Department of Energy

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NOV 1 0 2004

DOE-0041-05

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V, SR-6J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF THE DRAFT CERTIFICATION DESIGN LETTER AND CERTIFICATION SAMPLING PROJECT SPECIFIC PLAN FOR AREA 9, PHASE III ABANDONED OUTFALL LINE – PART THREE

Enclosed for your review are the draft Certification Design Letter and Certification Sampling Project Specific Plan for Area 9, Phase III Abandoned Outfall Line – Part Three.

If you have any questions or require additional information, please contact Johnny Reising at (513) 648-3139.

Sincerely,

Johnny Reising

for William J. Taylor
Director

FCP:Reising

Enclosures: As Stated

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CERTIFICATION DESIGN LETTER FOR AREA 9, PHASE III ABANDONED OUTFALL LINE – PART THREE

FERNALD CLOSURE PROJECT
FERNALD, OHIO

NOVEMBER 2004

U.S. DEPARTMENT OF ENERGY

Attachment to:
DOE-0041-05

21140-RP-0004
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LIST OF ACRONYMS AND ABBREVIATIONS

A1PII	Area 1, Phase II
A9PIII	Area 9, Phase III
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
CRDL	contract required detection limit
CU	certification unit
DOE	U.S. Department of Energy
FCP	Fernald Closure Project
FMPC	Feed Material Production Center
FRL	final remediation level
MDL	minimum detection level
mg/kg	milligrams per kilogram
MH	manhole
NPDES	National Pollutant Discharge Elimination System
OSDF	On-Site Disposal Facility
OU5	Operable Unit 5
pCi/g	picoCuries per gram
ppm	parts per million
PSP	Project Specific Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SR	State Route
UCL	Upper Confidence Limit
VSL	validation support level

EXECUTIVE SUMMARY

This Certification Design Letter (CDL) describes the certification approach for a section of Area 9, Phase III – Part Three (A9PIII) from the State Route (SR) 128 to approximately 38 feet west of the Great Miami River. The following information is included in the CDL:

- The boundaries (Figure 1-1) and a description of the area to be certified under the guidance of this CDL;
- A presentation of historical data from the area proposed for certification;
- A discussion of the area-specific constituent of concern (ASCOC) selection process and list of ASCOCs assigned to A9PIII;
- A presentation of the certification unit (CU) boundaries and proposed sampling strategy;
- The analytical requirements and the statistical methodology that will be employed; and
- The proposed schedule for the certification activities.

This CDL covers the soil beneath the abandoned outfall line bedding material from SR 128 to approximately 38 feet west of the Great Miami River and the Manhole (MH) 181-2 above-final remediation level excavation. The soil beneath the abandoned outfall line bedding material located within the Mid Valley Pipeline easement is also covered under the scope of this CDL. However, because the easement is bound on the east and the west by CU 1, which is part of A9PIII – Part One, samples will be collected as part of CU 1 for certification purposes. For the abandoned outfall line trench, precertification real-time measurements will be completed in conjunction with certification sampling. Real-time precertification measurements will be taken following excavation of the impacted area near MH 181A, but prior to certification sampling. Real-time scanning results from precertification activities of A9PIII will be presented in the certification report. The protective sleeve surrounding the abandoned outfall line under SR 128 will be evaluated against the free release criteria per applicable site procedures.

The certification design presented in this CDL follows the general approach outlined in Section 3.4 of the Sitewide Excavation Plan (SEP, DOE 1998) and SEP Addendum (DOE 2001). The selection of A9PIII ASCOCs was accomplished using constituent of concern lists in the Operable Unit 5 Record of Decision (DOE 1996). Three CUs have been established to cover the A9PIII – Part Three certification area. The CU design for CUs 7 and 8 were based on the length and width of the trench. The CU design for CU 9 was based on size of the impacted area in the proximity of MH 181A.

1.0 INTRODUCTION

This Certification Design Letter (CDL) describes the certification approach for demonstrating that soil in Area 9, Phase III (A9PIII) meets the final remediation levels (FRLs) for all area-specific constituents of concern (ASCOCs). The format of this CDL follows guidelines presented in the Sitewide Excavation Plan (SEP, DOE 1998). Accordingly, this CDL consists of five sections:

1.0 Introduction - Presentation of the purpose, objectives, and scope of this CDL

2.0 Historical Data - Presentation and discussion of historical soil data from A9PIII

3.0 Area-Specific Constituents of Concern - Discussion of selection criteria and ASCOCs for A9PIII

4.0 Certification Approach - Presentation of design, sampling and analytical methodologies

5.0 Schedule

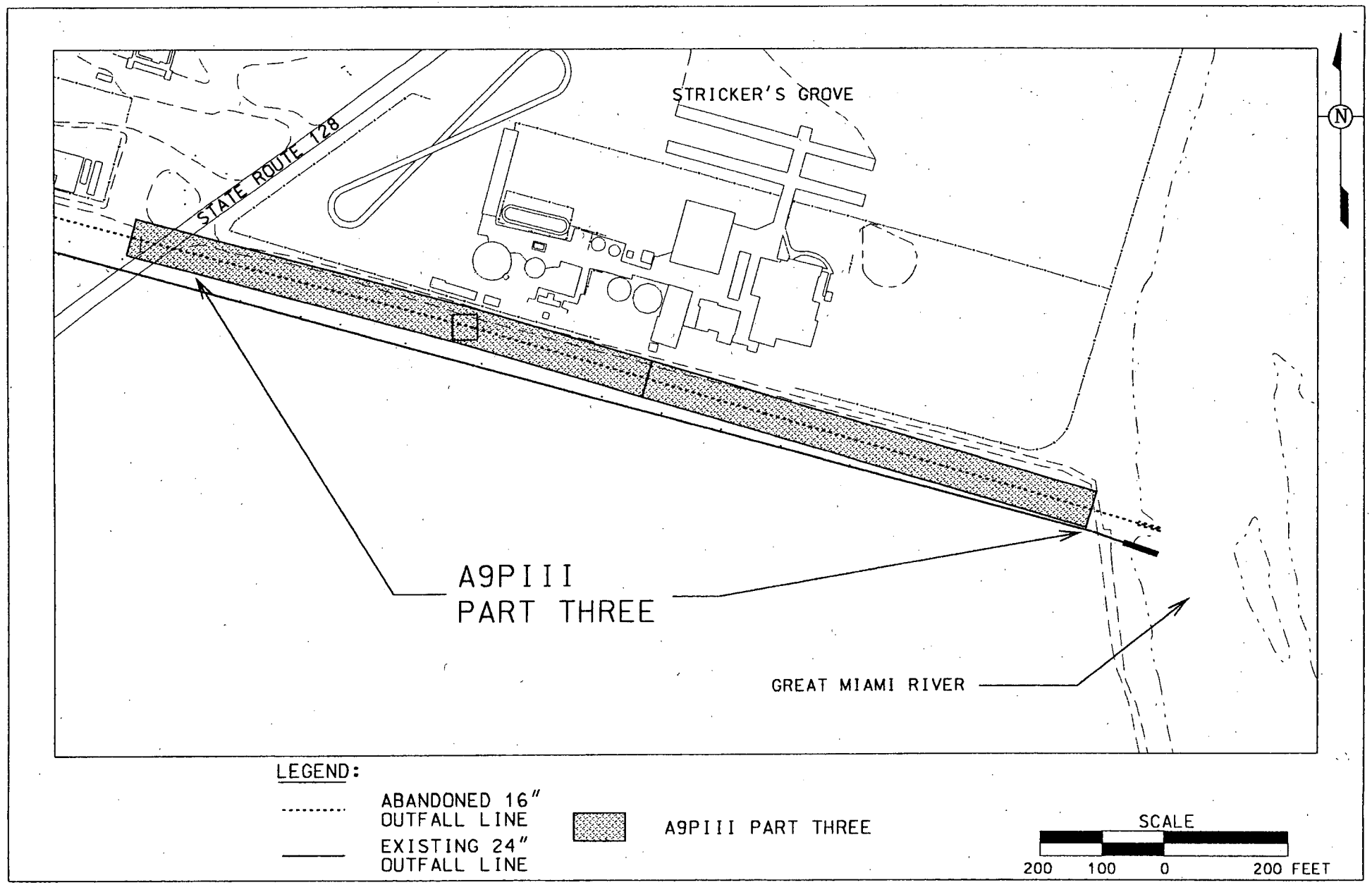
1.1 OBJECTIVES

The primary objectives of this document are to:

- Define the boundaries of the area to be certified under the guidance of this CDL;
- Present historical data collected from within the area proposed for certification;
- Define the ASCOC selection process and list the selected A9PIII ASCOCs;
- Present the certification unit (CU) boundaries and proposed certification sampling strategy;
- Summarize the analytical requirements and the statistical methodology that will be employed; and
- Present the proposed schedule for the certification activities.

1.2 SCOPE AND AREA DESCRIPTION

A9PIII is located off site, stretching east from the eastern boundary of the Fernald Closure Project (FCP) to the Great Miami River. The scope of this CDL covers the portion of A9PIII that extends from the western side of State Route (SR) 128 to approximately 38 feet west of the Great Miami River and the impacted area in the proximity of Manhole (MH) 181A. The location of A9PIII – Part Three is shown on Figure 1-1.



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STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 1-1. AREA 9 PHASE III, PART THREE LOCATION MAP

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2.0 HISTORICAL AND PRECERTIFICATION DATA

Characterization data have been collected from A9PIII as part of the Offsite Soils Removal Action Around MH 180, Feed Material Production Center (FMPC) Effluent Line (EPA 1988). The criteria identified for this removal action was 52 parts per million (ppm) total uranium and/or 46 ppm total thorium. These action levels were established and used prior to the development of the current FRLs. When the historical data collected in 1989 and 1993 were compared to the newly established FRLs, several FRL exceedances were identified. Confirmatory sampling was conducted to demonstrate whether or not the historical FRL exceedances still exist. Confirmatory sampling verified a historical FRL exceedance at MH 181-4. This exceedance was bound both laterally and vertically and the material will be excavated and sent to the On-Site Disposal Facility (OSDF). The following section further summarizes the data collection chronology.

2.1 HISTORICAL AND PRECERTIFICATION DATA SUMMARY

2.1.1 Historical Physical Sampling Data

Before initiating the certification process, all pertinent historical data relative to A9PIII were examined. This included the August 1988 National Pollutant Discharge Elimination System (NPDES) Permit Application and Offsite Soils Removal Action Around Manhole 180, FMPC Effluent Line. The list of secondary ASCOCs was partially developed from these two sources of information as discussed in Section 3.2. All historical physical sampling data will be presented in Appendix B of the Excavation Control Plan.

2.1.2 Precertification Real-Time Scanning

Precertification real-time scanning will occur in conjunction with excavation of the abandoned outfall line. After the overburden material, piping, and bedding material are removed, real-time scanning of the bottom of the excavation will occur. Precertification results will be presented in the certification report for this area.

3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN

In the Operable Unit 5 (OU5) Record of Decision (ROD, DOE 1996), there are 80 soil constituents of concern (COCs) with established FRLs. These COCs were retained for further investigation based on a screening process that considered the presence of the constituent in site soil and the potential risk to a receptor exposed to soil containing this contaminant. In spite of the conservative nature of this COC retention process, many of the COCs with established FRLs have a limited distribution in site soil or the presence of the COC is based on high contract required detection limits (CRDLs). When FRLs were established for these COCs in the OU5 ROD, the FRLs were initially screened against site data presented on spatial maps to establish a picture of potential remediation areas.

