



Department of Energy

Ohio Field Office
Fernald Closure Project
175 Tri-County Parkway
Springdale, Ohio 45246
(513) 648-3155

APR 4 2005



5883

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-0206-05

Mr. Thomas Schneider, Project Manager
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402-2911

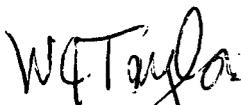
Dear Mr. Saric and Mr. Schneider:

**TRANSMITTAL OF THE DRAFT CERTIFICATION DESIGN LETTER AND
PROJECT SPECIFIC PLAN FOR AREA 5 EAST PARKING LOT CERTIFICATION
SAMPLING**

Enclosed for your review is the draft Certification Design Letter and Project Specific Plan for Area 5 East Parking Lot Certification Sampling.

If there are any questions concerning this subject, please contact Johnny Reising, 648-3139.

Sincerely,


William J. Taylor
Director

FCP:Reising

Enclosure: As Stated

Mr. James A. Saric
Mr. Tom Schneider

-2-

DOE-0206-05

cc w/enclosures:

D. Pfister, OH/FCP

J. Reising, OH/FCP

T. Schneider, OEPA-Dayton (three copies of enclosures)

G. Jablonowski, USEPA-V, SR-6J

F. Bell, ATSDR

M. Cullerton, Tetra Tech

M. Shupe, HSI GeoTrans

R. Vandegrift, ODH

AR Coordinator, Fluor Fernald, Inc./MS78

cc w/o enclosures:

K. Alkema, Fluor Fernald, Inc./MS01

J. Chiou, Fluor Fernald, Inc./MS88

F. Johnston, Fluor Fernald, Inc./MS99

C. Murphy, Fluor Fernald, Inc./MS77

ECDC, Fluor Fernald, Inc./MS52-7

**PROJECT SPECIFIC PLAN FOR
AREA 5 EAST PARKING LOT
CERTIFICATION SAMPLING**

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



MARCH 2005

U.S. DEPARTMENT OF ENERGY

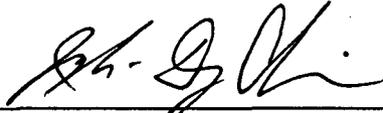
**20810-PSP-0007
REVISION A
DRAFT**

**PROJECT SPECIFIC PLAN FOR
AREA 5 EAST PARKING LOT
CERTIFICATION SAMPLING**

Document Number 20810-PSP-0007
Draft Revision A

March 2005

APPROVAL:



3/24/05

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

Date



3/24/05

Frank Miller, Characterization Manager
Demolition, Soil and Disposal Project

Date



3/24/05

Tom Buhrlage, Sampling Manager
Demolition, Soil and Disposal Project

Date



3/25/05

Reinhard Friske, Quality Assurance/Quality Control
Safety, Health and Quality

Date

FERNALD CLOSURE PROJECT

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

TABLE OF CONTENTS

	<u>Page</u>
List of Acronyms and Abbreviations	iii
List of Figures.....	ii
List of Tables	ii
1.0 Introduction	1-1
1.1 Background and Purpose.....	1-1
1.2 Scope.....	1-1
1.3 Key Project Personnel	1-1
2.0 Certification Sampling Program	2-1
2.1 Certification Design	2-1
2.2 Surveying	2-1
2.3 Physical Soil Sample Collection.....	2-1
2.3.1 Sample Collection	2-1
2.3.2 Equipment Decontamination.....	2-2
2.3.3 Physical Sample Identification	2-3
3.0 Certification Sample Analysis	3-1
4.0 Quality Assurance/Quality Control Requirements.....	4-1
4.1 Field Quality Control Samples, Analytical Requirements and Data Validation	4-1
4.2 Project Specific Procedures, Manuals and Documents	4-2
4.3 Independent Assessment	4-2
4.4 Implementation of Changes.....	4-2
5.0 Health and Safety.....	5-1
6.0 Disposition of Waste.....	6-1
7.0 Data Management.....	7-1

APPENDICES

Appendix A	Data Quality Objective SL-052, Rev. 3
Appendix B	Area 5 East Parking Lot Certification Sample Locations and Identifiers

LIST OF TABLES

Table 1-1	Key Project Personnel
Table 3-1	Sampling and Analytical Requirements
Table 3-2	Target Analyte Lists

LIST OF FIGURES

Figure 1-1	Area 5 East Parking Lot Location Map
Figure 2-1	Area 5 East Parking Lot CU Boundary Map
Figure 2-2	Certification Sampling Locations for CU 01 and CU 04
Figure 2-3	Certification Sampling Locations for CU 02 and CU 03

LIST OF ACRONYMS AND ABBREVIATIONS

ASCOC	area specific constituent of concern
ASL	analytical support level
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	constituent of concern
CU	certification unit
DOE	U.S. Department of Energy
DQO	Data Quality Objectives
EPL	East Parking Lot
FACTS	Fernald Analytical Computerized Tracking System
FAL	Field Activity Log
FCP	Fernald Closure Project
FRL	final remediation level
GC	gas chromatography
GPC	gas proportional counter
ICP-AES	inductively coupled plasma-atomic emission spectrometry
ICP/MS	inductively coupled plasma/mass spectrometry
LSC	liquid scintillation counting
MDC	Main Drainage Corridor
µg/kg	micrograms per kilogram
MDL	minimum detection level
mg/kg	milligrams per kilogram
mg/L	milligrams per Liter
NAD83	North American Datum of 1983
PCBs	polychlorinated biphenyls
pCi/g	picoCuries per gram
pCi/L	picoCuries per Liter
PSP	Project Specific Plan
QC	Quality Control
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
TAL	Target Analyte List
V/FCN	Variance/Field Change Notice
VSL	validation support level
WAC	waste acceptance criteria
WAO	Waste Acceptance Organization

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

This Project Specific Plan (PSP) describes the certification sampling and analysis necessary to certify the Area 5 East Parking Lot (EPL).

Certification demonstrates that risk-based, area-specific constituents of concern (ASCOCs) meet final remediation levels (FRLs). As shown on Figure 1-1, Area 5 lies in the southern portion of the Former Production Area and northern Administration Area. The area is bound by the Main Drainage Corridor (MDC) to the north, MDC and Area 7 to the west, Area 7 to the south, and Areas 6 and 7 to the east. Figure 1-1 depicts the portion of Area 5 (Area 5 EPL) that is to be certified. There are a total of four certification units (CUs) for Area 5 EPL.

1.2 SCOPE

The scope of this PSP includes details of certification sampling, analysis and validation that will take place in Area 5 EPL. Field activities will be consistent with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) and Section 3.4 of the SEP. The certification sampling program, as discussed in Section 2.0 of this PSP, will be consistent with Data Quality Objective (DQO) SL-052, Revision 3, which is included as Appendix A of this PSP.

1.3 KEY PROJECT PERSONNEL

Key project personnel responsible for performance of the project are listed in Table 1-1.

