4927

PROJECT SPECIFIC PLAN FOR AREA 6, PHASE I CERTIFICATION SAMPLING

FERNALD CLOSURE PROJECT
FERNALD, OHIO

JUNE 24, 2003

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

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REVISION 0

000001

PROJECT SPECIFIC PLAN FOR AREA 6, PHASE I CERTIFICATION SAMPLING

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APPROVAL:

Jyh-Dong Chiou, Project Manager — Date 6/24/03
Soil and Disposal Facility Project

Frank Miller, Characterization Manager — Date 6/24/03
Soil and Disposal Facility Project

Tom Buhrlage, Environmental Monitoring — Date 6/24/03
Closure Project and Regulatory Management

Reinhard Friske, Quality Control — Date 6/24/03
Safety, Health and Quality Support

FERNALD CLOSURE PROJECT

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

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LIST OF ACRONYMS AND ABBREVIATIONS

A6PI	Area 6, Phase I
ASCOC	area-specific constituent of concern
ASL	analytical support level
BTV	benchmark toxicity value
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CU	certification unit
DOE	U.S. Department of Energy
DQO	Data Quality Objectives
FACTS	Fernald Analytical Customer Tracking System
FAL	Field Activity Log
FCP	Fernald Closure Project
FRL	final remediation level
FTF	Fire Training Facility
GPS	Global Positioning System
MDL	minimum detectable level
mg/kg	milligrams per kilogram
ONAR	Old North Access Road
PAH	polyaromatic hydrocarbon
PCB	polychlorinated biphenyl
pCi/g	picoCuries per gram
PSP	Project Specific Plan
QA/QC	Quality Assurance/Quality Control
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SDFP	Soil and Disposal Facility Project
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SPL	Sample Processing Laboratory
TAL	Target Analyte List
TAT	turnaround time
V/FCN	Variance/Field Change Notice
VOA	volatile organic analysis
VOC	volatile organic compound
VSL	validation support level
WAO	Waste Acceptance Operations
WPRAP	Waste Pits Remedial Action Project

1.0 INTRODUCTION

1.1 PURPOSE

This Project Specific Plan (PSP) describes the certification sampling and analysis for Area 6, Phase I (A6PI). Certification is a process where statistical analyses of analytical data are used to verify that risk-based, area-specific soil constituents of concern (ASCOCs) meet final remediation levels (FRLs) within a given area, per requirements of the Sitewide Excavation Plan (SEP).

1.2 SCOPE

This PSP covers all physical sampling associated with A6PI certification. A6PI is located north of the Former Production Area at the Fernald Closure Project (FCP) and spans approximately 15.74 acres. As shown on Figure 1-1, it includes the former Fire Training Facility (FTF); the Waste Pits Remedial Action Project (WPRAP) Gravel Access Road; the field between the gravel road and Area 1, Phase III; and the Old North Access Road (ONAR). A6PI also includes an approximately 2-acre field west of the WPRAP exclusion fence that is non-conterminous with the above portions of A6PI. This area was defined within the larger parcel of land between WPRAP and Paddys Run, and excludes fill areas along the rail spur and Paddys Run stream.

The sampling locations meet criteria identified in the Certification Design Letter (CDL) for A6PI. All sampling and analysis will be consistent with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ), Section 3.4 of the SEP, and Data Quality Objectives (DQO) SL-052, Revision 3. DQO SL-052 is included as Appendix A of this PSP.

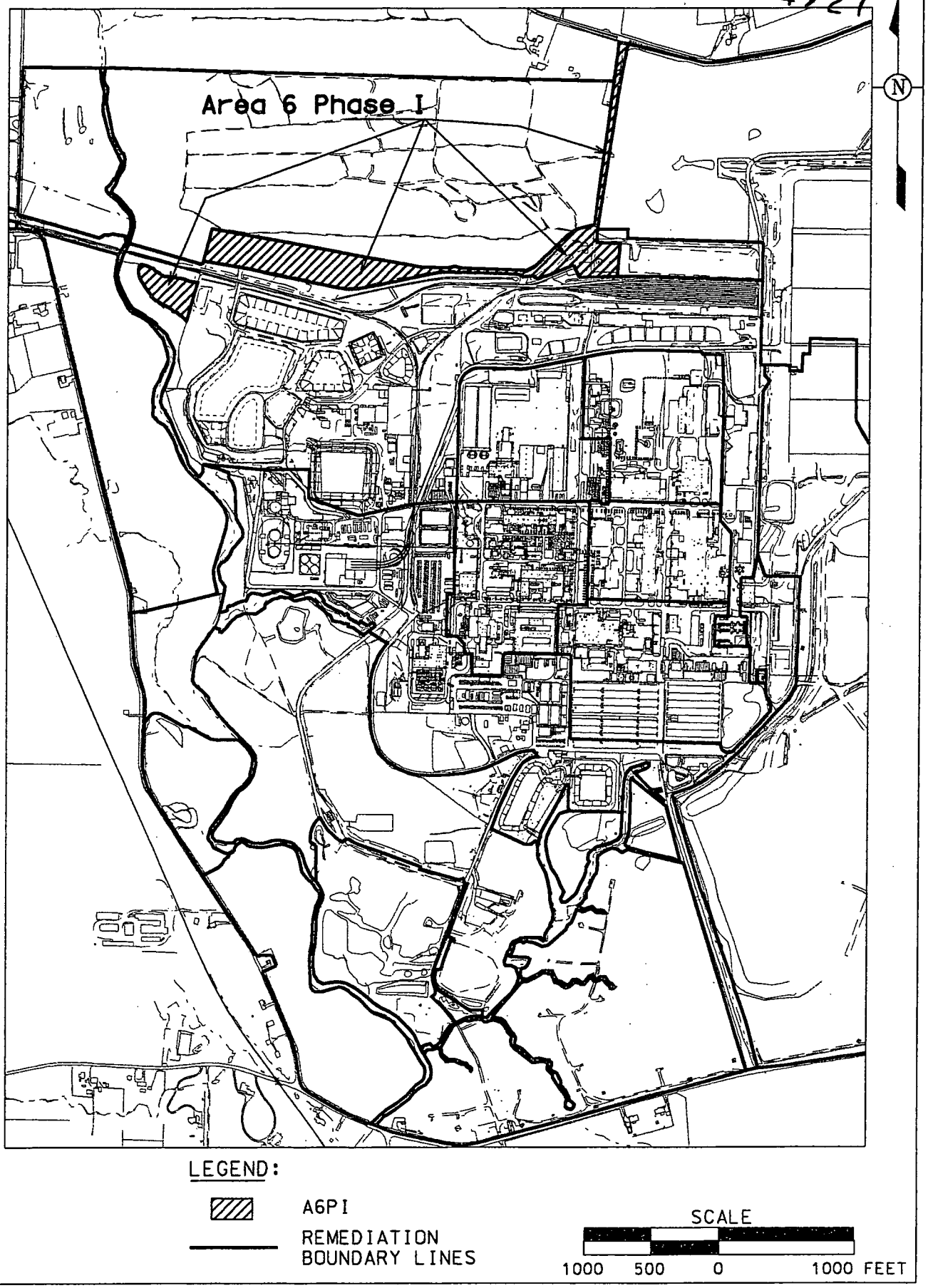
1.3 KEY PERSONNEL

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

TABLE 1-1
KEY PERSONNEL

Title	Primary	Alternate
DOE Contact	Rob Janke	Kathi Nickel
SDFP Manager	Jyh-Dong Chiou	Tom Beasley
Characterization Manager	Frank Miller	Greg Lupton
Field Sampling Manager	Tom Buhrlage	Jim Hey
Surveying Manager	Jim Schwing	Andy Clinton
WAO Contact	Linda Barlow	Lawrence Love
Laboratory Contact	Heather Medley	Amy Meyer
Data Validation Contact	Jim Chambers	Andy Sandfoss
Field Data Validation Contact	Dee Dee Edwards	Andy Sandfoss
Data Entry Contact	Lee Ann Stroud	Sharon Foister
Data Management Contact	Greg Lupton	Denise Arico
QA/QC Contact	Reinhard Friske	Mike Godber
FACTS/SED Database Contact	Kym Lockard	Susan Marsh
Health and Safety Contact	Gregg Johnson	Pete Bolig/Jeff Middaugh

FACTS – Fernald Analytical Customer Tracking System
QA/QC – Quality Assurance/Quality Control
SDFP – Soil and Disposal Facility Project
SED – Sitewide Environmental Database
WAO – Waste Acceptance Organization



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STATE PLANAR COORDINATE SYSTEM 1983

19-JUN-2003

FIGURE 1-1. AREA 6, PHASE I LOCATION MAP

2.0 CERTIFICATION SAMPLING PROGRAM

2.1 CERTIFICATION DESIGN

Details and logic of the certification design for the A6PI area are described in the A6PI CDL, and are consistent with Section 3.4 of the SEP. Fourteen Group 1 certification units (CUs), which can be as large as 62,500 square feet, have been conservatively established throughout A6PI, as shown on Figure 2-1. Within each CU, 16 random sampling locations have been identified to provide comprehensive coverage of the CU. To accomplish this, each CU was divided into 16 approximately equal sub-CUs; and within each sub-CU, a random sampling location was generated. Also, all sample locations within a CU are separated by a prescribed minimum distance, which is calculated as a function of the CU size.

2.2 CERTIFICATION SAMPLING LOCATIONS

Certification sampling consists of the collection of 12 randomly selected physical soil samples within each CU per Section 3.4.2.1 in the SEP with the remaining four of the total retained for archive purposes. In order to determine which samples to analyze while still providing sufficient area coverage, each CU is divided into quadrants, where each quadrant contains four sampling locations. Three of the four samples from each quadrant are then randomly selected for collection and analysis, resulting in a total of 12 samples analyzed per CU. Additionally, a field duplicate sample will be collected at one randomly selected location per CU. Figures 2-2 through 2-7 show the A6PI certification sampling locations, along with the duplicate and archive locations. This information is also provided in tabular form in Appendix B. While the "archive" samples are listed in Appendix B, they will not be submitted for analysis unless necessary based on results of the initial 12 samples (refer to Section 3.4.5 of the SEP). If this is the case, a Variance/Field Change Notice (V/FCN) will be generated to document the request.

