

**CERTIFICATION REPORT
FOR AREA 8, PHASE III-NORTH**

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



DECEMBER 2003

**U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE**

**21110-RP-0004
REVISION A
DRAFT**

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LIST OF ACRONYMS AND ABBREVIATIONS

A8PIII-N	Area 8, Phase III-N
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	Department of Energy
EPA	Environmental Protection Agency
FCP	Fernald Closure Project
FRL	Final Remediation Level
HAMDC	highest allowable minimum detectable concentration
HPGe	high-purity germanium
MDC	minimum detection concentration
mg/kg	milligrams per kilogram
NaI	Sodium Iodide
OEPA	Ohio Environmental Protection Agency
OSDF	On-site Soil Disposal Facility
OU	Operable Unit
pCi/g	picoCuries per gram
QA/QC	quality assurance/quality control
PSP	Project Specific Plan
RAWP	Remedial Action Work Plan
ROD	Record of Decision
RSS	Radiation Scanning System
RTRAK	Radiation Tracking System
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
TPU	Total Propagated Uncertainty
UCL	Upper Confidence Level
V&V	verification and validation process
V/FCN	Variance/Field Change Notice
VSL	Validation Support Level

EXECUTIVE SUMMARY

This certification report presents the information and data used by the U.S. Department of Energy (DOE) to determine that the existing area-specific constituents of concern (ASCOCs) do not exceed the final remediation levels (FRLs) in Area 8, Phase III-North (A8PIII-N) at the Fernald Closure Project (FCP). On the basis of this reported information and supporting project files, DOE has determined that no remedial actions are required in these areas of the site and, therefore, they can be considered "certified." A8PIII-N will be considered certified when the U.S. Environmental Protection Agency (EPA) and Ohio Environmental Protection Agency (OEPA) agree that the certification criteria have been achieved within all ten (10) relevant certification units (CUs) into which the area was divided. Upon approval from the regulatory agencies, DOE will proceed with planning the natural resource restoration activities for A8PIII-N, as outlined in the Natural Resource Restoration Plan (DOE, 1998a).

A8PIII-N was divided into ten (10) CUs. CU delineation is described in the *Certification Design Letter for Area 8, Phase III-North* (DOE, 2003a) and *Project Specific Plan for Area 8, Phase III-North* (DOE, 2003b). Certification sampling was conducted in these areas of the site to verify that the certification criteria were achieved. These criteria state that: 1) the mean concentrations or activities of the primary ASCOCs within a CU are less than the FRLs at the 95 percent upper confidence level (UCL); and 2) no certification result can exceed two-times the FRL (i.e., the hot spot criterion). If either of these criteria is not met, then further investigation and possible excavation is required. If both of these criteria are met for a CU, then it can be released for development of the final land use.

Consistent with the Sitewide Excavation Plan (SEP, DOE, 1998b), this area underwent precertification activities between 2002 and 2003, including the use of real-time instrumentation as well as physical sampling and analysis. A radium hot spot was identified in the northern-most part of A8PIII-N, which CU A8P3N-1 was centered around, and was remediated prior to certification sampling.

Area 8, Phase III North underwent the certification process during the summer of 2003. The results of this process indicated that all of the certification units meet certification criteria. A Certification Design Letter was submitted June 30, 2003 to address the final certification approach for A8PIII-N (DOE, 2003a). Certification sampling was conducted in each CU to verify that the certification criterion set forth in the SEP were achieved. The certification samples were collected in early September 2003 and were analyzed at an off-site laboratory that is on the FCP Approved Laboratories List per the Sitewide

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance
Project Plan (SCQ, DOE, 2002a).

1.0 INTRODUCTION

1.1 PURPOSE

This Certification Report presents the process and data used by the U.S. Department of Energy (DOE) to determine that existing area-specific constituents of concern (ASCOC) concentrations do not exceed the final remediation levels (FRLs) within Area 8, Phase III-North (A8PIII-N). This report presents final certification results for the certification units (CUs) identified in the *Certification Design Letter (CDL) for Area 8, Phase III-North* (DOE, 2003a). Based on this reported information, the DOE considers remedial goals achieved in this portion of the site.

1.2 BACKGROUND

In the Operable Unit (OU) 5 Record of Decision (ROD, DOE, 1996a), DOE committed to excavating contaminated soil that exceeds health-based FRLs, with final disposition of the excavated material in the On-Site Disposal Facility (OSDF) or an off-site disposal facility if the waste acceptance criteria (WAC) are exceeded. The OU5 Remedial Investigation Report (DOE, 1995a) defined the potential extent of soil contamination exceeding the FRLs and, in general, indicated widespread contamination in approximately 430 acres of the 1,050-acre Fernald Closure Project (FCP). Approximately 1.8 million cubic yards of contaminated soils will be excavated and placed within the OSDF.

In the OU5 Remedial Action Work Plan (RAWP, DOE, 1996b), DOE committed to preparing a Sitewide Excavation Plan (SEP, DOE 1998), defining the overall approach to implementing the soil, and at- and below-grade debris cleanup obligations identified in the OU2 (DOE, 1995b), OU3 (DOE, 1996c), and OU5 RODs. In the SEP, the FCP was divided into ten remedial areas; this report addresses A8PIII-N.

After all necessary remediation is completed within each area/phase, the soil will be certified as attaining all clean up goals (i.e., FRLs). The SEP describes the general soil remediation and certification process at the FCP. According to the SEP, excavation Approach E was followed in A8PIII-N, since the area is not considered to be an "impacted area."

1.3 AREA DESCRIPTION

The focus of this Certification Report is the 38.7-acre area of A8PIII-N, located just north of the Pilot Plant drainage ditch entry into Paddy's Run and south of the railroad trestle, along Paddy's Run Road on the FCP property. See Figure 1-1 for a delineation of the certified area.

It is unlikely that A8PIII-N has been impacted by the former FCP production activities for several reasons. First, A8PIII-N is located west (upwind) of the Former Production Area, and therefore should have minimal impacts from airborne contamination. Secondly, A8PIII-N does not receive drainage from any other part of the FCP site. Finally, no known disposal or plant related activities were associated with this region of the FCP, and it was generally used by local farmers for cattle grazing.

1.4 SCOPE

The scope of this report is limited to the certification of 38.7 acres in Area 8, Phase III – North, which occurred between June 2003 and October 2003. A8PIII-N was divided into ten (10) certification units (CUs). The certification design for these ten (10) CUs follows the general Approach E outlined in Section 3.4 of the SEP.

1.5 OBJECTIVES

The objectives of this Certification Report are:

- Provide an overview of previous precertification activities conducted in A8PIII-N
- Describe the analytical methods, data validation processes, data reduction and statistical processes used to support the certification process
- Present the certification sampling results for all ten (10) CUs within A8PIII-N
- Present the statistical analysis showing that all ten (10) CUs have passed the certification criteria, including FRL attainment and hot spot criteria
- Describe access controls implemented to prevent recontamination.