**TABLE 1-1
KEY PROJECT PERSONNEL**

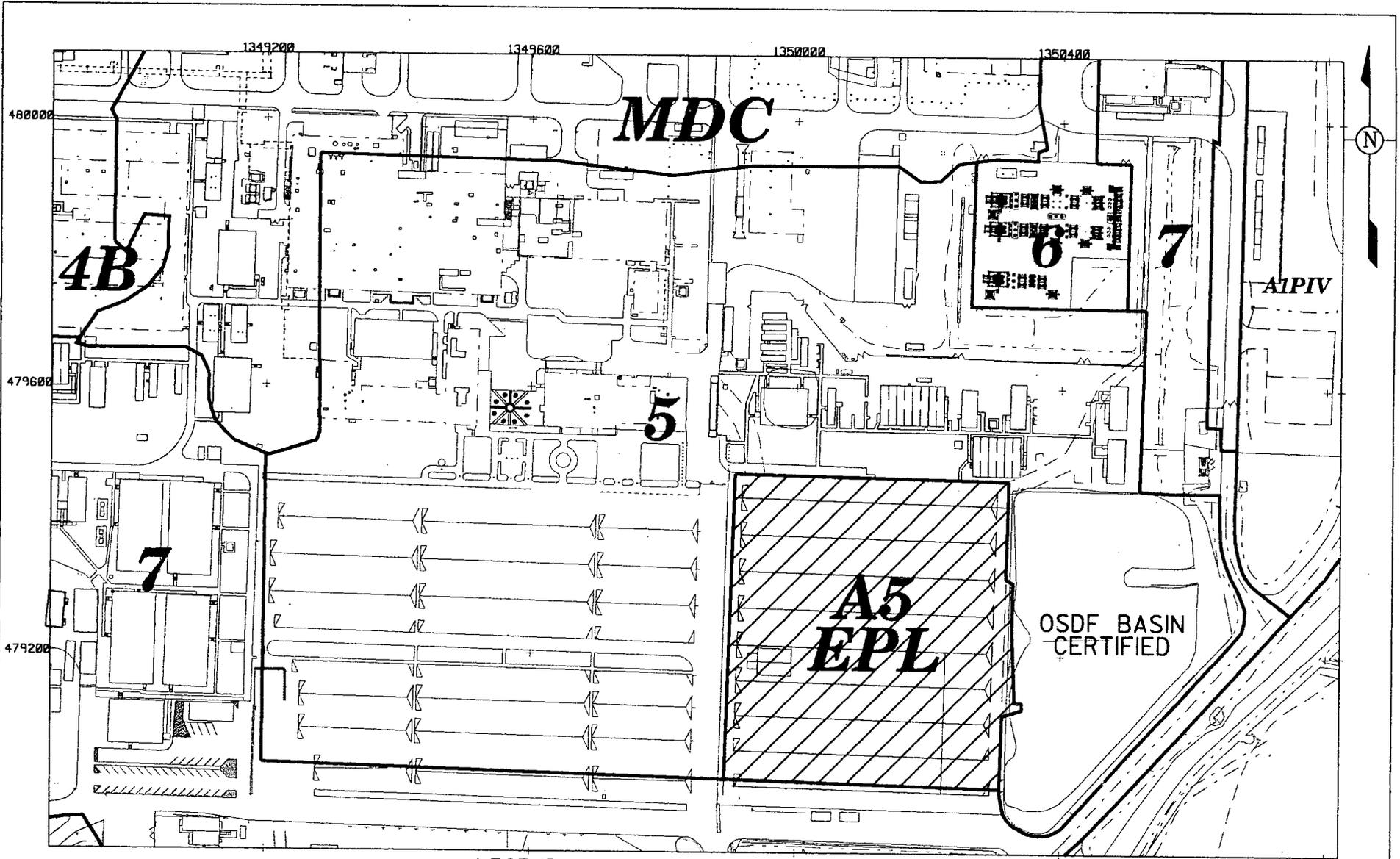
Title	Primary	Alternate
DOE Contact	Johnny Reising	TBD
Project Manager	Jyh-Dong Chiou	Frank Miller
Characterization Manager	Frank Miller	Greg Lupton
Field Sampling Manager	Tom Buhrlage	Jim Hey
Surveying Manager	Jim Schwing	Andy Clinton
WAO Contact	Christa Walls	Linda Barlow
Laboratory Contact	Amy Meyer	Heather Medley
Area 5 Data Management Contact	Greg Lupton	Krista Flaugh
Data Validation Contact	James Chambers	Baohe Chen
Field Data Validation Contact	Dee Dee Edwards	James Chambers
FACTS/SED Database Contact	Kym Lockard	Susan Marsh
Quality Control Contact	Reinhard Friske	Darren Wessel
Safety and Health Contact	Gregg Johnson	Pete Bolig/Jeff Middaugh

FACTS – Fernald Analytical Computerized Tracking System

QC – Quality Control

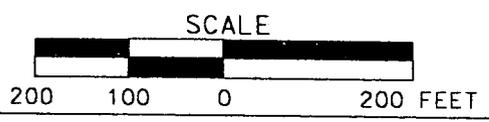
SED – Sitewide Environmental Database

WAO – Waste Acceptance Organization



LEGEND:

-  AREA BOUNDARIES
-  AREA TO BE CERTIFIED



DRAFT

v:\#2\fm12\dgn#a5_106.dgn
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 1-1. AREA 5 EAST PARKING LOT LOCATION MAP

21-MAR-2005

5883

- 1 • The distance moved must be as small as possible (less than 3 feet);
- 2
- 3 • It must remain within the boundary of the same CU and sub-CU, and must still meet the minimum
- 4 distance criterion;
- 5
- 6 • If the distance moved is greater than 3 feet, the move must be documented in a Variance/Field
- 7 Change Notice (V/FCN), considered as significant, which will be approved by the agencies prior
- 8 to collection.
- 9

10 Anytime a location is moved, the appropriate figure should be used to determine the best direction to
11 move the point to adhere to the above guidelines. The Characterization Manager or designee should be
12 contacted when a sample location is moved. All final sampling locations will be documented in the
13 Area 5 East Parking Lot Certification Report.

14
15 Customer sample numbers and FACTS identification numbers will be assigned to all samples collected.
16 The sample labels will be completed with sample collection information, and technicians will complete a
17 Field Activity Log (FAL), a Sample Collection Log, and a Chain of Custody/Request for Analysis form in
18 the field prior to submittal of the samples.

19
20 When possible, soil samples from the CU with like analyses (including the field duplicate) will be batched
21 and submitted to the Sample Processing Laboratory under one set of Chain of Custody/Request for
22 Analysis forms which will represent one analytical release. The rinsate will be listed on a separate Chain
23 of Custody/Request for Analysis form.

24 25 2.3.2 Equipment Decontamination

26 Decontamination is performed to prevent the introduction of contaminants from sampling equipment to
27 subsequent soil samples. Field Technicians will ensure that sampling equipment (core tubes and caps) has
28 been decontaminated prior to transport to the field. As described in SMPL-01, all sampling equipment will
29 have been decontaminated before it is transported to the field site, and the 6-inch core liners will be
30 decontaminated using the Level II (Section K.11 of the SCQ) procedure upon receipt from the
31 manufacturer. Decontamination is also necessary in the field if sampling equipment is reused. If an
32 alternate sampling method is used, equipment will be decontaminated between collection of sample
33 intervals, and again after the sampling performed under this PSP is completed. Following
34 decontamination, clean disposable wipes may be used to replace air-drying of the equipment.

35

1 2.3.3 Physical Sample Identification

2 Each soil certification sample will be assigned a unique sample identification number as

3 *Remediation Area-C#-Location^Analysis-QC*, where:

- 4
- 5 A5-EPL = Sample collected from Remediation Area 5, East Parking Lot
- 6
- 7 C# = Certification unit from which sample was collected
- 8
- 9 Location = Sample location number within the CU (1 through 16)
- 10
- 11 Analysis = "R" indicates radiological analysis
- 12
- 13 QC = Quality control sample, if applicable. A "D" indicates a field duplicate sample;
- 14 and "X" indicates a rinsate.
- 15