By reviewing existing Remedial Investigation/Feasibility Study (RI/FS) data presented on spatial distribution maps, the sitewide list of soil COCs in the OU5 ROD was reduced from 80 to 30. This reduction was possible because the majority of the COCs with FRLs listed in the OU5 ROD have no detections above their corresponding FRL, thus eliminating them from further consideration. The 30 remaining sitewide COCs account for over 99 percent of the combined risk to a site receptor model, and they comprise the list from which all of the remediation ASCOCs are drawn. When planning certification for a remediation area, additional selection criteria are used to derive a subset of these 30 COCs. This subset of COCs is passed along to the certification process.

3.1 SELECTION CRITERIA

All of the sitewide primary COCs (total uranium, radium-226, radium-228, thorium-232, and thorium-228) will be retained as ASCOCs for certification in all areas of the site as well as off-property. The selection process for retaining secondary ASCOCs for a remediation area is driven by applying a set of decision criteria. A soil contaminant will be retained as an ASCOC if:

- It was retained as an ASCOC in adjacent FCP soil remediation areas;
- It is listed as a soil COC in the OU5 ROD, and it is listed as an ASCOC in Table 2-7 of the SEP for the Remediation Area of interest (Note: Table 2-7 does not include off-property Area 9);
- Analytical results show that a contaminant is present above its FRL, and the above-FRL concentrations are not attributable to false positives or elevated CRDLs;
- It can be traced to site use, either through process knowledge or known release of the constituent to the environment; and

- Physical characteristics of the contaminant, such as degradation rate and volatility, indicate it is likely to persist in the soil between time of release and remediation.

3.2 ASCOC SELECTION PROCESS FOR A9PIII

Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary COCs, and will be retained as ASCOCs for the A9PIII CUs. Cesium-137 and technetium-99 will be retained because of historical FRL exceedances. The remaining suite of ASCOCs to be analyzed during certification of the A9PIII – Part Three is based on the list of ASCOCs from the adjacent FCP soil remediation area as well as those constituents identified on the 1988 NPDES Permit Application that either have a FRL or are Resource Conservation and Recovery Act (RCRA) characteristic and were detected in the abandoned outfall line. The ASCOCs will be certified to the more stringent off-property soil FRLs identified in the OU5 ROD. The selected A9PIII ASCOCs for the CUs east of A1PII are listed on Table 3-1, along with their applicable FRLs.

Table 3-1 lists the ASCOCs that will be retained for sampling based on the above-listed criteria. The reason for constituent retention is included in the table.

TABLE 3-1
ASCOC LIST FOR A9PIII – PART THREE CERTIFICATION UNITS EAST OF A1PII

ASCOC	Off-Property FRL	Reason Retained
Total Uranium	50 mg/kg	Retained as a primary ASCOC Sitewide
Radium-226	1.5 pCi/g	Retained as a primary ASCOC Sitewide
Radium-228	1.4 pCi/g	Retained as a primary ASCOC Sitewide
Thorium-228	1.5 pCi/g	Retained as a primary ASCOC Sitewide
Thorium-232	1.4 pCi/g	Retained as a primary ASCOC Sitewide
Cesium-137	0.82 pCi/g	Above-FRL concentration
Technetium-99	1.0 pCi/g	Above-FRL concentration
Antimony	0.61 mg/kg	ASCOC for A1PII*
Arsenic	9.6 mg/kg	ASCOC for A1PII
Beryllium	0.62 mg/kg	ASCOC for A1PII
Cadmium	0.91 mg/kg	On NPDES Permit Application and detected
Copper	20 mg/kg	On NPDES Permit Application and detected
Fluoride	850 mg/kg	On NPDES Permit Application and detected
Hexavalent Chromium	11 mg/kg (0.05 mg/kg)	On NPDES Permit Application and detected
Lead	400 mg/kg (200 mg/kg)	ASCOC for A1PII*
Manganese	1400 mg/kg	On NPDES Permit Application and detected
Molybdenum	13 mg/kg (10 mg/kg)	ASCOC for A1PII*
Nickel	34 mg/kg	On NPDES Permit Application and detected
Silver	1.0 mg/kg	On NPDES Permit Application and detected
Zinc	82 mg/kg	On NPDES Permit Application and detected
1,1-dichloroethene	0.059 mg/kg	On NPDES Permit Application and detected
Aroclor-1254	0.04 mg/kg	ASCOC for A1PII
Aroclor-1260	0.04 mg/kg	ASCOC for A1PII
Carbon Tetrachloride	0.091 mg/kg	On NPDES Permit Application and detected
1,1,1-trichloroethane[2]	0.19 mg/kg	On NPDES Permit Application and detected
Tetrachloroethene	1.0 mg/kg	ASCOC for A1PII On NPDES Permit Application and detected

* Ecological COC

A1PII – Area 1, Phase II
mg/kg – milligrams per kilogram
pCi/g – picoCuries per gram

[1]FRL is actually for 1,1,2-trichloroethane since 1,1,1-trichloroethane does not have a FRL.

4.0 CERTIFICATION APPROACH

4.1 CERTIFICATION DESIGN

The certification design for the A9PIII - Part Three trench CUs follows the same approach described in the CDL for A9PIII - Part One. The points were laid out in the trench that overlay the eastern section of the abandoned outfall line. In order to achieve a whole number of trench CUs in A9PIII - Part Three, the distance between sampling locations had to be reduced to approximately 47 feet, which enabled the placement of CUs 7 and 8. This will allow for more concentrated sampling and ensure the excavation activities had no effect on the soil in A9PIII.

The certification design for CU 9 covers an impacted area in the proximity of MH 181A. Above-FRL sample results for technetium-99 were detected within the area during predesign sampling. This area is horizontally and vertically bound by predesign samples, and will be excavated to remove the impacted soil. The area is bound to the north by boring locations A9P3-MH181-2N4, to the south by A9P3-MH181-2S2, to the west by A9P3-MH181-2W4, and to the east by boring location A9P3-MH181-2E3. The southwestern quadrant of this area will be excavated to 5 feet deep and is bound by boring locations A9P3-MH181-2N2, A9P3-MH181-2S2, A9P3-MH181-2W4, and A9P3-MH181-2E2. The remaining portion of the area will be excavated to 2 feet deep. Certification samples will be collected in the floor and sidewalls of the area following excavation. CU 9 must pass certification before the abandoned outfall line excavation can continue through the area. The CUs are shown on Figure 4-1.

The section of the abandoned outfall line that runs beneath SR 128 is surrounded and protected by a sleeve. In order to safely excavate near the ends of the protective sleeve, it will be necessary to jack a larger diameter pipe around the protective sleeve. The outer protective pipe will, at a minimum, extend the entire length of the protective sleeve. The abandoned outfall line will be forced out of the sleeve, and soil and/or foreign material will be rinsed from within the protective sleeve. After the above items have been completed, radiological controls personnel will monitor the exposed interior surfaces of the protective sleeve for fixed (direct frisk) and removable (collect smears) contamination using extension rods from both ends of the protective sleeve. This information along with the real-time scans and/or physical sample results from the areas outside of both ends of the sleeve will be utilized in the free release determination. If the interior of the protective sleeve that has been radiologically surveyed passes the radiological free release criteria as described in the guiding documents and

regulations, which provide the basis of such justifications (i.e., DOE Order 5400.5, Radiation Protection of the Public and the Environment; 10 Code of Federal Regulations 835; and FCP Site Procedure RP-0025, Radiological Release of Items and Materials), then the remaining protective sleeve will be considered free releasable, certified, and will remain in place. If the results of the radiological survey reveal the sleeve cannot pass the free release criteria, then the protective sleeve will also be removed. If the protect sleeve has to be removed, then soil samples will be collected from the soil that existed between the protective sleeve and outer protective pipe at representative spacing as it is removed from within the pipe.

Sample locations were then evenly spaced across the length of the CUs 7 and 8 with one location falling within each of the 16 sub-CUs. The certification design for CU 9 follows the general approach outlined in Section 3.4 of the SEP. However, biased samples were place on the shear walls of the excavation. Sample locations with the exception of biased samples were tested against the minimum distance criteria for each CU. All sub-CUs and planned A9PIII certification sampling locations are shown on Figures 4-2 through 4-4. Every fourth sample location in each CU is designated with a "V," indicating archive sample locations. One sample location in each CU is designated with a "D," indicating a field duplicate sample collection location.

Certification sampling locations will be surveyed in the field, offset and flagged on the northern excavation fence for CUs 7 and 8. If there is evidence of leakage from the outfall line (e.g., broken, cracked, or disjointed piping), then a biased sample location will be flagged on the fence line, and samples will be collected from the floor and both the north and south sidewalls approximately one foot from the floor of the excavation. Locations may be moved if a subsurface obstacle such as a rock or tree root prevent collection. Requirements for moving a certification sample location will be discussed in the Project Specific Plan (PSP) for Certification Sampling of A9PIII Abandoned Outfall Line – Part Three (DOE 2004).

All sampling locations in each of the trench CUs will be collected from the bottom of the excavation from the bucket of an excavator after the piping, bedding material, and roughly 6 inches of underlying soil have been removed. The goal will be to collect the top 6 inches of soil from the bottom of the excavation. The four samples designated as "archive" will be collected and stored in the event they are needed for additional analysis.

4.2 ANALYTICAL METHODOLOGY

Laboratory analysis of certification samples will be conducted using an approved analytical method, as discussed in Appendix H of the SEP. The minimum detection level (MDL) will be set at 10 percent of the FRL but the low off-property FRLs may result in difficulties for laboratories to meet 10 percent of the FRL for some analytes. In those instances, the MDL will be set as low as reasonable below the FRL. Analysis will be conducted to Analytical Support Level (ASL) D or E, where the MDL of the FRL is above the Sitewide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) ASL detection level, but the analyses meet all other SCQ ASL D criteria. An ASL D data package will be provided for all of the analytical data. Because results are batched or grouped by CU, all results from a minimum of one of the two CUs will be validated to Validation Support Level (VSL) D. Samples rejected during the validation process will be re-analyzed, or an archive sample may be substituted if there is insufficient material available from the initial sample. Once data are validated as required, results will be entered into the Sitewide Environmental Database (SED).

4.3 STATISTICAL ANALYSIS

Once data are entered into the SED, a statistical analysis will be performed to evaluate the pass/fail criteria for each CU including any biased samples that are collected within the CU. The statistical approach is discussed in Section 3.4.3, Appendix G of the SEP, and Section 3.4.8 of the SEP Addendum (DOE 2001).

