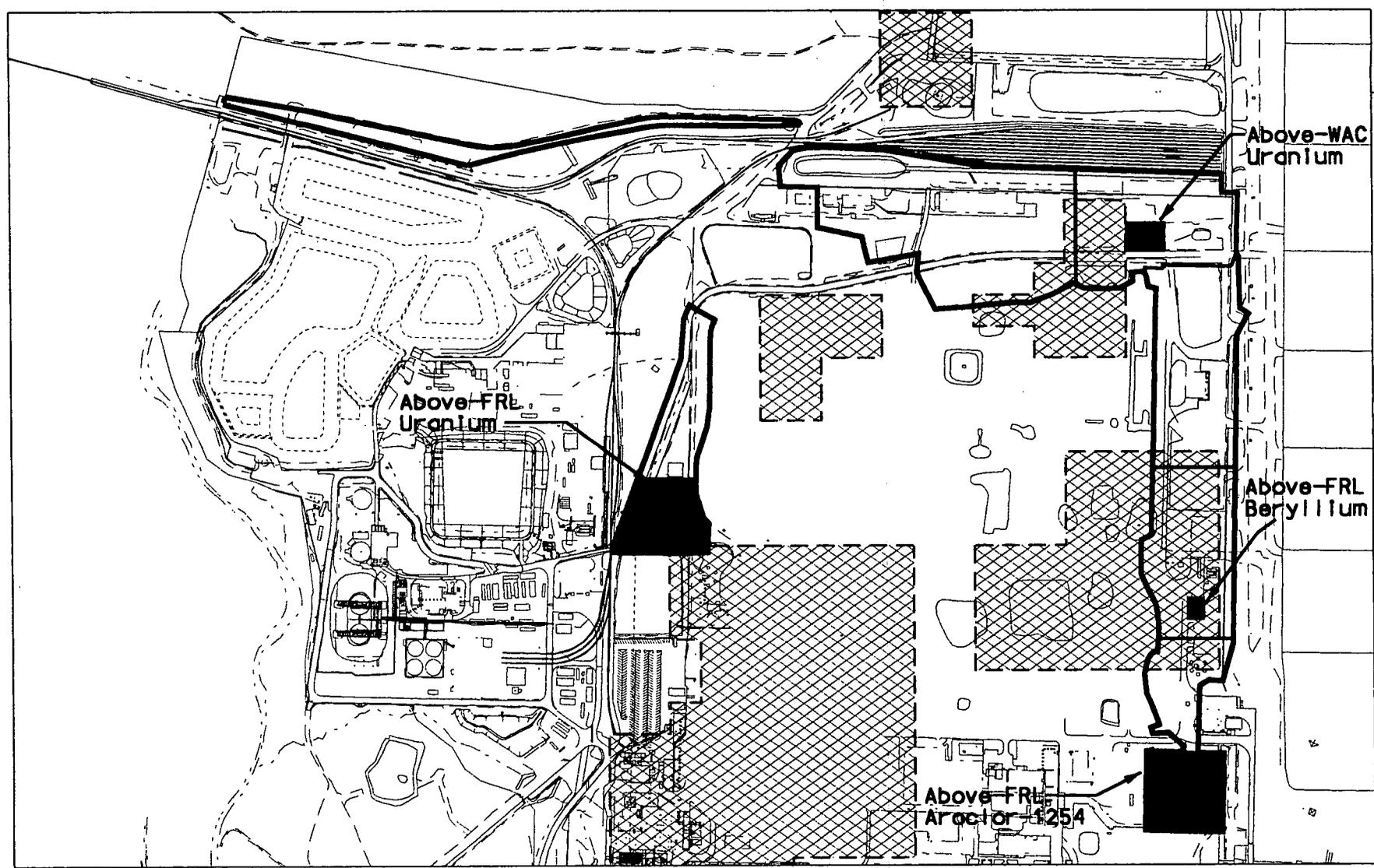
Type of Contamination Zone	Types of Samples/Measurements and Data Use		
	Sideslope of Each Excavation Lift	Floor of Each Excavation Lift	Floor/Sideslope at Design Depth for Contamination Zone
Above-WAC Uranium	<ul style="list-style-type: none"> Real-time for Uranium (WAC) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Real-time for Uranium (WAC)
Above-FRL Uranium	<ul style="list-style-type: none"> Real-time for Uranium (WAC) 	<ul style="list-style-type: none"> Real-time for Uranium (WAC) 	<ul style="list-style-type: none"> Real-time for Uranium (WAC/FRL)*
Above-FRL Beryllium	<ul style="list-style-type: none"> Physical sample for Beryllium (for FRL) Real-time for Uranium (WAC) 	<ul style="list-style-type: none"> Real-time for Uranium (WAC) 	<ul style="list-style-type: none"> Physical sample for Beryllium (for FRL) Real-time for Uranium (FRL)
Above-FRL Aroclor-1254	<ul style="list-style-type: none"> Physical sample for Aroclor-1254 (for FRL) Real-time for Uranium (WAC) 	<ul style="list-style-type: none"> Real-time for Uranium (WAC) 	<ul style="list-style-type: none"> Physical sample for Aroclor-1254 (for FRL) Real-time for Uranium (FRL)

* During the real-time uranium WAC scan, the data collected will be evaluated later for precertification purposes by reviewing concentrations of thorium-232 and radium-226, as well as thorium-228 and radium-228 based on equilibrium, in comparison to their respective FRLs.