2.3 SURVEYING

The NAD83 State Planar coordinates have been determined for each sample location listed in Appendix B. Before collection, sample locations will be identified and flagged using standard land surveying methods. Archive sample locations will not be identified and flagged. If an archive sample is required for collection, the surveying group will then identify and flag the location. The elevation of the sample surface will be collected during placement of the sample flag. If surface features prevent collection of soil samples at the planned location, the sample location may be field adjusted to accommodate safe and reasonable sample locations but may not cross CU or sub-CU boundaries. Any sample location moved more than 3 feet from the planned location must be approved by the regulatory agencies and documented in a V/FCN.

2.4 PHYSICAL SOIL SAMPLE COLLECTION

Surface samples will be collected using 3-inch diameter plastic or stainless steel core liners, or an alternate method as identified in SMPL-01, Solids Sampling. If refusal or resistance is encountered during sample collection, the location may be moved within a 3-foot radius of the identified sample location. When sampling below overlying material (e.g., gravel, asphalt, etc.), the sample will be collected from the first 6 inches of soil beneath the overlying material.

Following soil sample collection, the appropriate volume of sample material must be separated into the appropriate number of containers (separate containers are necessary for radiological, chemical, and volatile constituents; refer to Appendices B and C). Sample volumes, preservation requirements and analysis information are summarized in Table 2-1. If a 6-inch interval contains insufficient soil mass for the necessary analyses, additional material can be obtained by performing an additional push. All samples will be taken to the Sample Processing Laboratory (SPL), where they will be prepared for shipment to an off-site laboratory for analysis.

For field QC, rinsate samples must be collected at a frequency of one per CU where equipment is re-used, and therefore, decontaminated in the field. A trip blank must also be collected each day that samples are collected for volatile organic analyses (VOAs). Laboratory QC analysis is also necessary for one sample per release when analyzing off-site at Analytical Support Level (ASL) D. Therefore, the Sampling Technicians must collect three times the soil volume for one sample per release so the contract laboratory can perform the required QC analyses. Finally, because this is a certification effort, no alpha-beta screen samples will be necessary.

If surface or subsurface obstacles prevent sample collection at any of the original locations identified in Appendix B, the location may be moved up to 3 feet in radius from the original location. The distance and direction moved will be noted on the Field Activity Log (FAL). If any certification sampling location is moved, it must remain within the boundary of the same sub-CU. 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 FAL, Sample Collection Log, and Chain of Custody/Request for Analysis; this documentation is to be completed in the field prior to submitting the samples.

All samples collected from one CU (including duplicate samples) with the same intended analysis (i.e., radiological, chemical, VOA) will be batched and submitted to the SPL on one Chain of Custody form as one analytical release. Water QC samples will be listed on a separate Chain of Custody. Upon completion of sample collection, boreholes will be abandoned according to DRL-01, Plugging and Abandonment.

2.4.1 Certification Physical Sample Identification

Each certification soil sample will be assigned a unique sample identification code, as follows:

A6P1	=	Sample collected from A6PI (Note that the number "1" is used in place of the roman numeral "I" in the ID number for data management purposes)
C	=	Certification Sample
CU	=	Certification unit, sequential CU numbering 01 through 13
Location	=	Sample location number within each CU (1 through 16)
Suite	=	Suite Identifier "R" for radiological "M" for metals "P" for PCBs "S" for semi-volatiles "L" for volatiles "V" for archive
QC	=	Quality control sample, if applicable "D" indicates a duplicate sample, "X" indicates a rinsate "Y" indicates a container blank sample.

Therefore, a duplicate sample taken for metals and PCBs from the 15th sample location in CU-09 would be identified as A6P1-C-09-15^MP-D.

2.4.2 Equipment Decontamination

Decontamination is performed to protect worker health and safety and to prevent the introduction of contaminants from sampling equipment to subsequent soil samples. Field technicians will ensure that sampling equipment has been decontaminated prior to transport to the field site. Decontamination is only necessary in the field when sampling equipment is reused. Push tubes and core tube end caps require decontamination prior to use. If an alternate sampling method is used, equipment will be decontaminated between collection of sample intervals and again after the sampling performed under this PSP is completed. Equipment that comes into contact with the sample will be decontaminated at Level II (Section K.11 of the SCQ) in the field. Clean disposable wipes may be used to replace air drying of the equipment.

2.5 WASTE DISPOSITION

Excess soil from borehole the will be dispersed on the ground surface in the same general area of the boring. Any water (used decontamination water, etc.) generated during sampling must be containerized and documented on a completed Wastewater Discharge Request Form (FS-F-4045) before disposal. Any non-soil solid waste generated from the sampling effort will be documented and disposed in accordance with applicable requirements for each boring location, as determined by WAO.

TABLE 2-1
SAMPLING AND ANALYTICAL REQUIREMENTS

Analytes	Sample Matrix	ASL[a]	TAT	Preservative	Hold Time	Container	Sample Mass/ Volume
TAL A (Radiological)	Solids	D (E)	30 Day	Cool to 4°C (due to metals and organics)	12 months	Glass w/ Teflon-lined lid (due to PCBs)	500 g (1500 g)[b]
TAL B[c] (Metals, PCBs)					6 months (metals) 14 days (PCBs)		
TAL C (Radiological)	Solids	D (E)	30 Day	Cool to 4°C (due to metals and organics)	12 months	Glass w/ Teflon-lined lid (due to PCBs)	500 g (1500 g)[b]
TAL D[c] (Metals, PCBs, PAHs)					6 months (metals) 14 days (PCBs and PAHs)		
TAL B[c] (Metals, PCBs)	Solids	D (E)	30 Day	Cool to 4°C (due to metals and organics)	6 months	Glass w/ Teflon-lined lid (due to PCBs)	500 g (1500 g)[b]
TAL E (Radiological)					12 months		
TAL F (VOCs)	Solids	D (E)	30 Day	Cool 4°C	14 days	Glass w/ Teflon-lined lid. Fill to minimize headspace.	20 g (60 g)[b]
TAL G (VOCs)	Solids	D (E)	30 Day	Cool 4°C	14 days	Glass w/ Teflon-lined lid. Fill to minimize headspace.	20 g (60 g)[b]
TAL B[c] (Metals, PCBs)	Solids	D (E)	30 Day	Cool to 4°C (due to metals and organics)	6 months	Glass w/ Teflon-lined lid (due to PCBs)	500 g (1500 g)[b]
TAL H (Radiological)					12 months		
TAL A,C,E,or H (Radiological)	Liquid (rinsate)	D (E)	30 Day	HNO_3 to pH<2	6 months	Plastic or Glass	4 L
TAL B (Metals)	Liquid (rinsate)	D (E)	30 Day	HNO_3 to pH<2 (metals)	6 months (metals)	Plastic (metals)	1 L (metals)
TAL B (PCBs)	Liquid (rinsate)	D (E)	30 Day	Cool to 4°C (PCBs)	7 days (PCBs)	Amber glass w/ Teflon-lined lid (PCBs)	3 L (PCBs)

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TABLE 2-1
SAMPLING AND ANALYTICAL REQUIREMENTS

Analytes	Sample Matrix	ASL[a]	TAT	Preservative	Hold Time	Container	Sample Mass/ Volume
TAL D (Metals, PCBs and PAHs) *Note: collect water for metals analysis in a separate container*	Liquid (rinsate)	D (E)	30 Day	HNO_3 to pH<2 (metals)	6 months (metals)	Plastic (metals)	1 L (metals)
				Cool to 4°C (PCBs/PAHs)	7 days (PCBs/PAHs)	Amber glass w/ Teflon-lined lid (PCBs/PAHs)	6 L (PCBs/PAHs)
TAL F or G (VOCs)	Liquid (trip blank/ rinsate)	D (E)	30 Day	Cool 4°C H_2SO_4 to pH<2	14 days	3-40 ml glass with Teflon-lined septa and no head space	120 mL

[a] Analyses meet all criteria for ASL D, but detection levels are set at 10 percent of the FRL or benchmark toxicity value (BTV), whichever is lower.
[b] 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" (see Section 2.4).
[c] Material for metals, polychlorinated biphenyl (PCB), and polyaromatic hydrocarbon (PAH) analyses may be submitted in the same container.
TAT – turnaround time
VOC – volatile organic compound

1346000 1346500 1347000 1347500 1348000 1348500 1349000 1349500 1350000

484000 483500 483000 482500 482000

N

14 (NORTHERN ONAR)

4 (SOUTHERN ONAR)

UST (SEE FIGURE 2-7)

3

2 (FTF)

1 (FTF EXCAVATED)

10 9 8 7 6 5

13 12

11 (GRAVEL ROAD)

LEGEND:

CERTIFICATION UNIT BOUNDARY

000014

SCALE

300 150 0 300 FEET

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FIGURE 2-1. A6PI CERTIFICATION UNITS