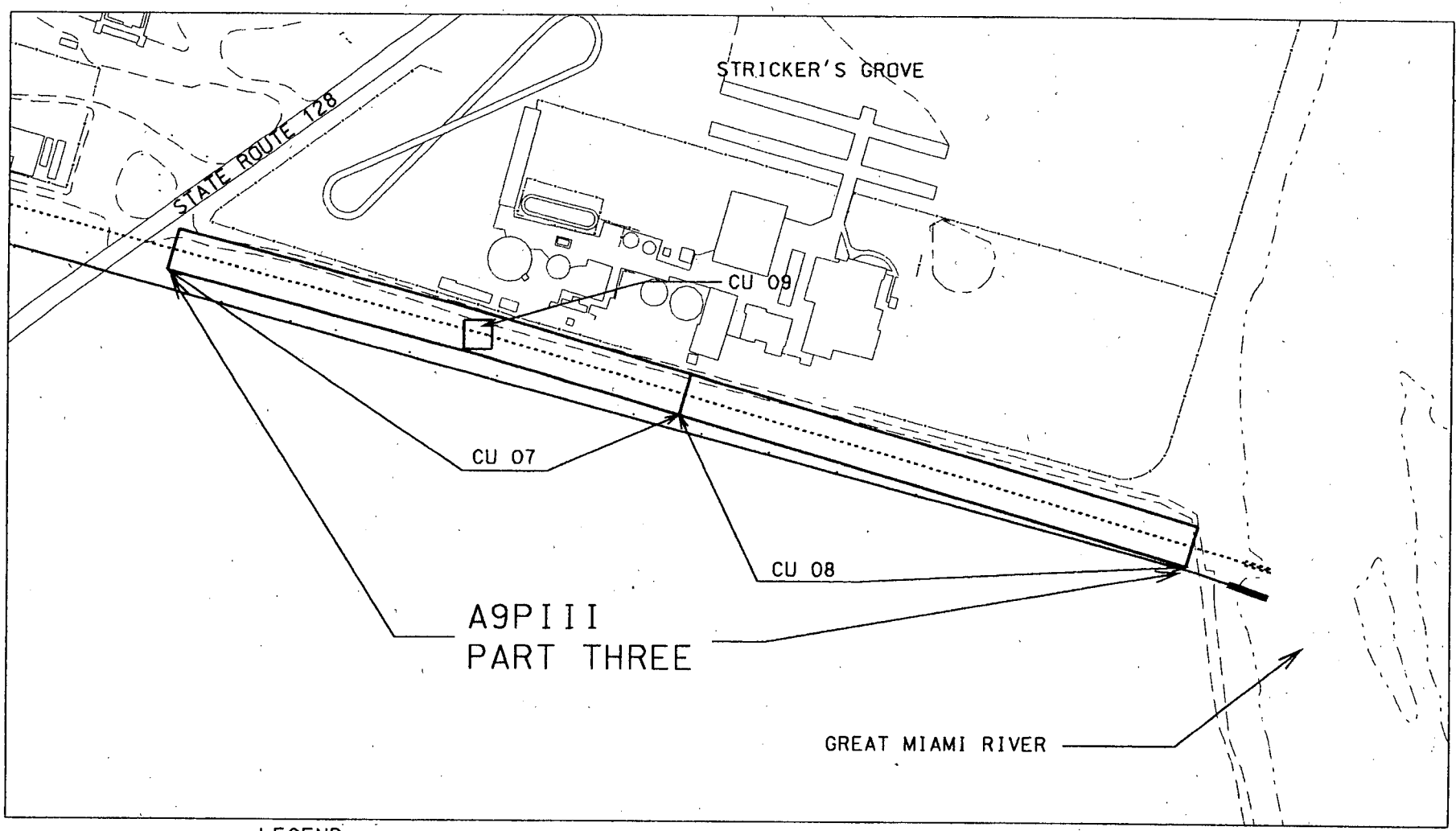
When all CUs within the scope of this CDL have passed certification, a Certification Report will be issued. The Certification Report will be submitted to the regulatory agencies to receive acknowledgment that the pertinent operable unit remedial actions were completed, and the individual CUs are certified and may be released for interim or final land use. Section 7.4 of the SEP provides additional details and describes the required content of the Certification Report.

4.3.1 Surface Samples (0 to 6-inch)

Two criteria must be met for the CU to pass certification. If the data distribution is normal or lognormal, the first criterion compares the 95 percent Upper Confidence Limit (UCL) on the mean of each primary COC to its FRL, or the 90 percent UCL on the mean of each secondary ASCOC. On an individual CU basis, any ASCOC with the 95 percent UCL for primary ASCOCs (or 90 percent UCL for secondary COCs) that are above the FRL results in that CU failing certification. If the data distribution is not normal or lognormal, the appropriate nonparametric approach discussed in Appendix G of the SEP will be used to evaluate the second criterion. The second criterion is the hot spot criterion, which states that primary or

secondary ASCOC results must not exceed two times the FRL. When the given UCL on the mean for each COC is less than its FRL and the hot spot criterion is met, the CU will be considered certified.

In the event that a CU fails certification, the following scenarios will be evaluated: 1) a high variability in the data set, 2) localized contamination, and 3) widespread contamination. Details on the evaluation and responses to these possible outcomes are provided in Section 3.4.5 of the SEP.



LEGEND:

..... ABANDONED 16" OUTFALL LINE

——— EXISTING 24" OUTFALL LINE

SCALE

200 100 0 200 FEET

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STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 4-1. AREA 9 PHASE III, PART THREE CU LOCATIONS

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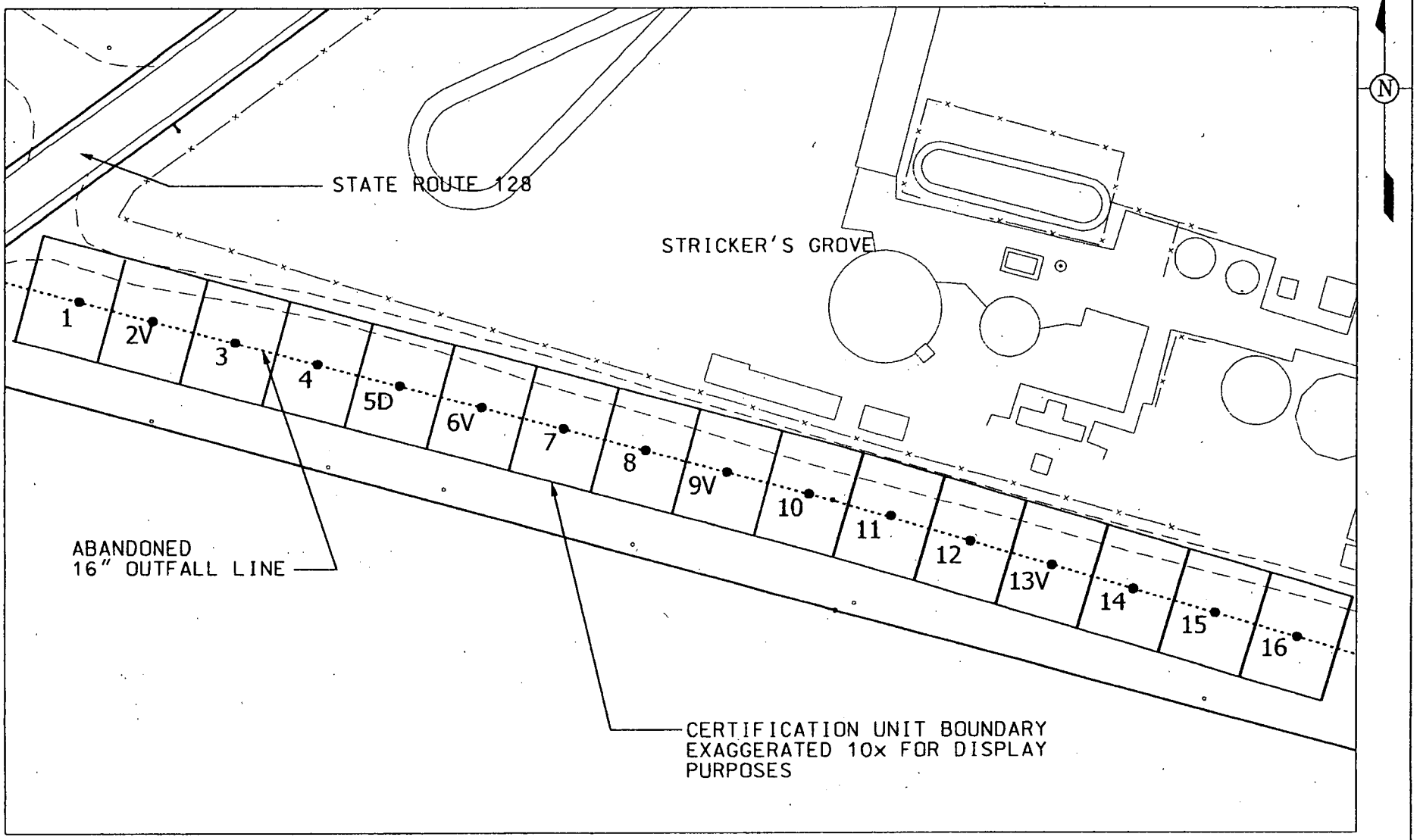

LEGEND:

13 • SAMPLE LOCATION

SCALE

80 40 0 80 FEET

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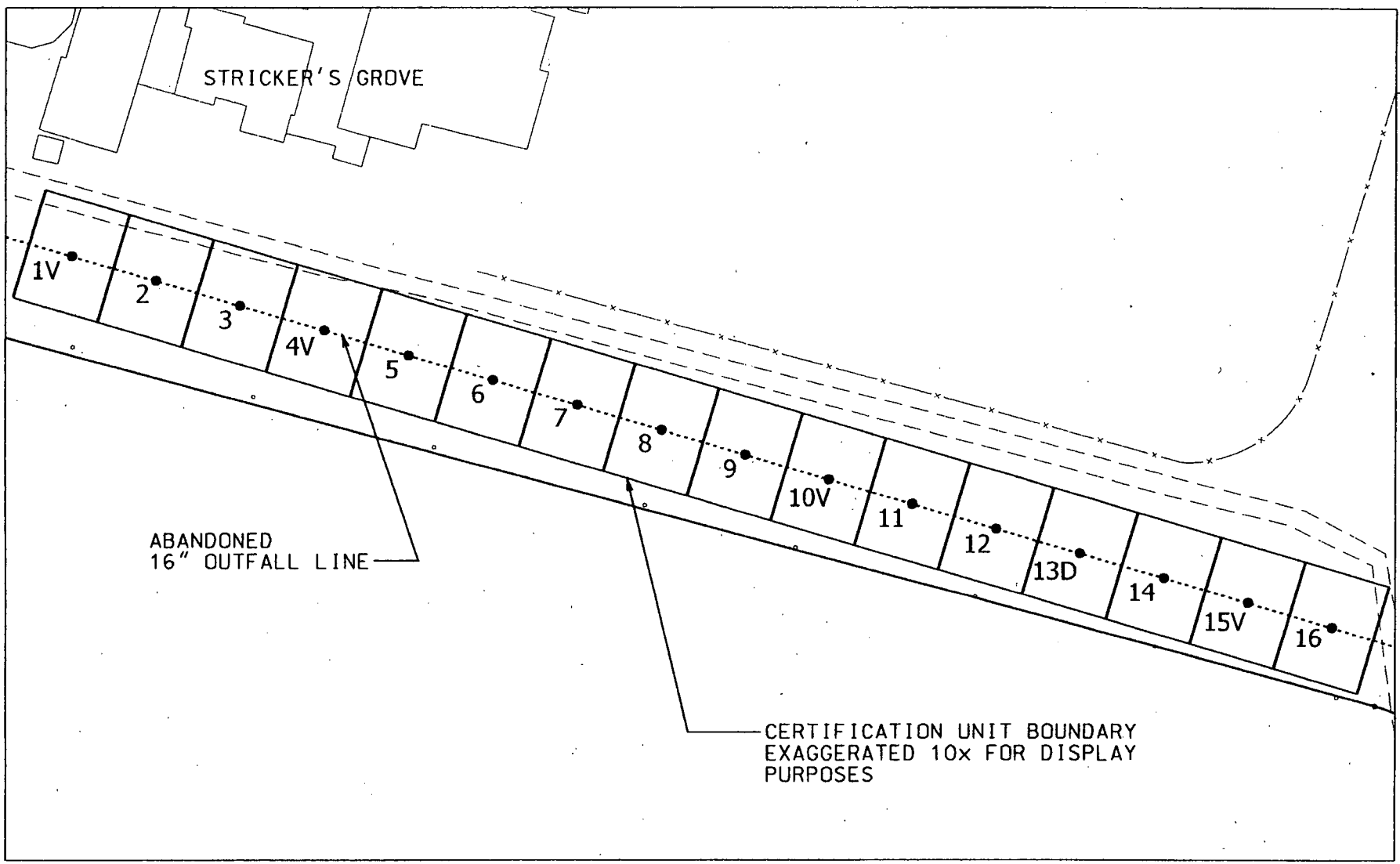
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 4-2. CERTIFICATION SAMPLING LOCATIONS FOR CU 07