**TABLE 2-4
PHYSICAL SAMPLE ANALYTICAL REQUIREMENTS**

Analysis (ASL B)	Sample Matrix	Lab	Preservation	Holding Time	Container Type	Sample Mass (wet)
Total Uranium	Solid	Off-site	None	12 months	Appropriate Size Plastic or Glass	300 grams
Beryllium	Solid	Off-site	Cool 4°C	14 days	Appropriate Size Plastic	50 grams
Aroclor-1254	Solid	Off-site	Cool 4°C	14 days	Appropriate Size glass with Teflon lid	100 grams

ASL - Analytical Support Level



LEGEND:

----- HIGH LEACHATE ZONES

SCALE

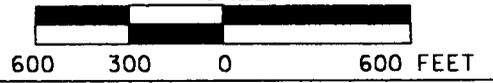


FIGURE 2-1. DISCRETELY BOUNDED AREAS (ABOVE-WAC AND ABOVE-FRL)

3.0 INSTRUMENTATION AND TECHNIQUES

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

3.1 MEASUREMENT INSTRUMENTATION AND TECHNIQUES

3.1.1 Real-Time

3.1.1.1 Sodium Iodide Data Acquisition (RTRAK, RSS, GATOR, EMS)

3.1.1.2 HPGe Data Acquisition

3.1.1.3 Excavation Monitoring System

3.1.1.4 Radon Monitor

3.1.2 Surface Moisture Measurements

3.2 REAL-TIME MEASUREMENT IDENTIFICATION

3.3 REAL-TIME DATA MAPPING

3.4 REAL-TIME SURVEYING

4.0 PREDESIGN

This supplemental PSP differs from the typical supplemental PSP because predesign activities are complete. The predesign investigations of Area 6 FPA have been completed per the following PSPs:

- 20600-PSP-0006, *PSP for Predesign of Area 6 Subarea 1 (Supplement to 20300-PSP-0011)*
- 20600-PSP-0001, *PSP for Predesign of Area 6 Subarea 2 (Supplement to 20300-PSP-0011)*
- 20600-PSP-0013, *PSP for Predesign of Area 6 Subareas 3 and 4 (Supplement to 20300-PSP-0011)*
- 20500-PSP-0005, *PSP for Predesign Investigation in Area 7 (Supplement to 20300-PSP-0011)*
- 20810-PSP-0002, *PSP for the Area 3 Predesign Investigation of Potentially Characteristic Areas*

Therefore, the required subsections for this section per 20300-PSP-0011 are not applicable and are not listed.

5.0 EXCAVATION CONTROL MEASURES

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

5.1 EXCAVATION DESIGN CONTROL REQUIREMENTS

- 5.1.1 Contamination Zone
- 5.1.2 Floors, Roads and Foundations
- 5.1.3 Real-time Lift Scans
- 5.1.4 Above-WAC Lift Scans

5.2 ORGANIC SCREENING AND PHYSICAL SAMPLING REQUIREMENTS

- 5.2.1 Above-WAC Photoionization Detector (PID)/Gas Chromatograph (GC) Screening
- 5.2.2 All Other Physical Sample Requirements
- 5.2.3 PID Screening and Physical Sampling Procedures
- 5.2.4 Physical Sample Identification

6.0 PRECERTIFICATION

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

- 6.1 INITIAL PRECERTIFICATION NaI SCAN AT BASE OF DESIGN GRADE
- 6.2 PRECERTIFICATION HPGE MEASUREMENTS IN 20 PPM FRL (URANIUM) AREAS
- 6.3 PRECERTIFICATION HPGE MEASUREMENTS IN 82 PPM FRL (URANIUM) AREAS
- 6.4 DELINEATING HOT SPOTS FOLLOWING PRECERTIFICATION HPGE MEASUREMENTS

7.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

7.1 QUALITY CONTROL SAMPLES - REAL-TIME MEASUREMENTS AND PHYSICAL SAMPLES

7.2 DATA VALIDATION

7.2.1 Physical Sample Data Validation

7.2.2 Real-Time Data Verification/Validation

7.3 APPLICABLE DOCUMENTS, METHODS AND STANDARDS

7.4 SURVEILLANCES

7.5 IMPLEMENTATION AND DOCUMENTATION OF VARIANCE/FIELD CHANGE NOTICES (V/FCN)

8.0 SAFETY AND HEALTH

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for this section.

9.0 EQUIPMENT DECONTAMINATION

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for this section.

10.0 DISPOSITION OF WASTES

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for this section.

11.0 DATA AND RECORDS MANAGEMENT

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

11.1 REAL-TIME

11.2 PHYSICAL SAMPLES