1.6 REPORT FORMAT

This certification report is presented in six sections with supporting documentation and data in Appendices A and B. The sections of this report area as follows:

- Section 1.0 Introduction: Purpose, background, area description, scope, and objectives of the report
- Section 2.0 Certification Approach: The CU design and approach to sampling and analysis used for certification

- Section 3.0 Overview of Field Activities: Area preparation/survey, sampling and changes to work scope
- Section 4.0 Analytical Methodologies, Data Validation Processes and Data Reduction
- Section 5.0 Certification Evaluation and Conclusions
- Section 6.0 Protection of Certified Areas
- Appendix A Certification Samples, Analytical Results and Statistical Tables
- Appendix B Variance/Field Change Notices (V/FCNs) for A8PIII-N Certification Project Specific Plan (PSP)

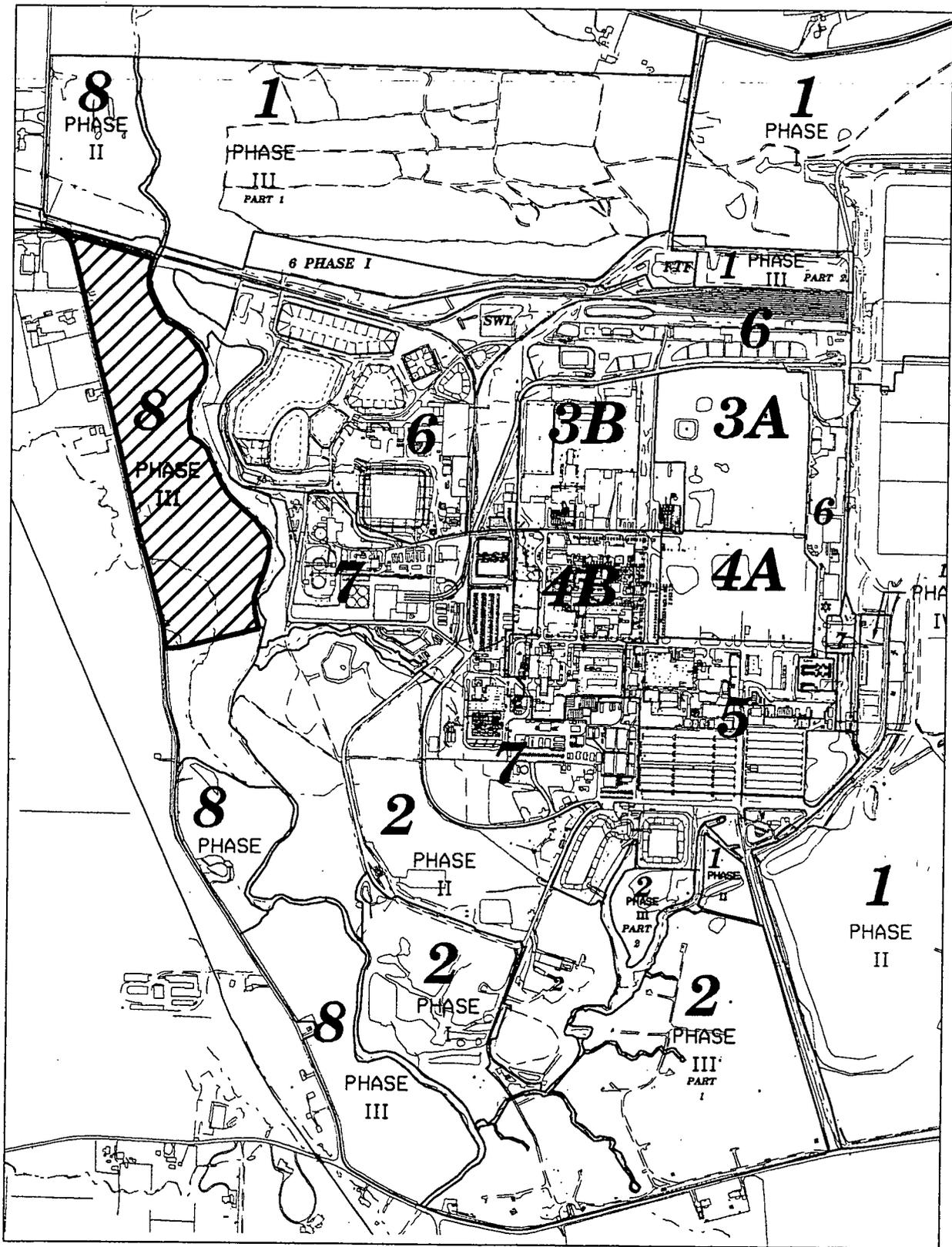
1.7 FCP CONTROLLED CERTIFICATION MAP

In order to track the status of certification at the FCP, DOE will include a site map showing the status of the soil remediation areas and phased areas with all Certification Reports. This map is included in this Certification Report as Figure 1-2, and has been updated to reflect the status of A8PIII-N.

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STATE PLANAR COORDINATE SYSTEM 1983

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LEGEND:



AREA 8
PHASE III-NORTH

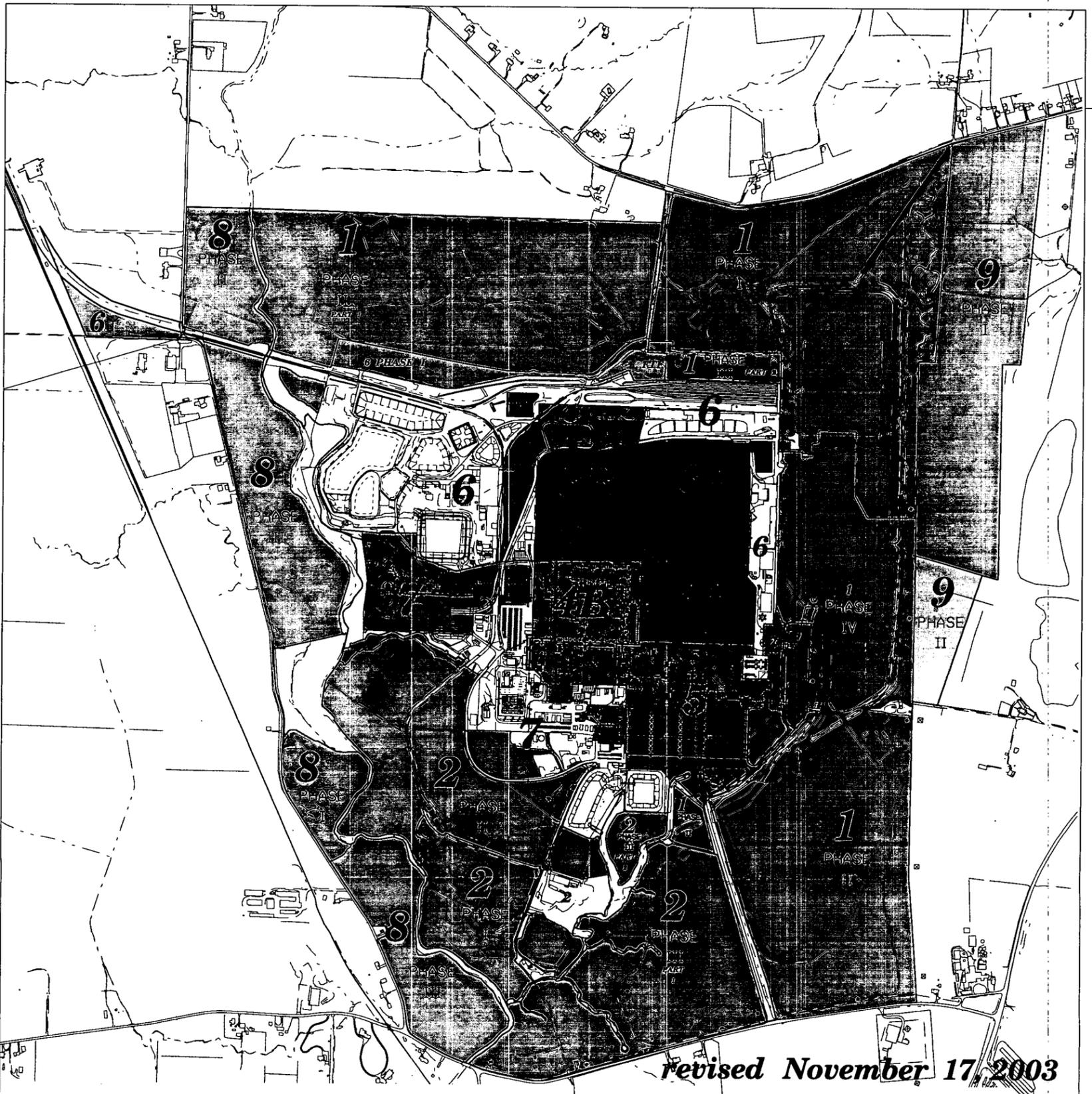
SCALE



1000 500 0 1000 FEET

FIGURE 1-1. AREA 8, PHASE III-NORTH LOCATION MAP

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revised November 17, 2003

AREAS	TOTAL ACRES	APPROVED CERT. ACRES	CERT. ACRES IN PROGRESS	PROPOSED ACRES IN PROGRESS	REMAINING ACRES
AREA 1	394.6	390.1	0	0	4.2
AREA 2	175.0	107.6	0	2.7	57.1
AREA 3A/4A	41.5	0	0	41.5	0
AREA 3B/4B	47.8	0	0	23.2	24.6
AREA 5	31.8	3.2	0	0	28.6
AREA 6	142.0	17.4	2.7	2.4	14.6
AREA 7	84.9	0	0	1.8	36.8
AREA 8	98.9	98.9	0	0	0
AREA 9	0.75	0	0	0	0
PR/SSOD/PPDD ***	32.3	0	0	0	2.1
TOTAL ON SITE	1049.5	617.3	2.7	71.6	168.0
AREA 9	84.5	71.9	12.6	0	0
TOTAL OFF SITE	84.5	71.9	12.6	0	0

• ONSITE AREA9 REMAINING ACRES INCLUDE THE DISSOLVED OXYGEN FACILITY AREA, WHICH WILL BE CERTIFIED AS PART OF THE OLD OUTFALL LINE CERTIFICATION. THE INTERIM LEACHATE LINE CORRIDOR IS INCLUDED IN AREA 6.

