Department of Energy

Ohio Field Office
Fernald Closure Project
175 Tri-County Parkway
Springdale, Ohio 45246

NOV 16 2006

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

DOE-0066-07

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

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF THE RESPONSE TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENT AND THE FINAL CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6E

References:
1) Letter DOE-0025-07, J. Reising to J. Saric/T. Schneider, "Transmittal of the Draft Certification Design Letter and Certification Project Specific Plan for Area 6E," dated October 23, 2006

2) Letter, T. Schneider to J. Reising, "Approval - Draft CDL and Certification PSP for A6E," dated October 24, 2006

3) Letter, J. Saric to J. Reising, "Area 6E CDL and Certification PSP," dated November 8, 2006

Enclosed for your approval is the response to the U.S. Environmental Protection Agency comment and the final Certification Design Letter (CDL) and Certification Project Specific Plan (PSP) for Area 6E as noted in Reference 3. All comment responses have been incorporated in the final CDL/PSP. The Ohio Environmental Protection Agency approved the draft CDL/PSP as noted in Reference 2.

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

Sincerely,

Johnny W. Reising
Director

Enclosures

cc w/enclosures:
J. Desormeau, DOE-OH/FCP
T. Schneider, OEPA-Dayton (three copies of enclosures)
G. Jablonowski, USEPA-V, SRF-5J
M. Cullerton, Tetra Tech
M. Shupe, HSI GeoTrans
S. Helmer, ODH
AR Coordinator, Fluor Fernald, Inc./MS12

cc w/o enclosures:
J. Chiou, Fluor Fernald, Inc./MS88
F. Johnston, Fluor Fernald, Inc./MS12
C. Murphy, Fluor Fernald, Inc./MS1
T. Terry, Fluor Fernald, Inc./MS1

RESPONSE TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY TECHNICAL REVIEW COMMENT ON THE DRAFT CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6E

FERNALD CLOSURE PROJECT
FERNALD, OHIO

NOVEMBER 2006

U.S. DEPARTMENT OF ENERGY

RESPONSE TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY TECHNICAL REVIEW COMMENT ON THE DRAFT CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6E (20810-PSP-0011, Revision A)

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Executive Summary Page #: 1-2 Line #: 21
Original Specific Comment #: 1
Comment: The text states that field sampling is scheduled to begin immediately following issuance of the document. However, the schedule provided in Section 5.0 indicates that sampling activities are complete. The text and schedule should be revised to resolve this discrepancy.

Response: Agree. The executive summary text was incorrect. This text will be replaced by verbiage used in recently approved certification design letters.

Action: Remove the text that references starting sampling after issuance of the document and replace it with the following:

"Prior to submission of this document, the basic sampling information was informally submitted to the agencies for discussion. After revisions to the certification unit (CU) design and Target Analyte Lists based on comments received, sampling activities for Area 6E were begun.

Upon completion of the certification activities described in the final version of this document as approved by the U.S. Environmental Protection Agency and Ohio Environmental Protection Agency, a Certification Report will be issued."

CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6E

FERNALD CLOSURE PROJECT
FERNALD, OHIO

NOVEMBER 2006

U.S. DEPARTMENT OF ENERGY

20810-PSP-0011
REVISON 0

CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6E

Document Number 20810-PSP-0011
Revision 0

November 2006

APPROVAL:

for JD Chiou 11/9/06

Jyh-Dong Chiou, Project Manager
Environmental Closure Project — Date

9 Nov 06

Rich Abitz, Characterization Manager
Environmental Closure Project — Date

for TW Buhrlage 9 Nov 06

Tom Buhrlage, Sampling Manager
Environmental Closure Project — Date

for BD Crockett 11/9/06

Darren Wessel, Quality Assurance/Quality Control
Safety, Health and Quality — Date

FERNALD CLOSURE PROJECT

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

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LIST OF ACRONYMS AND ABBREVIATIONS

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
COC	constituent of concern
CRDL	contract required detection limit
CU	certification unit
CVAA	Cold Vapor Atomic Absorption
DOE	U.S. Department of Energy
EDD	electronic data deliverable
EPA	U.S. Environmental Protection Agency
FACTS	Fernald Analytical Computerized Tracking System
FAL	Field Activity Log
FCP	Fernald Closure Project
FPA	Former Production Area
FRL	final remediation level
ft^2	square feet
GC	gas chromatograph
GC/MS	gas chromatography/mass spectroscopy
GCN	Generic Cleanup Number
GPS	global positioning system
ICP	inductively coupled plasma (atomic emission spectroscopy)
ICP/MS	inductively coupled plasma/mass spectroscopy
LSC	liquid scintillation counting
MDC	Main Drainage Corridor
MDL	minimum detectable level
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
NAD83	North American Datum of 1983
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
OU	Operable Unit
PAH	polyaromatic hydrocarbons
PCB	polychlorinated biphenyl
pCi/g	picoCuries per gram
PRG	Preliminary Remediation Goal
PSP	Project Specific Plan
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RIMIA	Receiving and Incoming Materials Inspection Area
ROD	Record of Decision
RWP	Radiological Work Permit
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SPL	Sample Processing Laboratory
SVOC	semi-volatile organic compound
SWRB	Storm Water Retention Basin

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

TAL	Target Analyte List
TAT	turnaround time
TSCA	Toxic Substance Control Act
UCL	Upper Confidence Limit
UST	underground storage tank
V/FCN	Variance/Field Change Notice
VOC	volatile organic compound
VSL	validation support level
WAC	waste acceptance criteria
WAO	Waste Acceptance Organization

1.0 INTRODUCTION

This Certification Design Letter (CDL)/Certification Project Specific Plan (PSP) describes the certification design, sampling, analysis, and validation necessary to demonstrate that soil in Area 6E have met the final remediation levels (FRLs) for all area-specific constituents of concern (ASCOCs). Certification demonstrates that risk-based ASCOCs meet the FRLs. The format of this document follows guidelines presented in the Sitewide Excavation Plan (SEP, DOE 1998) and SEP Addendum (DOE 2001). Accordingly, this document consists of nine sections:

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

2.0 Historical and Precertification Data - Discussion of historical soil data and presentation of precertification data from Area 6E

3.0 Area-Specific Constituents of Concern - Discussion of selection criteria and ASCOCs for Area 6E

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

5.0 Schedule

6.0 Quality Assurance/Quality Control Requirements - Presents the field Quality Control (QC), analytical methodologies

7.0 Health and Safety

8.0 Disposition of Waste

9.0 Data Management

References

1.1 OBJECTIVES

The primary objectives of this document are to:

- Define the boundaries of the area to be certified under the guidance of this CDL/Certification PSP;
- Present maps for newly acquired real-time data;
- Define the ASCOC selection process and list the selected for Area 6E;
- Present the certification unit (CU) boundaries and proposed certification sampling strategy;
- Summarize the analytical requirements and the statistical methodology that will be employed; and
- Present the proposed schedule for the certification activities.

1.2 SCOPE AND AREA DESCRIPTION

The scope of this CDL and Certification PSP includes details of certification sampling, analysis, and validation that will take place in Area 6E.

It should be noted that the scope of Area 6E was originally included in Area 7F, Area 4B - Part Two, and Main Drainage Corridor (MDC) Area - 1st Street. Figure 1-1 depicts the area to be certified under this CDL and Certification PSP.

Area 6E is approximately 17 acres and is located between Area 4A and the On-Site Disposal Facility (OSDF). It is bounded to the south and southwest by Area 5 Administration Area. It includes the footprints of former Building 77, which was the Finish Products Warehouse, Building 79, which was originally the Plant 6 Warehouse and then the Toxic Substance Control Act (TSCA) loadout, Building 82, which was the Receiving and Incoming Materials Inspection Area (RIMIA) Building, the east water tower, the electrical substation, Building 31, which was the Vehicle Repair Garage, and support trailers. Area 6E also includes seven underground storage tanks (USTs); 1, 2, 5, 8, 9, 10, and 17. The historical surface features of Area 6E are depicted on Figure 1-2 and the topography is depicted on Figure 1-3.

The northern section of Area 6E includes a high-leachability zone where the total uranium FRL is 20 milligrams per kilogram (mg/kg), as shown also on Figure 1-2.

1.3 KEY PROJECT PERSONNEL

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

TABLE 1-1
KEY PROJECT PERSONNEL

Title	Primary	Alternate
DOE Contact	Johnny Reising	Jane Powell
Project Manager	Jyh-Dong Chiou	Rich Abitz
Characterization Manager	Rich Abitz	Krista Flaugh
Field Sampling Manager	Tom Buhrlage	Mike Frank
Surveying Manager	Bernie Kienow	Andy Clinton
WAO Contact	Christa Walls	None
Laboratory Contact	Amy Meyer	None
Area 6E Data Management Contact	Krista Flaugh	Greg Lupton
Data Validation Contact	James Chambers	None
Field Data Validation Contact	Ervin O'Brien	James Chambers
FACTS/SED Database Contact	Mark Turner	Susan Marsh
QA/QC Contact	Darren Wessel	None
Safety and Health Contact	Garner Powell	Jeff Middaugh

DOE - U.S. Department of Energy
FACTS - Fernald Analytical Computerized Tracking System
QA/QC - Quality Assurance/Quality Control
SED - Sitewide Environmental Database
WAO - Waste Acceptance Organization

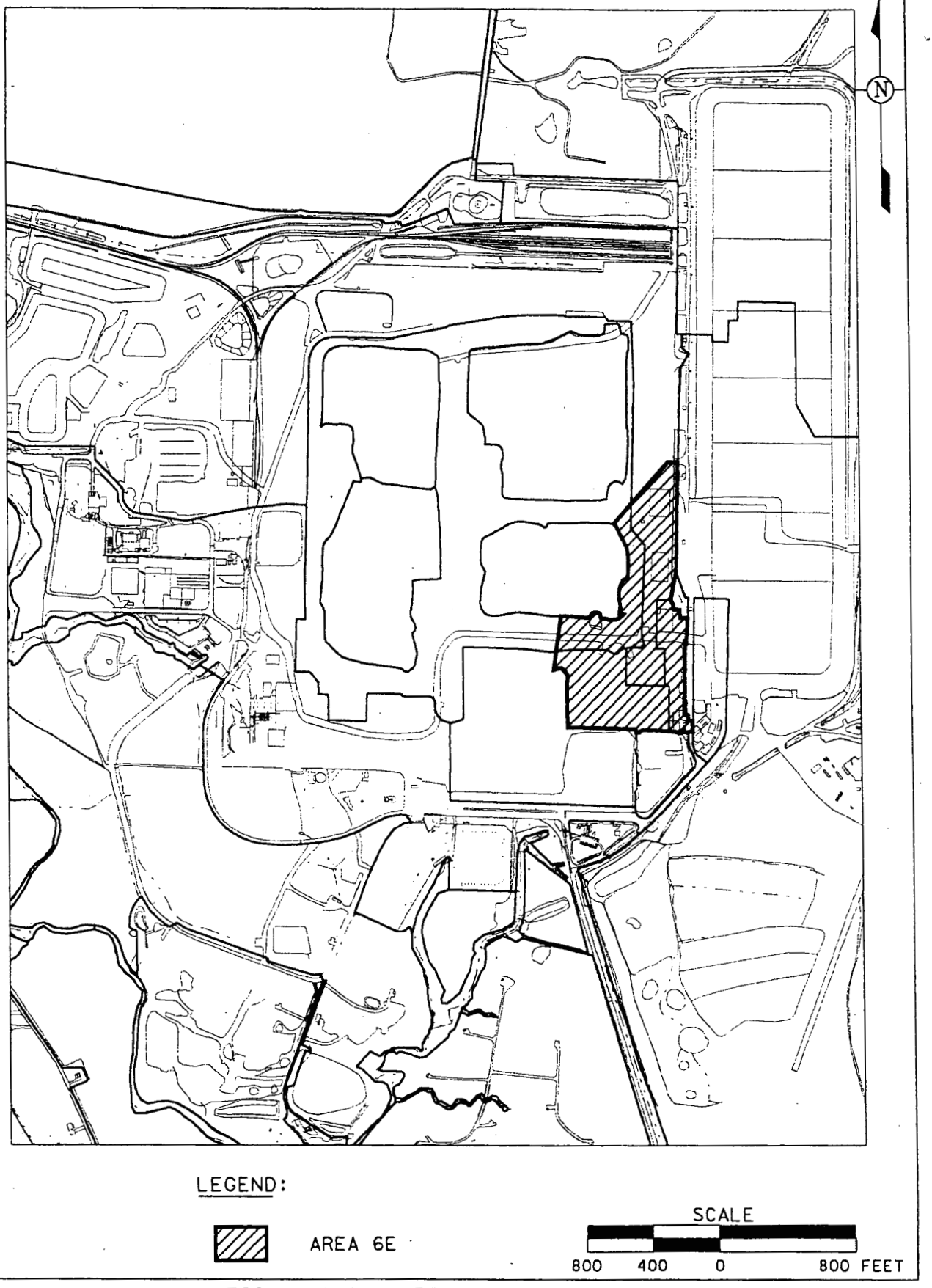

FIGURE 1-1. AREA 6E LOCATION MAP

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STATE PLANAR COORDINATE SYSTEM 1983