04-NOV-2004



LEGEND:

13 • SAMPLE LOCATION

SCALE

80 40 0 80 FEET

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STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 4-3. CERTIFICATION SAMPLING LOCATIONS FOR CU 08

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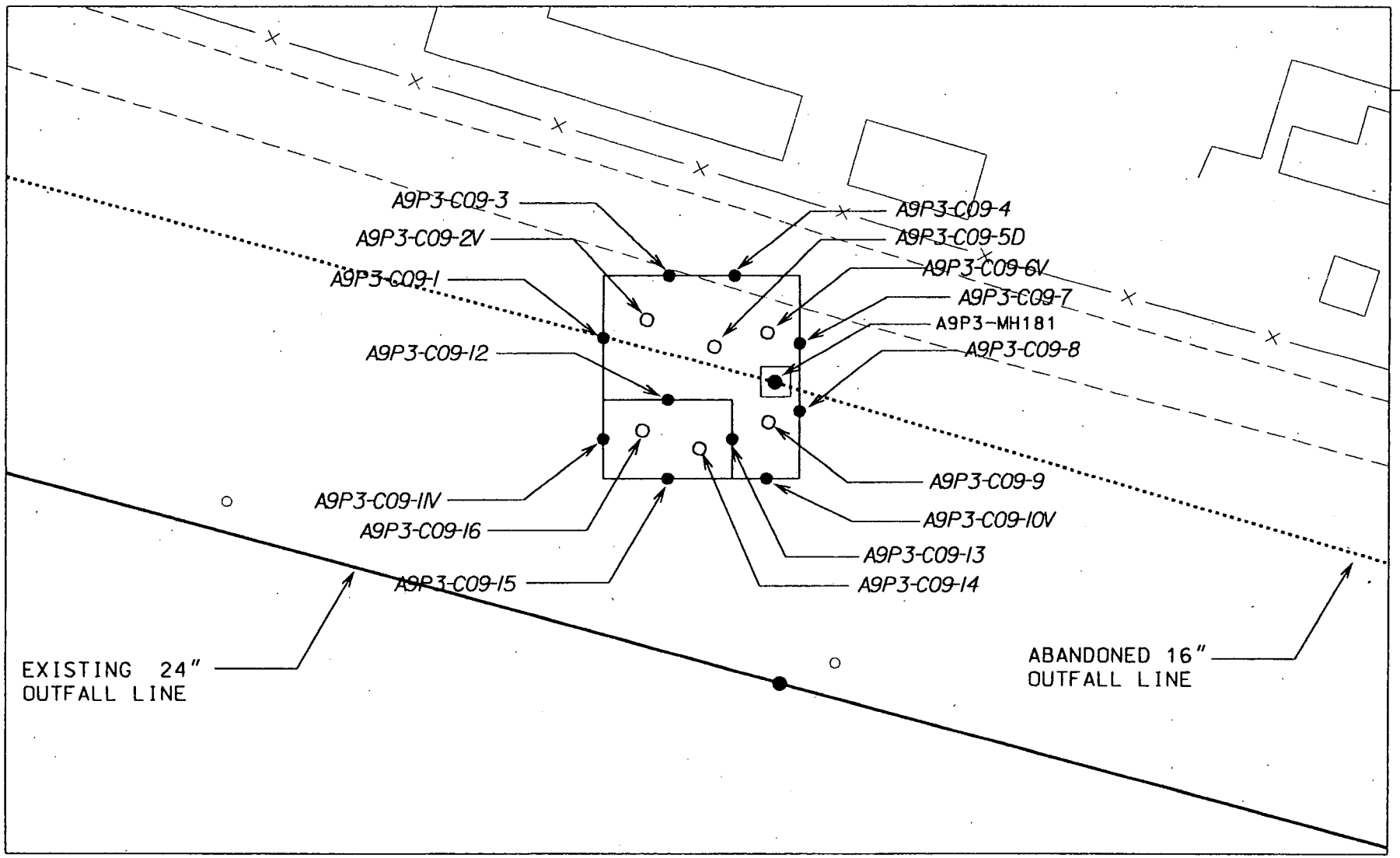

LEGEND:

● SIDEWALL SAMPLE LOCATION

○ FLOOR SAMPLE LOCATION

SCALE

30 15 0 30 FEET

DRAFT

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STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 4-4. CERTIFICATION SAMPLING LOCATIONS FOR CU 09

08-NOV-2004

5.0 SCHEDULE

The following draft schedule shows key activities for the completion of the work within the scope of this CDL. Implementation of this schedule is pending funding availability and property access. If necessary, an extension will be requested.

Activity	Target Date
Submittal of Certification Design Letter	November 9, 2004
Start of Certification Sampling	November 9, 2004
Complete Field Work	December 17, 2004
Complete Analytical Work	January 17, 2005
Complete Data Validation and Statistical Analysis	January 28, 2005
Submit Certification Report	February 28, 2005[a]

[a] Only the date for submittal of the Certification Report is a commitment to the U.S. Environmental Protection Agency and Ohio Environmental Protection Agency. Other dates are internal target completion dates.

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PROJECT SPECIFIC PLAN FOR CERTIFICATION SAMPLING OF AREA 9, PHASE III ABANDONED OUTFALL LINE – PART THREE

FERNALD CLOSURE PROJECT
FERNALD, OHIO

NOVEMBER 2004

U.S. DEPARTMENT OF ENERGY

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PROJECT SPECIFIC PLAN FOR CERTIFICATION SAMPLING OF AREA 9, PHASE III ABANDONED OUTFALL LINE – PART THREE

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APPROVAL:

11/9/04

Jyh-Dong Chiou, Project Manager
Demolition, Soil and Disposal Project
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11/9/04

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Safety, Health and Quality Division
Date

FERNALD CLOSURE PROJECT

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LIST OF ACRONYMS AND ABBREVIATIONS

A1PII	Area 1, Phase II
A9PIII	Area 9, Phase III
AEDO	Assistant Emergency Duty Officer
ASL	analytical support level
BTV	Benchmark Toxicity Value
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
DSDP	Demolition, Soil and Disposal Project
EMS	Environmental Monitoring System
FACTS	Fernald Analytical Computerized Tracking System
FAL	Field Activity Log
FCP	Fernald Closure Project
FRL	final remediation level
GC/MS	gas chromatography mass spectroscopy
GPC	gas proportional counting
HPGe	high-purity Germanium (detector)
ICP-AES	inductively coupled plasma atomic emission spectroscopy
ICP/MS	inductively coupled plasma mass spectroscopy
MDL	minimum detection level
mg/kg	milligrams per kilogram
MH	manhole
NAD83	North American Datum of 1983
pCi/g	picoCuries per gram
PCB	polychlorinated biphenyl
PPE	personal protective equipment
PSP	Project Specific Plan
QA/QC	Quality Assurance/Quality Control
RSS	Radiation Scanning System
RTIMP	Real-Time Instrumentation Measurement Program
RTRAK	Radiation Tracking System
RWP	Radiation Work Permit
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SPL	Sample Processing Laboratory
TAL	Target Analyte List
V/FCN	Variance/Field Change Notice

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

VOC	volatile organic compound
VSL	validation support level
WAO	Waste Acceptance Organization

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

Area 9, Phase III (A9PIII) is located offsite and follows the abandoned outfall line from the eastern boundary of the Fernald Closure Project (FCP) to the Great Miami River; however, this certification effort encompasses the portion of A9PIII – Part Three, which extends from the western side of State Route 128 to approximately 38 feet west of the Great Miami River, the Manhole (MH)-181-2 above the final remediation level (FRL) excavation, and the section of the abandoned outfall line located within the Mid Valley Pipeline easement. However, because the Mid Valley Pipeline easement is bound on the east and the west by Certification Unit (CU) 1, which is part of A9PIII - Part One, samples will be collected as part of CU 1 for certification purposes. Certification of this area only encompasses the soil beneath the abandoned outfall line bedding material. A location map of A9PIII – Part Three is provided on Figure 1-1. The area located off-property to the east of Area 1, Phase II (A1PII) will be certified to the more stringent off-property FRLs. The purpose of certification is to verify that residual soil constituent of concern (COC) concentrations meet the FRLs.

1.2 SCOPE

This Project Specific Plan (PSP) includes details of certification sampling, analysis and validation that will take place in A9PIII – Part Three, which is adjacent to remediated, on-property A1PII. 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 Sitewide Excavation Plan (SEP). The certification sampling program, as discussed in Section 2.0 of this PSP, will be consistent with Data Quality Objectives (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
DSDP Project Manager	Jyh-Dong Chiou	Rich Abitz
Characterization Manager	Frank Miller	Rich Abitz
A9PIII Characterization Lead	Greg Lupton	Denise Arico
RTIMP Manager	Brian McDaniel	Dale Seiller
Soil Sampling Manager	Tom Buhrlage	Jim Hey
Surveying Manager	Jim Schwing	Andy Clinton
WAO Contact	Linda Barlow	TBD
Construction Manager	Warren Hooper	Charles Carney
Engineering Lead	Tony Snider	Dave Russell
Laboratory Contact	Heather Medley	Kathy Leslie
Data Validation Contact	Jim Chambers	Angie Bown
Field Data Validation Contact	Dee Dee Edwards	Jim Chambers
Data Management Lead	Greg Lupton	Denise Arico
Radiological Control Contact	Corey Fabricante	Mike Schneider
FACTS/SED Database Contact	Kym Lockard	Susan Marsh
Quality Assurance Contact	Reinhard Friske	Darren Wessel
Safety and Health Contact	Gregg Johnson	Jeff Middaugh

DOE – U.S. Department of Energy
DSDP – Demolition, Soil and Disposal Project
FACTS – Fernald Analytical Computerized Tracking System
RTIMP – Real-Time Instrumentation Measurement Program
SED – Sitewide Environmental Database
WAO – Waste Acceptance Organization