*** PADDYS RUN/STORMSEWER OUTFALL DITCH CORRIDOR IS IDENTIFIED AS: .

API ROADS EXCLUDED FROM CERTIFICATION IDENTIFIED AS: ██████████.

AREA 10 INCLUDES PIPELINES RELATED TO GROUNDWATER REMEDIATION AND OTHER UTILITIES NOT SPECIFICALLY LISTED.

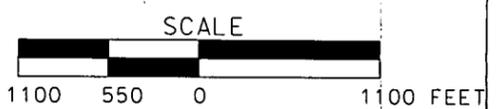


FIGURE 1-2. FCP CONTROLLED CERTIFICATION MAP

2.0 CERTIFICATION APPROACH

2.1 CERTIFICATION STRATEGY

This section summarizes the area-specific constituent of concern (ASCOC) selection process and the certification approach, including CU establishment, sampling design, and statistical analysis. The general purpose of certification sampling is to verify that the mean concentrations or activities of primary ASCOCs remaining in the soil of a CU following remedial activities are less than the FRLs at the 95 percent upper confidence level (UCL), and at the 90 percent UCL for secondary ASCOCs, although none were retained for A8PIII-N. This certification process also includes the hot spot criterion, which states that if any of the certification results exceeds two times the FRL, further action is required, as discussed in Section 3.4.5 of the SEP. If the mean residual ASCOC concentrations or activities are below the FRLs within the respective confidence bounds, and the hot spot criterion is met, then the remedial objectives have been achieved for the CU. It can then be released for regrading, reseeded and development of a final land use. The general certification strategy is described in Section 3.4 of the SEP, and in the A8PIII-N specific strategy as described in the CDL/PSP for A8PIII-N.

The general certification strategy is described in Section 3.4 of the SEP, and the A8PIII-N specific strategy described in the CDL for A8PIII-N.

2.1.1 Area-Specific Constituents of Concern

As committed in the SEP, the sitewide primary radiological constituents of concern (COCs) (total uranium, radium-226, radium-228, thorium-228, and thorium-232) were retained as ASCOCs for this remediation effort. No secondary COCs were selected as described in Section 2.1.3.

2.1.2 ASCOC Selection Criteria

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 the following apply:

- 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;
- Analytical results show that a contaminant is present above its FRL, and the above-FRL concentrations are not attributable to false positives or elevated contract-required detection limits (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.

2.1.3 ASCOC Selection Process

Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary COCs and were therefore retained as ASCOCs. Historical data do not show any other ASCOCs as present above the FRL in A8PIII-N, and do not meet the above criteria for being retained. Based on this factor and the inability to identify any mechanism for secondary COC contamination of this part of the site, only the sitewide primary COCs were retained as the A8PIII-N ASCOCs. Table 2-1 list the A8PIII-N ASCOCs and their respective FRLs.

2.2 CERTIFICATION APPROACH

2.2.1 Certification Design

The certification design for A8PIII-N followed the general approach outlined in Section 3.4 of the SEP. Since A8PIII-N is not considered to be an "impacted area," Approach E from the SEP will be used as a basis for certification design, as described in Section 4.5 of the SEP. Historical land uses, soil COC data, precertification data and topography were used to establish CU boundaries. Because there were no significant production-related land uses and very few soil COC data were collected in A8PIII-N, the precertification data and the topography of A8PIII-N were the main drivers for CU delineation. As shown in Figure 2-1, ten CUs were established in A8PIII-N: two Group 1 CUs and eight Group 2 CUs. The two Group 1 CUs were established to surround the hot spot identified and remediated during precertification.

Ten CUs were established in A8PIII-N as follows:

- CU A8P3-1 Group 1 CU impacted area centered around a radium hot spot
- CU A8P3-2 Group 1 CU west of radium hot spot along western site boundary fence line
- CUs A8P3-3 through A8P3-6 Group 2 CUs in non-impacted area
- CU A9P3-7 Group 2 CU following steep sloped topography within non-impacted area
- CUs A8P3-8 through A8P3-10 Group 2 CUs in non-impacted area

Sample Selection Process

Certification sampling locations were selected according to Section 3.4.2 of the SEP. Each CU was first divided into 16 approximately equal sub-CUs. Sample locations were then generated by randomly selecting an easting and northing coordinate within the boundaries of each sub-CU, then testing those locations against the minimum distance criteria for the CU. If the minimum distance criteria were not met, an alternative random location was selected for that sub-CU, and all the locations were re-tested. This process continued until the minimum distance criteria were met for all 16 random sampling locations. All sub-CUs and planned A8PIII-N certification sampling locations are shown in Figure 2-2.

2.2.2 Certification Sampling

Each sample was collected from the 0 to 6-inch (surface) soil interval at the designated and surveyed location. Four of the 16 certification locations per CU (one per each quadrant of the CU) were randomly selected for archiving (identified in the field, but not collected), and the other 12 locations were submitted for analysis. However, due to the extreme length of CU A8P3-7, all archives plus an additional four random samples (one from each quadrant) for a total of 20 were collected and analyzed for all A8PIII-N ASCOCs. All samples were analyzed at an off-site laboratory for the five primary ASCOCs using the gamma spectrometry method. Additional information regarding the certification sampling and analysis may be obtained from the A8PIII-N Certification PSP.

2.2.3 Statistical Analysis

The statistical analysis of certification samples is discussed in Appendix G of the SEP. Per Section G.2.3 of the SEP, statistical analysis of certification results is not necessary to determine if an ASCOC passed certification in a CU if all of the results for that ASCOC in that CU were below FRL. If any sample result(s) does exceed the associated FRL, then statistical analyses will be performed and 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, resulting in the pass/fail decision on each individual CU. 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 *a posteriori* test will be performed to determine whether the sample size is sufficient for a meaningful conclusion of this comparison. The second criterion is the hot spot criterion, which states that all 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.

TABLE 2-1
ASCOC LIST FOR ALL A8PIIIN-N CERTIFICATION UNITS

ASCOC	FRL	REASON RETAINED
Total Uranium	82 mg/kg	Retained as a primary ASCOC sitewide
Radium-226	1.7 pCi/g	Retained as a primary ASCOC sitewide
Radium-228	1.8 pCi/g	Retained as a primary ASCOC sitewide
Thorium-228	1.7 pCi/g	Retained as a primary ASCOC sitewide
Thorium-232	1.5 pCi/g	Retained as a primary ASCOC sitewide