17-OCT-2006

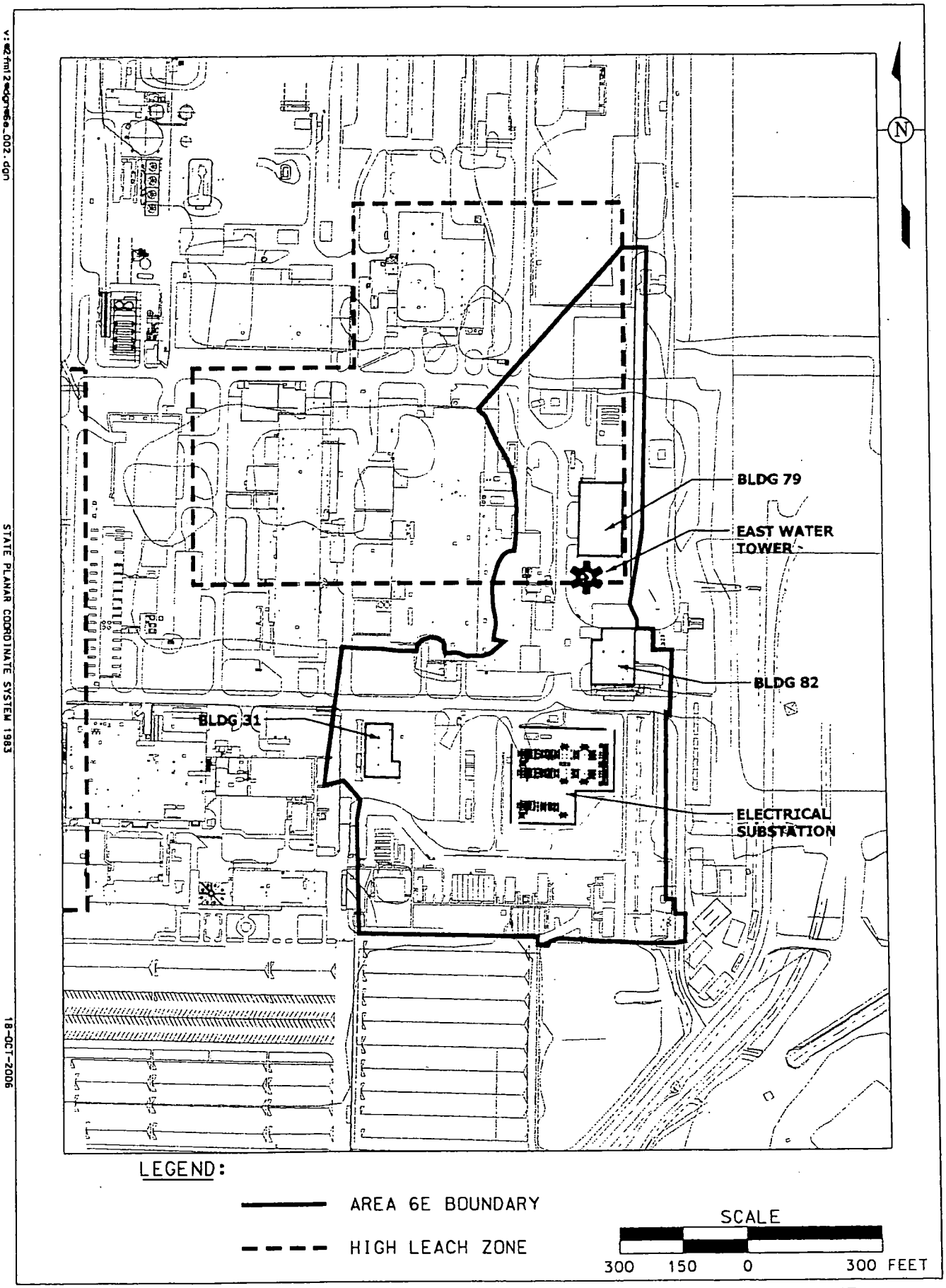

FIGURE 1-2. AREA 6E HISTORICAL FEATURES & HIGH LEACH ZONE

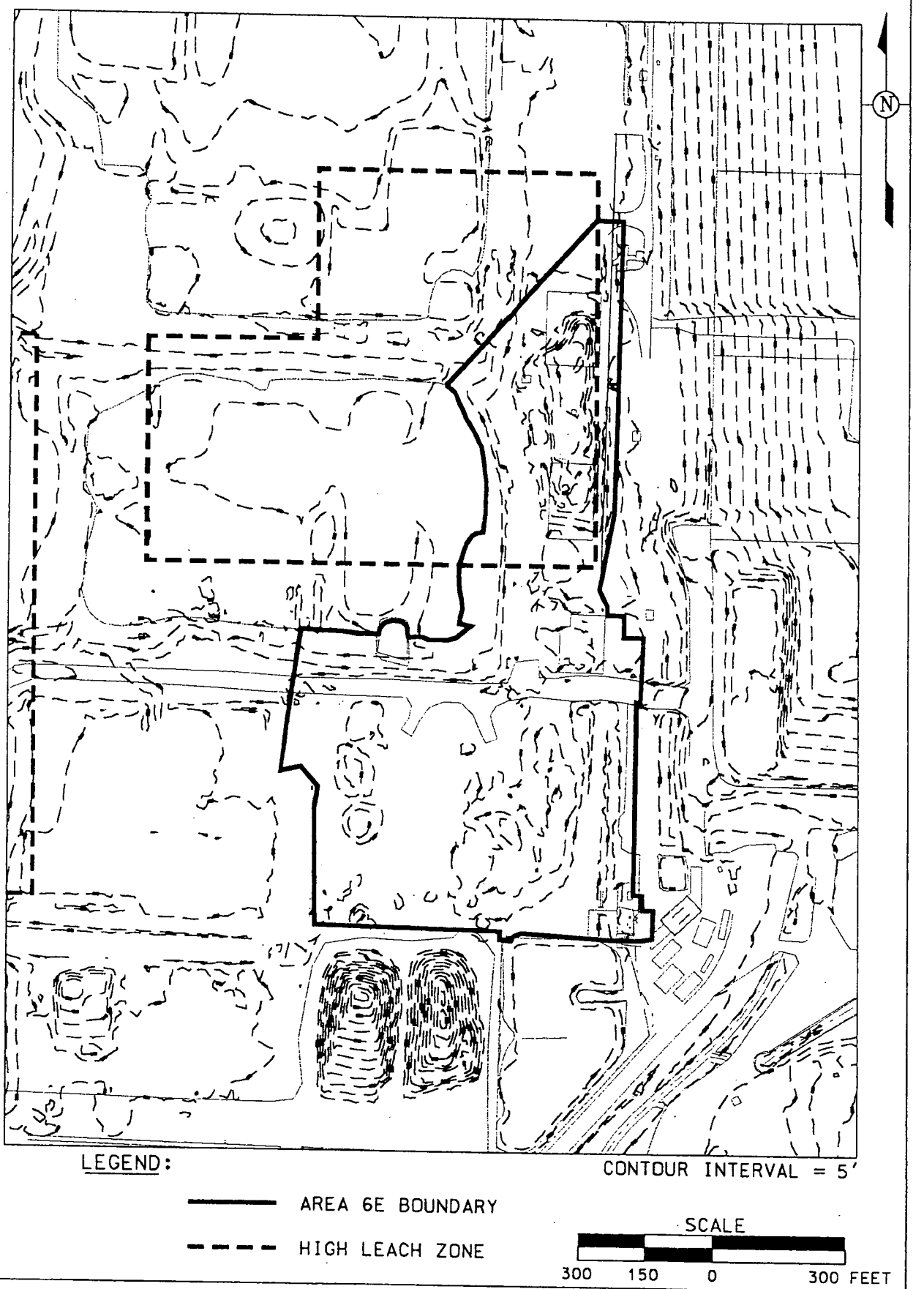

FIGURE 1-3. AREA 6E TOPOGRAPHY (APRIL 2006)

2.0 HISTORICAL AND PRECERTIFICATION DATA

In accordance with the SEP, prior to conducting precertification and certification activities, all soil demonstrated to contain contamination above the associated FRLs or other applicable action levels must be evaluated for remedial actions.

In addition to the Predesign Investigations, the Remedial Investigation Reports (RI, DOE 1995a and 1995b), and Feasibility Study Reports (FS, DOE 1995c and 1995d) for Operable Units (OU) 3 and 5 were used for remedial design of Area 6E. Final grade excavation monitoring/ sampling and real-time scanning/sampling data have been collected pursuant to the RI/FS and remedial activities.

Before initiating the certification process, all historical soil data within the Area 6E were pulled from the Sitewide Environmental Database (SED), and are summarized in Section 2.1. Based on the results of sampling and scanning activities summarized below, it has been determined that no further remedial actions are necessary to remove above-FRL or above-waste acceptance criteria (WAC) soil.

2.1 Area 6E

2.1.1 Area 6E Historical, Predesign and Excavation Control

All historical data for Area 6E are presented in the Excavation Plan for Area 6 - Former Production Area (DOE 2005a), the Implementation Plan for Area 3B/4B/5 (DOE 2004a), and the Excavation Plan for Area 7 Silos and General Area (DOE 2005b). This includes data collected during the RI/FS and during four separate predesign investigations; PSP for Predesign Investigation in Area 5 (DOE 2002a), PSP for Delineating Known Exceedances of the OSDF WAC in Areas 3B/4B/5 (DOE 2002b), PSP for Predesign Investigation in Area 6 Subarea 2 (Supplement to 20300-PSP-0011) (DOE 2004b), and PSP for Predesign Investigation in Area 7 (Supplement to 20300-PSP-0011) (DOE 2005c). Data were also collected during the remediation/excavation activities for excavation control and following the remediation/excavation activities for precertification per the PSP for Excavation Control of Areas 3B, 4B, and 5 (Supplement to 20300-PSP-0011) (DOE 2004c), and PSP for the Excavation Control and Precertification of Area 6 - Former Production Area (Supplement to 20300-PSP-0011) (DOE 2005d).

The following is a brief discussion of the remediation/excavation activities of the above-WAC, above-FRL, and UST areas in Area 6E. The excavation activities within this area were completed to not only capture the contamination plume but were extended to capture any subsurface utilities that existed below the design grade.

There were no designed above-WAC areas in Area 6E stemming from physical sample data or real-time scans.

There were two designed above-FRL areas in Area 6E. They include the Electrical Substation Area and the northwest corner of Building 79. The Electrical Substation was above-FRL for aroclor-1254 and lead and the northwest corner of Building 79 was above-FRL for beryllium. All of the above-FRL material was removed during the remediation/excavation activities in Area 6E.

During excavation of the area west of the east water tower, above-WAC materials were discovered via real time scans. This material was excavated separately and sent off site for disposal.

There are seven USTs located in Area 6E. They are UST 1, UST 2, UST 5, UST 8, UST 9, UST 10, and UST 17. USTs 1, 2, 5, 8, 9, and 10 are located east of the Building 31 footprint and UST 17 is located north of the Building 46 footprint. These USTs will be closed during certification.

Area 6E was also used as a stockpile area for Silos and Storm Water Retention Basins (SWRBs), which are located in Area 7. As a result, the ASCOCs for Area 7 will be evaluated for certification of Area 6E. This is discussed further in Section 3.0.

2.1.2 Precertification Data

According to guidelines established in Section 3.3.3 of the SEP, precertification activities were conducted to evaluate residual radiological contamination patterns as specified in the PSP Guidelines for General Characterization for Sitewide Soil Remediation (DOE 2005e). Prior to conducting a precertification real-time scan, Area 6E was scanned with a magnetometer to determine if residual debris remained following excavation activities. Minor occurrences of metallic objects as well as some residual concrete materials were located and were either excavated or hand picked from the area.

All areas in Area 6E passed the requirements of precertification. The results of the precertification scans are presented on data maps in Appendix A.

3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN

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

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

3.1 SELECTION CRITERIA

The selection process for retaining ASCOCs for a remediation area is driven by applying a set of decision criteria. A soil contaminant will be retained as an ASCOC if:

- It 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(s) of interest;
- It is listed as a COC in the USTs of interest (Table 2-2 of the SEP) that lie within the certification area boundary;
- It can be traced to site use in the remediation area of interest, either through process knowledge or known release of the constituent to the environment;
- Analytical results indicate that a contaminant is present above its FRL, and the above-FRL concentrations are not attributable to false positives or elevated CRDLs;
- 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; or
- The contaminant is one of the sitewide primary COCs (total uranium, radium-226, radium-228, thorium-238, and thorium-232).