16 For example, a field duplicate sample taken from the 8th sample location from Area 5 EPL CU.01 for

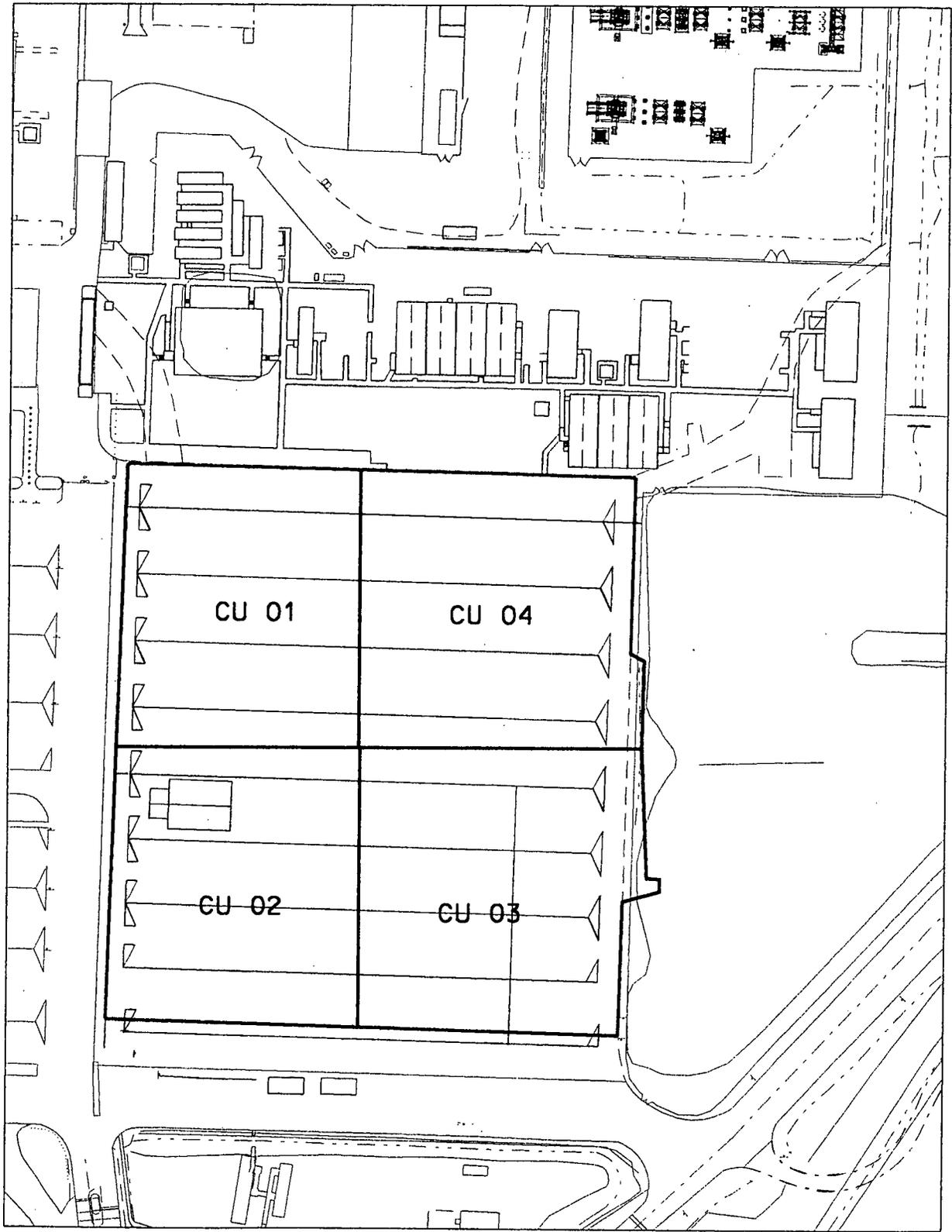
17 radiological analyses would be identified as A5-EPL-C01-8^R-D. The first rinsate will be identified as

18 A5-EPLC-R-X1 and A5-EPLC-M-X1.

v: s2 fmi 2 wd g r e o s _ 1 1 7 . d g n

STATE PLANAR COORDINATE SYSTEM 1983

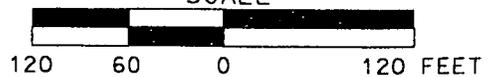
21-MAR-2005



LEGEND:

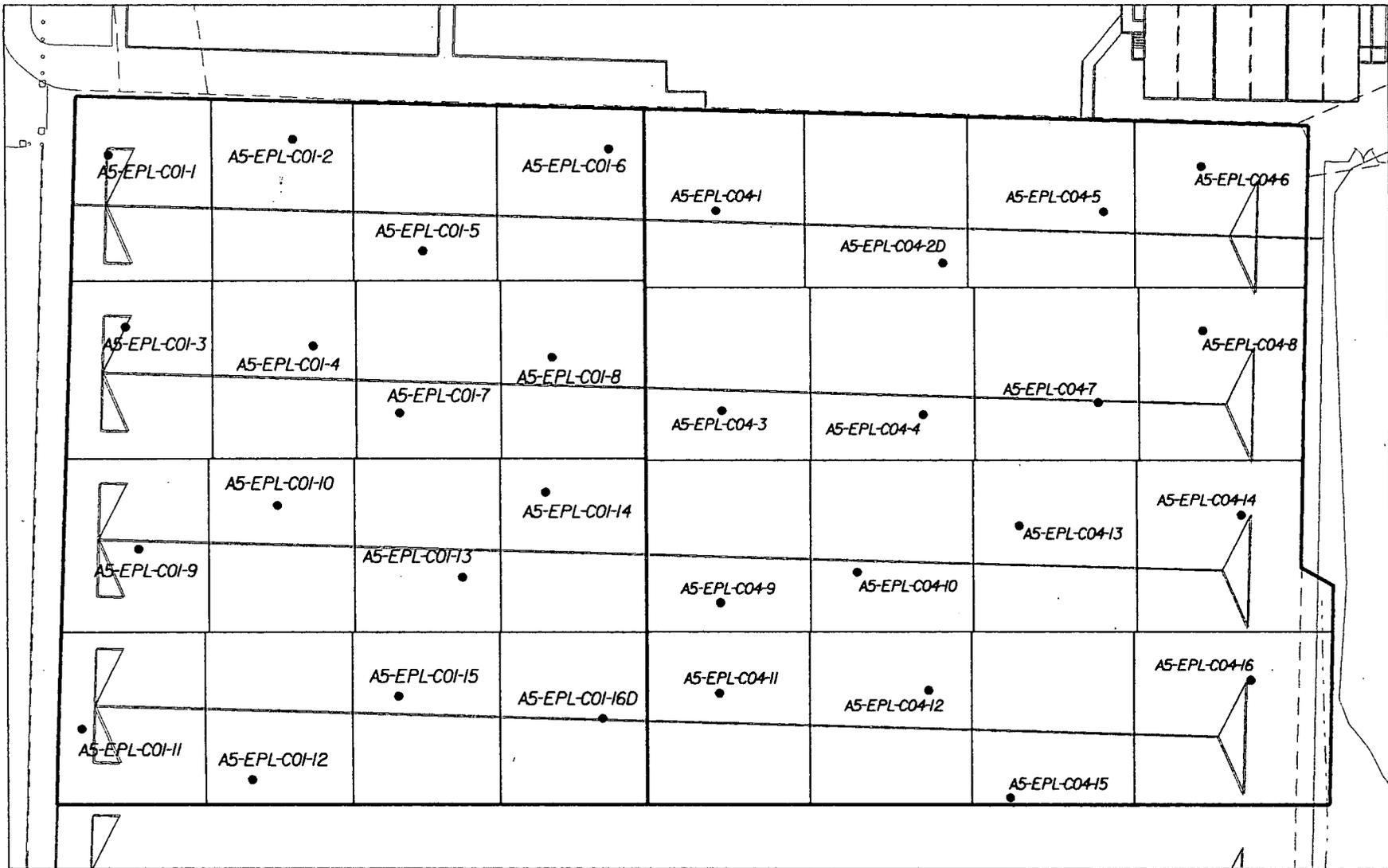
— CU BOUNDARY

SCALE



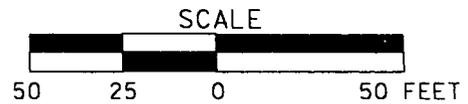
DRAFT

FIGURE 2-1. AREA 5 EAST PARKING LOT CU BOUNDARY MAP

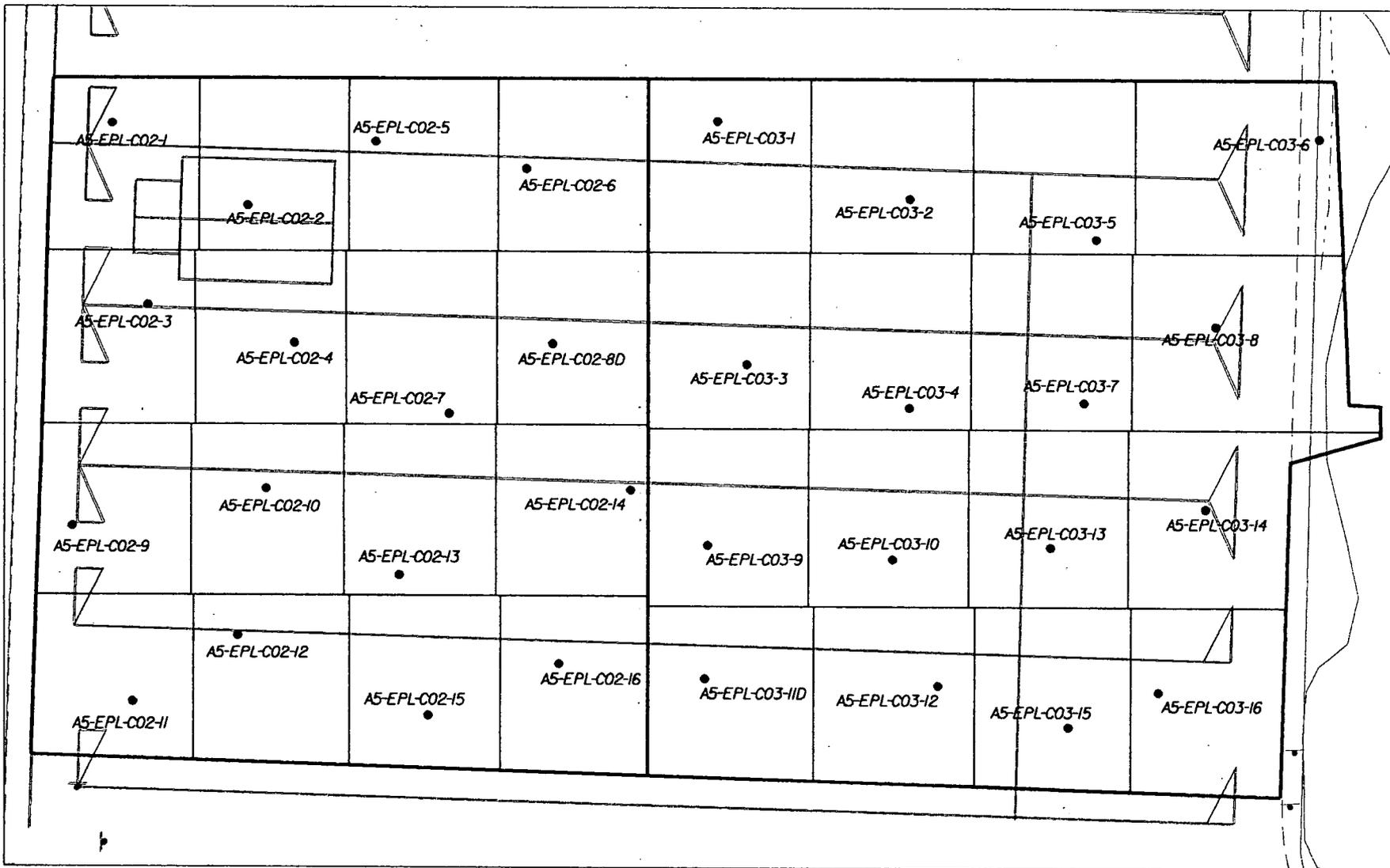


LEGEND:

• SAMPLE LOCATION

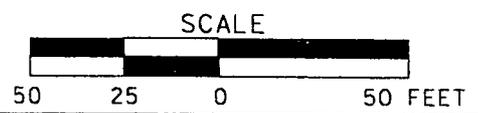


DRAFT



LEGEND:

• SAMPLE LOCATION



DRAFT

FIGURE 2-3. CERTIFICATION SAMPLING LOCATIONS FOR CU 02 AND CU 03

5800

3.0 CERTIFICATION SAMPLE ANALYSIS

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19

All soil samples from the CU (including the field duplicate) will be batched and submitted to the Sample Processing Laboratory under one set of Chain of Custody/Request for Analysis forms which will represent one analytical release. Container blanks will be listed on a separate Chain of Custody/Request for Analysis form but may be batched together in one analytical release.

All samples will be prepared for shipment to off-site laboratories per procedure 9501, Shipping Samples to Off-site Laboratories. Samples will only be shipped to off-site laboratories that are listed on the Fluor Fernald Approved Laboratories List. Historical data from each area will be used to ship the samples off site. The highest historical total uranium result in Area 5 EPL is 75 micrograms per kilogram ($\mu\text{g}/\text{kg}$) from boring P27-SP3.

As soon as the samples arrive at the laboratory where the analysis will take place they should be sealed to begin the in-growth period for radium analysis. A 30-day turnaround time will be required for sample analysis.

The sampling and analytical requirements are listed in Table 3-1 and the Target Analyte Lists (TAL) are shown in Table 3-2.

1
2
3

TABLE 3-1
SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Method	Sample Matrix	ASL	Preserve	Hold Time	Container ^b	Minimum Mass/Volume
Radiological (TAL A)	Gamma Spec, Alpha Spec, Liquid Scintillation or GPC	Solid	D/E ^a	Cool, 4° C	12 months	Glass with Teflon-lined lid	500 g (1500 g) ^c
Metals (TAL B)	ICP-AES or ICP/MS				6 months		
PCBs (TAL C)	GC				14 days		
Radiological	Gamma Spec and LSC	Liquid (rinsate)	D/E ^a	HNO ₃ pH<2	6 months	Polyethylene	4 liters
Metals	ICP or ICP/MS	Liquid (rinsate)	D/E ^a	HNO ₃ pH<2	6 months	Polyethylene	500 mls

4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21

^a Samples will be analyzed according to Analytical Support Level (ASL) D requirements but the minimum detection level (MDL) may cause some analyses to be considered ASL E.

^b Sample container types may be changed at the direction of the Field Sampling Lead, as long as the volume requirements, container compatibility requirements, and SCQ requirements are met.

^c At the direction of the Field Sampling Lead, triple the specified volume must be collected for all samples at one location in the CU in order for the contract laboratory to perform the required QC analysis. The samples shall be identified on the Chain of Custody/Request for Analysis forms as "designated for laboratory QC".

GC - gas chromatography

GPC - gas proportional counter

ICP-AES - inductively coupled plasma-atomic emission spectrometry

ICP/MS - inductively coupled plasma/mass spectrometry

LSC - liquid scintillation counting

PCBs - polychlorinated biphenyls

1
2
3
4
5
6

**TABLE 3-2
TARGET ANALYTE LISTS**

**20803-PSP-0002-A
Area 5 EPL**

Analyte	On-Property FRL/WAC	Soil MDL	Water MDL
Total Uranium	82 mg/kg	8.2 mg/kg	3.00 mg/L
Radium-226	1.7 pCi/g	0.17 pCi/g	2,550 pCi/L
Radium-228	1.8 pCi/g	0.18 pCi/g	2,700 pCi/L
Thorium-228	1.7 pCi/g	0.17 pCi/g	2,550 pCi/L
Thorium-232	1.5 pCi/g	0.15 pCi/g	2,550 pCi/L

7
8
9
10

**20803-PSP-0002-B
Area 5 EPL**

Analyte	On-Property FRL/WAC	Soil MDL	Water MDL
Arsenic	12 mg/kg	1.2 mg/kg	1.440 mg/L

11
12
13
14

**20803-PSP-0002-C
Area 5 EPL**

Analyte	On-Property FRL/WAC	Soil MDL
Aroclor-1254	0.13 mg/kg	0.013 mg/kg

15
16
17
18
19
20

mg/kg – milligrams per kilogram
mg/L – milligrams per Liter
pCi/g – picoCuries per gram
pCi/L – picoCuries per Liter
WAC – waste acceptance criteria

1 **4.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS**

2
3 4.1 FIELD QUALITY CONTROL SAMPLES, ANALYTICAL REQUIREMENTS AND DATA VALIDATION

4 Per requirements of the SEP and DQO SL-052, Revision 3, the field quality control, analytical and data
5 validation requirements are as follows:

- 6
- 7 • Field QC requirements include one field duplicate for the CU, as noted in Section 2.3 and
- 8 identified in Appendix B. The field duplicate sample will be analyzed for the same constituents of
- 9 concern (COCs) as the other samples in the CU from which the field duplicate has been collected.

10 One rinsate will be collected for metals and radionuclides at a minimum frequency of one per
11 20 pieces of equipment reused in the field.

- 12
- 13
- 14 • All analyses will be performed at ASL D or E, where E meets the MDL of 10 percent of the FRL
- 15 and is above the SCQ ASL D detection level, but the analyses meet all other SCQ ASL D criteria.
- 16 An ASL D data package will be provided for all of the data.

- 17
- 18 • All field data will be validated. A minimum of 10 percent of the laboratory data will be validated
- 19 to Validation Support Level (VSL) D with the remainder validated to VSL B. If any result is
- 20 rejected during validation, the sample will be re-analyzed or an archive location will be sampled
- 21 and analyzed in its place. If necessary, this change will be documented in a V/FCN.
- 22

23 Once all data are validated as required, results will be entered into the SED and a statistical analysis will be
24 performed to evaluate the pass/fail criteria for the each CU. The statistical approach is discussed in
25 Section 3.4.3 and Appendix G of the SEP.