mg/kg – milligrams per kilogram

pCi/g – picoCuries per gram

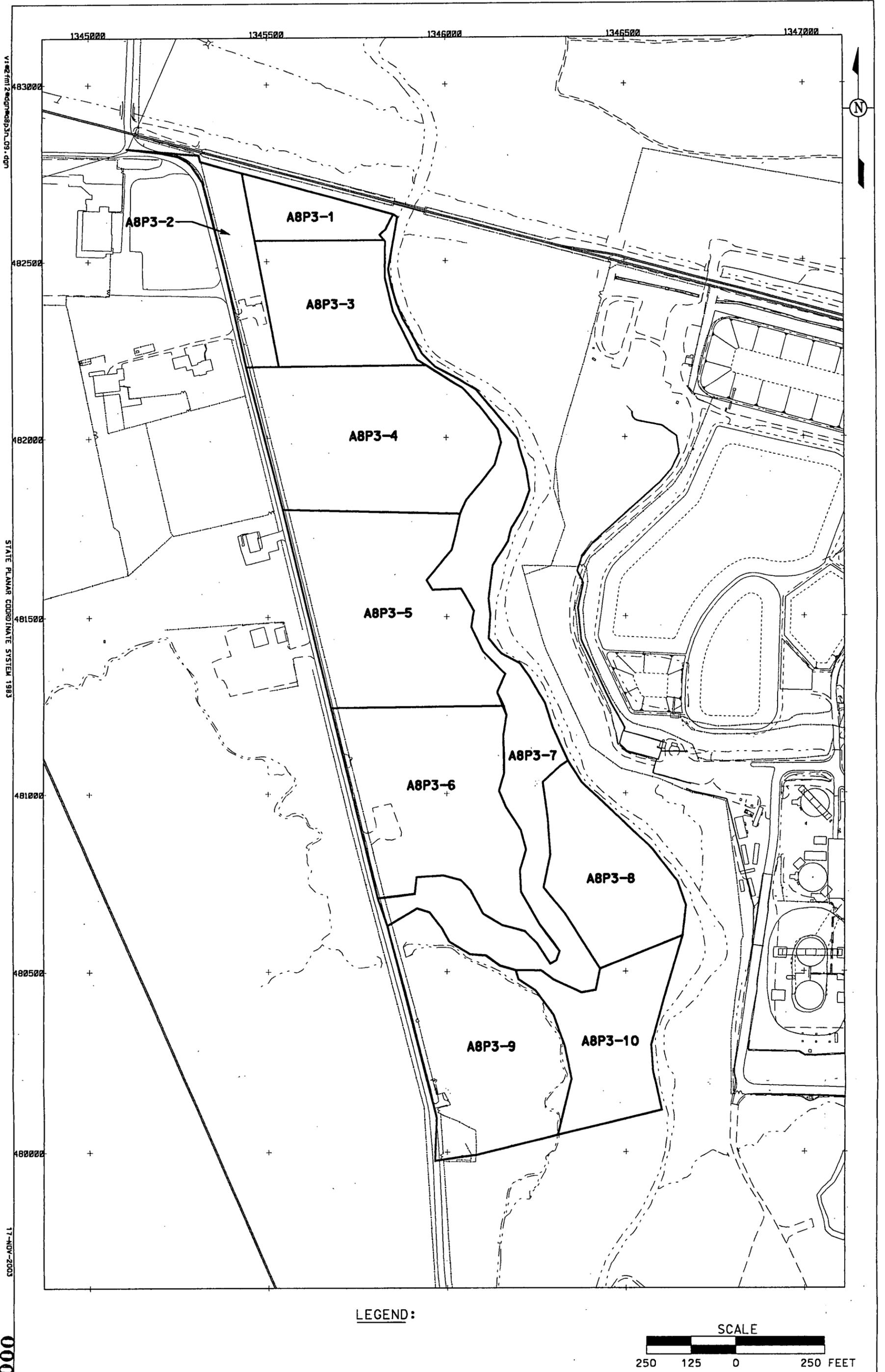


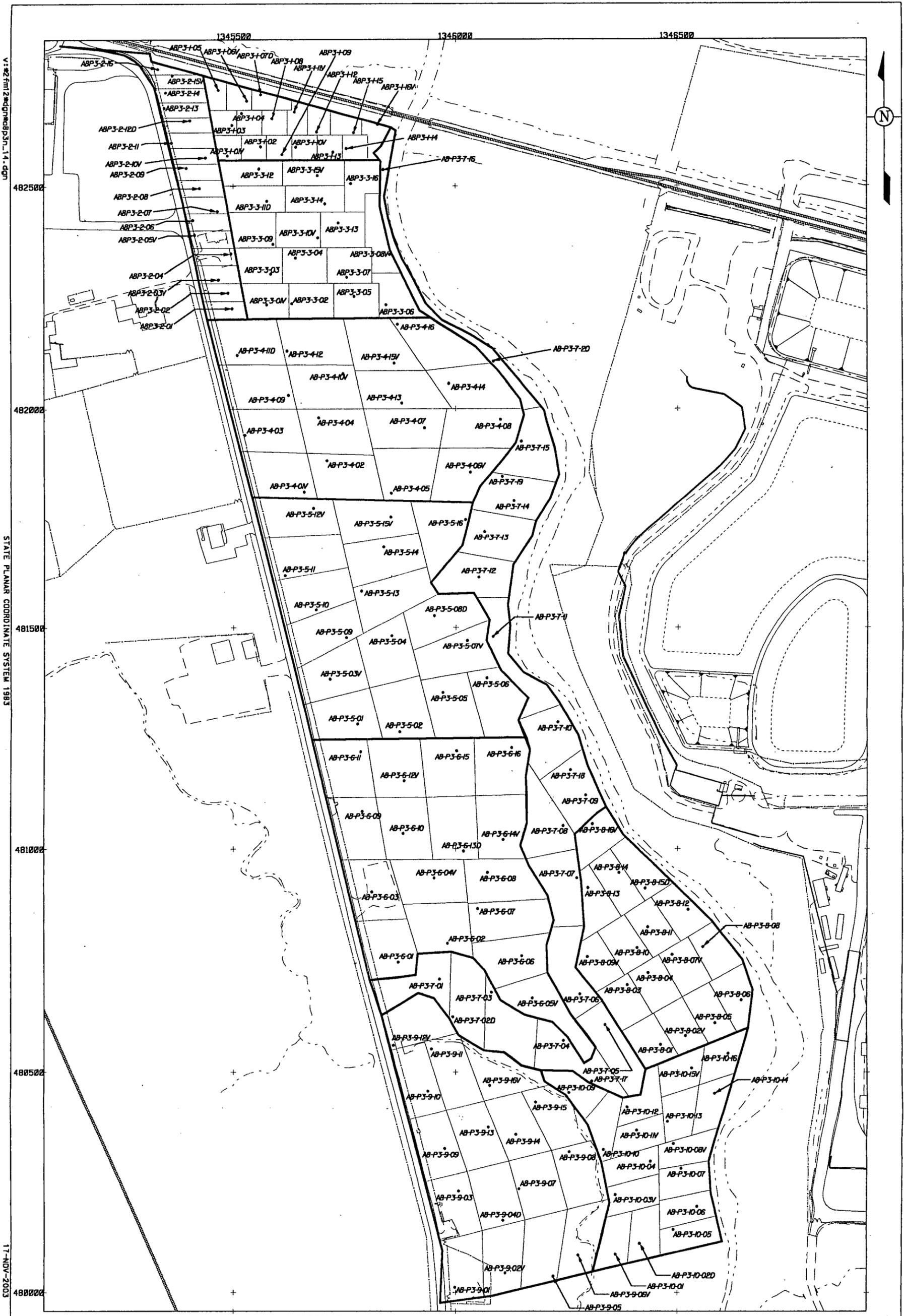
FIGURE 2-1. AREA 8. PHASE III-NORTH CERTIFICATION UNITS

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LEGEND:

- AB-P3-9-07 CERTIFICATION SAMPLES
(V=ARCHIVE, D=DUPLICATE)
- AB-P3-9-01 ORIGINAL LOCATIONS OF
RELOCATED SAMPLES

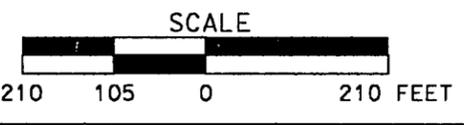


FIGURE 2-2. ABPIII-N CERTIFICATION SAMPLING LOCATIONS

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3.0 OVERVIEW OF FIELD ACTIVITIES

3.1 DATA EVALUATION AND PRECERTIFICATION

In September 2002, precertification real-time scanning began in A8PIII-N pursuant to the Project Specific Plan (PSP) for A8PIII-N Precertification Real-Time Scan (DOE, 2002b). The real-time scan was conducted using the Radiation Tracking System (RTRAK), the Radiation Scanning System (RSS) and the high-purity germanium (HPGe) detectors. Phase 1 and Phase 2 precertification was not performed on the steep ridges and vegetated areas that prohibited the use of the real-time equipment. During Phase 1 of precertification, the mobile sodium iodide (NaI) detectors (RTRAK and RSS) were used to scan as much of A8PIII-N as possible. Some areas of A8PIII-N were inaccessible to RTRAK and RSS because of steep ridges and vegetated areas. In those cases, the HPGe was used. During Phase 2 of precertification, HPGe readings were obtained at the location of highest gamma activity within each identified CU as added assurance that concentrations were not above FRL. A few locations were too steep to safely scan with any real-time equipment and therefore were not scanned. Real-time scanning was completed for A8PIII-N in May 2003.