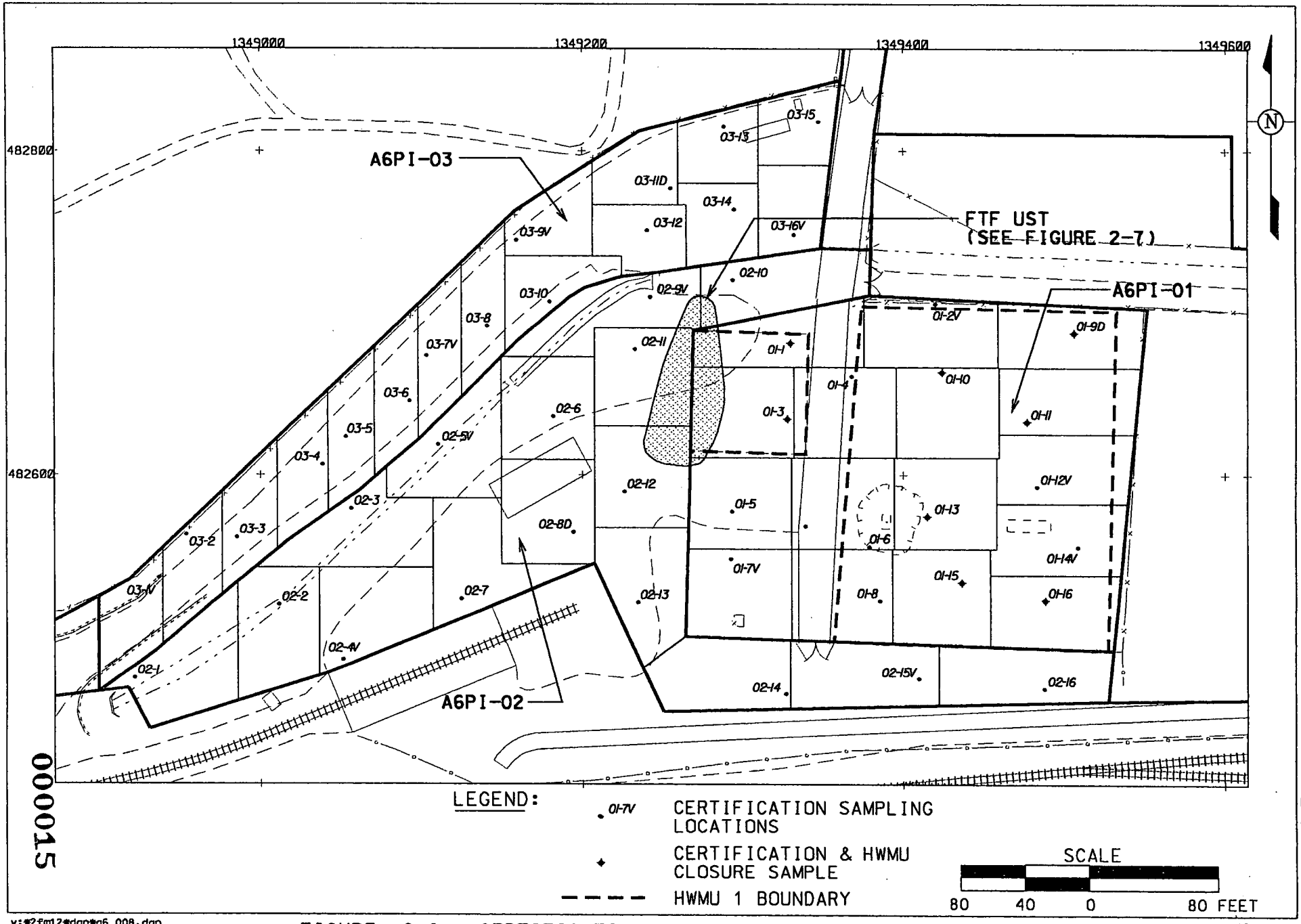

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FIGURE 2-2. CERTIFICATION SAMPLING LOCATIONS FOR CUs IN THE FTF AREA

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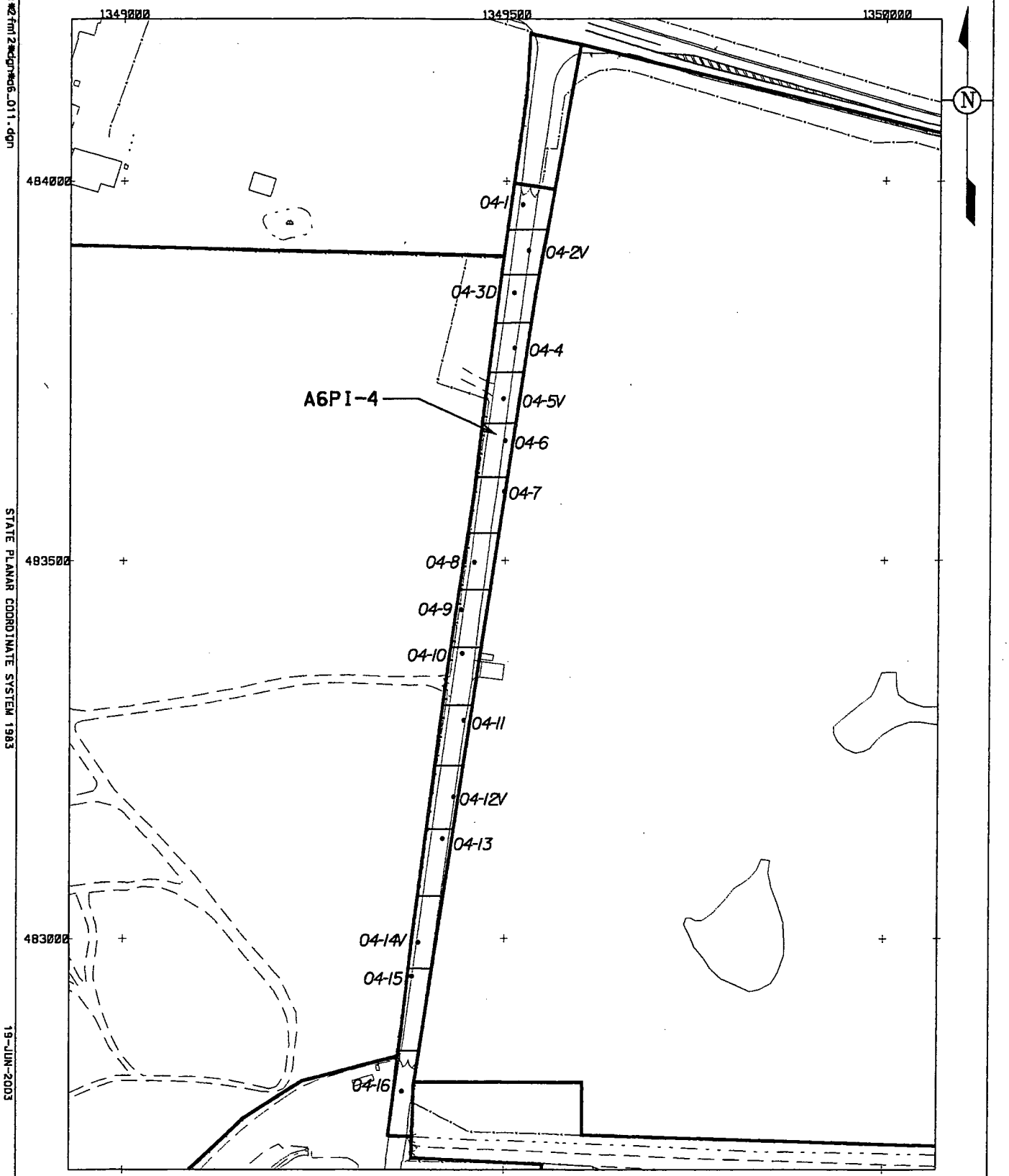
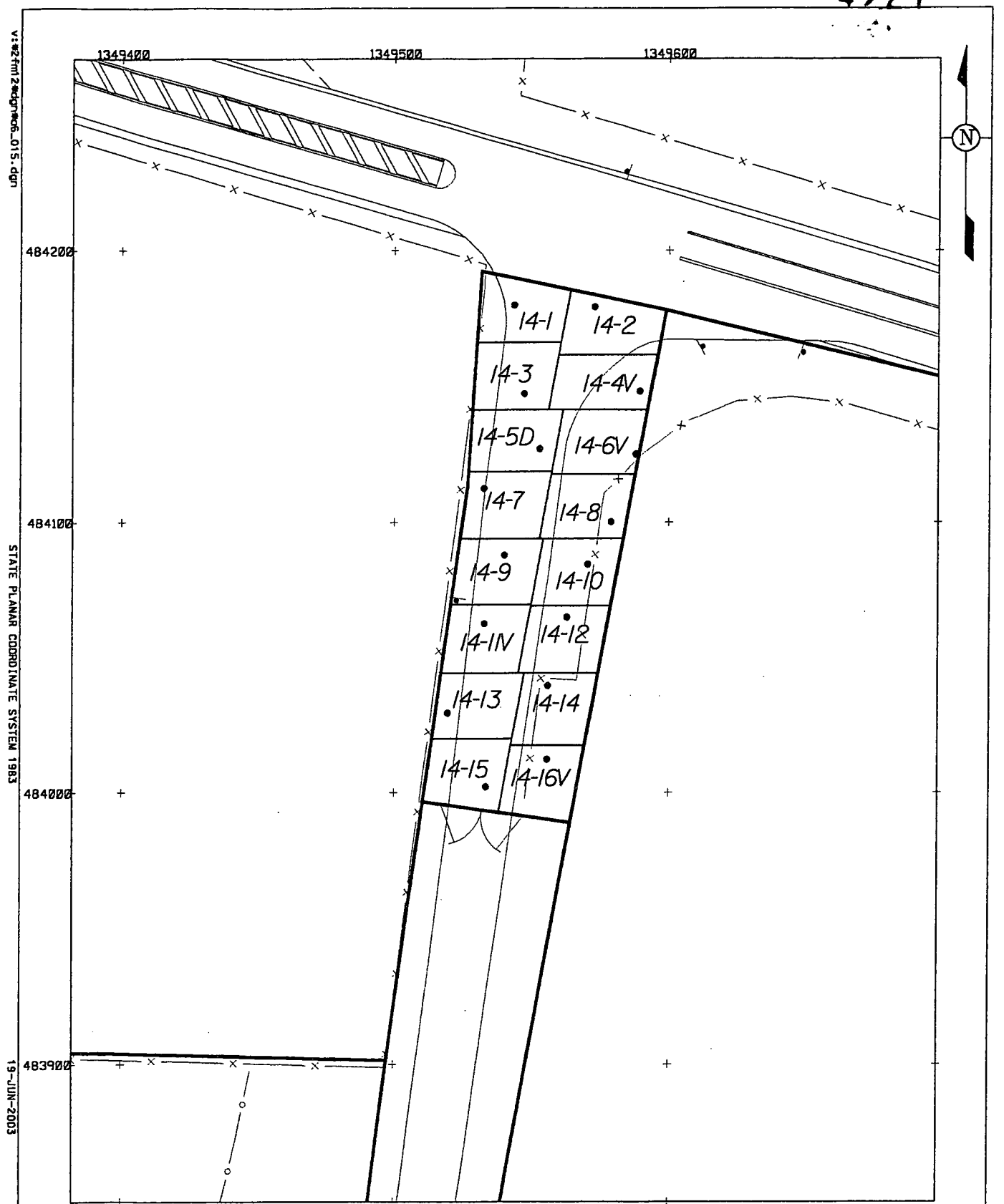