26
27 If any sample collection or analytical methods are used that are not in accordance with the SCQ, the
28 Project Manager and Characterization Manager must determine if the qualitative data from the samples
29 will be beneficial to certification decision making. If the data will be beneficial, the Project Manager and
30 Characterization Manager will ensure that:

- 31
- 32 • A variance to the PSP will be written to document references confirming that the new method
- 33 supports data needs,
- 34
- 35 • variations from the SCQ methodology are documented in a variance to the PSP, or
- 36
- 37 • data validation of the affected samples is requested or qualifier codes of J (estimated)
- 38 and R (rejected) be attached to detected and non-detected results, respectively.
- 39

4.2 PROJECT SPECIFIC PROCEDURES, MANUALS AND DOCUMENTS

Programs supporting this work are responsible for ensuring team members work to and are trained to applicable documents. Additionally, programs supporting this work are responsible for ensuring team members in their organizations are qualified and maintain qualification for site access requirements. The Project Manager will be responsible for ensuring any project-specific training required to perform work per this PSP is conducted.

To ensure consistency and data integrity, field activities in support of the PSP will follow the requirements and responsibilities outlined in the procedures and guidance documents referenced below.

- 20100-HS-0002, Soil and Disposal Facility Project Integrated Health and Safety Plan
- Sitewide Excavation Plan (SEP)
- Sitewide CERCLA Quality Assurance Project Plan (SCQ)
- SH-1006, Event Investigation and Reporting
- ADM-02, Field Project Prerequisites
- EQT-06, Geoprobe[®] Model 5400 and Model 6600
- SMPL-01, Solids Sampling
- SMPL-21, Collection of Field Quality Control Samples
- 9501, Shipping Samples to Off-site Laboratories
- Trimble Pathfinder Pro-XL GPS Operation Manual

4.3 INDEPENDENT ASSESSMENT

An independent assessment may be performed by the Fernald Closure Project (FCP) QC organization by conducting a surveillance, consisting of monitoring/observing on-going project activities and work areas to verify conformance to specified requirements. The surveillance will be planned and documented in accordance with Section 12.3 of the SCQ.

4.4 IMPLEMENTATION OF CHANGES

Before the implementation of changes, the Field Sampling Lead will be informed of the proposed changes. Once the Field Sampling Lead has obtained written or verbal approval (electronic mail is acceptable) from the Characterization Manager and QC for the changes to the PSP, the changes may be implemented. Changes to the PSP will be noted in the applicable FALs and on a V/FCN. QC must receive the completed V/FCN, which includes the signatures of the Characterization and Sampling Managers, Project Manager, and QC within seven days of implementation of the change. The U.S. Environmental Protection Agency and Ohio Environmental Protection Agency will be given a 15-day review period prior to implementing the change(s) for any V/FCNs identified as "significant" per project guidelines.

5.0 HEALTH AND SAFETY

1
2
3 Technicians will schedule a project walkdown with Health and Safety (Radiological Control,
4 Industrial Hygiene, and Safety) and any other groups that may be working in the same or an adjacent area
5 before the start of the project. Any hazards identified during the project walkdown must be
6 corrected/controlled prior to the start of work. Weekly walkdowns will be conducted throughout the
7 course of the project in accordance with SPR 1-10, Safety Walk-Throughs. All work on this project will
8 be performed according to applicable Environmental Monitoring procedures, the documents identified in
9 Section 3.4, Fluor Fernald work permit, Radiological Work Permit, and other applicable permits as
10 determined by project management. Concurrence with applicable safety permits is required by each
11 technician in the performance of their assigned duties.

12
13 A job/safety briefing will be conducted before field activities begin each day. The project lead or designee
14 will document the briefing on form FS-F-2955. Personnel will also be briefed on any health and safety
15 documents (such as Travelers) that may apply to the project work scope. During the course of this project,
16 no operating heavy-duty equipment within a 50-foot buffer zone will be permitted. Additional safety
17 information can be found in 20100-HS-0002, Soil and Disposal Facility Project Integrated Health and
18 Safety Plan. All personnel have stop-work authority for imminent safety hazards or other hazards resulting
19 from noncompliance with the applicable safety and health practices.

20
21 Technicians will be provided with cellular phones for all sampling activities, and **all emergencies will be**
22 **reported by dialing 648-6511 and asking for "CONTROL"**. Announcements for severe weather will
23 be provided on the Emergency Message System and by alphanumeric page. Pagers and cellular phones are
24 provided to the Technicians by FCP.

6.0 DISPOSITION OF WASTE

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

During sampling activities, field personnel may generate small amounts of soil, water, and contact waste. Excess soil generated during sample collection will be replaced in the borehole. Contact waste generation will be minimized by limiting contact with sample media, and by only using disposable materials that are necessary. Contact waste will be bagged and brought back to site for disposal in an uncontrolled area dumpster. Generation of decontamination waters will be minimized in the field. Decontamination water that is generated will be contained in a plastic bucket with a lid and returned to site for disposal. A wastewater discharge form must be completed for disposal. On-site decontamination of equipment will take place at a facility that discharges to the Advanced Wastewater Treatment Facility, either directly or indirectly, through the storm water collection system.

Following analysis, any remaining soil and/or sample residuals will remain at the off-site laboratories for a specified period of time as defined in their contracts with Fluor Fernald. Prior authorization must be obtained from the Characterization Manager, or designee, to disposition samples collected under this PSP.

7.0 DATA MANAGEMENT

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33

A data management process will be implemented so information collected during the investigation will be properly managed to satisfy data end use requirements after completion of field activities. As specified in Section 5.1 of the SCQ, sampling teams will describe daily activities on a FAL, which should be sufficiently detailed for accurate reconstruction of the events without reliance on memory. Sample Collection Logs will be completed according to protocols specified in Appendix B of the SCQ and in applicable procedures. These forms will be maintained in loose-leaf form and uniquely numbered following the sampling event.

All field measurements, observations, and sample collection information associated with physical sample collection will be recorded, as applicable, on the Sample Collection Log, the FAL, the Chain of Custody/Request for Analysis form, the Lithologic Log, and Borehole Abandonment Record. The PSP number will be on all documentation associated with these sampling activities.

Samples will be assigned a unique sample number as explained in Section 2.3 and listed in Appendix B. This unique sample identifier will appear on the Sample Collection Log and Chain of Custody/Request for Analysis form and will be used to identify the samples during analysis, data entry, and data management.

Technicians will review all field data for completeness and accuracy then forward the field data package to the Field Data Validation Contact for final QC review. Analytical data will be entered into the SED by Sample Data Management personnel. Analytical data that is designated for data validation will be forwarded to the Data Validation Group. The PSP requirements for analytical data validation are outlined in Section 4.1. Analytical data will be reviewed by the Data Management Lead upon receipt from the off-site laboratories.

Following field and analytical data validation, the Sample Data Management organization will perform data entry into the SED. The original field data packages, original analytical data packages, and original documents generated during the validation process will be maintained as project records by the Sample Data Management organization.

To ensure that correct coordinates and survey information are tied to the final sample locations in the database, the following process will take place. Upon surveying all locations identified in the PSP, the

1 Surveying Manager will provide the Data Management Lead (i.e., Characterization) with an electronic file
2 of all surveyed coordinates and surface elevations. The Sampling Manager will provide the
3 Data Management Lead with a list of any locations that must be moved during penetration permitting or
4 sample collection, and the Data Management Lead will update the electronic file with this information.
5 After sample collection is complete, the Data Management Lead will provide this electronic file to the
6 Database Contact for uploading to SED.

APPENDIX A

DATA QUALITY OBJECTIVES SL-052, REV. 3

Control Number _____

Fernald Environmental Management Project

Data Quality Objectives

Title: Sitewide Certification Sampling and Analysis

Number: SL-052

Revision: 3

Effective Date: March 13, 2000

Contact Name: Mike Rolfes

Approval: 
James Chambers
DQO Coordinator

Date: 3/13/00

Approval: 
J.D. Chiou
SCEP Project Director

Date: 3/13/00

Rev. #	0	1	2	3			
Effective Date:	4/28/99	6/10/99	2/3/00	3/13/00			

DATA QUALITY OBJECTIVES Sitewide Certification Sampling and Analysis

Members of Data Quality Objectives (DQO) Scoping Team

The members of the scoping team included individuals with expertise in QA, analytical methods, field sampling, statistics, laboratory analytical methods and data management.

Conceptual Model of the Site

Soil sampling was conducted at the Fernald Environmental Management Project (FEMP) during the Operable Unit 5 (OU5) Remedial Investigation/Feasibility Study (RI/FS). Final Remediation Levels (FRLs) for constituents of concern (COCs), along with the extent of soil contaminated above the FRLs, were identified in the OU5 Record of Decision (ROD). Actual soil remediation activities now fall under the guidance of the final Sitewide Excavation Plan (SEP).