Using the above process, the ASCOCs were refined to those listed in Tables 2-2 and 2-7 of the SEP. The list of ASCOCs for Areas 4, 5, 6, and 7 are presented in Table 3-1.

3.1.1 ASCOC Selection

Because Area 6E consists of what used to be Area 4 and Area 5, the ASCOCs for these two areas were evaluated for their relevance to Area 6E. Also, Area 6E was used as a stockpile area for material that was excavated from the Silos and the SWRBs, which are both in Area 7, therefore the ASCOCs for Area 7 were evaluated for their relevance to Area 6E. All of the ASCOCs for Areas 4, 5, 6, and 7 are listed in Table 3-1. Table 3-2 presents the reasoning for either retaining or eliminating each ASCOC. Table 3-3 lists the ASCOCs for Area 6E, and Table 3-4 lists the COCs for each specific UST.

TABLE 3-1
ASCOC LIST FOR AREAS 4, 5, 6, AND 7 FROM THE SEP

Primary COCs	Secondary COCs for Area 4	Secondary COCs for Area 5	Secondary COCs for Area 6	Secondary COCs for Area 7
Radium-226	Aroclor-1254	Aroclor-1254	Aroclor-1254	Aroclor-1254
Radium-228	Aroclor-1260	Aroclor-1260	Aroclor-1260	Aroclor-1260
Thorium-228	Arsenic	Arsenic	Arsenic	Arsenic
Thorium-232	Benzo(a)pyrene	Beryllium	Benzo(a)pyrene	Beryllium
Total Uranium	Beryllium	Dieldrin	Benzo(b)fluoranthene	Cesium-137
	Bromodichloromethane		Beryllium	Dieldrin
	Cesium-137		Bromodichloromethane	Lead
	Dieldrin		Cesium-137	Lead-210
	Fluoride		Dibenzo(a,h)anthracene	Manganese
	Lead		1,1-Dichloroethene	Techentium-99
	Plutonium-238		Dieldrin	Thorium-230
	Strontium-90		Fluoride	
	Technetium-99		Heptachlorodibenzo-p-dioxins	
	Tetrachloroethene		Indeno(1,2,3-c,d)pyrene	
	Thorium-230		Octachlorodibenzo-p-dioxins	
			Technetium-99	
			Tetrachloroethene	
			Thorium-230	
	Ecological COCs for Area 4	**Ecological COCs for Area 5**	**Ecological COCs for Area 6**	**Ecological COCs for Area 7**
	Antimony	None	Antimony	Antimony
			Cadmium	Cadmium
			Silver	Molybdenum
			PAHs[a]	Silver
				PAHs[a]

[a] PAHs - polyaromatic hydrocarbons (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perlene, benzo(k)fluoranthene, fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene.

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TABLE 3-2
ASCOC LIST FOR AREA 6E

ASCOC	Retained as ASCOC?	Justification	CU(s)
Radionuclides			
Total Uranium	Yes	Primary Radionuclide	All
Radium-226	Yes	Primary Radionuclide	All
Radium-228	Yes	Primary Radionuclide	All
Thorium-228	Yes	Primary Radionuclide	All
Thorium-232	Yes	Primary Radionuclide	All
Lead-210	Yes	Area 7 COC [a]	1 - 12, 18 and 19
Cesium-137	Yes	Area 4, 6, and 7 COC [a]	1 - 12, 18 and 19
Plutonium-238	No	Not detected at concentrations above the FRL	None
Strontium-90	No	Not detected at concentrations above the FRL	None
Technetium-99	Yes	Area 4, 6, and 7 COC [a]	1 - 12, 18 and 19
Thorium-230	Yes	Area 4, 6, and 7 COC [a]	1 - 12, 18 and 19
Inorganics			
Antimony	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Arsenic	Yes	Area 4, 5, 6, and 7 COC [a] Specific COC for USTs 5, 8, and 9	1 - 12, 14, 15, 18 and 19
Barium	Yes	Area 7 SWRB COC [a] Specific COC for USTs 1, 2, 5, 10, and 17	1 - 14, 16, 17, 18 and 19
Beryllium	Yes	Area 4, 5, 6 and 7 COC [a]	1 - 12, 18 and 19
Cadmium	Yes	Area 7 SWRB COC [a] Specific COC for UST 5	1 - 12, 14, 18 and 19
Chromium	Yes	Area 7 SWRB COC [a] Specific COC for UST 5	1 - 12, 14, 18 and 19
Fluoride	No	Not detected at concentrations above the FRL	None
Lead	Yes	Area 7 SWRB COC [a] Specific COC for USTs 1, 2, 5, and 10	1 - 14, 16, 18 and 19
Manganese	No	Not detected at concentrations above the FRL	None
Mercury	Yes	Area 7 SWRB COC [a] Specific COC for USTs 1, 2, and 5	1 - 14, 18 and 19
Molybdenum	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Selenium	Yes	Area 7 SWRB COC [a] Specific COC for USTs 5, 8, 9, and 17	1 - 12 14, 15, 17, 18 and 19

TABLE 3-2
ASCOC LIST FOR AREA 6E

ASCOC	Retained as ASCOC?	Justification	CU(s)
Inorganics (Continued)			
Silver	Yes	Area 7 SWRB COC [a] Specific COC for UST 5	1 - 12, 14, 18 and 19
Pesticides/PCBs			
Aroclor-1254	Yes	Area 4, 5, 6, and 7 COC [a] Specific COC for UST 5	1 - 12, 14, 18 and 19
Aroclor-1260	Yes	Area 4, 5, 6, and 7 COC [a] Specific COC for UST 5	1 - 12, 14, 18 and 19
Dieldrin	Yes	Area 4, 5, 6, and 7 COC [a]	1 - 12, 18 and 19
PAHs			
Benzo(a)anthracene	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Benzo(a)pyrene	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Benzo(b)fluoranthene	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Benzo(g,h,i)perylene	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Benzo(k)fluoranthene	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Chrysene	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Dibenzo(a,h)anthracene	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Fluoranthene	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Indeno(1,2,3-cd)pyrene	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Phenanthrene	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
Pyrene	Yes	Area 7 SWRB COC [a]	1 - 12, 18 and 19
VOCs			
1,1,1-Trichloroethane	Yes	Area 7 SWRB COC [a] Specific COC for USTs 5 and 17	1 - 12, 14, 17, 18 and 19
1,1-Dichloroethene	Yes	Area 7 SWRB COC [a] Specific COC for UST 5	1 - 12, 14, 18 and 19
1,2-Dichloroethane	Yes	Area 7 SWRB COC [a] Specific COC for UST 5	1 - 12, 14, 18 and 19
2-Butanone (MEK)	Yes	Specific COC for USTs 5, 8, and 9	14, 15

EXECUTIVE SUMMARY

This document is a combination of the Certification Design Letter and Certification Project Specific Plan for Area 6E. This document describes the certification design, sampling, analysis, and validation for Area 6E.

Certification demonstrates that area-specific constituents of concern (ASCOCs) meet the risk based final remediation levels. The following information is included:

- The boundary of Area 6E and a description of the areas to be certified under the guidance of this document;
- A discussion of historical data from the area proposed for certification;
- A discussion of the ASCOC selection process and list of ASCOCs assigned to the Area 6E;
- A presentation of the certification unit (CU) boundaries and proposed sampling strategy;
- Details of certification sampling, analysis, and validation that will take place;
- The analytical requirements and the statistical methodology that will be employed; and
- The proposed schedule for the certification activities.

The scope of this certification effort is limited to the certification of Area 6E as shown on Figure 1-1. Remediation was complete in Area 6E in 2006, thus initiating the certification process described in this document. The selection of Area 6E ASCOCs was accomplished using constituent of concern (COC) lists in the Operable Unit 5 Record of Decision (DOE 1996), previous investigation data, and process knowledge. Nineteen CUs have been defined for this certification effort. Total uranium, thorium-228, thorium-232, radium-226, and radium-228 (the sitewide primary radiological COCs) are considered ASCOCs in each CU. Secondary COCs are identified for specific CUs within the certification area.

Prior to submission of this document, the basic sampling information was informally submitted to the agencies for discussion. After revisions to the CU design and Target Analyte Lists based on comments received, sampling activities for Area 6E were begun.

The certification design presented in this document follows the general approach outlined in Section 3.4 of the Sitewide Excavation Plan (SEP, DOE 1998) and SEP Addendum (DOE 2001).

Upon completion of the certification activities described in the final version of this document as approved by the U.S. Environmental Protection Agency and Ohio Environmental Protection Agency, a Certification Report will be issued.

TABLE 3-2
ASCOC LIST FOR AREA 6E

ASCOC	Retained as ASCOC?	Justification	CU(s)
VOCs (Continued)			
4-Methyl-2-Pentanone (MIK)	Yes	Area 7 SWRB COC [a]	1 - 12, 14, 18 and 19
Acetone	Yes	Area 7 SWRB COC [a] Specific COC for USTs 5, 8, 9, 10, and 17	1 - 12, 14 - 17, 18 and 19
Benzene	Yes	Area 7 SWRB COC [a] Specific COC for USTs 1, 2, 5, 8, and 9	1 - 15, 18 and 19
Bromodichloromethane	No	Not detected at concentrations above the FRL	None
Carbon Tetrachloride	Yes	Area 7 SWRB COC [a] Specific COC for UST 5	1 - 12, 14, 18 and 19
Cyclohexanone	Yes	Specific COC for UST 5	14
Ethylbenzene	Yes	Area 7 SWRB COC [a] Specific COC for USTs 1, 2, 5, 8, and 9	1 - 15, 18 and 19
Ethyl Ether	Yes	Specific COC for UST 5	14
Methylene Chloride	Yes	Area 7 SWRB COC [a] Specific COC for USTs 5 and 10	1 - 12, 14, 16, 18 and 19
Tetrachloroethene	Yes	Area 7 SWRB COC [a] Specific COC for UST 5	1 - 12, 14, 18 and 19
Toluene	Yes	Area 7 SWRB COC [a] Specific COC for USTs 1, 2, 5, 8, and 9	1 - 15, 18 and 19
Trichloroethene	Yes	Area 7 SWRB COC [a] Specific COC for UST 5	1 - 12, 14, 18 and 19
Trichlorofluoromethene	Yes	Specific COC for UST 10	16
Trifluorochloromethane	No	Specific COC for UST 5, but based on high volatility, it will not persist in the environment.	None
Xylenes, Total	Yes	Area 7 SWRB COC [a] Specific COC for USTs 1, 2, 5, 8, and 9	1 - 15, 18 and 19
Dioxins			
Heptachlorodibenzo-p-dioxins	No	Not detected at concentrations above the FRL	None
Octachlorodibenzo-p-dioxins	No	Not detected at concentrations above the FRL	None

[a] Material from one or more of these areas was staged in the Area 6E footprint, therefore this COC is being retained for certification.

CU 13 = USTs 1 and 2
CU 14 = UST 5
CU 15 = USTs 8 and 9
CU 16 = UST 10
CU 17 = UST 17

PCBs - polychlorinated biphenyls

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TABLE 3-3
AREA 6E ASCOC LIST

ASCOC	FRL/Residential Generic Cleanup Number[c]/(*BTV*[a])
Radionuclides	
Total Uranium	82 mg/kg 20 mg/kg [b]
Radium-226	1.7 pCi/g
Radium-228	1.8 pCi/g
Thorium-228	1.7 pCi/g
Thorium-232	1.5 pCi/g
Cesium-137	1.4 pCi/g
Lead-210	38 pCi/g
Technetium-99	30.0 pCi/g
Thorium-230	280 pCi/g
Metals	
Antimony	96 mg/kg /(*10 mg/kg*)
Arsenic	12.0 mg/kg
Barium	68,000 mg/kg
Beryllium	1.5 mg/kg
Cadmium	82 mg/kg /(*5.0 mg/kg*)
Chromium	300 mg/kg [c]
Lead	400 mg/kg
Mercury	7.5 mg/kg
Molybdenum	2900 mg/kg /(*10 mg/kg*)
Selenium	5,400 mg/kg
Silver	29,000 mg/kg /(*10 mg/kg*)
Pesticides/PCBs	
Aroclor-1254	0.13 mg/kg
Aroclor-1260	0.13 mg/kg
Dieldrin	0.015 mg/kg
PAHs	
Benzo(a)anthracene	20 mg/kg /(*1.0 mg/kg*)
Benzo(a)pyrene	2.0 mg/kg /(*1.0 mg/kg*)
Benzo(b)fluoranthene	20 mg/kg /(*1.0 mg/kg*)
Benzo(g,h,i)perylene	(*1.0 mg/kg*)
Benzo(k)fluoranthene	200 mg/kg /(*1.0 mg/kg*)
Chrysene	2000 mg/kg /(*1.0 mg/kg*)
Dibenzo(a,h)anthracene	2.0 mg/kg /(*0.088 mg/kg*)
Fluoranthene	(*10 mg/kg*)
Indeno(1,2,3-cd)pyrene	20 mg/kg /(*1.0 mg/kg*)
Phenanthrene	(*5 mg/kg*)
Pyrene	(*10 mg/kg*)

TABLE 3-3
AREA 6E ASCOC LIST

ASCOC	FRL/Residential Generic Cleanup Number[a]/(*BTV*[a])
VOCs	
1,1,1-Tricholoroethane	4.3 mg/kg [d]
1,1-Dichloroethene	0.41 mg/kg
1,2-Dichloroethane	0.00553 mg/kg [e]
2-Butanone (MEK)	11.9 mg/kg [e]
4-Methyl-2-Pentanone (MIK)	2500 mg/kg
Acetone	43,000 mg/kg
Benzene	850 mg/kg
Carbon tetrachloride	2.1 mg/kg
Cyclohexanone	100,000 mg/kg [e,f]
Ethylbenzene	5,100 mg/kg
Ethyl Ether	1800 mg/kg [e,f]
Methyl Chloride	37 mg/kg /(*85 mg/kg*)
Tetrachloroethene	3.6 mg/kg
Toluene	100,000 mg/kg
Trichloroethene	25 mg/kg
Trichlorofluoromethane	355 mg/kg [e]
Total Xylene	920,000 mg/kg

[a] Benchmark toxicity value (BTV) applies to Ecological COCs.