FIGURE 2-3. CERTIFICATION SAMPLING LOCATIONS FOR CUs IN THE ONAR SOUTH OF THE SECURITY GATE



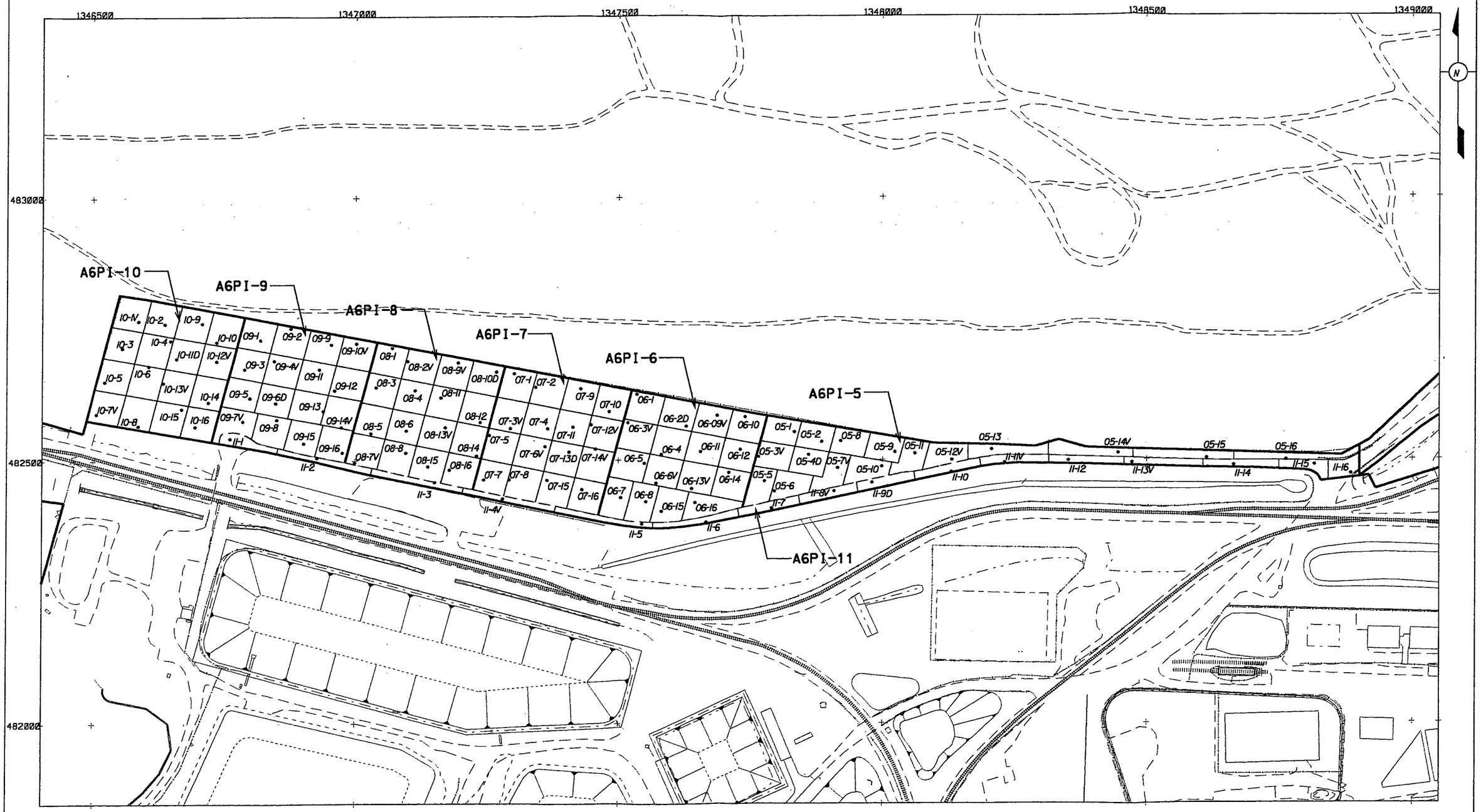
LEGEND:

14-12 • CERTIFICATION SAMPLING LOCATIONS

SCALE

50 25 0 50 FEET

FIGURE 2-4. CERTIFICATION SAMPLING LOCATIONS FOR CUs IN THE ONAR NORTH OF THE SECURITY GATE



LEGEND:

.05-9 CERTIFICATION SAMPLING LOCATIONS

000018

SCALE

180 90 0 180 FEET

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FIGURE 2-5. CERTIFICATION SAMPLING LOCATIONS FOR CUs IN THE WPRAP GRAVEL ACCESS ROAD AND FIELD NORTH OF WPRAP

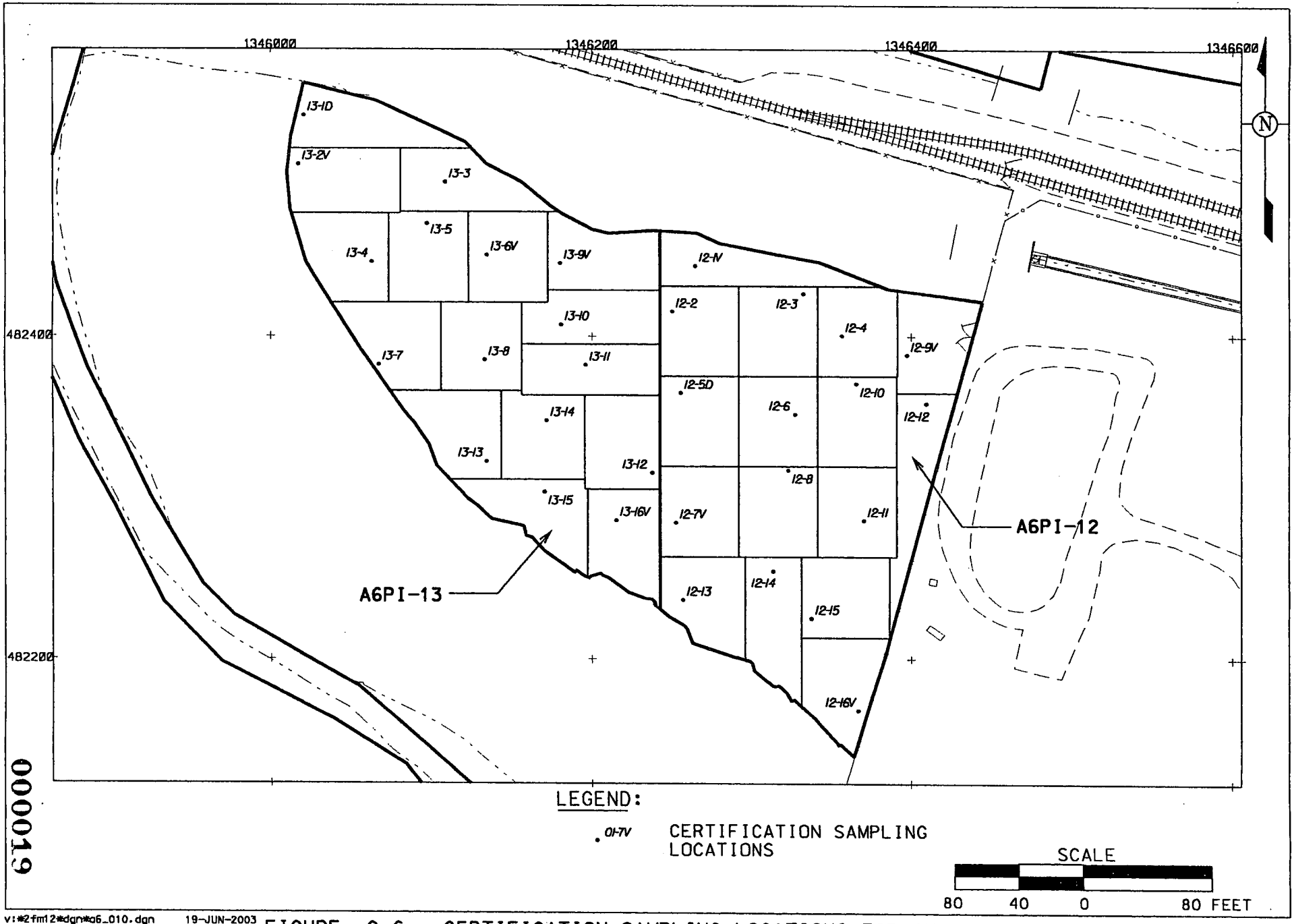

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FIGURE 2-6. CERTIFICATION SAMPLING LOCATIONS FOR CUs IN THE FIELD WEST OF WPRAP