As outlined in the SEP, the FEMP has been divided into individual Remediation Areas (or phased areas within a Remediation Area) to sequentially carry out soil remedial activities. Under the strategy identified in the SEP, pre-design investigations are first conducted to better define the limits of soil excavation requirements. Following any necessary excavation, pre-certification real-time scanning activities are conducted to evaluate residual patterns of soil contamination. Pre-certification scan data should provide a level of assurance that the FRLs will be achieved. When pre-certification data indicate that remediation goals are likely to be met, they are used to define certification units (CUs) within the Remediation Area of interest. Table 2-9 of the final SEP identifies a list of area-specific COCs (ASCOCs) for each Remediation Area at the FEMP. Based on existing data and production knowledge, a subset of these ASCOCs are conservatively identified within each CU as potentially present in the CU. This suite of CU-specific COCs is the subset of the ASCOCs to be evaluated against the FRLs within that CU. At a minimum, the five primary radiological COCs (total uranium, radium-226, radium-228, thorium-228, thorium-232) will be retained as CU-specific COCs for certification of each CU.

Delineation and justification for the final CU boundaries, along with each corresponding suite of CU-specific ASCOCs is documented in a Certification Design Letter. Upon approval of the Certification Design Letter by the EPA, certification activities can begin. Section 3.4 of the final SEP presents the general certification strategy.

1.0 Statement of Problem

FEMP soil and potentially impacted adjacent off-property soil must be certified on a CU by CU basis for compliance with the FRLs of all CU-specific ASCOCs. The appropriate sampling, analytical and information management criteria must be developed to provide the required qualified data necessary to demonstrate attainment of certification statistical criteria. For every area undergoing certification, a sampling plan must be in place that will direct soil samples to be collected which are representative of the CU-specific COC concentrations within the framework of the certification approach identified in the final SEP. The appropriate analytical methodologies must be selected to provide the required data.

Exposure to Soil

The cleanup standards, or FRLs, were developed for a final site land use as an undeveloped park. Under this exposure scenario, receptors could be directly exposed to contaminated soil through dermal contact, external radiation, incidental ingestion, and/or inhalation of fugitive dust while visiting the park. Exposure to contaminated soil by the modeled receptor is expected to occur at random locations within the boundaries of the FEMP and would not be limited to any single area. Some soil FRLs were developed based on the modeled cross-media impact potential of soil contamination to the underlying aquifer. In these instances, potential exposure to contaminants would be indirect through the groundwater pathway, and not directly linked to soil exposure. Off-site soil FRLs were established at more conservative levels than the on-property soil FRLs, based on an agricultural receptor. Benchmark Toxicity Values (BTVs) are also being considered in the cleanup process by assessing habitat impact of individual BTVs under post-remedial conditions.

Available Resources

Time: Certification sampling will be accomplished by the field sampling team prior to interim or final regrading or release of soil for construction activities. The certification sampling schedule must allow sufficient time, in the event additional remediation is required, to demonstrate certification of FRLs prior to permanent construction or regrading. Certification sampling will have to be completed and analytical results validated and statistical analysis completed prior to submission of a Certification Report to the regulatory agencies.

Project Constraints: Certification sampling and analytical testing must be performed with existing manpower, materials and equipment to support the certification effort. Remediation areas are prioritized for certification sampling and analysis according to the date required for initiation of sequential construction activities in those areas. Fluor Daniel Fernald (FDF) and DOE must demonstrate post-remedial compliance with the CU-specific COC FRLs to release the designated Remediation Area for

planned interim grading, eventual restoration under the Natural Resources Restoration Plan (NRRP), and other final land use activities.

2.0 Identify the Decision

Decision

Demonstrate within each CU if all CU-specific COCs pass the certification criteria. These criteria are as follows: 1) The average concentration of each CU-specific COC is below the FRL and within the agreed upon confidence limits (95% for primary ASCOCs and 90% for secondary ASCOCs); and 2) the hot-spot criteria, that no result for any CU-specific COC is more than two times the associated soil FRL. The certification criteria are discussed in greater detail in Section 3.4.4 of the final SEP.

Possible Results

1. The average concentration of each CU-specific COC is demonstrated to be below the FRLs within the confidence level, with no single result for any CU-specific COC greater than two times the associated FRL. The CU can then be certified as attaining remediation goals.
2. The average concentration of at least one CU-specific COC is demonstrated to be above the FRL at the given confidence level. The CU will fail certification and require additional remedial action, per Section 3.4.5 of the final SEP.
3. If a result(s) of one or more CU-specific COC is demonstrated to be at or above two times the FRL, the CU will fail certification. The CU will fail certification and require additional remedial action per Section 3.4.5 of the final SEP. A combination of results 2 and 3 also constitutes certification failure.

3.0 Inputs That Affect the Decision

Required Information

Certification data will be obtained through physical soil sampling. Based on the certification analytical results, the average concentrations of each CU-specific COC with specified confidence levels will be calculated using the statistical methods identified in Appendix G of the final SEP.

Source of Information

Per the SEP, analysis of certification samples for each CU-specific COC will be conducted at analytical support level (ASL) D in accordance with methods and QA/QC standards in the FEMP Sitewide CERCLA Quality Assurance Project Plan [SCQ].

Contaminant-Specific Action Levels

The cleanup levels are the soil FRLs published in the OU5 and OU2 RODs. BTVs being considered in the remediation process are discussed for consideration during certification in Appendix C of the NRRP.

Methods of Sampling and Analysis

Physical soil samples will be collected in accordance with the applicable site sampling procedures. Per the SEP, laboratory analysis will be conducted at ASL D using QA/QC protocols specified in the SCQ. Full raw data deliverables will be required from the laboratory to allow for appropriate data validation. For FEMP-approved on- and off-site laboratories, the analytical method used will meet the required precision, accuracy and detection capabilities necessary to achieve FRL analyte ranges.

4.0 The Boundaries of the Situation

Spatial Boundaries

Domain of the Decision: The boundaries of this certification DQO extend to all surface, stockpile and fill soil in areas that are undergoing certification as part of FEMP remediation.

Population of Soil: Soil includes all excavated surfaces, undisturbed relatively unimpacted native soil, and sub-surface intervals (stockpile or fill areas only) in areas undergoing certification sampling and analysis.

Scale of Decision Making

Based on considerations of the final certification units and the COC evaluation process, the CU-specific COCs are determined. The area undergoing certification will be evaluated on a CU basis, based on physical sample results, as to whether it has passed or failed the criteria for attainment of certification (final SEP Section 3.4.4).

Temporal Boundaries

Time frame: Certification sampling must be performed in time to sequentially release certified areas for scheduled interim grading, restoration, and other final land use activities. Certification sampling data received from the laboratory will be validated and statistically evaluated. Certification results and findings will be documented in Certification Reports, which must be submitted to and approved by the regulatory agencies prior to release of the areas for scheduled interim grading, restoration, and other final land use activities.

Practical Considerations: Some areas undergoing remediation will not be accessible for certification sampling until decontamination/demolition and remedial excavation activities are complete. Other areas, such as wood lots, that are relatively uncontaminated and not planned for excavation, may require preparation, such as cutting of grass or removal of undergrowth prior to certification sampling, thus requiring coordination with FEMP Maintenance personnel.

5.0 Decision Rule

Successful certification of soil within the boundaries of a certification unit (CU) demonstrates that the certified soil (surface or subsurface) has concentrations of CU-specific COC(s) that meet the established criteria for attainment of Certification.

Parameters of Interest

The parameters of interest are the individual and average surface soil concentrations of CU-specific COCs and confidence limits on the calculated average within a CU. OU2 and OU5 ROD identify all applicable soil FRLs. The SEP identifies the ASCOCs, a subset of which will be used to establish CU-specific COCs within each Remediation Area undergoing certification sampling and analysis.

Action Levels

The applicable action levels are the on- and off-property soil FRLs published in the OU5 or OU2 ROD for each ASCOC.

Decision Rules

If the average concentration for each CU-specific COC is demonstrated to be below the FRLs within the agreed upon confidence level (95% for primary COCs; 90% for secondary COCs), and no analytical result exceeds two times the soil FRL, then the CU can be certified as complying with the cleanup criteria. If a CU does not meet the FRLs within the agreed upon confidence level for one or more CU-specific COCs, or one or more analytical results for one or more CU-specific COCs is greater than two times the associated soil FRL, then the CU fails certification and requires further assessment as per the SEP.