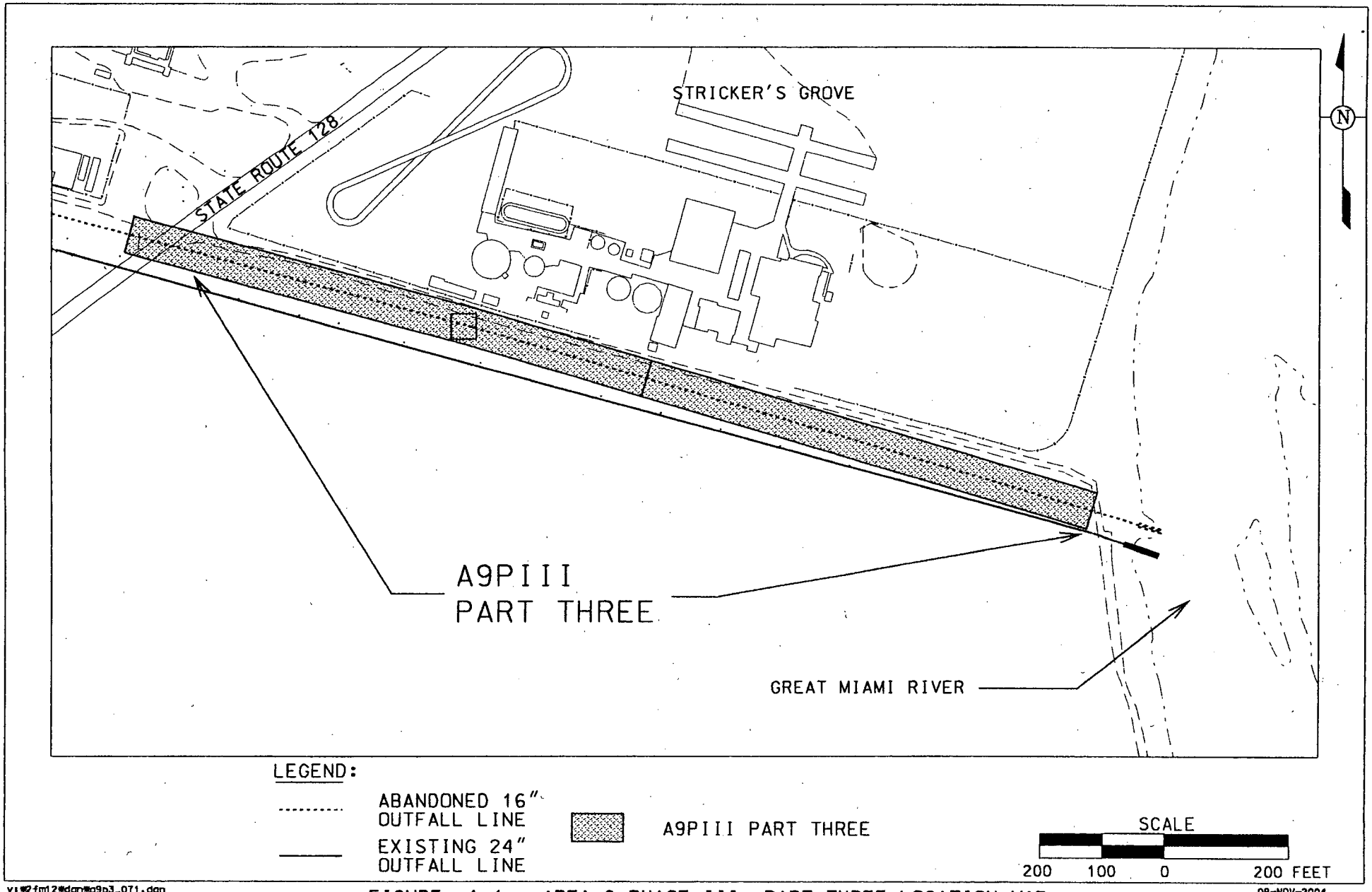

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FIGURE 1-1. AREA 9 PHASE III, PART THREE LOCATION MAP

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2.0 CERTIFICATION SAMPLING PROGRAM

2.1 CERTIFICATION DESIGN

Details and logic of the certification design are described in the A9PIII Abandoned Outfall Line Part Three Certification Design Letter (CDL). Within A9PIII, three Group 1 CUs have been established. Each CU is divided into 16 sub-CUs. Within each sub-CU, one certification sample location has been identified. All sample locations were tested against the minimum distance criterion as defined in the SEP within each CU. Certification sampling will consist of sample collection at the 16 selected locations, plus one field duplicate sample within each CU. The CU numbering sequence, which started in A9PIII Part One and carried into A9PIII Part Two, will continue into A9PIII Part Three. Therefore, the CUs for A9PIII Part Three will be numbered CU 7 and CU 8, which represent the trench CUs, and CU 9, which represents the impacted area surrounding MH 181A.

As discussed in Section 4.1 of A9PIII Part Three CDL, if the results of the radiological survey performed on the sleeve that surrounds the section of the abandoned outfall line that runs beneath SR 128 indicate that the sleeve does not meet the free release criteria, then it will be necessary to collect certification samples. If physical sampling is necessary, then a significant variance will be written documenting the need to create an additional CU and collect certification samples. The sample locations, field duplicate samples, and archive samples are identified in Appendix B.

2.2 SURVEYING

The North American Datum of 1983 (NAD83) State Planar coordinates for each selected sampling location will be surveyed, offset and flagged on the northern excavation fence for the trench CUs. Appendix B and Figures 2-1 through 2-4 show the tentative certification sampling locations, all of which meet the minimum distance criterion.

2.3 PHYSICAL SOIL SAMPLE COLLECTION

After the impacted material has been excavated from around MH 181A, biased certification sampling locations will be surveyed and samples will be collected from both the shear walls and the floor of the excavation. Samples may be collected from the bucket of an excavator if the sampling location cannot be accessed safely.

After the abandoned outfall line piping, bedding material, and approximately 6 inches of native soil have been removed from the trench, the approximate certification sampling location shall be identified, and the next 6 inches of undisturbed soil shall be removed from the bottom of the trench and sampled. All samples will be collected from the bucket of the excavator. At the discretion of the Field Sampling Lead, samples may be collected using various methods specified in SMPL-01, as long as sufficient volume is collected to perform the prescribed analyses. If there is evidence of leakage from the outfall line (e.g., broken, cracked, or disjointed piping), then a biased sample location will be flagged on the fence line, and samples will be collected from the floor and both the north and south sidewalls approximately one foot from the floor of the excavation.

In order to meet the quality control requirements for duplicate field samples, twice the soil volume will be collected at one location per CU, as identified in Appendix B. The duplicate field samples will be collected according to procedure SMPL-21, Section 6.5, and will not be homogenized with the original sample. All samples, including duplicate field samples, will be assigned unique sample identification numbers as shown in Appendix B.

If an obstacle prevents sample collection at the specified location, it can be moved according to the following guidelines:

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

The Characterization Manager or designee should be contacted when a sample location is moved greater than 3 feet. All final sampling locations will be documented in the Certification Report.

Customer sample numbers and FACTS identification numbers will be assigned to all samples collected. The sample labels will be completed with sample collection information, and technicians will complete a Field Activity Log (FAL), a Sample Collection Log, and a Chain of Custody/Request for Analysis form in the field prior to submittal of the samples. When possible, all soil samples from a single CU with like analyses (including field duplicates) will be batched and submitted to the Sample Processing Laboratory

(SPL) under one set of Chain of Custody/Request for Analysis forms which will represent one analytical release. Rinsates/container blanks will be listed on a separate Chain of Custody/Request for Analysis form. Based on historical data, precertification scan data and process knowledge, no photoionization detector survey or radiological survey will be necessary. Also, no alpha/beta screens will be required for samples to be shipped off site. The highest total uranium result for the area is 14.4 milligrams per kilogram (mg/kg) from A9P3-MH177-3.

Samples will be collected from all 16 sample locations in each CU, including one field duplicate sample. Thirteen samples from each CU (12 plus one field duplicate) will be submitted for analysis. The four samples designated as "archive" will be stored in the event they are needed for additional analyses.

2.3.1 Equipment Decontamination

Decontamination is performed to prevent the introduction of contaminants from the sampling equipment to subsequent soil samples. As described in SMPL-01, Field Technicians will ensure that sampling equipment has been decontaminated prior to transport to the field. Decontamination is also necessary in the field if sampling equipment is reused. If an alternate sampling method is used, equipment will be decontaminated between collections of sample intervals, and again after the sampling performed under this PSP is completed. Following decontamination, clean disposable wipes may be used to replace air-drying of the equipment.

2.3.2 Physical Sample Identification

Each soil certification sample will be assigned a unique sample identification number as *A9P3-C#-Location^Analysis-QC,* where:

A9P3	=	Sample collected from Remediation A9PIII (Note that the number "3" is used in place of the roman numeral "III" in the ID for data management purposes)
C#	=	Certification sample representing certification unit from which sample was collected (numbered as C01 through C04)
Location	=	Sample Location number within each CU (1 through 16 [17 for CU01 and CU04])
Analysis	=	"R" indicates radiological analysis; "M" indicates metals; "P" indicates PCBs; "L" indicates volatiles; and "V" indicates archives

QC	=	Quality control sample, if applicable. "D" indicates a field duplicate sample. "TB1" indicates the first trip blank collected, and each additional trip blank collected will be consecutively numbered. "Y" indicates a container blank.

For example, a field duplicate sample taken from the 1st sample location from CU 7 for radiological, metals, and polychlorinated biphenyl (PCB) analysis would be identified as A9P3-C07-1^RMP-D. The first container blank collected will be identified as A9P3CP3-L-Y1 (where CP3 indicates Certification Part 3) and A9P3CP3-RMP-Y1. Each trip blank will be identified as A9P3CP3-L-TB# (where # represents a sequential number starting with 1). The first trip blank collected will be identified as A9P3CP3-L-TB1. An example archive sample collected from the 4th sample location from CU 7 would be identified as A9P3-C07-4^V.

Each bias soil certification sample will be assigned a unique sample identification number as *A9P3-C#-B#N(or C or S)^Analysis-QC*, where:

A9P3	=	Sample collected from Remediation A9PIII (Note that the number "3" is used in place of the roman numeral "III" in the ID for data management purposes)
C#	=	Certification sample representing certification unit from which sample was collected (numbered as C07 through C08)
B#N(or C or S)	=	Sequential Bias Sample Location number within each CU and "N" indicates North, "C" indicates Center, and "S" indicates South
Analysis	=	"R" indicates radiological analysis; "M" indicates metals; "P" indicates PCBs; "S" indicates semi-volatiles; "L" indicates volatiles; and "V" indicates archives
QC	=	Quality control sample, if applicable. A "D" indicates a field duplicate sample; "TB1" indicates the first trip blank collected, and each additional trip blank collected will be consecutively numbered.

For example, the first a bias sample taken from the north wall of the trench of CU 07 for radiological, metals, and PCB analysis would be identified as A9P3-C07-B1N^RMP; from the center of the trench would be identified as A9P3-C07-B1C^RMP; and from the south wall of the trench would be identified as A9P3-C07-B1S^RMP.