[b] The total uranium FRL is lower in the defined high-leachability zones (CUs 1, 2, 3, 4, and 5).

[c] The FRL listed here is for hexavalent chromium because total chromium does not have a FRL. All chromium analyses will be done for total chromium and compared to this FRL.

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

[e] This analyte does not have a FRL or BTV. Therefore the Residual Generic Cleanup Number (GCN), from the April 2006 Closure Plan Review Guidance for RCRA Facilities, written by the Ohio Environmental Protection Agency (OEPA) Division of Hazardous Waste Management, was used (OEPA 2004).

[f] The analyte does not have a FRL, BTV, or GCN, therefore the Region 9 Preliminary Remediation Goal (PRG) was used, per the OEPA.

pCi/g - picoCuries per gram

TABLE 3-4
AREA 6E UST COCs

ASCOC	Sort Class	CU 13	CU 14	CU 15	CU 16	CU 17
		USTs 1 and 2	UST 5	USTs 8 and 9	UST 10	UST 17
Radium-226	R	X	X	X	X	X
Radium-228	R	X	X	X	X	X
Thorium-228	R	X	X	X	X	X
Thorium-232	R	X	X	X	X	X
Total Uranium	R	X	X	X	X	X
Arsenic	M		X	X		
Barium	M	X	X		X	X
Cadmium	M		X			
Chromium	M		X			
Lead	M	X	X		X	
Mercury	M	X	X			
Selenium	M		X	X		X
Silver	M		X			
Aroclor-1254	P		X			
Aroclor-1260	P		X			
1,1,1-Trichloroethane	V		X			X
1,1-Dichloroethene	V		X			
1,2-Dichloroethane	V		X			
2-Butanone (MEK)	V		X	X		
4-Methyl-2-Pentanone (MIK)	V		X			
Acetone	V		X	X	X	X
Benzene	V	X	X	X		
Carbon Tetrachloride	V		X			
Cyclohexanone	V		X			
Ethyl Ether	V		X			
Ethylbenzene	V	X	X	X		
Methylene Chloride	V		X		X	
Tetrachloroethene	V		X			
Toluene	V	X	X	X		
Total Xylenes	V	X	X	X		
Trichloroethene	V		X			

4.0 CERTIFICATION APPROACH

4.1 CERTIFICATION DESIGN

The certification design for Area 6E area follows the general approach outlined in Section 3.4 of the SEP. The design for Area 6E area is depicted on Figure 4-1 and the sample locations are depicted in Figures 4-2 through 4-11. As discussed in Section 3.0 of this document, the five primary ASCOCs (total uranium, radium-226, radium-228, thorium-228, and thorium-232) will be retained in each CU. Additional secondary COCs are identified for specific CUs within the certification area as well as unique COCs for USTs 1, 2, 5, 8, 9, 10, and 17.

Many factors were taken into consideration when determining the boundaries for each CU within Area 6E. These factors include: historical land use, proximity to other areas of the site, residual COC data, and previous existence of USTs. Additionally, since the northern portion of Area 6E falls within the Former Production Area (FPA), it is considered to be an impacted area, and will therefore be comprised of Group 1 CUs to allow for more concentrated sampling and to ensure excavation activities removed contaminated soil. The southern portion of Area 6E was not within the FPA historically; therefore this area is comprised of two Group 2 CUs (CUs 11 and 12). Although these are classified as Group 2 CUs, each one is considerably less than the typical size of a Group 2 CU, which can be as big as 250,000 square feet (ft^2), with CU 11 being approximately 158,305 ft^2 and CU 12 being approximately 95,952 ft^2.

4.1.1 Certification Unit Design

Area 6E consists of twelve Group 1 CUs, two Group 2 CUs, and five CUs designed around the boundaries of seven USTs. As shown of Figure 4-1, five CUs (CUs 1 through 5) are either partially or entirely within a high leachability zone. As a conservative measure, these five CUs will be treated as though they were completely within a high leachability zone, which will require the use of the 20 mg/kg FRL for evaluation of uranium.

Two of the 12 group one CUs (CU 18 and CU 19) were defined around soil that was intentionally spread across the footprints of several underlying CUs. This soil originated from stockpiles of a soil and debris mixture, whereby the soil portion was previously precertified prior to excavating and stockpiling. The excavation was necessary to remove man-made debris primarily from the substation area efficiently and effectively, however, the soil was not necessarily contaminated. Once these materials were stockpiled, the debris was mechanically removed leaving the precertified soil behind. In order to prove that the remaining soil was not chemically or radiologically contaminated, the piles were spread into an approximate 1-foot lift with the boundaries identified and made into discrete CUs.

Due to the presence of USTs in Area 6E, the certification effort must include demonstration of soil FRL attainment and UST closure. Per Section 2.2.6 (UST closure) of the SEP:

- Each UST footprint will form a distinct CU.
- Multiple USTs within a building footprint can be combined into a CU.
- At least eight locations will be sampled in each CU.
- Samples will be analyzed for the COCs identified for each UST in Table 2-2 of the SEP.

UST 1 and UST 2 are located adjacent to each other and have the identical COCs; therefore they will be combined into CU 13. UST 5 will be CU 14. UST 8 and UST 9 are also located adjacent to each other and have the identical COCs; therefore they will be combined into CU 15. UST 10 and UST 17 will be CU 16 and CU 17 respectively.

4.1.2 Sample Location Design

The selection of certification sampling locations was conducted according to Section 3.4.2 of the SEP. Each CU was first divided into 16 approximately equal sub-CUs with the exception of the CUs for the USTs, which were divided into eight approximately equal sub-CUs consistent with SEP guidance. 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 all random locations met the minimum distance criteria.

All Area 6E sub-CUs and planned certification sampling locations are shown on Figures 4-2 through 4-11. Samples will be collected for analysis from 0 to 6 inches in each CU. One sample location in each CU is designated with a "D," indicating a field duplicate sample collection location.

Prior to commencement of certification sampling field activities, all certification sample locations will be surveyed and field verified to ensure no surface obstacles will prevent sample collection at the planned location. Locations may be moved if a subsurface obstacle prevents sample collection. Requirements for moving a certification sample location are discussed below in Section 4.3.1.

4.2 SURVEYING

Before certification sampling activities begin, the North American Datum of 1983 (NAD83) State Planar coordinates for each selected sampling location (with the exception of the archive sample locations) will be surveyed and identified in the field with a flag. All locations will be field verified to ensure no surface obstacles will prevent collection at each of the planned locations.

The Area 6E CU boundaries are shown on Figure 4-1 and the certification sampling locations are shown on Figures 4-2 through 4-11. The sample locations for the USTs are shown on Figures 4-5 through 4-9. All sample location information can be found in Appendix B.

4.3 PHYSICAL SOIL SAMPLE COLLECTION

4.3.1 Sample Collection

Soil samples will be collected in accordance with procedure SMPL-01, Solids Sampling. Surface samples will be collected using 3-inch diameter, 6-inch long, plastic liners, or an alternate method as identified in SMPL-01, as long as sufficient volume is collected from the appropriate depth to perform the prescribed analyses. Sampling at depth will be completed using the Geoprobe® Model 5400 and Model 6600 per EQT-06, or an alternate method identified in SMPL-01, as long as sufficient volume is collected from the appropriate depth to perform the prescribed analyses. Ultimately, the method of sample collection will be left to the discretion of the Field Sampling Lead. Following sample collection, each soil core shall be divided, if necessary, and placed into the proper sample containers. When sampling below overlying material (e.g., gravel, asphalt, etc.), the sampling interval will begin where the soil contains less than 50 percent overlying material. Upon completion of sample collection, the boreholes will be collapsed and no additional abandonment is necessary.

Quality control sample requirements will include a duplicate field sample, a trip blank, and a container blank and/or rinsate, and will be collected per procedure SMPL-21, Collection of Field Quality Control Samples. For the duplicate field sample, twice the soil volume (a second core) will be collected at one location in the CU, and will not be homogenized with the original sample. The locations that require the collection of a duplicate sample are identified in Appendix B. A trip blank will be collected each day that volatile organic compound (VOC) samples are collected, or one per 20 VOC samples that are collected, or one per cooler that will be shipped, whichever is more frequent. Depending on the sample collection method used, container blanks and/or rinsates will be collected. If container blanks are collected, one will be done before sample collection begins and one at the conclusion of sample collection for the entire Area 6E. If rinsates are required, one rinsate will be collected at a minimum frequency of one per 20 pieces of equipment reused in the field. All samples will be assigned unique sample identification numbers.

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

- The distance moved must be as small as possible (less than 3 feet);
- It must remain within the boundary of the same CU and sub-CU, and must still meet the minimum distance criterion;

- If the distance moved is greater than 3 feet, the move must be documented in a Variance/Field Change Notice (V/FCN), considered as significant, which will be approved by the agencies prior to collection.

- Anytime a location is moved, the appropriate figure should be used to determine the best direction to move the point to adhere to the above guidelines. The Characterization Manager or designee should be contacted when a sample location is moved. All final sampling locations will be documented in the Area 6E Certification Report.

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

All soil samples from the CU with like analyses (including the field duplicate) will be batched and submitted to the Sample Processing Laboratory (SPL) under one set of Chain of Custody/Request for Analysis forms which will represent one analytical release. The container blank and/or rinsate will be listed on a separate Chain of Custody/Request for Analysis form. No alpha/beta screens will be required, as historical information can be used for shipping purposes.

4.3.2 Equipment Decontamination

Decontamination is performed to prevent the introduction of contaminants from sampling equipment to subsequent soil samples. Field Technicians will ensure that sampling equipment (core tubes and caps) has been decontaminated prior to transport to the field. As described in SMPL-01, all sampling equipment will have been decontaminated before it is transported to the field site, and the 6-inch core liners will be decontaminated using the Level II [Section K.11 of the Sitewide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ)] procedure upon receipt from the manufacturer. Decontamination is also necessary in the field if sampling equipment is reused. If an alternate sampling method is used, equipment will be decontaminated between sampling locations, and again after the sampling performed under this PSP is completed. Following decontamination, clean disposable wipes may be used to replace air-drying of the equipment.

4.3.3 Physical Sample Identification

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

6E = Sample collected from Remediation Area 6E Area

C## = Certification unit from which sample was collected

Location = Sample location number within the CU

Analysis = "R" indicates radiological analysis; "M" indicates metals analysis; "P" indicates PCB analysis; "S" indicates semi-volatile organic compound (SVOC/PAH) analysis; and "L" indicates VOC analysis.

QC = Quality control sample, if applicable. A "D" indicates a field duplicate sample; "Y1" indicates the first container blank sample; "X1" indicates the first rinsate sample; "TB1" indicates the first trip blank collected, and each additional trip blank collected will be consecutively numbered.

For example, a field duplicate sample taken from the 3rd sample location from Area 6E CU 8 for VOC analysis would be identified as 6E-C08-3^L-D. If a rinsate sample is required, the first rinsate sample will be identified as 6E-C-X1-M. If a container blank is required, the first container blank will be identified as 6E-C-Y1-M. The first trip blank will be identified as 6E-C-L-TB1. It should be noted that the "^" symbol should not be included in the sample number for container blanks, rinsates, and trip blanks.

4.4 ANALYTICAL METHODOLOGY

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

All samples will be prepared for shipment to off-site laboratories per procedure 9501, Shipping Samples to Off-site Laboratories. Samples will only be shipped to off-site laboratories that are listed on the Fluor Fernald Approved Laboratories List. Historical data from the area will be used to ship the samples off site. The highest post-excavation total uranium result from Area 6E is 339 mg/kg from boring A6FP-NOA-DG-43.