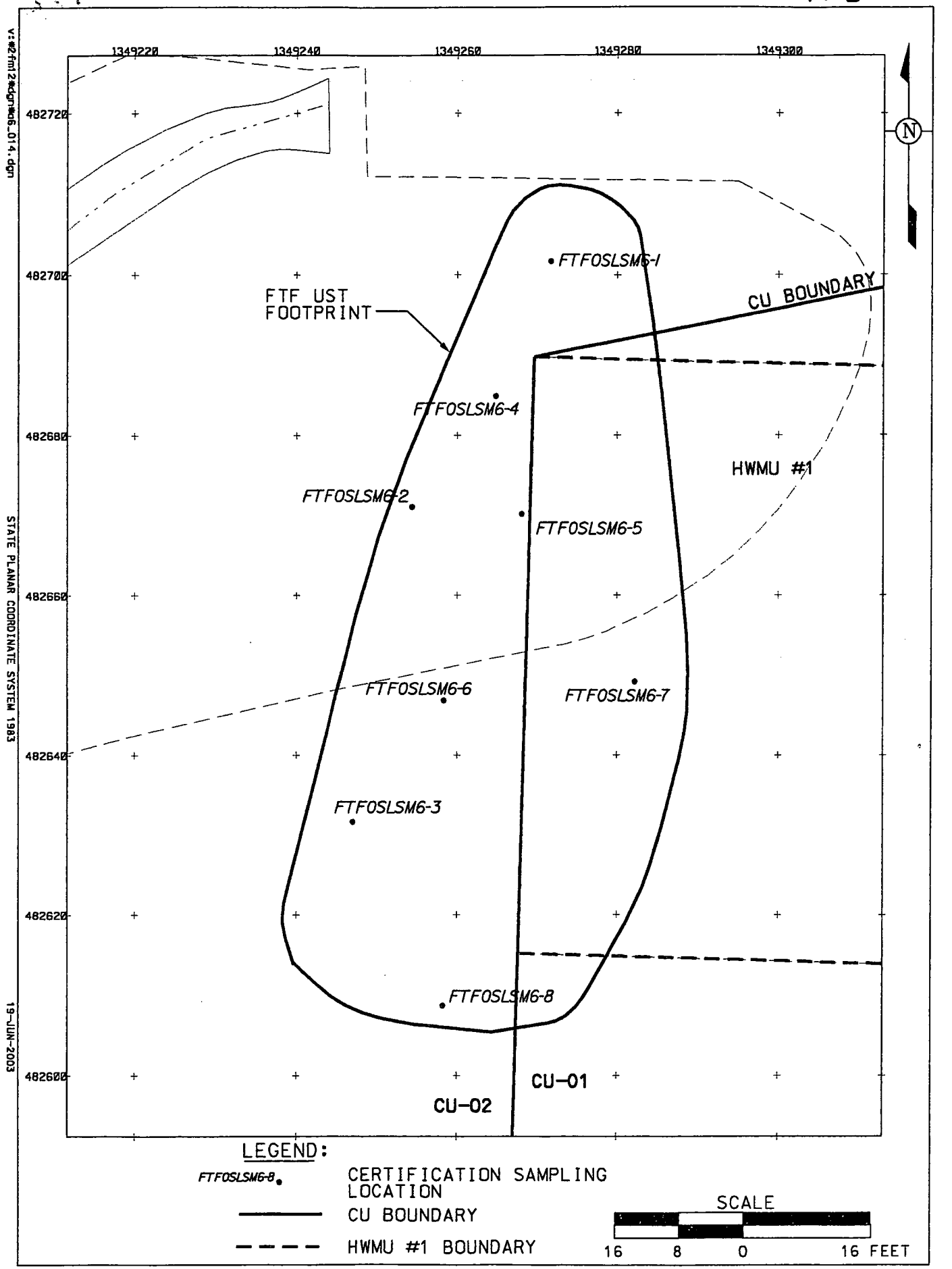

FIGURE 2-7. SPECIAL CASE CU AND SAMPLING LOCATIONS FOR FTF UST CLOSURE

3.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

3.1 FIELD QUALITY CONTROL SAMPLES, ANALYTICAL REQUIREMENTS AND DATA VALIDATION

The field QC, analytical and data validation requirements are as follows:

- Field QC requirements include one duplicate for each CU, as described in Section 2.4 and identified in Appendix B. If sampling equipment is reused, one rinsate sample will be collected per CU (minimum). Rinsates will be analyzed for the ASCOCs from the CU in which they were collected. Also, one trip blank will be collected for each day where samples are collected for VOAs, and will be analyzed for the ASCOCs from the CU in which they were collected.

- All analyses will be performed at ASL D, with the minimum detectable level (MDL) set at 10 percent of the FRL or BTV, whichever is lower. As a result the analyses are considered ASL E.

- All field data will be validated. An ASL D analytical package will be provided for 10 percent of the samples at a minimum and an ASL B package for 90 percent or less of the samples. At a minimum, 10 percent of the analytical data (two of the 13 CUs) will be validated to Validation Support Level (VSL) D and the remaining data to VSL B. To meet this requirement, all data from CUs 01 (the FTF) and 04 (the ONAR) will be validated to VSL D.

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. This work is being performed per the requirements as stated in DQO SL-052 (Appendix A).

3.2 PROJECT-SPECIFIC PROCEDURES, DOCUMENTS AND MANUALS

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.

- ADM-02, Field Project Prerequisites
- EQT-33, Real Time Differential Global Positioning System Operation
- Sitewide CERCLA Quality Assurance Project Plan (SCQ)
- SMPL-01, Solids Sampling
- SMPL-21, Collection of Field Quality Control Samples
- DRL-01, Plugging and Abandonment
- S.P. 766-S-1000, Shipping Samples to Offsite Laboratories
- Trimble Pathfinder Pro-XL GPS Operation Manual

- Sitewide Excavation Plan (SEP)
- Certification Design Letter for A6PI.

3.3 INDEPENDENT ASSESSMENT

Project management has ultimate responsibility for the quality of the work processes and the results of the sampling activities covered by this PSP. Project management can schedule independent assessments of the work processes or operations to assure quality of performance. Assessment will encompass project requirements as defined in this PSP and the SCQ.

3.4 IMPLEMENTATION OF CHANGES

Before implementation 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 Project Manager, QC, and the Characterization Manager or designee for the changes to the PSP, the changes may be implemented. Changes to the PSP will be noted in the applicable FALs and on a V/FCN. QC must receive the completed V/FCN, which includes the signatures of the Characterization Manager, Sampling Manager, Project Manager, and QC within seven working days of implementation of the change. All significant field changes (sample moves greater than 3 feet, changes from SEP certification strategy, etc.) require Agency approval prior to implementation. Per SDFP Guidelines, it is not permissible to proceed at risk on significant variances to certification PSPs.

4.0 HEALTH AND SAFETY

Technicians will schedule a project walkdown with Health and Safety (Radiological Control, Industrial Hygiene, and Safety) and any other groups that may be working in the same or an adjacent area before the start of the project. Weekly walkdowns will be conducted throughout the course of the project in accordance with SPR 1-10, Safety Walk-Throughs. All work on this project will be performed according to applicable Environmental Monitoring procedures, the documents identified in Section 3.2, Fluor Fernald work permit, Radiological Work Permit, and other applicable permits as determined by project management. Concurrence with applicable safety permits is required by each technician in the performance of their assigned duties. A job/safety briefing will be conducted before field activities begin each day; the project lead or designee will document the briefing on Form FS-F-2955. Personnel will also be briefed on any health and safety documents (such as Travelers) that may apply to the project work scope.

Technicians will be provided with 2-way radios or cell phones for all remote locations. The Technician or designee will have direct radio communication with Fluor Fernald Communication. This communication will be provided by FCP site radios or cell phones. This will ensure timely notification of site emergencies and severe weather.

- To report emergencies by site phone, dial 911
- To report by cellular phone, dial 648-6511
- To report by Radio call **"CONTROL"** or **"202"**.

5.0 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 2.4.2 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 Data Entry 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 from the off-site laboratories will be reviewed by the Data Management Lead prior to transfer of the data to the SED from the FACTS database.

Following field and analytical data validation, Data Entry personnel 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 in the 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., SDFP 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 A☐ B☐ C☐ D☐ E☐	Risk Assessment A☐ B☐ C☐ D☐ E☐
Evaluation of Alternatives A☐ B☐ C☐ D☐ E☐	Engineering Design A☐ B☐ C☐ D☐ E☐
Monitoring During Remediation A☐ B☐ C☐ D☐ E☐	Other 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

A6PI CERTIFICATION SAMPLES

APPENDIX B
A6PI CERTIFICATION SAMPLES/CONTAINERS

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
1	1-1	0" - 6"	A6P1-C-01-1^RMPS	TAL C&D	1349326.56	482681.82
		0" - 6"	A6P1-C-01-1^L	TAL F		
	1-2V	0" - 6"	A6P1-C-01-2^V	Archive	1349416.53	482706.17
	1-3	0" - 6"	A6P1-C-01-3^RMPS	TAL C&D	1349324.62	482634.61
		0" - 6"	A6P1-C-01-3^L	TAL F		
	1-4	0" - 6"	A6P1-C-01-4^RMPS	TAL C&D	1349364.53	482661.09
		0" - 6"	A6P1-C-01-4^L	TAL F		
	1-5	0" - 6"	A6P1-C-01-5^RMPS	TAL C&D	1349289.96	482577.72
		0" - 6"	A6P1-C-01-5^L	TAL F		
	1-6	0" - 6"	A6P1-C-01-6^RMPS	TAL C&D	1349378.1	482555.9
		0" - 6"	A6P1-C-01-6^L	TAL F		
	1-7V	0" - 6"	A6P1-C-01-7^V	Archive	1349289.11	482545
	1-8	0" - 6"	A6P1-C-01-8^RMPS	TAL C&D	1349381.83	482522.96
		0" - 6"	A6P1-C-01-8^L	TAL F		
	1-9D	0" - 6"	A6P1-C-01-9^RMPS	TAL C&D	1349502.87	482688.09
		0" - 6"	A6P1-C-01-9^RMPS-D	TAL C&D		
		0" - 6"	A6P1-C-01-9^L	TAL F		
		0" - 6"	A6P1-C-01-9^L-D	TAL F		
	1-10	0" - 6"	A6P1-C-01-10^RMPS	TAL C&D	1349420.76	482663.69
		0" - 6"	A6P1-C-01-10^L	TAL F		
	1-11	0" - 6"	A6P1-C-01-11^RMPS	TAL C&D	1349473.35	482632.91
		0" - 6"	A6P1-C-01-11^L	TAL F		
	1-12V	0" - 6"	A6P1-C-01-12^V	Archive	1349479.44	482592.93
	1-13	0" - 6"	A6P1-C-01-13^RMPS	TAL C&D	1349411.65	482574.69
		0" - 6"	A6P1-C-01-13^L	TAL F		
	1-14V	0" - 6"	A6P1-C-01-14^V	Archive	1349504.78	482555.77
	1-15	0" - 6"	A6P1-C-01-15^RMPS	TAL C&D	1349432.97	482534.13
		0" - 6"	A6P1-C-01-15^L	TAL F		
	1-16	0" - 6"	A6P1-C-01-16^RMPS	TAL C&D	1349484.73	482523.34
		0" - 6"	A6P1-C-01-16^L	TAL F		