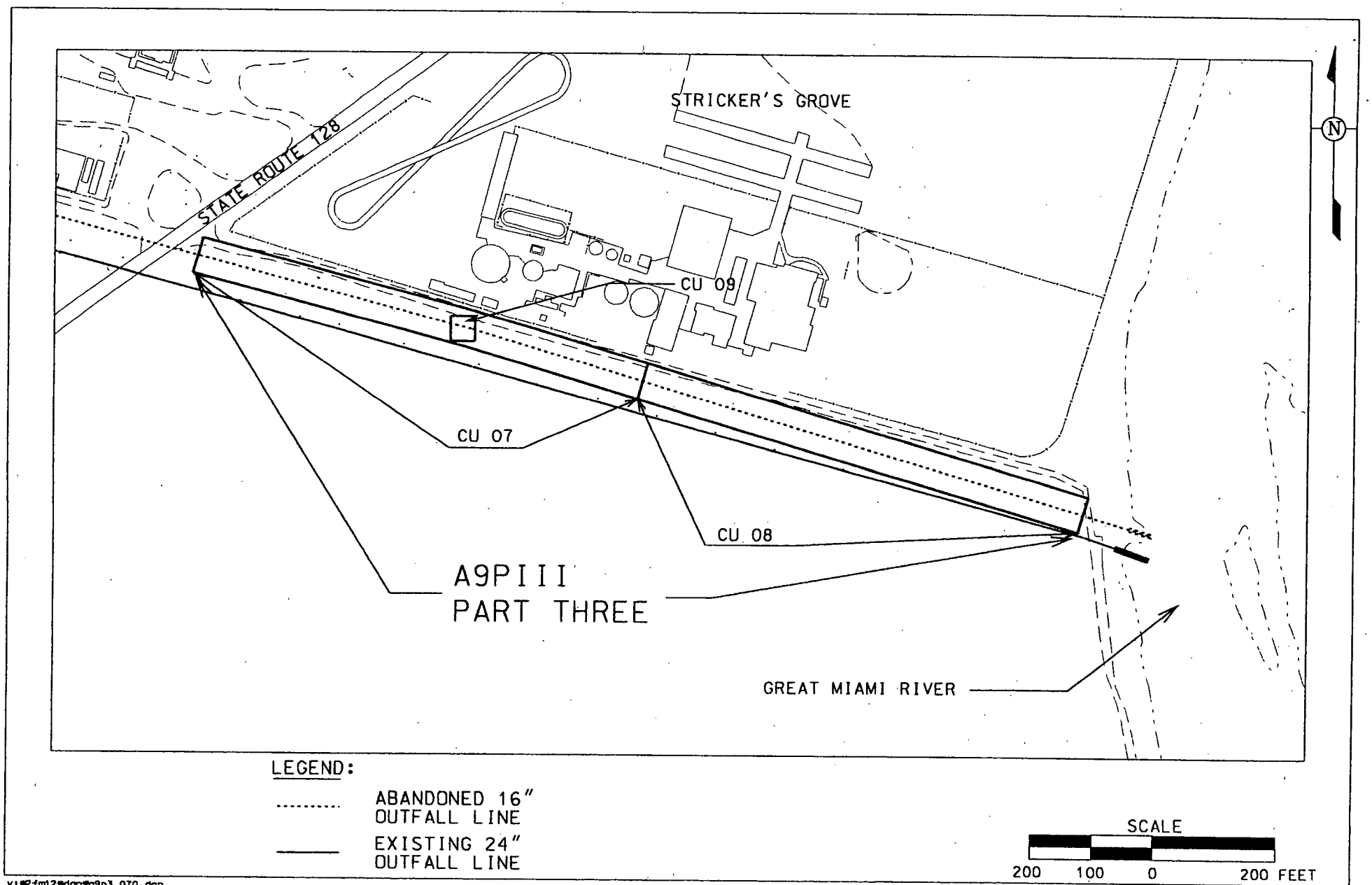

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FIGURE 2-1. AREA 9 PHASE III, PART THREE CU LOCATIONS

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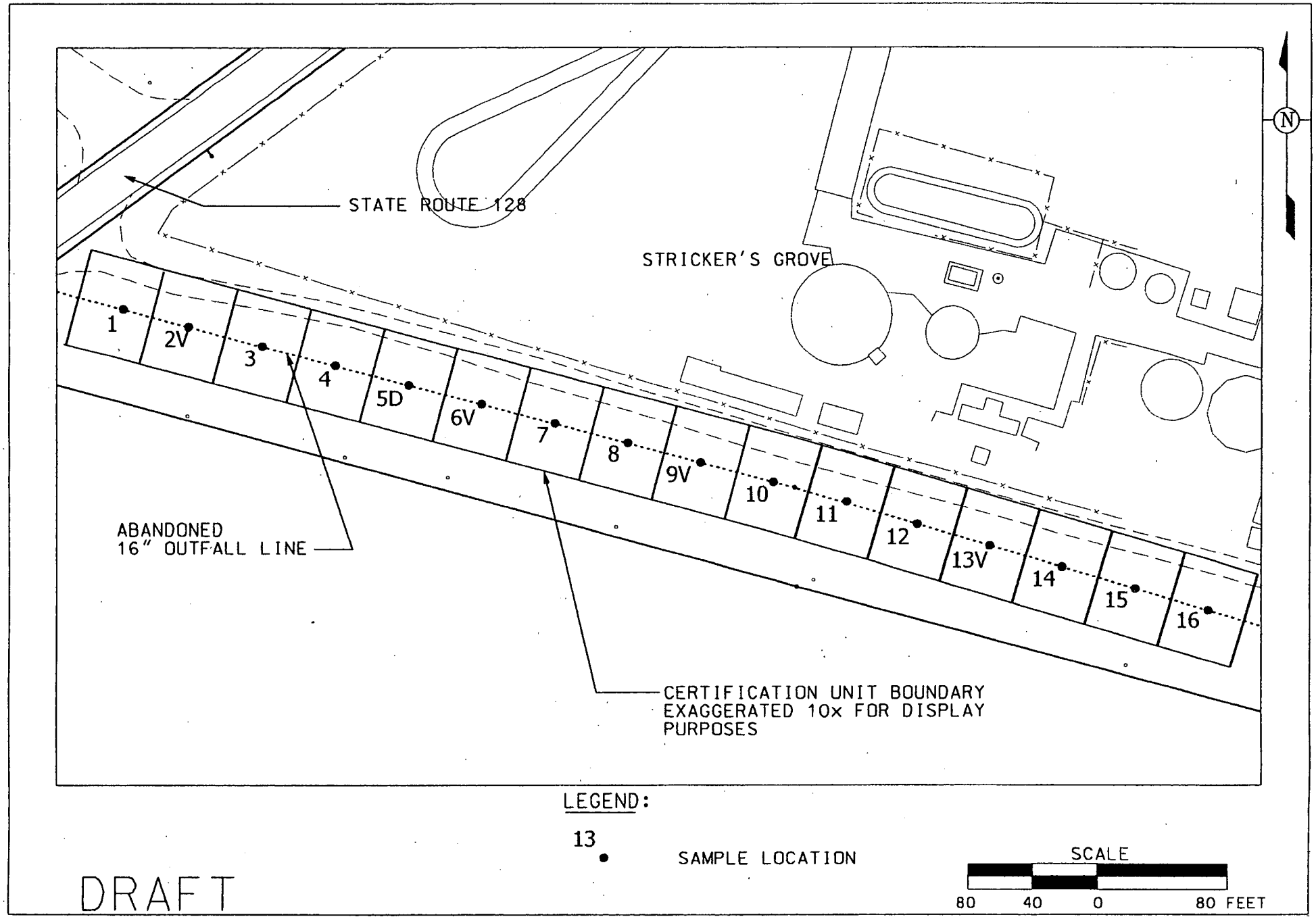

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FIGURE 2-2. CERTIFICATION SAMPLING LOCATIONS FOR CU 07

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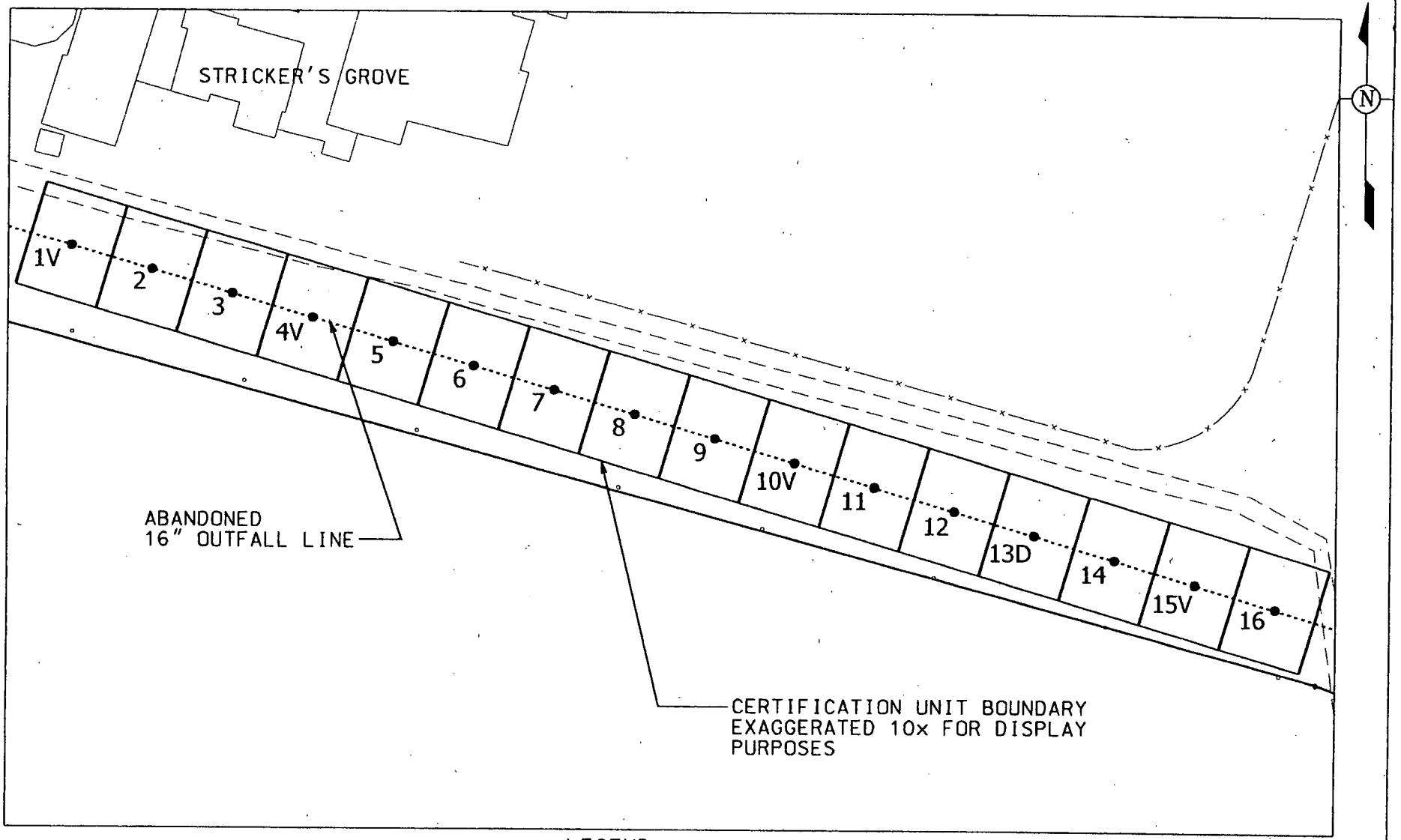

LEGEND:

13 ● SAMPLE LOCATION

SCALE

80 40 0 80 FEET

DRAFT

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FIGURE 2-3. CERTIFICATION SAMPLING LOCATIONS FOR CU 08

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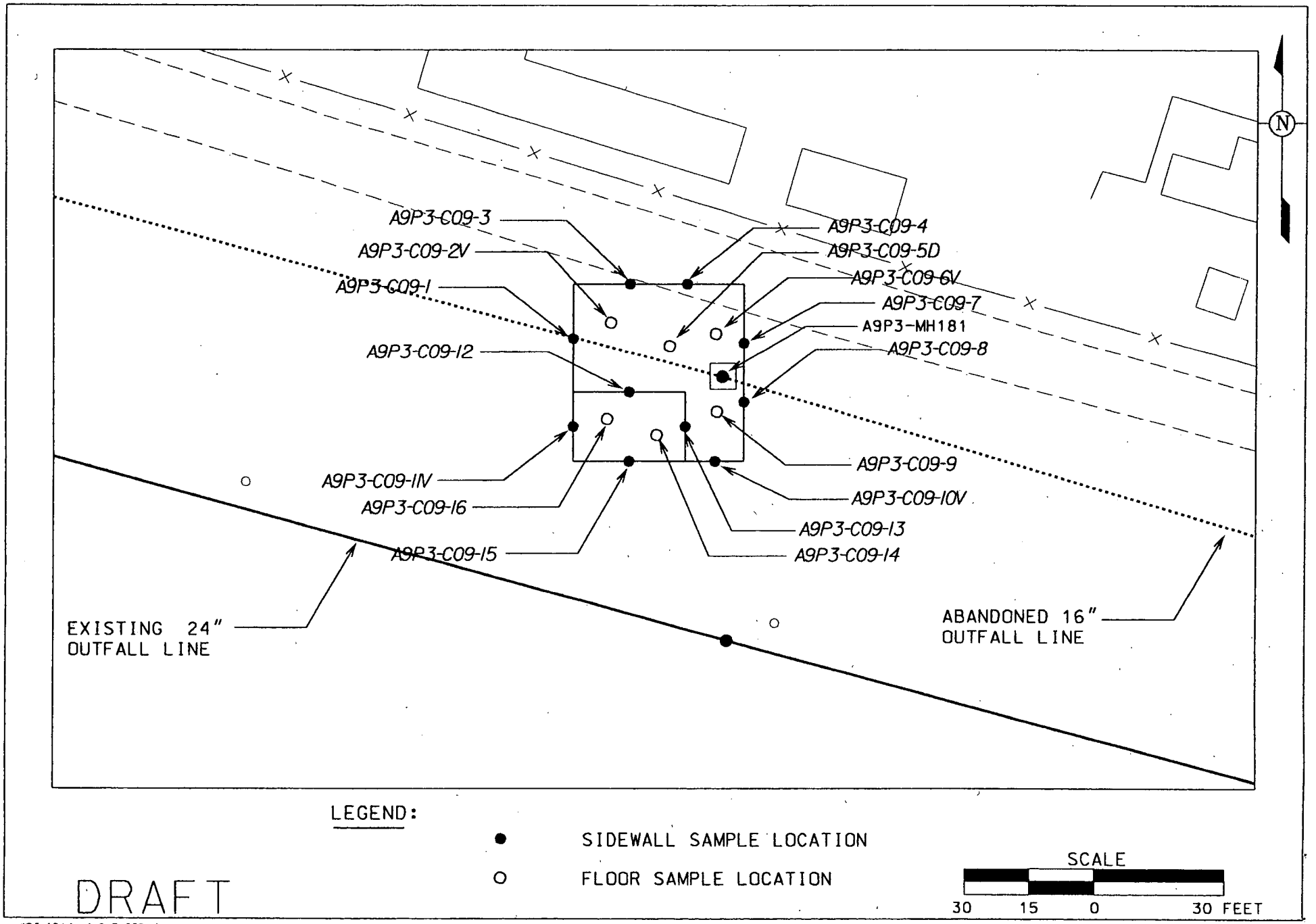

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FIGURE 2-4. CERTIFICATION SAMPLING LOCATIONS FOR CU 09

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3.0 CERTIFICATION SAMPLE ANALYSIS

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

As soon as the samples arrive at the laboratory where the analysis will take place, all samples should be prepared for analysis, and radiological samples should be sealed to begin the in-growth period for radium analysis.

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 (Colorimetric 7196A)				6 months		
PCBs (TAL B)	GC				14 days		
VOCs (TAL D)	GC/MS	Solid	D/E[a]	Cool, 4° C	48 hours	3 x 1-Encore Sampler[c] or equivalent plus a 30 ml jar for % moisture	Each full Encore Sampler[c] will hold approx. 5 g of soil
VOCs (TAL D)	GC/MS	Liquid (trip blank)	D/E[a]	Cool, 4° C H_2SO_4 pH<2	14 days	3 x 40-ml glass with lined-lined septa	120 ml[c] (no headspace)

[a] Samples will be analyzed according to Analytical Support Level (ASL) D requirements but the minimum detection level 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 per CU in order for the contract laboratory to perform the required quality control analysis. The samples shall be identified on the Chain of Custody/Request for Analysis forms as "designated for laboratory QC".

ICP-AES – inductively coupled plasma atomic emission spectroscopy
ICP/MS – inductively coupled plasma mass spectroscopy
GC/MS – gas chromatography mass spectroscopy
GPC – gas proportional counting
VOC – volatile organic compound

TABLE 3-2
TARGET ANALYTE LISTS

21130-PSP-0003-A
(ASL D/E[1])

Analyte	Off-Property FRL	MDL
Total Uranium	50 mg/kg	5 mg/kg
Radium-226	1.5 pCi/g	0.15 pCi/g
Radium-228	1.4 pCi/g	0.14 pCi/g
Thorium-228	1.5 pCi/g	0.15 pCi/g
Thorium-232	1.4 pCi/g	0.14 pCi/g
Cesium-137	0.82 pCi/g	0.082 pCi/g
Technetium-99	1 pCi/g	0.5 pCi/g[2]

21130-PSP-0003-B
(ASL D/E[1])

Analyte	Off-Property FRL (BTV)[3]	MDL
Antimony	0.61 mg/kg	0.25 mg/kg[2]
Arsenic	9.6 mg/kg	0.96 mg/kg
Beryllium	0.62 mg/kg	0.062 mg/kg
Cadmium	0.91 mg/kg	0.091 mg/kg
Copper	20 mg/kg	2 mg/kg
Fluoride	850 mg/kg	85 mg/kg
Hexavalent Chromium	11 mg/kg (0.05 mg/kg)	0.11 mg/kg
Lead	400 mg/kg (200 mg/kg)	20 mg/kg
Manganese	1400 mg/kg	140 mg/kg
Molybdenum	13 mg/kg (10 mg/kg)	1 mg/kg
Nickel	34 mg/kg	3.4 mg/kg
Silver	1.0 mg/kg	0.1 mg/kg
Zinc	82 mg/kg	8.2 mg/kg
Aroclor-1254	0.04 mg/kg	0.004 mg/kg
Aroclor-1260	0.04 mg/kg	0.004 mg/kg

TABLE 3-2
TARGET ANALYTE LISTS
(Continued)

21130-PSP-0003-D
(ASL D/E[1])

Analyte	Off-Property FRL	MDL
1,1-dichloroethene	0.059 mg/kg	0.0059 mg/kg
1,1,1-trichloroethane	0.19[4] mg/kg	0.0019 mg/kg
Carbon Tetrachloride	0.091 mg/kg	0.0091 mg/kg
Tetrachloroethene	1 mg/kg	0.1 mg/kg

[1] Analytical requirements will meet ASL D, but the minimum detection level may cause some analyses to be considered ASL E

[2] 10 percent of the FRL is not achievable for this analyte

[3] If the BTV is lower than the established FRL, the MDL shall bet set at 10 percent of the BTV

[4] FRL is actually for 1,1,2-trichloroethane since 1,1,1-trichloroethane does not have a FRL.

BTV – Benchmark Toxicity Value
MDL – minimum detection level
pCi/g – picoCuries per gram

4.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

4.1 FIELD QUALITY CONTROL SAMPLES, ANALYTICAL REQUIREMENTS AND DATA VALIDATION

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

- Field QC requirements include one field duplicate for each CU, as noted in Appendix B and Section 2.3. Field duplicate samples will be analyzed for the ASCOCs from the CU in which they were collected. Two container blanks will be collected - one before sample collection begins and one at the conclusion of sample collection for the entire A9PIII area - for the push tubes. If an alternate sample collection method is used, one rinsate will be collected at a minimum frequency of one per 20 pieces of equipment reused in the field. Container blanks and/or rinsates will be analyzed for the ASCOCs from the CU in which they were collected. Trip blanks are required if VOC samples are being collected. The frequency for a trip blank is one per day or one per batch of 20 VOC samples collected, whichever is more frequent.

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

- All field data will be validated. All laboratory results will be validated to Validation Support Level (VSL) B, and a minimum of 10 percent of the results will be validated to VSL D. If any result is rejected during validation, the sample will be re-analyzed or an archive sample will be analyzed in its place. All data from that laboratory will be validated to VSL D for the affected CU. If necessary, this change will be documented in a V/FCN.

Once all data are validated as required, results will be entered into the SED and a statistical analysis will be performed to evaluate the pass/fail criteria for the each CU. The statistical approach is discussed in Section 3.4.3 and Appendix G of the SEP and Section 3.4.8 of the SEP Addendum.

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

- A variance to the PSP will be written to document references confirming that the new method supports data needs,

- Variations from the SCQ methodology are documented in a variance to the PSP, or

- Data validation of the affected samples is requested or qualifier codes of J (estimated) and R (rejected) be attached to detected and non-detected results, respectively.

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.

- Sitewide Excavation Plan (SEP)
- SEP Addendum
- Sitewide CERCLA Quality Assurance Project Plan (SCQ)
- 20100-HS-0002, Soil and Disposal Facility Project Integrated Health and Safety Plan
- SH-1006, Event Investigation and Reporting
- ADM-02, Field Project Prerequisites
- EQT-06, Geoprobe® Model 5400
- EQT-33, Real-Time Differential Global Positioning System
- SMPL-01, Solids Sampling
- SMPL-21, Collection of Field Quality Control Samples
- 9501, Shipping Samples to Off-site Laboratories

4.3 INDEPENDENT ASSESSMENT

Independent assessment may be performed by the FCP Quality Assurance/Quality Control (QA/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 QA/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. QA/QC must receive the completed V/FCN, which includes the signatures of the Characterization and Sampling Managers, Project Manager, and QA/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 DSDP guidelines.

5.0 HEALTH AND SAFETY

The Soil Sampling Manager or designee will obtain applicable work permits per SH-0021, Work Permits. All work performed on this project will be performed in accordance with applicable Environmental Services procedures, RM-0020 (Radiological Control Requirements Manual), RM-0021 (Safety Performance Requirements Manual), Fluor Fernald work permits, Radiation Work Permit (RWP), penetration permits, and other applicable permits. Concurrence with applicable safety permits (as indicated by the signature of each field employee assigned to this project) is required by each employee in the performance of their assigned duties. A safety briefing will be conducted prior to the initiation of field activities.

A walk-down of the area by representatives from DSDP Characterization, RTIMP and the Soil and Miscellaneous Media Sampling groups may be required to determine the type of in situ gamma spectroscopy equipment to use and if the excavation lift area is ready for measurements or physical sampling (i.e., accessible by RTIMP equipment, boundaries marked or readily visible, no operating heavy duty equipment within 50-foot buffer zone, no excessive moisture or puddles, no soft spots, free of obstructions or depressions that might damage equipment, reasonable grade and slopes).