Samples collected for VOC analysis should be shipped to an off-site laboratory within 24 hours of sample collection. As soon as the samples arrive at the laboratory where the analysis will take place, all samples should be prepared for analysis (including homogenization for non-VOC samples), and radiological samples should be sealed to begin the in-growth period for radium analysis.

The sampling and analytical requirements are listed in Table 4-1 and the Target Analyte Lists (TAL) are listed in Table 4-2.

Laboratory analysis of certification samples will be conducted using an approved analytical method, as discussed in Appendix H of the SEP. Where possible, the CRDL is set at 10 percent of the FRL.

Analyses will be conducted to either Analytical Support Level (ASL) D or E. All requirements for ASL E are the same as for ASL D except the MDL for the selected analytical method must be at least 20 percent of FRL.

A minimum of 10 percent of the laboratory data will be validated to Validation Support Level (VSL) D with the remainder validated to VSL B. Additional validation information can be found in Section 6.

4.5 STATISTICAL ANALYSIS

Once data are validated, results will be entered into the SED and a statistical analysis will be performed to evaluate the pass/fail criteria for each CU. The statistical approach is discussed in Section 3.4.3 and Appendix G of the SEP, and will be the same for this area as it has been for previous certification areas.

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 ASCOC to its FRL, or the 90 percent UCL on the mean of each secondary ASCOC. On an individual CU basis, any ASCOC with the 95 percent UCL above the FRL for primary ASCOCs (or 90 percent UCL above the FRL results for secondary COCs) results in that CU failing certification. If the data distribution is not normal or lognormal, the appropriate nonparametric approach discussed in Appendix G of the SEP will be used to evaluate the first criterion; additionally, 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, hotspot criterion, is related to individual samples. An individual sample cannot be greater than two times the FRL (see Section 3.4.6 and Figure 3-11 of the SEP for further details) and if it is greater than two times it will be considered a hotspot. When the given UCL on the mean for each ASCOC is less than its FRL, and the hotspot criterion is met, the CU has met both criteria and will be considered certified.

In the event that the CU fails certification, the following scenarios will be evaluated: 1) a high variability in the data set, 2) localized contamination, and 3) widespread contamination. Details on the evaluation and responses to these possible outcomes are provided in Section 3.4.5 of the SEP. When all CUs within the scope of this CDL has passed certification, a Certification Report will be issued. The Certification Report will be submitted to the U.S. Environmental Protection Agency (EPA) and the OEPA to receive acknowledgement that the pertinent operable unit remedial actions were completed and the individual CUs are certified and ready to be released for interim or final land use. Section 7.4 of the SEP provides additional details and describes the required content of the Certification Report.

TABLE 4-1
SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte[a]	Method[a]	Sample Matrix	ASL	TAT	Preservative	Container[b]	Minimum Mass/Volume
Rads / Metals / PCBs / SVOC (TALs AB / C / D / E)	Gamma Spec, Alpha Spec, and LSC	Solid	D/E[a]	EDD gamma 10 days[e] Final gamma 14 days[e] Final thorium-230 10 days Final technetium-99 10 days	Cool, 4° C	Glass with Teflon-lined lid	700 g (2100 g)[c]
	ICP or ICP/MS or CVAA			10 days			
	GC			10 days			
	GC			10 days			
Rads / Metals / PCBs (TALs A / GHIJKL / U)	Gamma Spec	Solid	D/E[a]	EDD gamma 10 days[e] Final gamma 14 days[e]	Cool, 4° C	Glass with Teflon-lined lid	700 g (2100 g)[c]
	ICP or ICP/MS or CVAA			10 days			
	GC			10 days			
Rads / Metals (TALs A / GL or A / HJK or A / HL)	Gamma Spec	Solid	D/E[a]	EDD gamma 10 days[e] Final gamma 14 days[e]	Cool, 4° C	Glass with Teflon lined lid	500 g (1500 g)[c]
	ICP or ICP/MS or CVAA			10 days			
VOCs (TAL(s) F or MNOPQR or NO or OPRT or OQS or PR)	GC/MS	Solid	D/E[a]	10 days	Cool, 4° C	3 x 1-Encore Sampler Plus 1 x 2-oz jar for % moisture	Each full Encore Sampler[c] will hold approx. 5 g
VOCs (TAL(s) F or MNOPQR or NO or OPRT or OQS or PR)	GC/MS	Liquid (trip blank)	D/E[a]	10 days	H_2SO_4 pH<2 Cool, 4° C	3 x 40-ml glass with teflon-lined septa	120 mL (no headspace)
Metals (TALs C or GHIJKL or GL or HJK or HL)	ICP or ICP/MS or CVAA	Liquid[d]	D/E[a]	10 days	HNO_3 pH<2	Polyethylene	500 ml

TABLE 4-1
SAMPLING AND ANALYTICAL REQUIREMENTS
(Continued)

[a] Samples will be analyzed according to ASL D requirements but the minimum detection level may cause some analyses to be considered ASL E.

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

[c] At the direction of the Field Sampling Lead, triple the specified volume must be collected for all samples at one location in the 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".

[d] If "push tubes" are used for sampling, the off-site laboratories will be sent container blanks. If an alternative sample method is used, the Field Technicians will collect a rinsate.

[e] One sample collected per CU will be selected for analysis utilizing a 21-day in-growth with a 25-day turnaround time (TAT) for radium-226 only. Samples with a 7-day in-growth will be denoted by a "7DAY" suffix while the sample chosen as a 21-day in-growth will be denoted by a "21DAY" suffix within the electronic data deliverable (EDD).

CVAA - Cold Vapor Atomic Absorption
GC/MS - gas chromatography mass spectrometry
GC - gas chromatography
ICP - inductively coupled plasma (atomic emission spectroscopy)
ICP/MS - inductively coupled plasma/mass spectrometry
LSC - liquid scintillation counting

ADDITIONAL INFORMATION
Historical data for shipment of these samples is 36.1 mg/kg total uranium from boring 6E-C12-11.
All data will be validated
Approximately 19 rinsates or 2 container blanks for metals will be submitted for analysis under this project

TABLE 4-2
TARGET ANALYTE LISTS

20810-PSP-0011-A
(Rads - ASL D/E)
(249 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
Radium-226	1.7 pCi/g	0.3 pCi/g
Radium-228	1.8 pCi/g	0.3 pCi/g
Thorium-228	1.7 pCi/g	0.3 pCi/g
Thorium-232	1.5 pCi/g	0.3 pCi/g
Total Uranium	82 mg/kg	8.0 mg/kg
Total Uranium (high-leachability zone)	20 mg/kg	4.0 mg/kg

20810-PSP-0011-B
(Rads - ASL D/E)
(204 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
Lead-210	38 pCi/g	10 pCi/g
Cesium-137	1.4 pCi/g	0.14 pCi/g
Technetium-99	29.1 pCi/g[1]	2.9 pCi/g
Thorium-230	280 pCi/g	28 pCi/g

20810-PSP-0011-C
(Metals - ASL D/E)
(204 Soil Analysis Specified in PSP)

Analyte	FRL/*BTV*	MDL[2]	MDL (water)
Antimony	96 mg/kg / *10 mg/kg*	*1.0 mg/kg*	1.5 mg/L
Arsenic	12 mg/kg	1.2 mg/kg	1.8 mg/L
Barium	68000 mg/kg	6800 mg/kg	10200 mg/L
Beryllium	1.5 mg/kg	0.15 mg/kg	0.225 mg/L
Cadmium	82 mg/kg / *5 mg/kg*	*0.5 mg/kg*	0.75 mg/L
Chromium	300 mg/kg	30 mg/kg	45 mg/L
Lead	400 mg/kg	40 mg/kg	60 mg/L
Mercury	7.5 mg/kg	0.75 mg/kg	1.12 mg/L
Molybdenum	2900 mg/kg / *10 mg/kg*	*1.0 mg/kg*	1.5 mg/L
Selenium	5400 mg/kg	540 mg/kg	810 mg/L
Silver	29000 mg/kg / *10 mg/kg*	*1.0 mg/kg*	1.5 mg/L

20810-PSP-0011-D
(Pesticides/PCBs - ASL D/E)
(204 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
Aroclor-1254	0.13 m g/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg
Dieldrin	0.015 mg/kg	0.0015 mg/kg

20810-PSP-0011-E
(PAHs - ASL D/E)
(204 Soil Analysis Specified in PSP)

Analyte	FRL/*BTV*	MDL[2]
Benzo(a)anthracene	20 mg/kg / *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 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	200 mg/kg / *1.0 mg/kg*	0.1 mg/kg
Crysene	2000 mg/kg / *1.0 mg/kg*	0.1 mg/kg
Dibenzo(a,h)anthracene	2.0 mg/kg / *0.088 mg/kg*	0.01 mg/kg[3]
Fluoranthene	*10 mg/kg*	0.1 mg/kg
Indeno(1,2,3-cd)pyrene	20 mg/kg / *1.0 mg/kg*	0.1 mg/kg
Phenanthrene	*5 mg/kg*	0.5 mg/kg
Pyrene	*10 mg/kg*	0.1 mg/kg

20810-PSP-0011-F
(VOCs - ASL D/E)
(204 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
1,1,1-Trichloroethane	4.3 mg/kg[4]	0.43 mg/kg
1,1-Dichloroethene	0.41 mg/kg	0.04 mg/kg
1,2-Dichloroethane	0.00553 mg/kg[5]	0.000553 mg/kg
4-Methyl-2-Pentanone (MIK)	2500 mg/kg	250 mg/kg
Acetone	43000 mg/kg	4300 mg/kg
Benzene	850 mg/kg	85 mg/kg
Carbon Tetrachloride	2.1 mg/kg	0.2 mg/kg
Ethylbenzene	5100 mg/kg	510 mg/kg
Methylene Chloride	37 mg/kg	3.7 mg/kg
Tetrachloroethene	3.6 mg/kg	0.36 mg/kg
Toluene	100000 mg/kg	10000 mg/kg
Trichloroethene	25 mg/kg	2.5 mg/kg
Total Xylenes	920000 mg/kg	92000 mg/kg

20810-PSP-0011-G
(Metals - ASL D/E)
(18 Soil Analysis Specified in PSP)

Analyte	FRL	MDL	MDL (water)
Arsenic	12 mg/kg	1.2 mg/kg	1.8 mg/L

20810-PSP-0011-H
(Metals - ASL D/E)
(36 Soil Analysis Specified in PSP)

Analyte	FRL	MDL	MDL (water)
Barium	68000 mg/kg	6800 mg/kg	10200 mg/L

20810-PSP-0011-I
(Metals - ASL D/E)
(9 Soil Analysis Specified in PSP)

Analyte	FRL/*BTV*	MDL[2]	MDL (water)
Cadmium	82 mg/kg / *5 mg/kg*	*0.5 mg/kg*	0.75 mg/L
Chromium	300 mg/kg	30 mg/kg	45 mg/L
Silver	29000 mg/kg / *10 mg/kg*	*1.0 mg/kg*	1.5 mg/L

20810-PSP-0011-J
(Metals - ASL D/E)
(27 Soil Analysis Specified in PSP)

Analyte	FRL	MDL	MDL (water)
Lead	400 mg/kg	40 mg/kg	60 mg/L

20810-PSP-0011-K
(Metals - ASL D/E)
(27 Soil Analysis Specified in PSP)

Analyte	FRL	MDL	MDL (water)
Mercury	7.5 mg/kg	0.75 mg/kg	1.12 mg/L

20810-PSP-0011-L
(Metals - ASL D/E)
(27 Soil Analysis Specified in PSP)

Analyte	FRL	MDL	MDL (water)
Selenium	5400 mg/kg	540 mg/kg	810 mg/L

20810-PSP-0011-M
(Metals - ASL D/E)
(9 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
1,1-Dichloroethene	0.41 mg/kg	0.04 mg/kg
1,2-Dichloroethane	0.00553 mg/kg[5]	0.000553 mg/kg
2-Butanone (MEK)	11.9 mg/kg[5]	1.19 mg/kg
4-Methyl-2-Pentanone (MIK)	2500 mg/kg	250 mg/kg
Carbon Tetrachloride	2.1 mg/kg	0.2 mg/kg
Cyclohexanone	100000 mg/kg[6]	10000 mg/kg
Ethyl Ether	1800 mg/kg[6]	180 mg/kg
Tetrachloroethene	3.6 mg/kg	0.36 mg/kg
Trichloroethene	25 mg/kg	2.5 mg/kg

20810-PSP-0011-N
(VOCs - ASL D/E)
(18 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
1,1,1-Trichloroethane	4.3 mg/kg[4]	0.43 mg/kg

20810-PSP-0011-O
(VOCs - ASL D/E)
(36 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
Acetone	43000 mg/kg	4300 mg/kg

20810-PSP-0011-P
(VOCs - ASL D/E)
(27 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
Benzene	850 mg/kg	85 mg/kg
Ethylbenzene	5100 mg/kg	510 mg/kg

20810-PSP-0011-Q
(VOCs - ASL D/E)
(18 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
Methylene Chloride	37 mg/kg	3.7 mg/kg

20810-PSP-0011-R
(VOCs - ASL D/E)
(27 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
Toluene	100000 mg/kg	10000 mg/kg
Total Xylenes	920000 mg/kg	92000 mg/kg

20810-PSP-0011-S
(VOCs - ASL D/E)
(9 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
Trichlorofluoromethane	355 mg/kg[5]	35.5 mg/kg

20810-PSP-0011-T
(VOCs - ASL D/E)
(9 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
2-Butanone (MEK)	11.9 mg/kg[5]	1.19 mg/kg

20810-PSP-0011-U
(PCBs - ASL D/E)
(9 Soil Analysis Specified in PSP)

Analyte	FRL	MDL
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg

[1] Where the WAC is less than the FRL (as with technetium-99), the WAC will be used for data evaluation purposes.