5883

6.0 Limits on Decision Errors

Types of Decision Errors and Consequences

Definition

Decision Error 1: This decision error occurs when the decision maker decides that a CU has met the certification criteria, when in reality, the certification criteria have not been met. This situation could result in an increased risk to human health and the environment. In addition, this type of error could result in regulatory fees and penalties.

Decision Error 2: This decision error occurs when the decision maker decides a CU does not meet the certification criteria, when actually, the certification criteria have been met. This error would result in unnecessary added costs due to the excavation of soil containing COC concentrations below their FRLs, and an increased volume of soil assigned to the OSDF. In addition, unnecessary delays in the remediation schedule may result.

True State of Nature for the Decision Errors

The true state of nature for Decision Error 1 is that the certification criteria are not met (average CU-specific COC concentrations not below the FRL within the specified confidence limits; or a single sample result above two times the FRL). The true state of nature for Decision Error 2 is that certification criteria are met (average CU-specific COC concentrations are below the FRL within the specified confidence limits, and no result is above two times the FRL). Decision Error 1 is the more severe error due to the potential threat this poses to human health and the environment.

Null Hypothesis

H_0 : The average concentration of at least one CU-specific COC within a CU is equal to or greater than the associated FRL.

H_1 : The average concentration of all CU-specific COCs within a CU is less than the action levels.

False Positive and False Negative Errors

A false positive is Decision Error 1: less than or equal to five percent ($p = .05$) is considered the acceptable decision error in determination of compliance with FRLs for primary ASCOCs, while ten percent ($p = .10$) is acceptable for secondary ASCOCs.

A false negative is Decision Error 2: less than or equal to 20 percent is considered the acceptable decision error. This decision error is controlled through the determination of sample sizes (see Section G.1.4.1 of the final SEP).

7.0 Design for Obtaining Quality Data

Section 3.4.2 of the final SEP presents the specifics of the certification sampling design. The following text describes the general certification sampling design.

Soil Sample Locations

In order to select certification sampling locations, each CU is divided into 16 approximately equal sub-CUs. Certification sample locations are then generated by randomly selecting an easting and northing coordinate within the boundaries of each cell. Additional alternative sample locations are also generated in case the original random sample location fails the minimum distance criterion. The minimum distance criterion is defined as the minimum distance allowed between random sample locations in order to eliminate the chance of random sample points clustering within a small area. This clustering would tend to over emphasize a small area and, conversely, under represent a large area in certification determination. By not allowing sample locations to be too closely arranged, the sample locations are spread out and provide a more uniform coverage, thus reducing the possibility of large unsampled areas. The equation for determining minimum distance criterion is presented in Section 3.4.2.1 of the SEP.

In the event that the original random sample location failed the minimum distance criterion, the first alternate location was selected and all the locations were retested. This process continued until all 16 random locations passed the minimum distance criteria.

Each CU is also divided into four quadrants, each of which contains 4 sub-CUs and 4 sample locations. Three of the four locations per quadrant (12 per CU) are then selected for sample collection and analysis. The other one per quadrant (4 per CU) are designated as "archives", and samples will not be collected and analyzed unless need arises due to analytical or validation problems warrant. Per Section 3.4.2 of the SEP, as few as 8 samples may be collected from Group 2 CUs for analysis of secondary COCs.

Physical Samples

Physical soil certification samples will be collected from the surface according to SMPL-01 at locations identified in the PSP (generally 12 of the 16 locations per CU).

If stockpiled soil is to be certified, two CUs will be established, one for the stockpile and one for the underlying soil (i.e., the "footprint"). To certify the stockpile, samples will be collected from predetermined random intervals from within the stockpiled soil at each certification sampling location identified in the PSP. To certify the footprint, the first 6-inches of native soil present at each sampling location will also be collected for certification. If fill soil is to be certified, the strategy (surface or sampling at depth) will be based on results from the precertification scan of the fill area(s), as discussed in the Certification Design Letter and the certification PSP.

Laboratory Analysis

As defined in the PSP, a minimum of 8 to 12 samples per CU will be submitted to the on-site laboratory or a FDF approved off-site laboratory for analysis. All certification analyses will meet ASL D requirements per the SCQ except for the HAMDC. Samples will be analyzed for all CU-specific ASCOCs, with minimum detection levels set according to the SCQ and applicable project guidelines.

Validation

All field data will be validated. Also, a minimum of 10 percent of the analytical data from each laboratory will be subject to analytical validation to ASL D requirements in the SCQ, and will require an ASL D package. The remaining analytical data will be validated to a minimum of ASL B, and will require an ASL B package.

8.0 Use of Data to Test Null Hypothesis

Appendix G of the final SEP discusses in detail, the statistical evaluations of certification data used to determine attainment of certification criteria.

DQO #: SL-052, Rev. 3
Effective Date: March 3, 2000

Page 10 of 12

**Data Quality Objectives
Sitewide Certification Sampling and Analysis**

1A. Task Description:

1B. Project Phase: (Put an X in the appropriate selection.)

RI FS RD RA RvA Other (specify) _____

1C. DQO No.: SL-052, Rev. 2 DQO Reference No.: _____

2. Media Characterization: (Put an X in the appropriate selection.)

Air Biological Groundwater Sediment Soil
Waste Wastewater Surface Water Other (specify) _____

3. Data Use with Analytical Support Level (A-E): (Put an X in the appropriate Analytical Support Level selection(s) beside each applicable data use)

Site Characterization	Risk Assessment
A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>
Evaluation of Alternatives	Engineering Design
A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>
Monitoring During Remediation	Other
A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input checked="" type="checkbox"/> E <input type="checkbox"/>

4A. Drivers: Remediation Area Remedial Action Work Plans, Applicable or Relevant and Appropriate Requirements (ARARs) and Operable Unit 2 and Operable Unit 5 Records of Decision (ROD), Sitewide Excavation Plan (SEP).

4B. Objective: Confirmation that remediation areas at the FEMP, or adjacent off-property areas, have met certification criteria on a CU by CU basis.

5. Site Information (Description):

The OU2 and OU5 RODs have identified areas at the FEMP that require soil remediation activities. The RODs specify that the soil in these areas will be demonstrated to be below the FRLs. Certification is necessary for all FEMP soil and some adjacent off-property soil to demonstrate that the residual soil does not contain COC contamination exceeding the FRL at a specified confidence level.

6A. Data Types with appropriate Analytical Support Level Equipment Selection and SCQ Reference: (Place an "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 to the SCQ Section.)

- | | | | | | |
|----------------------|---------------------------------------|-------------------|---------------------------------------|--------------------|--------------------------|
| 1. pH | <input type="checkbox"/> | 2. Uranium | <input checked="" type="checkbox"/> * | 3. BTX | <input type="checkbox"/> |
| Temperature | <input type="checkbox"/> | Full Radiological | <input checked="" type="checkbox"/> * | TPH | <input type="checkbox"/> |
| Specific Conductance | <input type="checkbox"/> | Metals | <input checked="" type="checkbox"/> * | Oil/Grease | <input type="checkbox"/> |
| Dissolved Oxygen | <input type="checkbox"/> | Cyanide | <input type="checkbox"/> | | |
| Technetium-99 | <input checked="" type="checkbox"/> * | Silica | <input type="checkbox"/> | | |
| 4. Cations | <input type="checkbox"/> | 5. VOA | <input checked="" type="checkbox"/> * | 6. Other (specify) | |
| Anions | <input type="checkbox"/> | BNA | <input type="checkbox"/> | | |
| TOC | <input type="checkbox"/> | PEST | <input checked="" type="checkbox"/> * | | |
| TCLP | <input type="checkbox"/> | PCB | <input checked="" type="checkbox"/> * | | |
| CEC | <input type="checkbox"/> | COD | <input type="checkbox"/> | | |

* As identified in the area certification PSP

6.B. Equipment Selection and SCQ Reference:

Equipment Selection	Refer to SCQ Section
ASL A _____	SCQ Section _____
ASL B _____	SCQ Section _____
ASL C _____	SCQ Section _____
ASL D <u>Per SCQ and PSP</u>	SCQ Section <u>Appendix G, Tbls. 1&3</u>
ASL E <u>Per PSP</u>	SCQ Section <u>Appendix H (final)</u>

7A. Sampling Methods: (Put an X in the appropriate selection.)