Data collected during the Phase 1 scan were displayed for total gamma activity (as counts per second), total uranium, radium-226, and thorium-232. Overall, these results are comparable to what was found in other parts of Area 8 where contamination was not a problem. In January 2003, an HPGe scan indicted elevated radium-226 in the northern portion of A8PIII-N and subsequently confirmed as a hot spot with physical sampling under V/FCN 21110-PSP-003-2. In March 2003, the hot spot was bound by both physical sampling and real-time scans and later excavated in May 2003. The excavation area dimensions were approximately 10' by 30' to a depth of 6 inches. HPGe scans confirmed removal of the hot spot. All of the other mobile NaI results did not exceed the three times (3x) FRL hot spot level.

During Phase 2 of precertification, HPGe readings were obtained at the location of highest gamma activity within each identified CU as added assurance that concentrations were not above the FRL. The results again demonstrated that total uranium, thorium-232, and radium-226 were below their respective FRLs with the exception of the radium-226 hot spot.

3.2 CHANGES TO SCOPE OF WORK

The scope of work for A8PIII-N certification sampling was documented in the final CDL. There were additions and changes to the scope as documented in V/FCNs 21110-PSP-0004-01 through -04, which

are included in this report as Appendix B. V/FCNs 21110-PSP-0004-01, -02, and -03 document the relocation of seven (7) sample points by more than 3 feet from their original location. Per the SEP, relocation of any sample point beyond 3 feet requires documentation in a V/FCN. V/FCN 21110-PSP-0004-04 addresses revisions to validation requirements.

4.0 ANALYTICAL METHODOLOGIES, DATA VALIDATION PROCESSES AND DATA REDUCTION

4.1 ANALYTICAL METHODOLOGIES

Radiological samples were analyzed at the an off-site laboratory, which complies with Sitewide CERCLA Quality Assurance Project Plan (SCQ) requirements. The SCQ is the source for analytical methodologies (Appendix G), data verification and validation, and analytical and field quality assurance/quality control (QA/QC) requirements.

Laboratory analysis of certification samples was conducted using an approved analytical method, as discussed in Appendix H of the SEP. Analyses were conducted to analytical support level (ASL) D or E, where the minimum detection level of 10 percent of the FRL is above the SCQ ASL detection level, but the analyses meet other SCQ ASL D criteria. An ASL D data package was provided for all of the data. All of the data were validated. Certification analytical results are provided in Appendix A, and a summary of the analytical methods follows.

4.1.1 Radiochemical Methods

The radiochemical analytical methods depended on the specific nuclides of interest. Performance-based specification criteria included highest allowable minimum detectable concentration (HAMDC), percent overall tracer/chemical recovery, percent matrix spike recovery, method blank concentration, percent recovery of laboratory control sample, and percent recovery for duplicate samples were specified for each analyte. Laboratories were required to meet these specifications using the methodologies described below.

Total Uranium

Samples were analyzed for uranium-238 using gamma spectrometry, and the results were used to calculate the total uranium value. The calculation used was as follows:

$$\text{Total Uranium (mg/kg)} = (2.998544) \times \text{Uranium-238 gamma spectrometry result (pCi/g)}$$

The validation qualifier assigned to the total uranium value was the same as the uranium-238 qualifier.

Radium-226

Samples were analyzed by gamma spectrometry, and radium-226 was quantified by measuring gamma rays emitted by members of its decay chain. This method does not require chemical separation, but the samples must be allowed a 20-day progeny in-growth period before counting. The off-site laboratory used the same gamma ray emission lines and error weighted average methodology to calculate all A8PIIIN certification results.

Radium-228

Following gamma spectrometry analysis, radium-228 was also quantified by measuring gamma rays emitted by members of its decay chain. The off-site laboratory used the same gamma ray emission lines and error weighted average methodology to calculate all A8PIIIN CUs.

Isotopic Thorium

Isotopic thorium (Th-228 and Th-232) was quantified by measuring gamma rays emitted by members of its decay chain by gamma spectrometry. The off-site laboratory used the same gamma ray emission lines and error weighted average methodology to calculate all A8PIIIN CUs

4.2 DATA VERIFICATION AND VALIDATION

This section discusses the data verification and validation (V&V) process used to examine the quality of field and laboratory results. Data were qualified to indicate the level of data usability, or level of confidence in the reported analytical results. The U.S. Environmental Protection Agency (EPA) National Functional Guidelines for Data Review (Inorganic Data) (EPA, 1994), as adapted and approved by EPA Region V, as well as the Section 11.2 and Appendix D of the SCQ, was used for this process.

Specific parameters associated with the data were evaluated during V&V to determine whether or not the data quality objectives were met. Five principal QA parameters (i.e., precision, accuracy, completeness, comparability, and representativeness) were addressed during V&V. Field sampling and handling, laboratory analysis and reporting, and non-conformances and discrepancies in the data were examined to ensure compliance with appropriate and applicable procedures.

The V&V process evaluated the following parameters:

- Specific field forms for sample collection and handling
- Chain of Custody Forms
- Completeness of laboratory data deliverable.

The data validation process examined the analytical data to determine the level of confidence of the results. General areas examined include the following:

- Holding times
- Instrument calibrations
- Calculation of results
- Laboratory/field duplicate precision
- Field/Laboratory Blank contamination
- Dry weight correction for solid samples
- Correct detection limits reported
- Laboratory control sample (LCS) recoveries and compliance with established limits.

Parameters unique to the evaluation of radiochemical analyses include:

- Calibration data for specific energies
- Background checks
- Relative error ratios
- Detector efficiencies
- Background count correction.

For this project, all the radiological data were reviewed and validated for all criteria noted above. Per project requirements, a minimum 10 percent of the certification data were validated to Validation Support Level (VSL) D. This validation included the same review process as for VSL B, but included a systematic review of the raw data and recalculations. To meet this project requirement (as specified in the SEP and Data Quality Objectives SL-052), all analyses from one CU (CU A8P3N-07) were validated to VSL D, and the remaining data were validated to VSL B.

Following V&V, qualifier codes were applied to specific data points, reflecting the level of confidence assigned to the particular datum. These codes can include the following:

- No qualification; the positive result or detection limit is confident as reported
- J Positive result is estimated or imprecise; data point is usable for decision-making purposes. Positive results less than the contract required reporting limit are also qualified in this manner.
- R Positive result or detection limit is considered unreliable; data point should not be used for decision-making purposes.
- U Undetected result at the stated limit of detection
- UJ Undetected result; detection limit is considered estimated or imprecise; the data point is usable for decision-making purposes
- N Positive result is tentatively identified – that is, there is some question regarding the actual identification and quantification of the result. Compound reported is best professional judgment of the interpretation of the supporting data, such as mass spectra. Caution must be exercised with the use of this data.
- NV Not validated. The results for this sample were not validated
- Z This result, or detection limit in this analysis is not the best one to use; another analysis (e.g., the dilution or re-analysis) contains a more confident and usable result

The V&V of this data set did not identify any problems. All the results were either not qualified (-) or qualified as estimated (J). No results were qualified as rejected.

4.3 DATA REDUCTION

Each sample used to support the A8PIIIN-N area certification decision was entered in the FCP Sitewide Environmental Database (SED) with the following information:

Field Information

- Sample Identification Number – A unique number assigned to each discrete sample point
- Coordinate Information – Northing and Easting locations.
- Certification Unit – Each sample is assigned to a CU based on a location.