[2] Where both the FRL and the BTV are present, the minimum detection level (MDL) is based on the lower of the two values given.

[3] 10 percent of the BTV is not achievable.

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

[5] This analyte does not have a FRL or BTV. Therefore, the Residential GCN, from the April 2006 Closure Plan Review Guidance for RCRA Facilities, written by the OEPA Division of Hazardous Waste Management, was used.

[6] This analyte does not have a FRL, BTV, or GCN. Therefore, the Region 9 PRG was used, per OEPA.

[7] This analyte does not have a FRL, BTV, GCN, or PRG. Therefore, the laboratory's detection limit will be used for the MDL.

mg/L - milligrams per liter

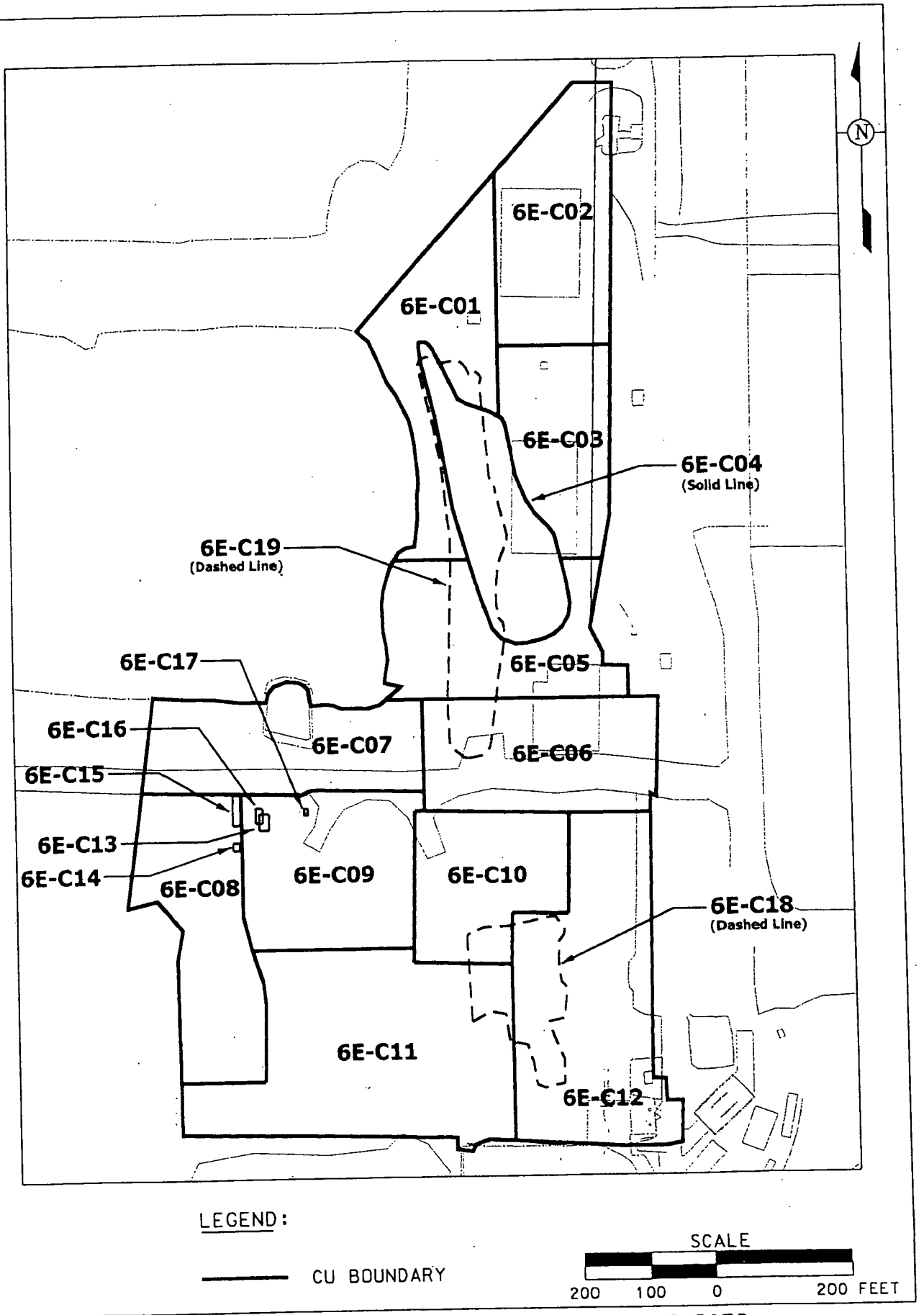


FIGURE 4-1. AREA 6E CERTIFICATION BOUNDARIES

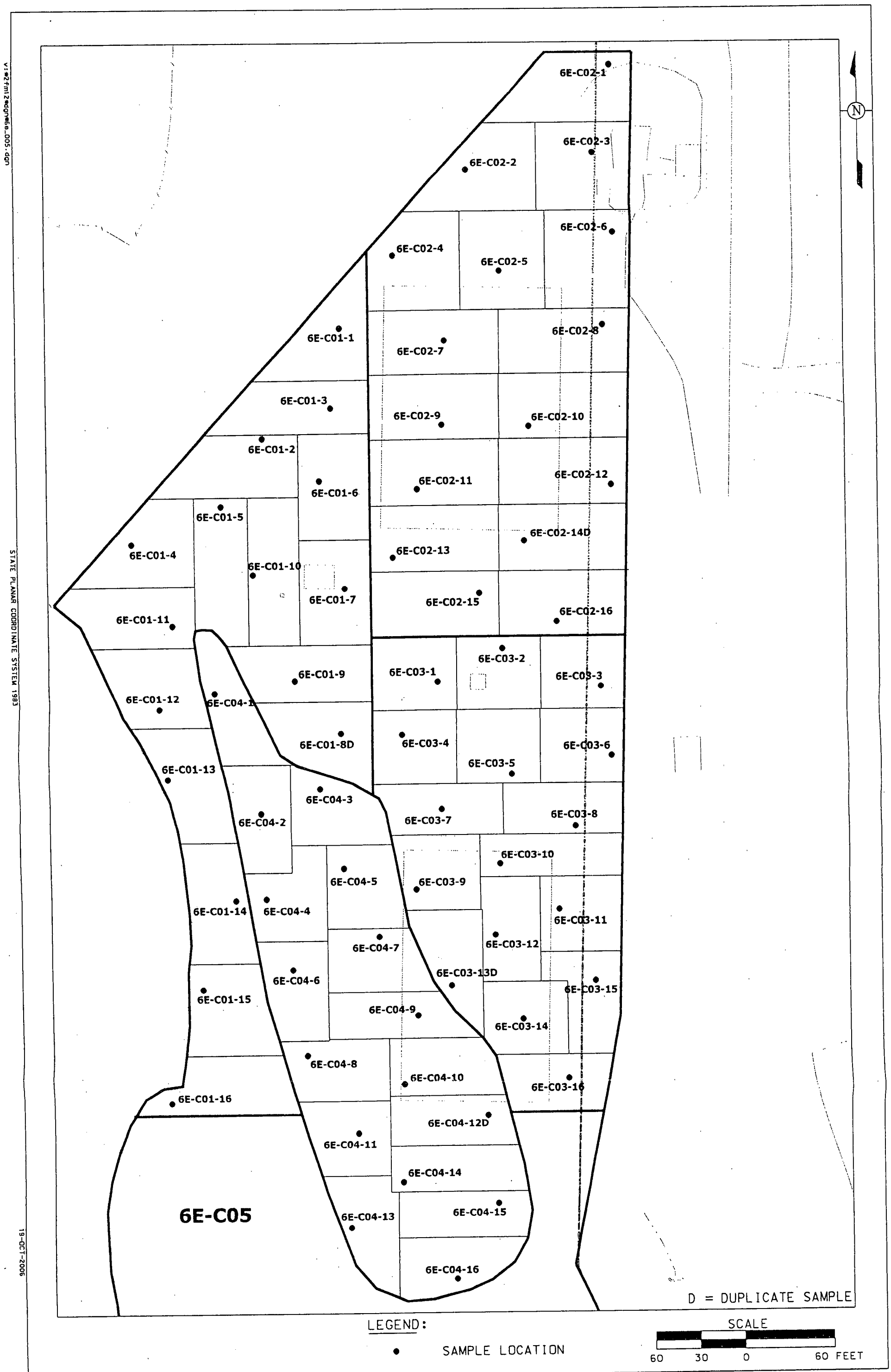


FIGURE 4-2. CERTIFICATION SAMPLING LOCATIONS FOR CUs 6E-C01, 6E-C02, 6E-C03, & 6E-C04

D = DUPLICATE SAMPLE

6E-C01

6E-C03

6E-C01-1
6E-C01-2
6E-C01-3
6E-C01-4
6E-C01-5
6E-C01-6
6E-C01-7D
6E-C01-8
6E-C01-9
6E-C01-10
6E-C01-11
6E-C01-12
6E-C01-13
6E-C01-14
6E-C01-15
6E-C01-16

6E-C07-1
6E-C07-2
6E-C07-3
6E-C07-4
6E-C07-5
6E-C07-6
6E-C07-7
6E-C07-8
6E-C07-9D
6E-C07-10
6E-C07-11
6E-C07-12
6E-C07-13
6E-C07-14
6E-C07-15
6E-C07-16

6E-C06-1
6E-C06-2
6E-C06-3D
6E-C06-4
6E-C06-5
6E-C06-6
6E-C06-7
6E-C06-8
6E-C06-9
6E-C06-10
6E-C06-11
6E-C06-12
6E-C06-13
6E-C06-14
6E-C06-15
6E-C06-16

6E-C08

6E-C09

6E-C10

6E-C12

LEGEND:

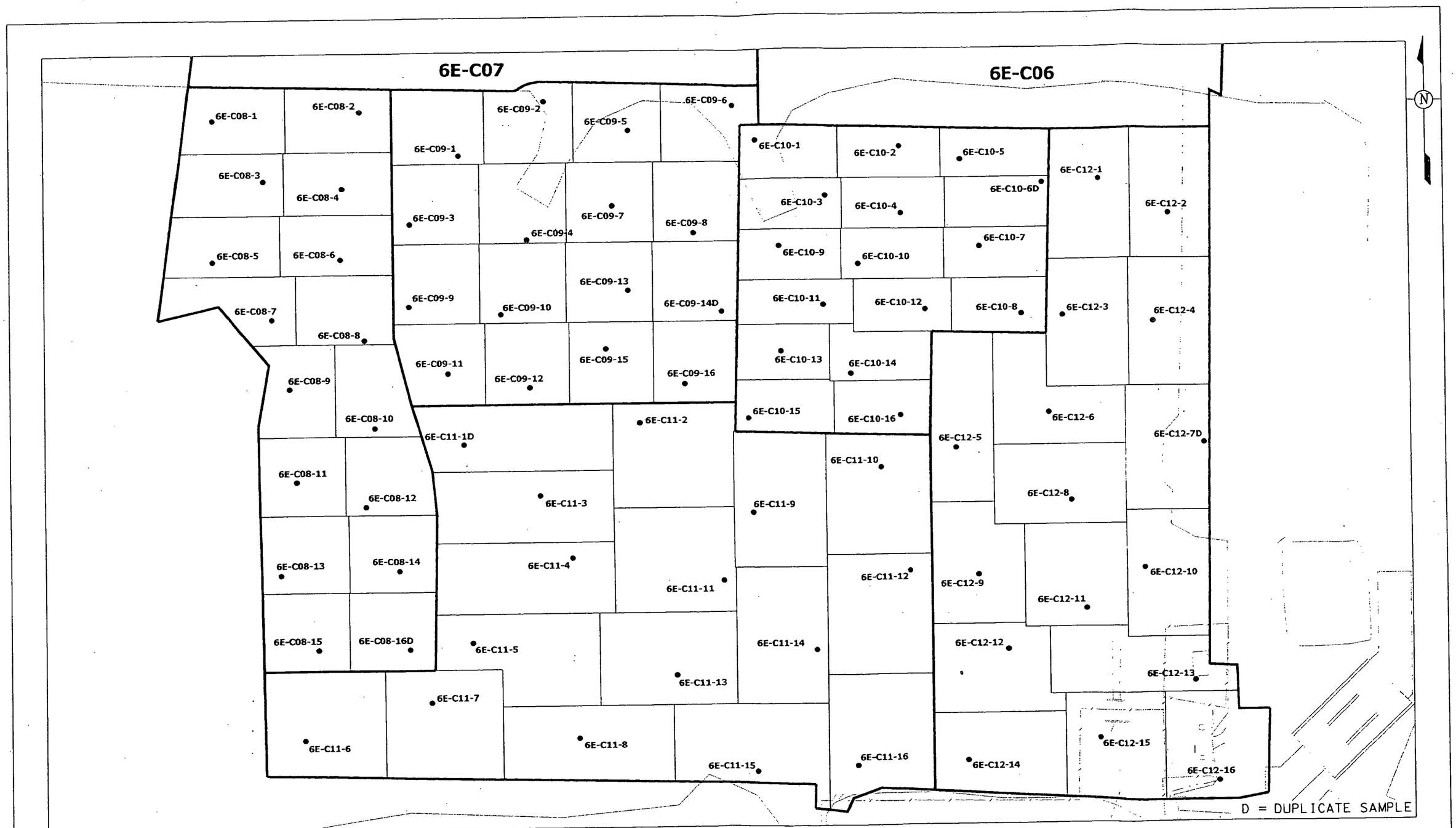
● SAMPLE LOCATION

SCALE

60 30 0 60 FEET

v:\2fm12\dgn\6e_006.dgn STATE PLANAR COORDINATE SYSTEM 1983 19-OCT-2006

FIGURE 4-3. CERTIFICATON SAMPLING LOCATIONS FOR CUs 6E-C05, 6E-C06, & 6E-C07



v:\2fm12\dgn\6e_007.dgn STATE PLANAR COORDINATE SYSTEM 1983 19-OCT-2006

FIGURE 4-4. CERTIFICATION SAMPLING LOCATIONS FOR CUs 6E-C08, 6E-C09, 6E-C10, 6E-C11, & 6E-C12

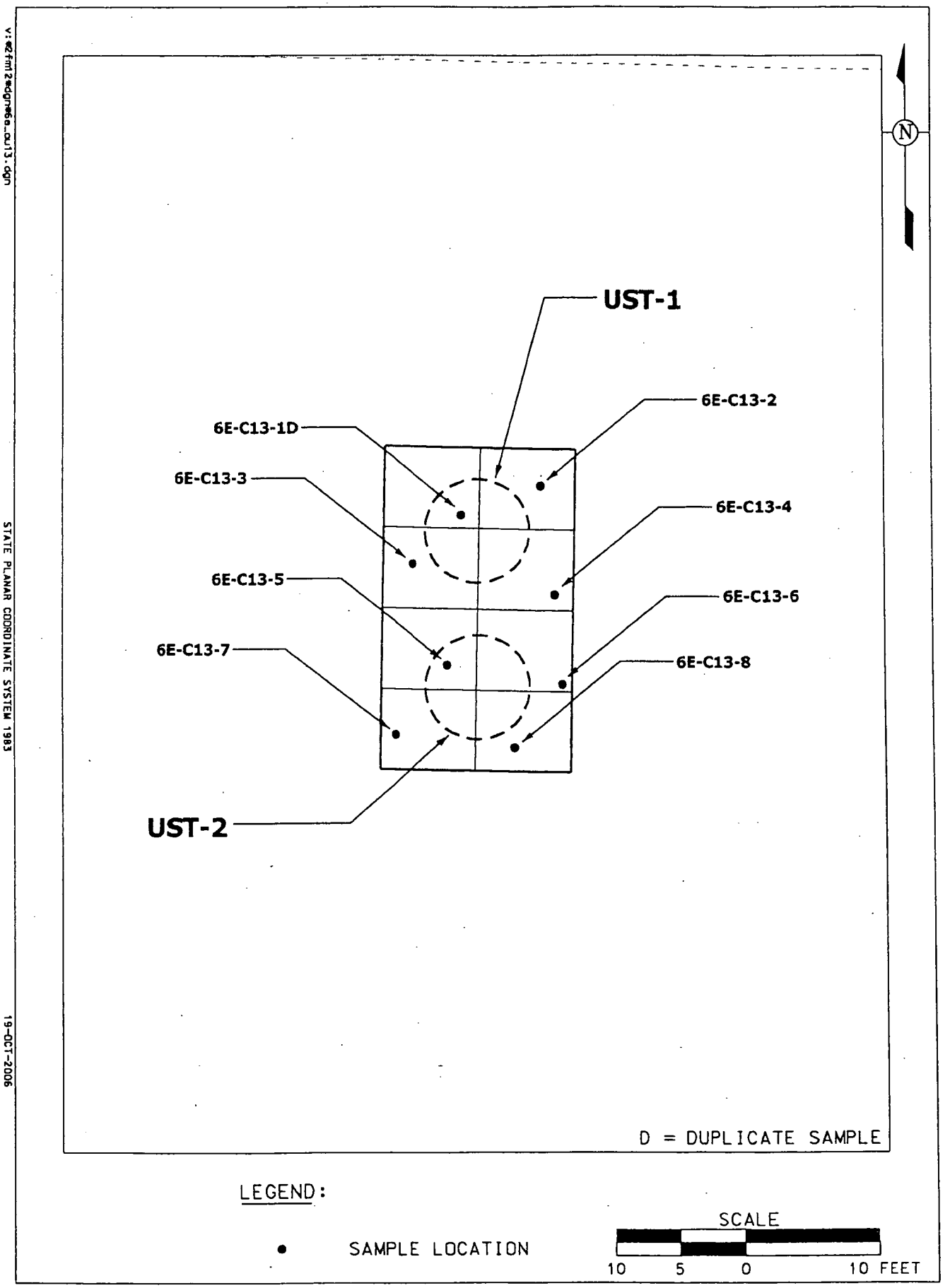


FIGURE 4-5. CERTIFICATION SAMPLING LOCATIONS FOR CU 6E-C13