APPENDIX B
A6PI CERTIFICATION SAMPLES/CONTAINERS

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
2	2-1	0" - 6"	A6P1-C-02-1^RMPS	TAL C&D	1348918.58	482475.1
		0" - 6"	A6P1-C-02-1^L	TAL G		
	2-2	0" - 6"	A6P1-C-02-2^RMPS	TAL C&D	1349007.82	482520.72
		0" - 6"	A6P1-C-02-2^L	TAL G		
	2-3	0" - 6"	A6P1-C-02-3^RMPS	TAL C&D	1349052.51	482579.42
		0" - 6"	A6P1-C-02-3^L	TAL G		
	2-4V	0" - 6"	A6P1-C-02-4^V	Archive	1349047.34	482486.75
	2-5V	0" - 6"	A6P1-C-02-5^V	Archive	1349106.49	482618.82
	2-6	0" - 6"	A6P1-C-02-6^RMPS	TAL C&D	1349178.43	482636.31
		0" - 6"	A6P1-C-02-6^L	TAL G		
	2-7	0" - 6"	A6P1-C-02-7^RMPS	TAL C&D	1349120.8	482524.23
		0" - 6"	A6P1-C-02-7^L	TAL G		
	2-8D	0" - 6"	A6P1-C-02-8^RMPS	TAL C&D	1349190.84	482564.96
		0" - 6"	A6P1-C-02-8^RMPS-D	TAL C&D		
		0" - 6"	A6P1-C-02-8^L	TAL G		
		0" - 6"	A6P1-C-02-8^L-D	TAL G		
	2-9V	0" - 6"	A6P1-C-02-9^V	Archive	1349239.03	482710.42
	2-10	0" - 6"	A6P1-C-02-10^RMPS	TAL C&D	1349290.63	482720.63
		0" - 6"	A6P1-C-02-10^L	TAL G		
	2-11	0" - 6"	A6P1-C-02-11^RMPS	TAL C&D	1349229.42	482678.05
		0" - 6"	A6P1-C-02-11^L	TAL G		
	2-12	0" - 6"	A6P1-C-02-12^RMPS	TAL C&D	1349222.69	482589.9
		0" - 6"	A6P1-C-02-12^L	TAL G		
	2-13	0" - 6"	A6P1-C-02-13^RMPS	TAL C&D	1349231.17	482522.06
		0" - 6"	A6P1-C-02-13^L	TAL G		
	2-14	0" - 6"	A6P1-C-02-14^RMPS	TAL C&D	1349323.34	482465.22
		0" - 6"	A6P1-C-02-14^L	TAL G		
	2-15V	0" - 6"	A6P1-C-02-15^V	Archive	1349406.01	482474.74
	2-16	0" - 6"	A6P1-C-02-16^RMPS	TAL C&D	1349484.07	482468.47
		0" - 6"	A6P1-C-02-16^L	TAL G		

APPENDIX B
A6PI CERTIFICATION SAMPLES/CONTAINERS

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
3	3-1V	0" - 6"	A6P1-C-03-1^V	Archive	1348933.76	482537.1
	3-2	0" - 6"	A6P1-C-03-2^RMPS	TAL C&D	1348950.51	482563.36
		0" - 6"	A6P1-C-03-2^L	TAL G		
	3-3	0" - 6"	A6P1-C-03-3^RMPS	TAL C&D	1348981.74	482561.71
		0" - 6"	A6P1-C-03-3^L	TAL G		
	3-4	0" - 6"	A6P1-C-03-4^RMPS	TAL C&D	1349030	482606.37
		0" - 6"	A6P1-C-03-4^L	TAL G		
	3-5	0" - 6"	A6P1-C-03-5^RMPS	TAL C&D	1349049.38	482623.55
		0" - 6"	A6P1-C-03-5^L	TAL G		
	3-6	0" - 6"	A6P1-C-03-6^RMPS	TAL C&D	1349088.9	482645.84
		0" - 6"	A6P1-C-03-6^L	TAL G		
	3-7V	0" - 6"	A6P1-C-03-7^V	Archive	1349099.51	482674
	3-8	0" - 6"	A6P1-C-03-8^RMPS	TAL C&D	1349137.19	482692.29
		0" - 6"	A6P1-C-03-8^L	TAL G		
	3-9V	0" - 6"	A6P1-C-03-9^V	Archive	1349155.45	482745.14
	3-10	0" - 6"	A6P1-C-03-10^RMPS	TAL C&D	1349176.18	482707.61
		0" - 6"	A6P1-C-03-10^L	TAL G		
	3-11D	0" - 6"	A6P1-C-03-11^RMPS	TAL C&D	1349251.85	482776.88
		0" - 6"	A6P1-C-03-11^RMPS-D	TAL C&D		
		0" - 6"	A6P1-C-03-11^L	TAL G		
		0" - 6"	A6P1-C-03-11^L-D	TAL G		
	3-12	0" - 6"	A6P1-C-03-12^RMPS	TAL C&D	1349237.13	482751.04
		0" - 6"	A6P1-C-03-12^L	TAL G		
	3-13	0" - 6"	A6P1-C-03-13^RMPS	TAL C&D	1349285.11	482815.32
		0" - 6"	A6P1-C-03-13^L	TAL G		
	3-14	0" - 6"	A6P1-C-03-14^RMPS	TAL C&D	1349291.43	482764.07
		0" - 6"	A6P1-C-03-14^L	TAL G		
	3-15	0" - 6"	A6P1-C-03-15^RMPS	TAL C&D	1349344.12	482818.36
		0" - 6"	A6P1-C-03-15^L	TAL G		
	3-16V	0" - 6"	A6P1-C-03-16^V	Archive	1349328.75	482748.33
4	4-1	0" - 6"	A6P1-C-04-1^RMP	TAL E&B	1349520.75	483968.67
	4-2V	0" - 6"	A6P1-C-04-2^V	Archive	1349528.86	483908.44
	4-3D	0" - 6"	A6P1-C-04-3^RMP	TAL E&B	1349510	483852.69
		0" - 6"	A6P1-C-04-3^RMP-D	TAL E&B		
	4-4	0" - 6"	A6P1-C-04-4^RMP	TAL E&B	1349510.37	483780.45
	4-5V	0" - 6"	A6P1-C-04-5^V	Archive	1349495.86	483713.74
	4-6	0" - 6"	A6P1-C-04-6^RMP	TAL E&B	1349498.56	483658.28
	4-7	0" - 6"	A6P1-C-04-7^RMP	TAL E&B	1349497.23	483591.32
	4-8	0" - 6"	A6P1-C-04-8^RMP	TAL E&B	1349458.15	483497.58
	4-9	0" - 6"	A6P1-C-04-9^RMP	TAL E&B	1349441.04	483434.35
	4-10	0" - 6"	A6P1-C-04-10^RMP	TAL E&B	1349442.72	483376.96
	4-11	0" - 6"	A6P1-C-04-11^RMP	TAL E&B	1349444.94	483288.54
	4-12V	0" - 6"	A6P1-C-04-12^V	Archive	1349431.84	483187.06
	4-13	0" - 6"	A6P1-C-04-13^RMP	TAL E&B	1349417.4	483131.85
	4-14V	0" - 6"	A6P1-C-04-14^V	Archive	1349385.89	482994.29
	4-15	0" - 6"	A6P1-C-04-15^RMP	TAL E&B	1349377.7	482949.69
	4-16	0" - 6"	A6P1-C-04-16^RMP	TAL E&B	1349365.28	482798.85

APPENDIX B
A6PI CERTIFICATION SAMPLES/CONTAINERS

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
5	5-1	0" - 6"	A6P1-C-05-1^RMP	TAL A&B	1347833.08	482553.88
	5-2	0" - 6"	A6P1-C-05-2^RMP	TAL A&B	1347884.87	482534.95
	5-3V	0" - 6"	A6P1-C-05-3^V	Archive	1347765.53	482506.93
	5-4D	0" - 6"	A6P1-C-05-4^RMP	TAL A&B	1347860.16	482510.18
		0" - 6"	A6P1-C-05-4^RMP-D	TAL A&B		
	5-5	0" - 6"	A6P1-C-05-5^RMP	TAL A&B	1347776.69	482460.25
	5-6	0" - 6"	A6P1-C-05-6^RMP	TAL A&B	1347800	482440.74
	5-7V	0" - 6"	A6P1-C-05-7^V	Archive	1347914.86	482484.71
	5-8	0" - 6"	A6P1-C-05-8^RMP	TAL A&B	1347920.56	482536.17
	5-9	0" - 6"	A6P1-C-05-9^RMP	TAL A&B	1348022.7	482514.8
	5-10	0" - 6"	A6P1-C-05-10^RMP	TAL A&B	1347997.65	482487.42
	5-11	0" - 6"	A6P1-C-05-11^RMP	TAL A&B	1348060.38	482512.15
	5-12V	0" - 6"	A6P1-C-05-12^V	Archive	1348130.21	482499.71
	5-13	0" - 6"	A6P1-C-05-13^RMP	TAL A&B	1348205.72	482519.8
	5-14V	0" - 6"	A6P1-C-05-14^V	Archive	1348444.23	482512.42
	5-15	0" - 6"	A6P1-C-05-15^RMP	TAL A&B	1348612.21	482502.43
	5-16	0" - 6"	A6P1-C-05-16^RMP	TAL A&B	1348761.89	482498.65
6	6-1	0" - 6"	A6P1-C-06-1^RMP	TAL A&B	1347534.42	482626.13
	6-2D	0" - 6"	A6P1-C-06-2^RMP	TAL A&B	1347628.46	482565.36
		0" - 6"	A6P1-C-06-2^RMP-D	TAL A&B		
	6-3V	0" - 6"	A6P1-C-06-3^V	Archive	1347516.82	482572.37
	6-4	0" - 6"	A6P1-C-06-4^RMP	TAL A&B	1347581.12	482511.39
	6-5	0" - 6"	A6P1-C-06-5^RMP	TAL A&B	1347549.02	482494.22
	6-6V	0" - 6"	A6P1-C-06-6^V	Archive	1347571.07	482456.31
	6-7	0" - 6"	A6P1-C-06-7^RMP	TAL A&B	1347503.75	482428.82
	6-8	0" - 6"	A6P1-C-06-8^RMP	TAL A&B	1347551.94	482420.85
	6-9V	0" - 6"	A6P1-C-06-09^V	Archive	1347686.52	482585.83
	6-10	0" - 6"	A6P1-C-06-10^RMP	TAL A&B	1347740.48	482582.91
	6-11	0" - 6"	A6P1-C-06-11^RMP	TAL A&B	1347655.28	482516.6
	6-12	0" - 6"	A6P1-C-06-12^RMP	TAL A&B	1347730.93	482520.54
	6-13V	0" - 6"	A6P1-C-06-13^V	Archive	1347639.03	482452
	6-14	0" - 6"	A6P1-C-06-14^RMP	TAL A&B	1347709.12	482476.41
	6-15	0" - 6"	A6P1-C-06-15^RMP	TAL A&B	1347581.66	482402.61
	6-16	0" - 6"	A6P1-C-06-16^RMP	TAL A&B	1347645.2	482419.1