Laboratory Information

For each sample result the following information is entered:

- Laboratory Result – The reported analytical value from the laboratory
- Laboratory Qualifier – The qualifier reported from the lab. For radiological parameters non-detect values are assigned a U qualifier.
- Total Propagated Uncertainty (TPU) – This value represents the uncertainty associated with the reported result. TPU includes the counting error, as well as uncertainty from other laboratory measurements and data reduction. (Applicable to radiological parameters only.)
- Units – The units in which the Laboratory Result is reported

Validation Information

Validation Result – The result based on the validation process. During the validation process, sample results may be adjusted. If the laboratory result is less than the associated minimum detectable concentration (MDC), the validation result becomes the MDC value

Validation TPU – The TPU based on the validation process

Validation Qualifier – The qualifier assigned as a result of the data validation process

Validation Units – The units in which the Validation Result is reported

Using the information as summarized above, the following actions were taken for data reduction of each CU data set.

1. All the data for each CU were queried from SED. All the data were used even if the CU had more than the minimum required data points
2. The data from the validation fields were used for statistical calculations
3. Data with a qualifier of R or Z was not used in the statistical calculations
4. The highest of the two duplicate results was used in the statistical calculations
5. One half of the non-detect (U or UJ) values were used in the statistical calculations.

5.0 CERTIFICATION EVALUATION AND CONCLUSIONS

5.1 CERTIFICATION RESULTS AND EVALUATION

All CUs for A8PIII-N passed the certification criteria. Certification success or failure was based on sample data from each CU against criteria discussed in Section 2.2.4. All results for nine (9) of the ten (10) CUs were below-FRL for the A8PIII-N ASCOCs, and passed on the first round of certification. One sample in CU 1 (sample A8P3N-C1-03) was above-FRL but upon statistical analysis the CU passed certification. No additional corrective actions were necessary, and the archived samples did not need to be analyzed. Final certification data are presented in Appendix A. Based on these results, DOE has determined that the remedial objectives of the OU5 ROD have been achieved in A8PIII-N, and no further remedial actions are required. The subject areas will be released for final land use.

5.2 A8PIII-N CERTIFICATION CONCLUSIONS

Based on the results and statistical analyses, DOE has determined that the remedial objectives in the OU5 ROD have been achieved in A8PIII-N. Therefore, upon U.S. Environmental Protection Agency and Ohio Environmental Protection Agency concurrence, these portions of the site will be released for final land use.

6.0 PROTECTION OF CERTIFIED AREAS

DOE has restricted access to certified areas in order to maintain their integrity prior to transferal for final land use. FCP Procedure EP-0008, Access to a Certified Area, has been developed to implement a process to protect certified areas from being recontaminated.

The procedure is summarized as follows:

- Prior to the initiation of certification sampling activities for a remediation area, temporary fencing will be installed to delineate the perimeter of the "certified" area if existing fencing is not already present.
- Signs will be posted upon the temporary perimeter limiting access to authorized individuals or projects.
- Personnel desiring admittance to a "certified" area to conduct work will submit a written request to gain access, using Form FS-F-4878, to the Soil and Disposal Facility Project Compliance Section.
- The purpose of entry must be described on the form, including any proposed chemical applications such as pesticides or herbicides.
- Any equipment to be used within the "certified" area must have been cleaned in accordance with FCP certified area access.
- Employees/operators should be briefed on the entry and exit requirements for a "certified" area.
- Additional restrictions apply to certified areas that have been restored. The SDFP Compliance section will forward access requests for restored areas to SDFP Natural Resources for written approval prior to entry.

After DOE, EPA and Ohio Environmental Protection Agency (OEPA) agree that an area is certified, the area will be released for final land use. At that time, best management practices and administrative controls will need to be used to protect the area from contamination, and other controls will be implemented as needed. Following approval of this certification report by the EPA and OEPA, DOE will proceed with planning the natural resource restoration and development of final land use for the area.

REFERENCES

U.S. Department of Energy, 1995a, "Remedial Investigation Report for Operable Unit 5," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH.

U.S. Department of Energy, 1996a, "Record of Decision for Remedial Actions at Operable Unit 5," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH.

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U.S. Department of Energy, 1998a, "Natural Resource Restoration Plan," Draft Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH.

U.S. Department of Energy, 1998b, "Sitewide Excavation Plan," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2002a, "Sitewide CERCLA Quality (SCQ) Assurance Project Plan," Rev. 2, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH.

U.S. Department of Energy, 2002b, "Project Specific Plan for Area 8, Phase III – North Precertification Real-Time Scan," Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH.

U.S. Department of Energy, 2003a, "Certification Design Letter for Area 8, Phase III - North," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, OH.

U.S. Department of Energy, 2003b, "Project Specific Plan for Area 8, Phase III – North Certification Sampling," Revision 0, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, OH.

U.S. Environmental Protection Agency, 1994, "National Functional Guidelines for Data Review," U.S.EPA Office of Solid Waste and Emergency Response, Washington, DC.

APPENDIX A

**CERTIFICATION SAMPLES, ANALYTICAL RESULTS
AND STATISTICS TABLES**

A8PIII-N CERTIFICATION UNIT 10

PRIMARY COCs					
SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total
A8P3N-C10-01^R	0.803 -	0.729 -	0.728 -	0.729 -	9.84 -
A8P3N-C10-02^R	0.739 -	0.748 -	0.759 -	0.748 -	6.44 -
A8P3N-C10-02^R-D	0.75 -	0.714 -	0.752 -	0.714 -	6.47 -
A8P3N-C10-04^R	0.823 -	0.792 -	0.796 -	0.792 -	12.6 -
A8P3N-C10-05^R	0.752 -	0.741 -	0.737 -	0.741 -	7.47 -
A8P3N-C10-06^R	0.742 -	0.708 -	0.714 -	0.708 -	4.58 -
A8P3N-C10-07^R	0.855 -	0.730 -	0.791 -	0.730 -	6.34 -
A8P3N-C10-09^R	0.838 -	0.761 -	0.760 -	0.761 -	8.60 -
A8P3N-C10-10^R	1.08 -	0.892 -	0.899 -	0.892 -	13.3 -
A8P3N-C10-12^R	0.719 -	0.636 -	0.626 -	0.636 -	9.99 -
A8P3N-C10-13^R	0.848 -	0.837 -	0.826 -	0.837 -	9.77 -
A8P3N-C10-14^R	0.886 -	0.834 -	0.811 -	0.834 -	7.90 -
A8P3N-C10-16^R	0.779 -	0.730 -	0.738 -	0.730 -	7.03 -
FRL	1.70	1.80	1.70	1.50	82
Units	pCi/g	pCi/g	pCi/g	pCi/g	ug/g
Confidence Level	95%	95%	95%	95%	95%
Max. Result	1.08	0.892	0.899	0.892	13.3
Max. >= Limit	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--
Test Procedure	--	--	--	--	--
Sample Size	12	12	12	12	12
Nondetects	0	0	0	0	0
% Nondetects	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--
UCL	--	--	--	--	--
Prob. > Limit	--	--	--	--	--
Pass / Fail	Pass	Pass	Pass	Pass	Pass

Definition of Qualifiers
J" = estimated result
UJ" = not detected, estimated
U" = not detected
- " = no data qualifier
NV" = not validated
UNV" = not detected, not validated

<i>a posteriori</i> Sample Size calculation	--	--	--	--	--
---	----	----	----	----	----

NOTES:

- (1) Maximum result did not exceed the FRL, therefore no statistics were generated and no other tests performed.
- (2) The maximum value of the two duplicates was used in all statistical equations.
- (3) * W-Statistic Probability is the highest calculated probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (Normal) and the log-transformed data (LogNormal) to test for lognormality.
- (4) ** Estimated Mean = Estimated measure of central tendency (Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median).