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

*Systematic random samples, selected one per cell and meeting the minimum distance criterion

7B. Sample Work Plan Reference: Project Specific Plan for the associated Remediation area Remedial Action Work Plan

Background samples: OU5 RI

7C. Sample Collection Reference: Associated PSP(s), SMPL-01

8. Quality Control Samples: (Put an X in the appropriate selection.)

8A. Field Quality Control Samples:

Trip Blanks	<input checked="" type="checkbox"/>	Container Blanks	<input checked="" type="checkbox"/>
Field Blanks	<input checked="" type="checkbox"/>	Duplicate Samples	<input checked="" type="checkbox"/>
Equipment Rinse Blanks	<input checked="" type="checkbox"/>	Split Samples	<input checked="" type="checkbox"/>
Preservative Blanks	<input type="checkbox"/>	Performance Evaluation Samples	<input type="checkbox"/>

Other (specify) _____

1) Collected for volatile organic sampling

2) As noted in the PSP

3) Split samples will be taken where required by the EPA

8B. Laboratory Quality Control Samples:

Method Blank	<input checked="" type="checkbox"/>	Matrix Duplicate/Replicate	<input checked="" type="checkbox"/>
Matrix Spike	<input checked="" type="checkbox"/>	Surrogate Spikes	<input checked="" type="checkbox"/>
Tracer Spike	<input checked="" type="checkbox"/>	Other (specify) _____	

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

Sample density will be dependent upon the CU size (Group 1 [250'x250'] or Group 2 [500'x500']), as determined by historical and pre-certification scan data.

APPENDIX B

AREA 5 EAST PARKING LOT SAMPLE LOCATIONS AND IDENTIFIERS

APPENDIX B
AREA 5 EAST PARKING LOT CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	East-83	North-83
1	1-1	0"-6"	A5-EPL-C01-1^RMP	ABC	1349917.99	479451.4
	1-2	0"-6"	A5-EPL-C01-2^RMP	ABC	1349979.54	479456.42
	1-3	0"-6"	A5-EPL-C01-3^RMP	ABC	1349923.3	479394.8
	1-4	0"-6"	A5-EPL-C01-4^RMP	ABC	1349986.09	479388.55
	1-5	0"-6"	A5-EPL-C01-5^RMP	ABC	1350022.89	479419.7
	1-6	0"-6"	A5-EPL-C01-6^RMP	ABC	1350084.99	479453.19
	1-7	0"-6"	A5-EPL-C01-7^RMP	ABC	1350014.87	479366.65
	1-8	0"-6"	A5-EPL-C01-8^RMP	ABC	1350065.69	479384.82
	1-9	0"-6"	A5-EPL-C01-9^RMP	ABC	1349927.43	479321.68
	1-10	0"-6"	A5-EPL-C01-10^RMP	ABC	1349973.85	479336.1
	1-11	0"-6"	A5-EPL-C01-11^RMP	ABC	1349908.16	479262.03
	1-12	0"-6"	A5-EPL-C01-12^RMP	ABC	1349964.99	479245.34
	1-13	0"-6"	A5-EPL-C01-13^RMP	ABC	1350035.36	479312.25
	1-14	0"-6"	A5-EPL-C01-14^RMP	ABC	1350063.28	479340.47
	1-15	0"-6"	A5-EPL-C01-15^RMP	ABC	1350013.99	479272.93
	1-16D	0"-6"	A5-EPL-C01-16^RMP	ABC	1350081.97	479265.64
A5-EPL-C01-16^RMP-D						
2	2-1	0"-6"	A5-EPL-C02-1^RMP	ABC	1349919.32	479222.01
	2-2	0"-6"	A5-EPL-C02-2^RMP	ABC	1349964.54	479194.57
	2-3	0"-6"	A5-EPL-C02-3^RMP	ABC	1349931.32	479161.75
	2-4	0"-6"	A5-EPL-C02-4^RMP	ABC	1349979.88	479149.21
	2-5	0"-6"	A5-EPL-C02-5^RMP	ABC	1350007.01	479215.92
	2-6	0"-6"	A5-EPL-C02-6^RMP	ABC	1350057.21	479206.95
	2-7	0"-6"	A5-EPL-C02-7^RMP	ABC	1350031.43	479125.98
	2-8D	0"-6"	A5-EPL-C02-8^RMP	ABC	1350065.9	479149.03
			A5-EPL-C02-8^RMP-D			
	2-9	0"-6"	A5-EPL-C02-9^RMP	ABC	1349905.98	479088.52
	2-10	0"-6"	A5-EPL-C02-10^RMP	ABC	1349970.48	479100.96
	2-11	0"-6"	A5-EPL-C02-11^RMP	ABC	1349926.26	479030.62
	2-12	0"-6"	A5-EPL-C02-12^RMP	ABC	1349961.11	479052.5
	2-13	0"-6"	A5-EPL-C02-13^RMP	ABC	1350014.74	479072.44
	2-14	0"-6"	A5-EPL-C02-14^RMP	ABC	1350091.78	479100.7
	2-15	0"-6"	A5-EPL-C02-15^RMP	ABC	1350024.43	479026.24
2-16	0"-6"	A5-EPL-C02-16^RMP	ABC	1350068	479043.42	

APPENDIX B
AREA 5 EAST PARKING LOT CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	East-83	North-83
3	3-1	0"-6"	A5-EPL-C03-1^RMP	ABC	1350120.55	479223
	3-2	0"-6"	A5-EPL-C03-2^RMP	ABC	1350184.49	479197.26
	3-3	0"-6"	A5-EPL-C03-3^RMP	ABC	1350130.34	479142.44
	3-4	0"-6"	A5-EPL-C03-4^RMP	ABC	1350184.41	479128.19
	3-5	0"-6"	A5-EPL-C03-5^RMP	ABC	1350246.54	479183.84
	3-6	0"-6"	A5-EPL-C03-6^RMP	ABC	1350320.8	479217.64
	3-7	0"-6"	A5-EPL-C03-7^RMP	ABC	1350242.67	479130.06
	3-8	0"-6"	A5-EPL-C03-8^RMP	ABC	1350286.51	479155.31
	3-9	0"-6"	A5-EPL-C03-9^RMP	ABC	1350117.37	479082.53
	3-10	0"-6"	A5-EPL-C03-10^RMP	ABC	1350178.89	479078.02
	3-11D	0"-6"	A5-EPL-C03-11^RMP	ABC	1350116.48	479038.6
			A5-EPL-C03-11^RMP-D			
	3-12	0"-6"	A5-EPL-C03-12^RMP	ABC	1350194.08	479036.42
	3-13	0"-6"	A5-EPL-C03-13^RMP	ABC	1350231.58	479082.03
	3-14	0"-6"	A5-EPL-C03-14^RMP	ABC	1350283.34	479094.88
	3-15	0"-6"	A5-EPL-C03-15^RMP	ABC	1350237.65	479022.94
3-16	0"-6"	A5-EPL-C03-16^RMP	ABC	1350267.81	479034.39	
4	4-1	0"-6"	A5-EPL-C04-1^RMP	ABC	1350120.63	479432.82
	4-2D	0"-6"	A5-EPL-C04-2^RMP	ABC	1350196.83	479415.65
			A5-EPL-C04-2^RMP-D			
	4-3	0"-6"	A5-EPL-C04-3^RMP	ABC	1350122.28	1349949.49
	4-4	0"-6"	A5-EPL-C04-4^RMP	ABC	1350189.97	479366.03
	4-5	0"-6"	A5-EPL-C04-5^RMP	ABC	1350250.96	479432.42
	4-6	0"-6"	A5-EPL-C04-6^RMP	ABC	1350283.8	479447.32
	4-7	0"-6"	A5-EPL-C04-7^RMP	ABC	1350248.87	479370
	4-8	0"-6"	A5-EPL-C04-8^RMP	ABC	1350284.17	479393.42
	4-9	0"-6"	A5-EPL-C04-9^RMP	ABC	1350121.5	479303.78
	4-10	0"-6"	A5-EPL-C04-10^RMP	ABC	1350167.53	479313.86
	4-11	0"-6"	A5-EPL-C04-11^RMP	ABC	1350121.05	479273.89
	4-12	0"-6"	A5-EPL-C04-12^RMP	ABC	1350191.41	479274.86
	4-13	0"-6"	A5-EPL-C04-13^RMP	ABC	1350222.09	479329.26
	4-14	0"-6"	A5-EPL-C04-14^RMP	ABC	1350296.65	479332.78
	4-15	0"-6"	A5-EPL-C04-15^RMP	ABC	1350218.85	479239.36
4-16	0"-6"	A5-EPL-C04-16^RMP	ABC	1350299.69	479278.19	