APPENDIX B
A6PI CERTIFICATION SAMPLES/CONTAINERS

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
7	7-1	0" - 6"	A6P1-C-07-1^RMP	TAL A&B	1347301.69	482666
	7-2	0" - 6"	A6P1-C-07-2^RMP	TAL A&B	1347341.85	482640.27
	7-3V	0" - 6"	A6P1-C-07-3^V	Archive	1347294.48	482561.58
	7-4	0" - 6"	A6P1-C-07-4^RMP	TAL A&B	1347364.75	482560.99
	7-5	0" - 6"	A6P1-C-07-5^RMP	TAL A&B	1347254.43	482548.66
	7-6V	0" - 6"	A6P1-C-07-6^V	Archive	1347359.92	482526.6
	7-7	0" - 6"	A6P1-C-07-7^RMP	TAL A&B	1347243.01	482463.59
	7-8	0" - 6"	A6P1-C-07-8^RMP	TAL A&B	1347292.19	482463.54
	7-9	0" - 6"	A6P1-C-07-9^RMP	TAL A&B	1347427.7	482637.13
	7-10	0" - 6"	A6P1-C-07-10^RMP	TAL A&B	1347481.49	482593.59
	7-11	0" - 6"	A6P1-C-07-11^RMP	TAL A&B	1347412.78	482563.87
	7-12V	0" - 6"	A6P1-C-07-12^V	Archive	1347447.26	482568.33
	7-13D	0" - 6"	A6P1-C-07-13^RMP	TAL A&B	1347405.5	482516.02
		0" - 6"	A6P1-C-07-13^RMP-D	TAL A&B		
	7-14V	0" - 6"	A6P1-C-07-14^V	Archive	1347455.22	482521.6
	7-15	0" - 6"	A6P1-C-07-15^RMP	TAL A&B	1347363.95	482462
	7-16	0" - 6"	A6P1-C-07-16^RMP	TAL A&B	1347430.31	482444.4
8	8-1	0" - 6"	A6P1-C-08-1^RMP	TAL A&B	1347069.18	482715.17
	8-2V	0" - 6"	A6P1-C-08-2^V	Archive	1347098.63	482689.92
	8-3	0" - 6"	A6P1-C-08-3^RMP	TAL A&B	1347038.11	482640.05
	8-4	0" - 6"	A6P1-C-08-4^RMP	TAL A&B	1347113.23	482634.25
	8-5	0" - 6"	A6P1-C-08-5^RMP	TAL A&B	1347028.62	482552.22
	8-6	0" - 6"	A6P1-C-08-6^RMP	TAL A&B	1347096.62	482557.53
	8-7V	0" - 6"	A6P1-C-08-7^V	Archive	1346998.24	482496.34
	8-8	0" - 6"	A6P1-C-08-8^RMP	TAL A&B	1347095.81	482515.16
	8-9V	0" - 6"	A6P1-C-08-9^V	Archive	1347193.51	482687.37
	8-10D	0" - 6"	A6P1-C-08-10^RMP	TAL A&B	1347267.58	482669.45
		0" - 6"	A6P1-C-08-10^RMP-D	TAL A&B		
	8-11	0" - 6"	A6P1-C-08-11^RMP	TAL A&B	1347161.35	482620.48
	8-12	0" - 6"	A6P1-C-08-12^RMP	TAL A&B	1347236.07	482573.33
	8-13V	0" - 6"	A6P1-C-08-13^V	Archive	1347169.57	482563.6
	8-14	0" - 6"	A6P1-C-08-14^RMP	TAL A&B	1347229.21	482509.31
	8-15	0" - 6"	A6P1-C-08-15^RMP	TAL A&B	1347137.49	482488.9
	8-16	0" - 6"	A6P1-C-08-16^RMP	TAL A&B	1347177.6	482482.41

APPENDIX B
A6PI CERTIFICATION SAMPLES/CONTAINERS

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
9	9-1	0" - 6"	A6P1-C-09-1^RMP	TAL A&B	1346817.89	482730.59
	9-2	0" - 6"	A6P1-C-09-2^RMP	TAL A&B	1346875.39	482752.65
	9-3	0" - 6"	A6P1-C-09-3^RMP	TAL A&B	1346787.6	482675.45
	9-4V	0" - 6"	A6P1-C-09-4^V	Archive	1346844.33	482690.98
	9-5	0" - 6"	A6P1-C-09-5^RMP	TAL A&B	1346797.68	482620.05
	9-6D	0" - 6"	A6P1-C-09-6^RMP	TAL A&B	1346847.05	482610.7
		0" - 6"	A6P1-C-09-6^RMP-D	TAL A&B		
	9-7V	0" - 6"	A6P1-C-09-7^V	Archive	1346784.26	482575.87
	9-8	0" - 6"	A6P1-C-09-8^RMP	TAL A&B	1346849.16	482578.85
	9-9	0" - 6"	A6P1-C-09-9^RMP	TAL A&B	1346953.22	482721.87
	9-10V	0" - 6"	A6P1-C-09-10^V	Archive	1347001.25	482723.73
	9-11	0" - 6"	A6P1-C-09-11^RMP	TAL A&B	1346930.24	482674.66
	9-12	0" - 6"	A6P1-C-09-12^RMP	TAL A&B	1346959.46	482634.46
	9-13	0" - 6"	A6P1-C-09-13^RMP	TAL A&B	1346937.7	482595.39
	9-14V	0" - 6"	A6P1-C-09-14^V	Archive	1346972.56	482564.18
	9-15	0" - 6"	A6P1-C-09-15^RMP	TAL A&B	1346900.67	482533.45
	9-16	0" - 6"	A6P1-C-09-16^RMP	TAL A&B	1346974.38	482515.64
10	10-1V	0" - 6"	A6P1-C-10-1^V	Archive	1346585.23	482767
	10-2	0" - 6"	A6P1-C-10-2^RMP	TAL A&B	1346636.05	482761.63
	10-3	0" - 6"	A6P1-C-10-3^RMP	TAL A&B	1346554.88	482715.7
	10-4	0" - 6"	A6P1-C-10-4^RMP	TAL A&B	1346647.13	482729.89
	10-5	0" - 6"	A6P1-C-10-5^RMP	TAL A&B	1346521.62	482651.68
	10-6	0" - 6"	A6P1-C-10-6^RMP	TAL A&B	1346604.91	482681.24
	10-7V	0" - 6"	A6P1-C-10-7^V	Archive	1346505.81	482590.33
	10-8	0" - 6"	A6P1-C-10-8^RMP	TAL A&B	1346585.37	482567.41
	10-9	0" - 6"	A6P1-C-10-9^RMP	TAL A&B	1346706.47	482762.43
	10-10	0" - 6"	A6P1-C-10-10^RMP	TAL A&B	1346734.31	482726.97
	10-11D	0" - 6"	A6P1-C-10-11^RMP	TAL A&B	1346658.22	482695.49
		0" - 6"	A6P1-C-10-11^RMP-D	TAL A&B		
	10-12V	0" - 6"	A6P1-C-10-12^V	Archive	1346734.25	482690.5
	10-13V	0" - 6"	A6P1-C-10-13^V	Archive	1346633.39	482649.45
	10-14	0" - 6"	A6P1-C-10-14^RMP	TAL A&B	1346718.63	482612.5
	10-15	0" - 6"	A6P1-C-10-15^RMP	TAL A&B	1346668.36	482599.53
	10-16	0" - 6"	A6P1-C-10-16^RMP	TAL A&B	1346693.5	482565.93

APPENDIX B
A6PI CERTIFICATION SAMPLES/CONTAINERS

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
11	11-1	0" - 6"	A6P1-C-11-1^RMP	TAL A&B	1346759.81	482542.81
	11-2	0" - 6"	A6P1-C-11-2^RMP	TAL A&B	1346925.62	482505.53
	11-3	0" - 6"	A6P1-C-11-3^RMP	TAL A&B	1347150.29	482458.91
	11-4V	0" - 6"	A6P1-C-11-4^V	Archive	1347280.17	482427.23
	11-5	0" - 6"	A6P1-C-11-5^RMP	TAL A&B	1347544.31	482378.26
	11-6	0" - 6"	A6P1-C-11-6^RMP	TAL A&B	1347666.2	482381.72
	11-7	0" - 6"	A6P1-C-11-7^RMP	TAL A&B	1347790.42	482408.25
	11-8V	0" - 6"	A6P1-C-11-8^V	Archive	1347908.38	482440.58
	11-9D	0" - 6"	A6P1-C-11-9^RMP	TAL A&B	1347979.4	482456.74
		0" - 6"	A6P1-C-11-9^RMP-D	TAL A&B		
	11-10	0" - 6"	A6P1-C-11-10^RMP	TAL A&B	1348129.36	482476.79
	11-11V	0" - 6"	A6P1-C-11-11^V	Archive	1348230.46	482494.87
	11-12	0" - 6"	A6P1-C-11-12^RMP	TAL A&B	1348350.42	482498.38
	11-13V	0" - 6"	A6P1-C-11-13^V	Archive	1348470.7	482494.08
	11-14	0" - 6"	A6P1-C-11-14^RMP	TAL A&B	1348663.87	482488.66
	11-15	0" - 6"	A6P1-C-11-15^RMP	TAL A&B	1348815.25	482489.56
	11-16	0" - 6"	A6P1-C-11-16^RMP	TAL A&B	1348883.75	482472.29
12	12-1V	0" - 6"	A6P1-C-12-1^V	Archive	1346264.5	482443.44
	12-2	0" - 6"	A6P1-C-12-2^RMP	TAL A&B	1346249.98	482415.45
	12-3	0" - 6"	A6P1-C-12-3^RMP	TAL A&B	1346332.31	482426.47
	12-4	0" - 6"	A6P1-C-12-4^RMP	TAL A&B	1346356.3	482400.6
	12-5D	0" - 6"	A6P1-C-12-5^RMP	TAL A&B	1346255.3	482364.82
		0" - 6"	A6P1-C-12-5^RMP-D	TAL A&B		
	12-6	0" - 6"	A6P1-C-12-6^RMP	TAL A&B	1346327.24	482351.52
	12-7V	0" - 6"	A6P1-C-12-7^V	Archive	1346252.31	482284.34
	12-8	0" - 6"	A6P1-C-12-8^RMP	TAL A&B	1346322.86	482316.81
	12-9V	0" - 6"	A6P1-C-12-9^V	Archive	1346397.07	482388.67
	12-10	0" - 6"	A6P1-C-12-10^RMP	TAL A&B	1346365.38	482370.58
	12-11	0" - 6"	A6P1-C-12-11^RMP	TAL A&B	1346370.11	482285.77
	12-12	0" - 6"	A6P1-C-12-12^RMP	TAL A&B	1346409.1	482358.25
	12-13	0" - 6"	A6P1-C-12-13^RMP	TAL A&B	1346256.75	482236.46
	12-14	0" - 6"	A6P1-C-12-14^RMP	TAL A&B	1346313.45	482254.37
	12-15	0" - 6"	A6P1-C-12-15^RMP	TAL A&B	1346337.33	482225.14
	12-16V	0" - 6"	A6P1-C-12-16^V	Archive	1346366.58	482167.89