APPENDIX B

**VARIANCES/FIELD CHANGE NOTICES FOR
A8PIII-N CERTIFICATION PROJECT SPECIFIC PLAN**

VARIANCE / FIELD CHANGE NOTICE

Signature (Yes/No)

5183

V/F: 21110-PSP-0004-1

WBS NO.: PROJECT/DOCUMENT/ECDC # 21110-PSP-0004 Rev.0

Page: 1 of 1

PROJECT TITLE: Project Specific Plan for Area 8, Phase III-North Certification Sampling

Date: 08/27/03

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance/Field Change Notice (V/FCN) documents the field modification of the sample location for Sample ID A8-P3N-C6-02^R. This sample location was moved 10 feet north of the original coordinates because the original location fell within a Cultural Resources Area, which requires sample re-location.

<u>Sample ID: A8P3N-C6-02^R</u>	<u>Easting-83</u>	<u>Northing-83</u>
Original Coordinates	1345981	480779
New Coordinates	1345981	480789

Justification:

Per Section 2.3 of the PSP, any sample location that needs to be relocated more than 3 feet from the original location due to inaccessibility will be documented in a V/FCN and submitted to the agencies for approval prior to collection. The new sample location remained in the same CU and sub-CU and still meets the minimum distance requirement.

REQUESTED BY: Amanda Porfidio

Date: 08/27/03

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Frisler <i>R. Frisler</i>	8/27/03	X	PROJECT MANAGER: J. Porfidio <i>J. Porfidio</i>	8/27/03
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: P. Miller <i>P. Miller</i>	8/27/03
	ANALYTICAL CUSTOMER SUPPORT:			RTIMP Manager	
	WAO		X	SAMPLING MANAGER: T. Bivins <i>T. Bivins</i>	8/27/03

VARIANCE/FCN APPROVED [X] YES [] NO REVISION REQUIRED: [] YES [x] NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

ORIGINAL

000031

VARIANCE / FIELD CHANGE NOTICE	Significant? (Yes or No): YES	V/F: 21110-PSP-0004-2
WBS NO.: PROJECT/DOCUMENT/ECDC #21110-PSP-0004 Rev.0		Page: 1 of 2
PROJECT TITLE: Project Specific Plan for Area 8, Phase III-North Certification Sampling		Date: 09/03/03

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance documents the moves of three boring locations. The affected locations and their moves are as follows:

LOCATION	ORIGINAL NORTHING	ORIGINAL EASTING	DISTANCE and DIRECTION MOVED	NEW NORTHING*	NEW EASTING*
A8P3N-C2-14	482712.56	1345330.22	15 feet (ft) East	482712.56	1345345.22
A8P3N-C2-15	482751.6	1345340.02	20 ft East	482751.60	1345360.02
A8P3N-C2-16	482766.37	1345297.2	30 ft East	482766.37	1345327.20

* Changes are shown in bold.

Sampling locations A8P3N-C2-14 and A8P3N-C2-16 were originally located along side Paddys Run Road. The locations were re-located to an area where they could be safely sampled. Sampling location A8P3N-C2-15 was re-located to meet the Minimum Distance Criteria. Figure 2-1 (attached) of the PSP has been updated to reflect these location changes.

Justification:

Per Section 2.3 of the PSP, any sample location that needs to be relocated more than 3 feet from the original location due to inaccessibility will be documented in a V/FCN and submitted to the agencies for approval prior to collection. The new sample location remained in the same CU and sub-CU and still meets the Minimum Distance Criteria.

REQUESTED BY: Greg Lupton Date: 09/03/03

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE R. Trinke <i>R. Trinke</i>	9/3/03	X	PROJECT MANAGER: M. G. C. L. <i>M. G. C. L.</i>	9/3/03
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: Frank Miller <i>Frank Miller</i>	9/3/02
	ANALYTICAL CUSTOMER SUPPORT:			RTIME Manager	
	WAD		X	Boring Manager: T. Bullage <i>T. Bullage</i>	9/3/03

VARIANCE/FCN APPROVED [X]YES []NO REVISION REQUIRED: []YES [X]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeanie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

ORIGINAL

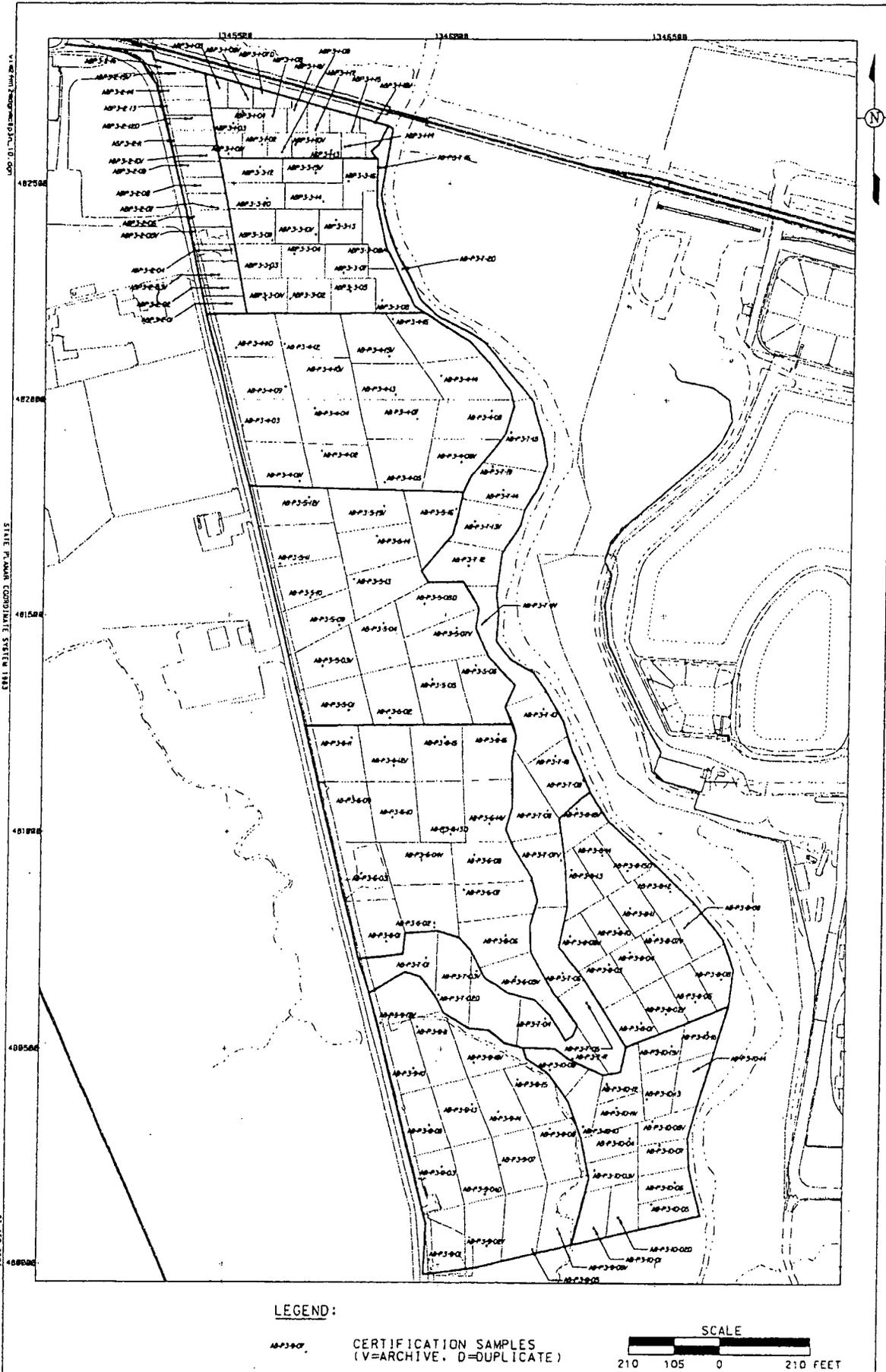


FIGURE 2-1. ABPII-NORTH CU AND SUB-CU BOUNDARIES AND CERTIFICATION SAMPLING LOCATIONS

000033

VARIANCE / FIELD CHANGE NOTICE

Significant?