All personnel performing measurements and physical sampling related to this project will be briefed to work control documents, including the Contractor Safe Work Plan or Traveler Package, Fluor Fernald work permits, RWP, penetration permits, other applicable permits for the applicable area, and Environmental Services procedures. These work control documents will define required personal protective equipment (PPE) and safe work zones. Work control documents must be reviewed by Soil Sampling and RTIMP personnel to ensure that the intended work is within the scope of these documents (i.e., ensure work to be performed is addressed in the permit). These briefings will be documented. Personnel who are not documented as having completed these briefings will not participate in the execution of field activities. All personnel entering the Construction Area will obtain a pre-entry briefing on current activities or hazards that may affect their work. Additionally, prior to entry into an excavation, the Competent Person for Trenching and Excavation shall be contacted to assure that the daily inspection has been completed and the excavation is safe to enter.

RTIMP personnel are to demarcate a minimum of a 50-foot safe work zone for high-purity Germanium (HPGe) detector (tripod) measurement locations and Radiation Scanning System (RSS) runs in the field

using a sufficient number of construction cones to clearly demarcate the work zone. RTIMP personnel operating the HPGe (tripod) and RSS in the construction area are occupied with watching measurement equipment computer screens and maneuvering the equipment. RTIMP personnel may not be aware of construction equipment moving in the field and operators of the construction equipment may not see the smaller HPGe (tripod) and RSS equipment/operator. The cones will be a visible indicator to construction equipment operators of the safe zone perimeter around this equipment. A 50-foot safe work zone does not need to be established for Radiation Tracking System (RTRAK), GATOR, and the Environmental Monitoring System (EMS) since this equipment is larger and more visible and it is easier for the driver to watch for approaching equipment.

The Health and Safety Lead, Soil Sampling Manager or designee, and team members will assess the safety of performing sampling activities in the vicinity of each boring location. This will include vehicle/equipment positioning limitations and fall hazards. The Soil Sampling Manager or designee will ensure that each Technician performing work related to this project has been trained to the relevant sampling procedures including safety precautions. Technicians who do not sign project safety and technical briefing forms will not participate in any activity related to the completion of assigned project responsibilities. A copy of applicable safety permits/surveys issued for worker safety and health will be posted in the affected area during field activities.

All off-site emergencies shall be reported immediately by using the local 911 system to get emergency assistance. As time permits, project management, Assistant Emergency Duty Officer (AEDO) and project safety should be contacted as to what event occurred and actions taken and reporting.

6.0 DISPOSITION OF WASTE

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.

7.0 DATA MANAGEMENT

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 2.3.2 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 QA/QC review. Analytical data will be entered into FACTS 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 Surveying Manager will provide the Data Management Lead (i.e., DSDP Characterization) with an electronic file of all surveyed coordinates and surface elevations. The Sampling Manager will provide the Data Management Lead with a list of any locations that must be moved during penetration permitting or collection, and the Data Management Lead will update the electronic file with this information. After sample collection is complete, the Data Management Lead will provide this electronic file to the 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: _____ Date: 3/13/00
James Chambers
DQO Coordinator

Approval: _____ Date: 3/13/00
J.D. Chiou
SCEP Project Director

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.

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 met 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, on 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.

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.: _____

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

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

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3. Data Use with Ananlytical 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☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☐ E☐
Evaluation of Alternatives	Engineering Design
A☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☐ E☐
Monitoring During Remediation	Other
A☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☒ E☐

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.

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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	☐	2. Uranium	☒*	3. BTX	☐
Temperature	☐	Full Radiological	☒*	TPH	☐
Specific Conductance	☐	Metals	☒*	Oil/Grease	☐
Dissolved Oxygen	☐	Cyanide	☐		
Technetium-99	☒*	Silica	☐		
4. Cations	☐	5. VOA	☒*	6. Other (specify)	
Anions	☐	BNA	☐		
TOC	☐	PEST	☒*		
TCLP	☐	PCB	☒*		
CEC	☐	COD	☐		

* 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 Per SCQ and PSP	SCQ Section Appendix G, Tbls. 1&3
ASL E Per PSP	SCQ Section Appendix H (final)

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	☒[1]	Container Blanks	☒
Field Blanks	☒[2]	Duplicate Samples	☒
Equipment Rinsate Blanks	☒	Split Samples	☒[3]
Preservative Blanks	☐	Performance Evaluation Samples	☐

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	☒	Matrix Duplicate/Replicate	☒
Matrix Spike	☒	Surrogate Spikes	☒
Tracer Spike	☒	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

A9PIII PART THREE CERTIFICATION SAMPLE LOCATION AND IDENTIFIERS

APPENDIX B
A9PIII - PART THREE CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
7	7-1	0"-6"	A9P3-C07-1^RMP	TAL A & B	1354027.74	479035.26
			A9P3-C07-1^L	TAL D		
	7-2V	0"-6"	A9P3-C07-2^V	Archive	1354068.05	479024.46
	7-3	0"-6"	A9P3-C07-3^RMP	TAL A & B	1354113.19	479012.36
			A9P3-C07-3^L	TAL D		
	7-4	0"-6"	A9P3-C07-4^RMP	TAL A & B	1354158.33	479000.26
			A9P3-C07-4^L	TAL D		
	7-5D	0"-6"	A9P3-C07-5^RMP	TAL A & B	1354203.47	478988.16
			A9P3-C07-5^L	TAL D		
			A9P3-C07-5^RMP-D	TAL A & B		
			A9P3-C07-5^L-D	TAL D		
	7-6V	0"-6"	A9P3-C07-6^V	Archive	1354248.61	478976.06
	7-7	0"-6"	A9P3-C07-7^RMP	TAL A & B	1354293.75	478963.96
			A9P3-C07-7^L	TAL D		
	7-8	0"-6"	A9P3-C07-8^RMP	TAL A & B	1354338.89	478951.86
			A9P3-C07-8^L	TAL D		
	7-9V	0"-6"	A9P3-C07-9^V	Archive	1354384.03	478939.76
	7-10	0"-6"	A9P3-C07-10^RMP	TAL A & B	1354429.17	478927.66
			A9P3-C07-10^L	TAL D		
	7-11	0"-6"	A9P3-C07-11^RMP	TAL A & B	1354474.31	478915.56
			A9P3-C07-11^L	TAL D		
	7-12	0"-6"	A9P3-C07-12^RMP	TAL A & B	1354518.11	478901.59
			A9P3-C07-12^L	TAL D		
	7-13V	0"-6"	A9P3-C07-13^V	Archive	1354562.92	478888.32
	7-14	0"-6"	A9P3-C07-14^RMP	TAL A & B	1354607.73	478875.05
			A9P3-C07-14^L	TAL D		
	7-15	0"-6"	A9P3-C07-15^RMP	TAL A & B	1354652.54	478861.78
			A9P3-C07-15^L	TAL D		
	7-16	0"-6"	A9P3-C07-16^RMP	TAL A & B	1354697.35	478848.51
			A9P3-C07-16^L	TAL D		

APPENDIX B
A9PIII - PART THREE CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
8	8-1V	0"-6"	A9P3-C08-1^V	Archive	1354742.16	478835.24
	8-2	0"-6"	A9P3-C08-2^RMP	TAL A & B	1354786.97	478821.97
			A9P3-C08-2^L	TAL D		
	8-3	0"-6"	A9P3-C08-3^RMP	TAL A & B	1354831.78	478808.7
			A9P3-C08-3^L	TAL D		
	8-4V	0"-6"	A9P3-C08-4^V	Archive	1354876.59	478795.43
	8-5	0"-6"	A9P3-C08-5^RMP	TAL A & B	1354921.4	478782.16
			A9P3-C08-5^L	TAL D		
	8-6	0"-6"	A9P3-C08-6^RMP	TAL A & B	1354966.21	478768.89
			A9P3-C08-6^L	TAL D		
	8-7	0"-6"	A9P3-C08-7^RMP	TAL A & B	1355011.02	478755.62
			A9P3-C08-7^L	TAL D		
	8-8	0"-6"	A9P3-C08-8^RMP	TAL A & B	1355055.83	478742.35
			A9P3-C08-8^L	TAL D		
	8-9	0"-6"	A9P3-C08-9^RMP	TAL A & B	1355100.64	478729.08
			A9P3-C08-9^L	TAL D		
	8-10V	0"-6"	A9P3-C08-10^V	Archive	1355145.45	478715.81
	8-11	0"-6"	A9P3-C08-11^RMP	TAL A & B	1355190.26	478702.54
			A9P3-C08-11^L	TAL D		
	8-12	0"-6"	A9P3-C08-12^RMP	TAL A & B	1355235.07	478689.27
			A9P3-C08-12^L	TAL D		
	8-13D	0"-6"	A9P3-C08-13^RMP	TAL A & B	1355279.88	478676
			A9P3-C08-13^L	TAL D		
			A9P3-C08-13^RMP-D	TAL A & B		
			A9P3-C08-13^L-D	TAL D		
	8-14	0"-6"	A9P3-C08-14^RMP	TAL A & B	1355324.69	478662.73
			A9P3-C08-14^L	TAL D		
	8-15V	0"-6"	A9P3-C08-15^V	Archive	1355369.5	478649.46
	8-16	0"-6"	A9P3-C08-16^RMP	TAL A & B	1355414.31	478636.19
			A9P3-C08-16^L	TAL D		

APPENDIX B
A9PIII - PART THREE CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
9	9-1	0"-6"	A9P3-C09-1^RMP	TAL A & B	1354407.76	478933.16
			A9P3-C09-1^L	TAL D		
	9-2V	0"-6"	A9P3-C09-2^V	Archive	1354416.55	478936.83
	9-3	0"-6"	A9P3-C09-3^RMP	TAL A & B	1354420.95	478945.71
			A9P3-C09-3^L	TAL D		
	9-4	0"-6"	A9P3-C09-4^RMP	TAL A & B	1354434.14	478945.71
			A9P3-C09-4^L	TAL D		
	9-5D	0"-6"	A9P3-C09-5^RMP	TAL A & B	1354430.15	478931.33
			A9P3-C09-5^L	TAL D		
			A9P3-C09-5^RMP-D	TAL A & B		
			A9P3-C09-5^L-D	TAL D		
	9-6V	0"-6"	A9P3-C09-6^V	Archive	1354440.84	478934.24
	9-7	0"-6"	A9P3-C09-7^RMP	TAL A & B	1354447.33	478932.01
			A9P3-C09-7^L	TAL D		
	9-8	0"-6"	A9P3-C09-8^RMP	TAL A & B	1354447.33	478918.31
			A9P3-C09-8^L	TAL D		
	9-9	0"-6"	A9P3-C09-9^RMP	TAL A & B	1354441.05	478916.07
			A9P3-C09-9^L	TAL D		
	9-10V	0"-6"	A9P3-C09-10^V	Archive	1354440.63	478904.61
	9-11V	0"-6"	A9P3-C09-11^V	Archive	1354407.76	478912.61
	9-12	0"-6"	A9P3-C09-12^RMP	TAL A & B	1354420.76	478920.61
			A9P3-C09-12^L	TAL D		
	9-13	0"-6"	A9P3-C09-13^RMP	TAL A & B	1354433.76	478912.61
			A9P3-C09-13^L	TAL D		
	9-14	0"-6"	A9P3-C09-14^RMP	TAL A & B	1354427.14	478910.67
			A9P3-C09-14^L	TAL D		
	9-15	0"-6"	A9P3-C09-15^RMP	TAL A & B	1354420.76	478904.61
			A9P3-C09-15^L	TAL D		
	9-16	0"-6"	A9P3-C09-16^RMP	TAL A & B	1354415.72	478914.4
			A9P3-C09-16^L	TAL D		