APPENDIX B
A6PI CERTIFICATION SAMPLES/CONTAINERS

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
13	13-1D	0" - 6"	A6P1-C-13-1^RMP	TAL A&B	1346020.22	482536.58
		0" - 6"	A6P1-C-13-1^RMP-D	TAL A&B		
	13-2V	0" - 6"	A6P1-C-13-2^V	Archive	1346016.8	482506.03
	13-3	0" - 6"	A6P1-C-13-3^RMP	TAL A&B	1346108.1	482502
	13-4	0" - 6"	A6P1-C-13-4^RMP	TAL A&B	1346062.44	482445.81
	13-5	0" - 6"	A6P1-C-13-5^RMP	TAL A&B	1346096.7	482474.55
	13-6V	0" - 6"	A6P1-C-13-6^V	Archive	1346134.08	482450.15
	13-7	0" - 6"	A6P1-C-13-7^RMP	TAL A&B	1346066.79	482382.31
	13-8	0" - 6"	A6P1-C-13-8^RMP	TAL A&B	1346132.66	482385.37
	13-9V	0" - 6"	A6P1-C-13-9^V	Archive	1346179.7	482445.02
	13-10	0" - 6"	A6P1-C-13-10^RMP	TAL A&B	1346180.27	482407.35
	13-11	0" - 6"	A6P1-C-13-11^RMP	TAL A&B	1346195.65	482382.19
	13-12	0" - 6"	A6P1-C-13-12^RMP	TAL A&B	1346237.51	482315.12
	13-13	0" - 6"	A6P1-C-13-13^RMP	TAL A&B	1346133.8	482322.09
	13-14	0" - 6"	A6P1-C-13-14^RMP	TAL A&B	1346171.24	482347.48
	13-15	0" - 6"	A6P1-C-13-15^RMP	TAL A&B	1346169.96	482303.13
	13-16V	0" - 6"	A6P1-C-13-16^V	Archive	1346214.93	482285.8
14	14-1	0" - 6"	A6P1-C-14-1^RMP	TAL H&B	1349543.39	484179.76
	14-2	0" - 6"	A6P1-C-14-2^RMP	TAL H&B	1349572.81	484179
	14-3	0" - 6"	A6P1-C-14-3^RMP	TAL H&B	1349547.15	484147.22
	14-4V	0" - 6"	A6P1-C-14-4^V	Archive	1349589.28	484148.04
	14-5D	0" - 6"	A6P1-C-14-5^RMP	TAL H&B	1349552.84	484126.85
		0" - 6"	A6P1-C-14-5^RMP-D	TAL H&B		
	14-6V	0" - 6"	A6P1-C-14-6^V	Archive	1349587.92	484124.92
	14-7	0" - 6"	A6P1-C-14-7^RMP	TAL H&B	1349532.55	484112.33
	14-8	0" - 6"	A6P1-C-14-8^RMP	TAL H&B	1349578.97	484100.05
	14-9	0" - 6"	A6P1-C-14-9^RMP	TAL H&B	1349539.93	484087.85
	14-10	0" - 6"	A6P1-C-14-10^RMP	TAL H&B	1349570.53	484084.4
	14-11V	0" - 6"	A6P1-C-14-11^V	Archive	1349532.74	484062.51
	14-12	0" - 6"	A6P1-C-14-12^RMP	TAL H&B	1349562.96	484064.86
	14-13	0" - 6"	A6P1-C-14-13^RMP	TAL H&B	1349518.95	484029.43
	14-14	0" - 6"	A6P1-C-14-14^RMP	TAL H&B	1349555.99	484039.59
	14-15	0" - 6"	A6P1-C-14-15^RMP	TAL H&B	1349533.43	484002.05
	14-16V	0" - 6"	A6P1-C-14-16^V	Archive	1349555.77	484012.17

APPENDIX C

A6PI CERTIFICATION TARGET ANALYTE LISTS

APPENDIX C
TARGET ANALYTE LISTS

TAL 20600-PSP-0004-A
Off-site analysis, ASL D (E), 117 samples specified in this PSP

Analyte	FRL	MDL
Total Uranium	82 mg/kg	8.2 mg/kg
Thorium-228	1.7 pCi/g	0.17 pCi/g
Thorium-230	280 pCi/g	28 pCi/g
Thorium-232	1.5 pCi/g	0.15 pCi/g
Radium-226	1.7 pCi/g	0.17 pCi/g
Radium-228	1.8 pCi/g	0.18 pCi/g

TAL 20600-PSP-0004-B
Off-site analysis, ASL D (E), 130 samples specified in this PSP

Analyte	FRL	MDL
Arsenic	12 mg/kg	1.2 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg

TAL 20600-PSP-0004-C
Off-site analysis, ASL D (E), 39 samples specified in this PSP

Analyte	FRL	MDL
Total Uranium	20 mg/kg	2.0 mg/kg
Thorium-228	1.7 pCi/g	0.17 pCi/g
Thorium-230	280 pCi/g	28 pCi/g
Thorium-232	1.5 pCi/g	0.15 pCi/g
Radium-226	1.7 pCi/g	0.17 pCi/g
Radium-228	1.8 pCi/g	0.18 pCi/g
Technetium-99	30.0 pCi/g	3.0 pCi/g

mg/kg – milligrams per kilogram
pCi/g – picoCuries per gram

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TAL 20600-PSP-0004-D
Off-site analysis, ASL D (E), 39 samples specified in this PSP

Analyte	FRL/BTV	MDL
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg
Arsenic	12 mg/kg	1.2 mg/kg
Beryllium	1.5 mg/kg	0.15 mg/kg
Benzo(a)anthracene	*(1.0 mg/kg)*	0.1 mg/kg
Benzo(a)pyrene	2.0 mg/kg *(1.0 mg/kg)*	0.1 mg/kg
Benzo(b)fluoranthene	20.0 mg/kg *(1.0 mg/kg)*	0.1 mg/kg
Benzo(g,h,i)perylene	*(1.0 mg/kg)*	0.1 mg/kg
Benzo(k)fluoranthene	*(1.0 mg/kg)*	0.1 mg/kg
Chrysene	*(1.0 mg/kg)*	0.1 mg/kg
Dibenzo(a,h)anthracene	2.0 mg/kg *(0.088 mg/kg)*	0.0088 mg/kg
Fluoranthene	*(10.0 mg/kg)*	1.0 mg/kg
Indeno(1,2,3-cd)pyrene	20.0 mg/kg *(1.0 mg/kg)*	0.1 mg/kg
Phenanthrene	*(5.0 mg/kg)*	0.5 mg/kg
Pyrene	*(10.0 mg/kg)*	1.0 mg/kg

TAL 20600-PSP-0004-E
Off-site analysis, ASL D (E), 13 samples specified in this PSP

Analyte	FRL	MDL
Total Uranium	20 mg/kg	2.0 mg/kg
Thorium-228	1.7 pCi/g	0.17 pCi/g
Thorium-230	280 pCi/g	28 pCi/g
Thorium-232	1.5 pCi/g	0.15 pCi/g
Radium-226	1.7 pCi/g	0.17 pCi/g
Radium-228	1.8 pCi/g	0.18 pCi/g

TAL 20600-PSP-0004-F
Off-site analysis, ASL D (E), 9 samples specified in this PSP

Analyte	FRL	MDL
1,1,1-Trichloroethane	4.3 mg/kg *	0.43 mg/kg
1,1-Dichloroethene	11.4 mg/kg	1.14 mg/kg
Tetrachloroethene	3.6 mg/kg	0.36 mg/kg
Toluene	100,000 mg/kg	10,000 mg/kg

* FRL is actually for 1,1,2-Trichloroethane since 1,1,1-Trichloroethane does not have a FRL.

TAL 20600-PSP-0004-G
Off-site analysis, ASL D (E), 30 samples specified in this PSP

Analyte	FRL	MDL
1,1-Dichloroethene	11.4 mg/kg	1.14 mg/kg
Tetrachloroethene	3.6 mg/kg	0.36 mg/kg

TAL 20600-PSP-0004-H
Off-site analysis, ASL D (E), 13 samples specified in this PSP

Analyte	FRL	MDL
Total Uranium	82 mg/kg	8.2 mg/kg
Thorium-228	1.7 pCi/g	0.17 pCi/g
Thorium-230	280 pCi/g	28 pCi/g
Thorium-232	1.5 pCi/g	0.15 pCi/g
Radium-226	1.7 pCi/g	0.17 pCi/g
Radium-228	1.8 pCi/g	0.18 pCi/g
Cesium-137	1.4 pCi/g	0.14 pCi/g