Yes/No: YES

5183

V/F: 21110-PSP-0004-3

WBS NO.: PROJECT/DOCUMENT/ECDC #21110-PSP-0004 Rev.0

Page: 1 of 2

PROJECT TITLE: Project Specific Plan for Area 8, Phase III-North Certification Sampling

Date: 09/11/03

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance documents the move of three boring locations due to inaccessibility by the surveyors. Two of the borings are located in CU7 (A8P3N-C7-09 and A8P3N-C7-20), and one boring is in CU9 (A8P3N-C9-01).

LOCATION	ORIGINAL NORTHING	ORIGINAL EASTING	DISTANCE and DIRECTION MOVED	NEW NORTHING*	NEW EASTING*
A8P3N-C7-09	481120	1346321	W/O 30 feet West	481120	1346291
A8P3N-C7-20	482303	1345889	233 feet Southeast	482106.06	1346083.511
A8P3N-C9-01	480011	1345978	20 feet East	480010.99	1345997.16

* Changes are shown in bold.

The three samples were moved for the following described reasons. A8P3N-C9-01 was originally located alongside Paddy's Run Road and was re-located to an area where it could be safely sampled. The sample locations, A8P3N-C7-09 and A8P3N-C7-20, were moved because they fell along the steep slope leading to Paddy's Run. All the sampling locations were verified to meet the Minimum Distance requirement. A map indicating the new boring locations in relation to the old boring location is attached as page 2. This map also shows the four boring locations that were approved for relocation in the previous two variances (Variance 1: A8P3N-C6-02 and Variance 2: A8P3N-C2-14, A8P3N-C2-15, A8P3N-C2-16).

Justification:

Per Section 2.3 of the PSP, any sample location that needs to be relocated more than 3 feet from the original location due to inaccessibility will be documented in a V/FCN and submitted to the agencies. The new sample location remained in the same CU and sub-CU and still meets the Minimum Distance Criteria.

REQUESTED BY: Amanda Porfidio

Date: 09/11/03

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: <i>[Signature]</i>	9/11/03	X	PROJECT MANAGER: <i>[Signature]</i>	9/11/03
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: <i>[Signature]</i>	9/11/03
	ANALYTICAL CUSTOMER SUPPORT:			RTIMP Manager	
	WAD		X	Sampling Manager: <i>[Signature]</i>	9/11/03
VARIANCE/FCN APPROVED [X] YES [] NO			REVISION REQUIRED: [] YES [x] NO		

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PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

ORIGINAL

000034

5183

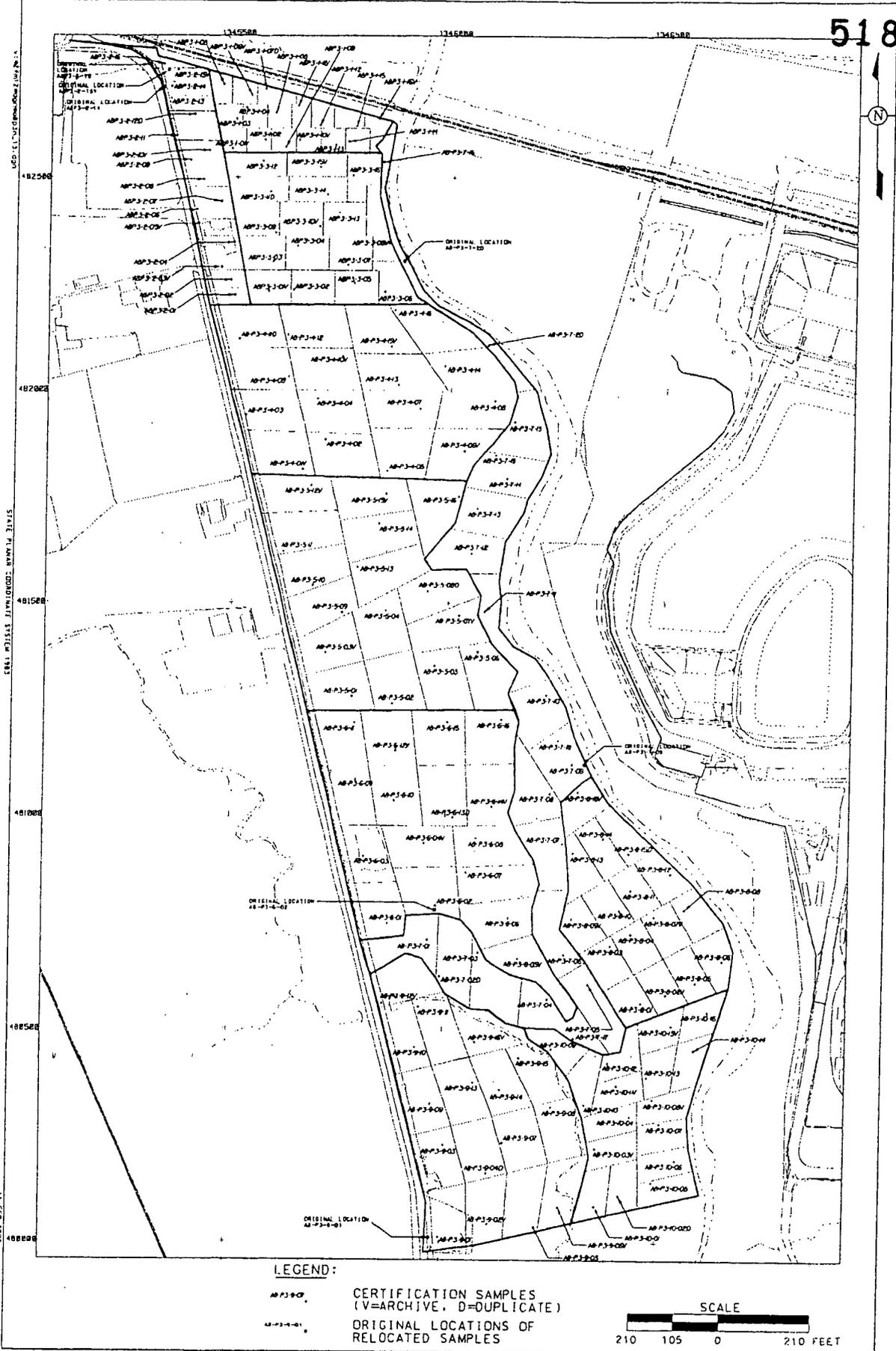


FIGURE 2-1. ABPIII-NORTH CU AND SUB-CU BOUNDARIES AND CERTIFICATION SAMPLING LOCATIONS

000035

VARIANCE / FIELD CHANGE NOTICE

Significant? (Yes or No) NO

V/F: 21110-PSP-0004-4

WBS NO. PROJECT/DOCUMENT/ECDC #21110-PSP-0004 Rev.0

Page: 1 of 1

PROJECT TITLE: Project Specific Plan for Area 8, Phase III-North Certification Sampling

Date: 10/02/03

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This variance documents a change regarding validation requirements in Section 4.1 "Field Quality Control Samples, Analytical Requirements and Data Validation" of this PSP. Section 4.1 states that "All analytical data from CU A8P3N-C1 shall be validated to VSL D." The new sentence should read: "All analytical data from CU A8P3N-C7 shall be validated to VSL D."

Justification:

Per Section 4.1 of this PSP, a minimum of 10 percent of the results will be validated to VSL D. Because CU-7 had 8 more samples than the other CUs, CU-1 no longer represented 10 percent of the results. To meet the required 10 percent, CU-7 was selected to be validated to VSL D.

REQUESTED BY: Amanda Porfidio

Date: 10/02/03

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE/ QA <i>[Signature]</i>	10/2/03	X	PROJECT MANAGER: J. COOK <i>[Signature]</i>	10/2/03
X	DATA QUALITY MANAGEMENT <i>[Signature]</i>	10/3/03	X	CHARACTERIZATION MANAGER: F. MILLER <i>[Signature]</i>	10/2/03
	ANALYTICAL CUSTOMER SUPPORT			RTIMP Manager	
	WAO			Sampling Manager: T. Hohlage	

VARIANCE/FCN APPROVED [X]YES []NO

REVISION REQUIRED: []YES [x]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

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