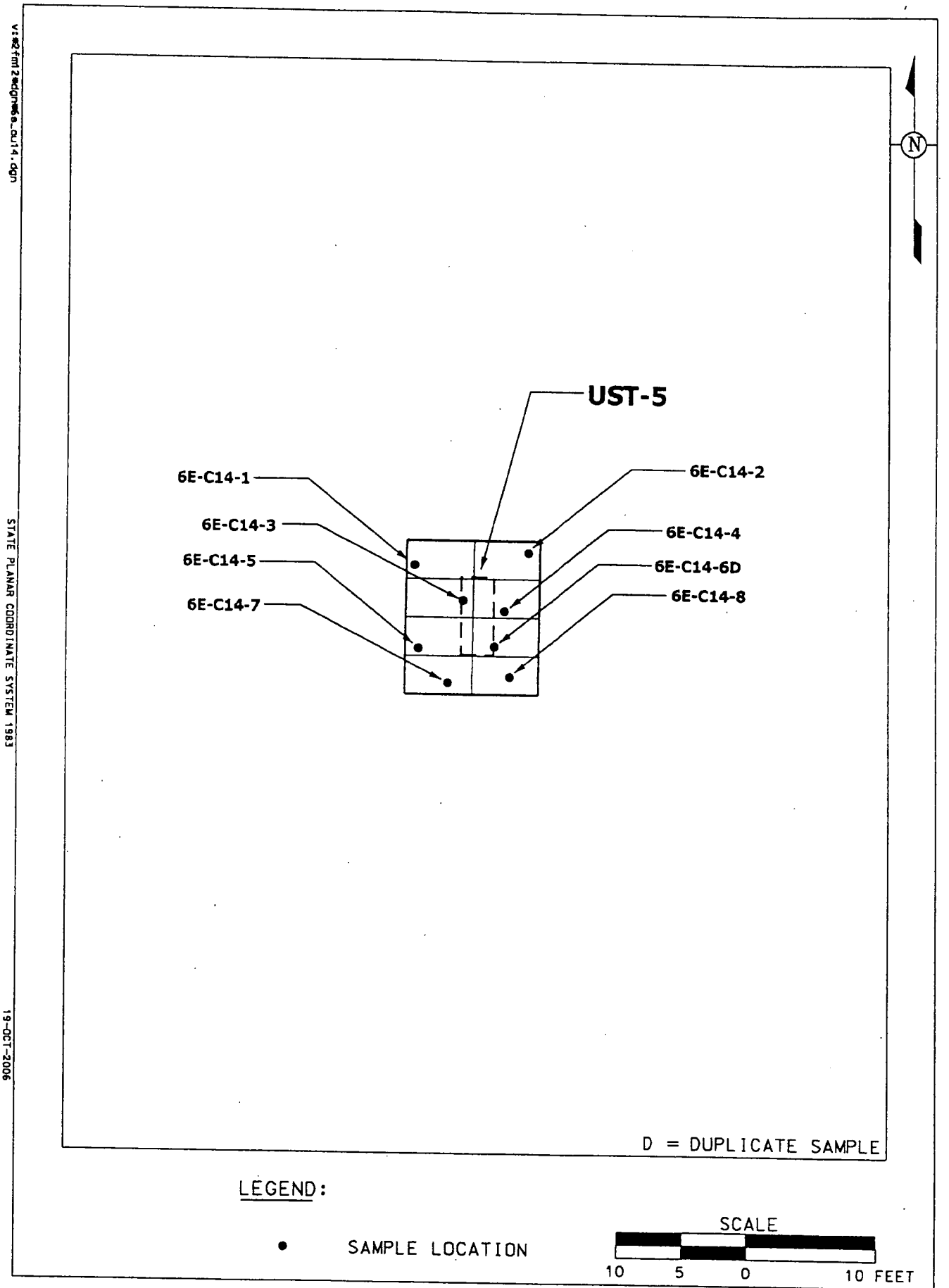


FIGURE 4-6. CERTIFICATION SAMPLING LOCATIONS FOR CU 6E-C14

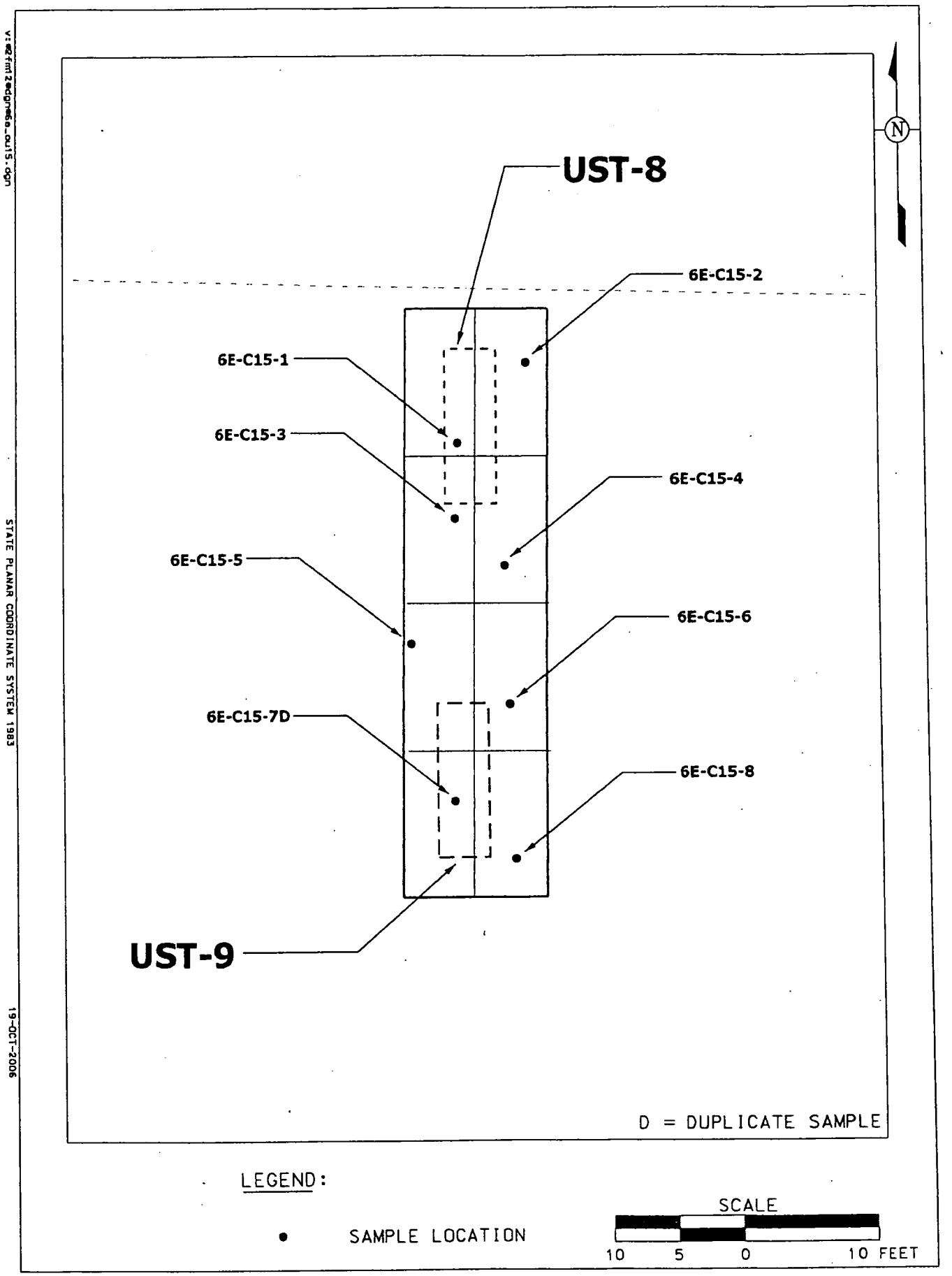


FIGURE 4-7. CERTIFICATION SAMPLING LOCATIONS FOR CU 6E-C15

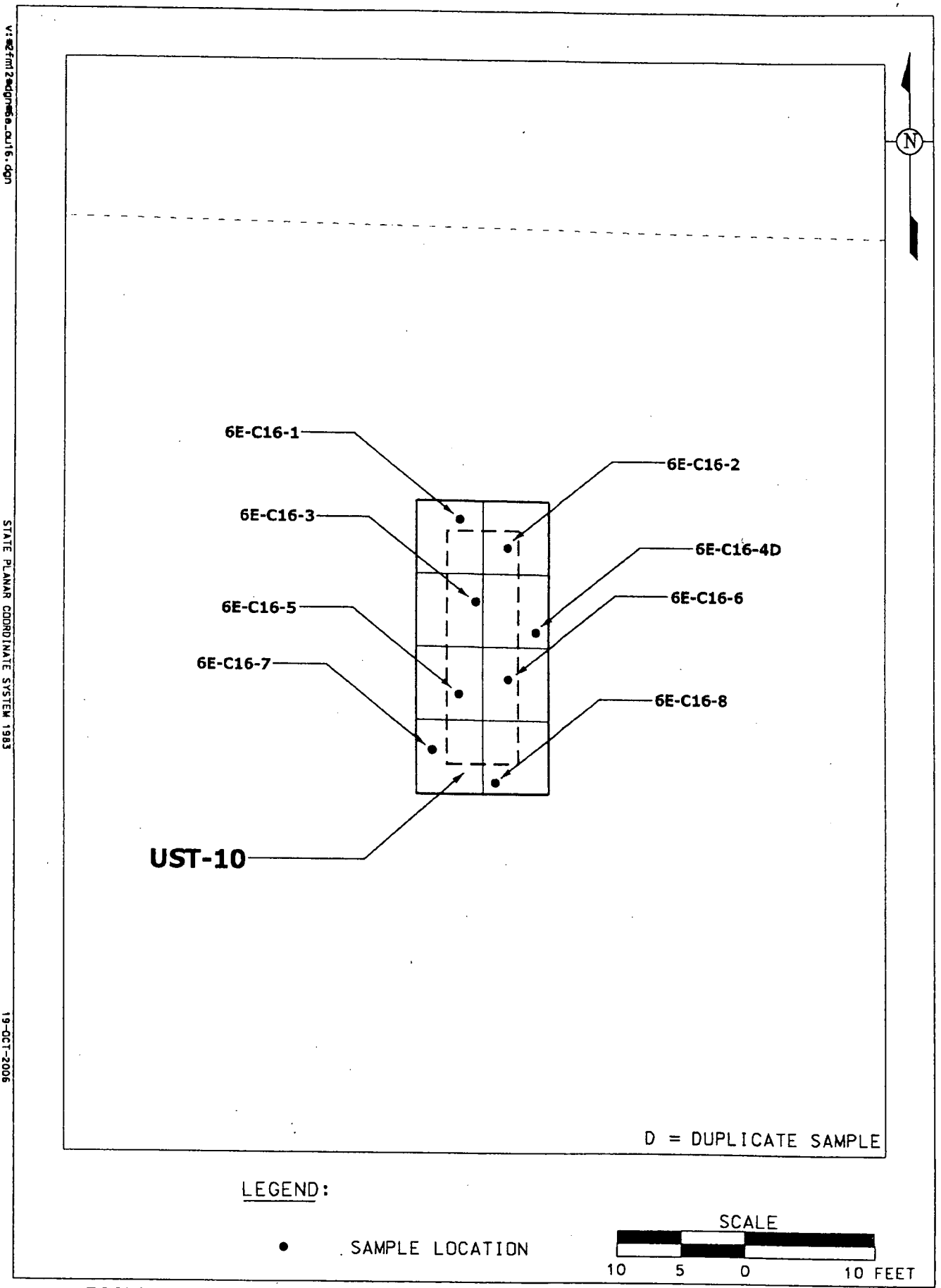


FIGURE 4-8. CERTIFICATION SAMPLING LOCATIONS FOR CU 6E-C16

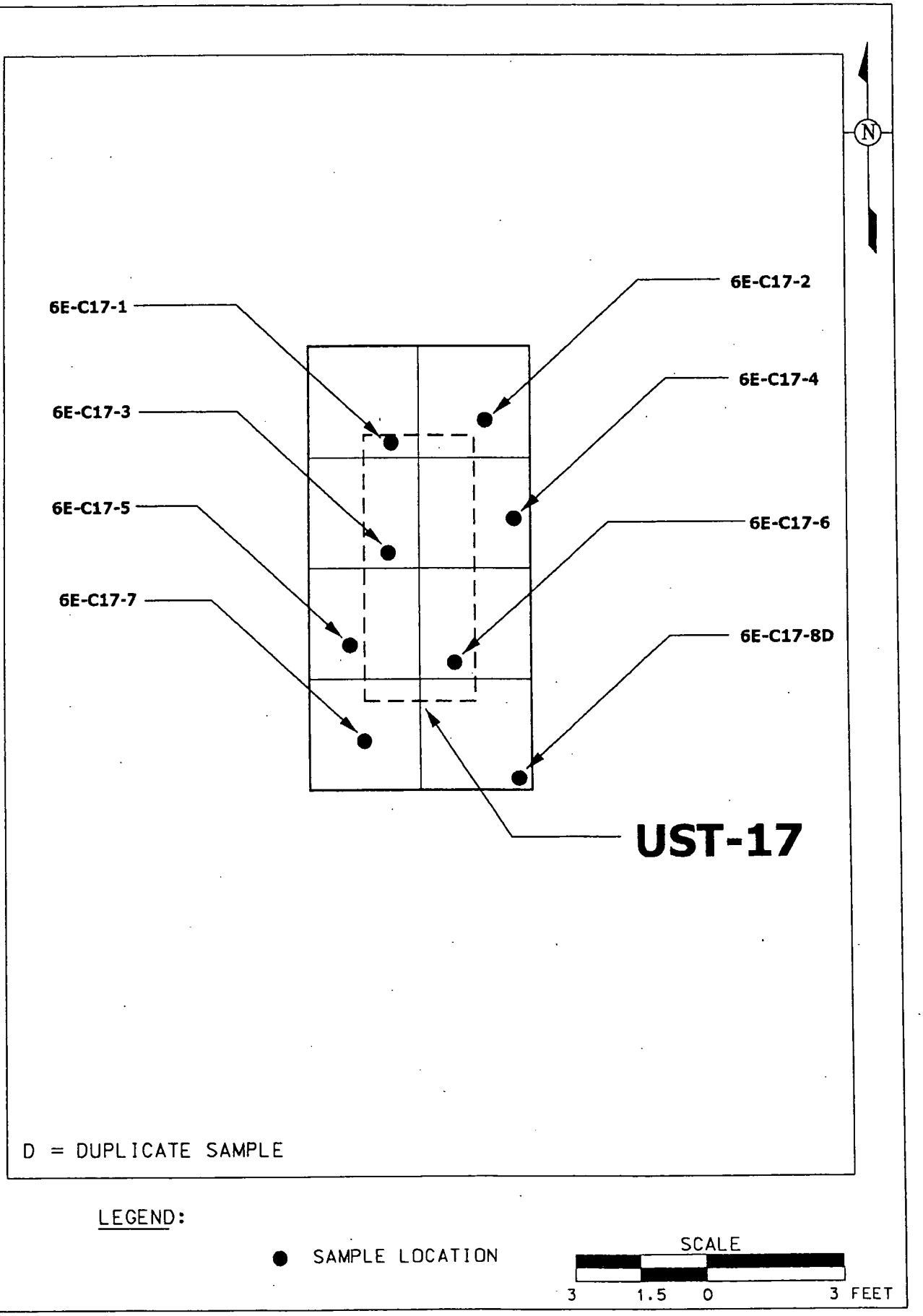


FIGURE 4-9. CERTIFICATION SAMPLING LOCATIONS FOR CU 6E-C17

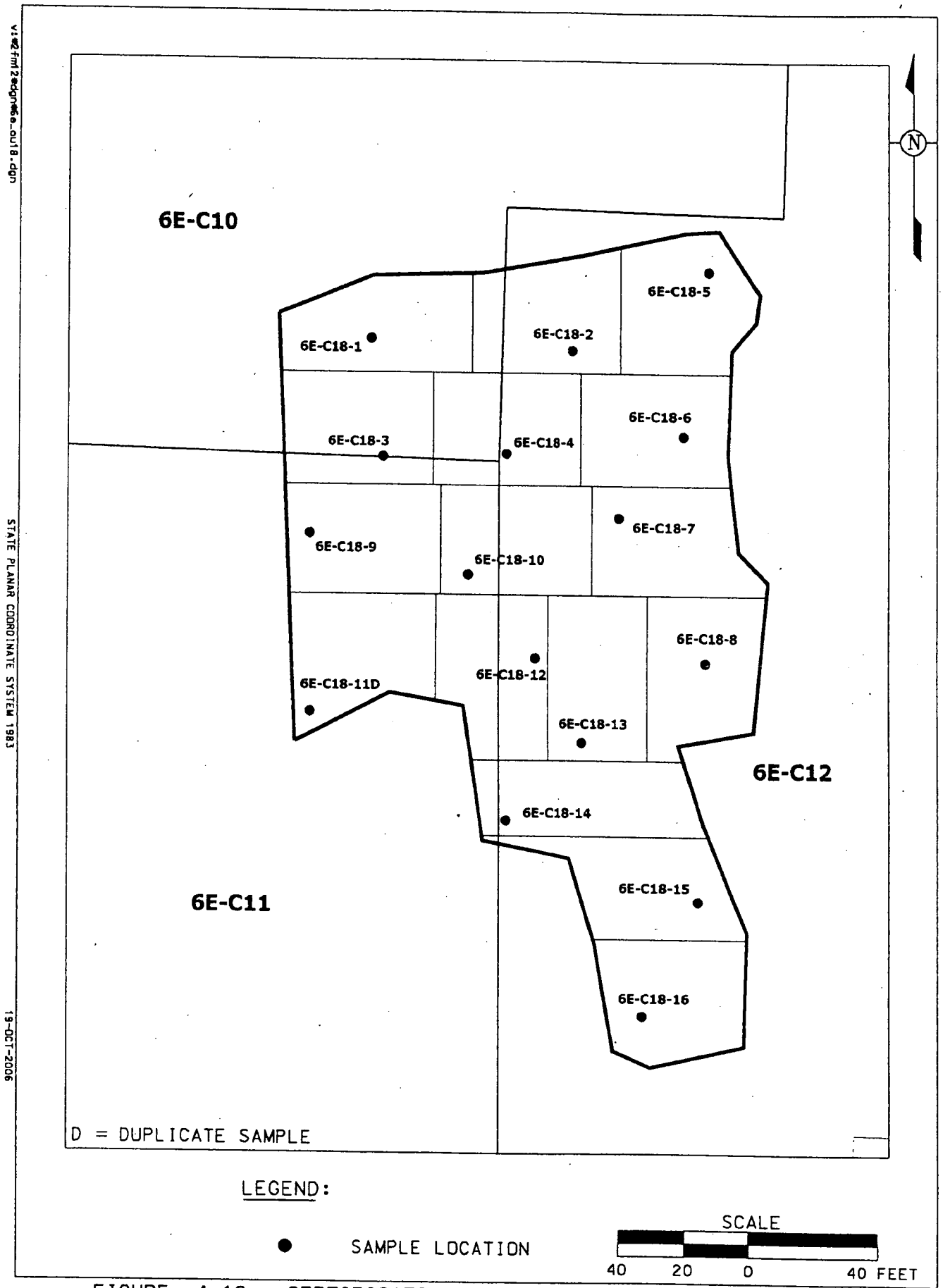


FIGURE 4-10. CERTIFICATION SAMPLING LOCATIONS FOR CU 6E-C18

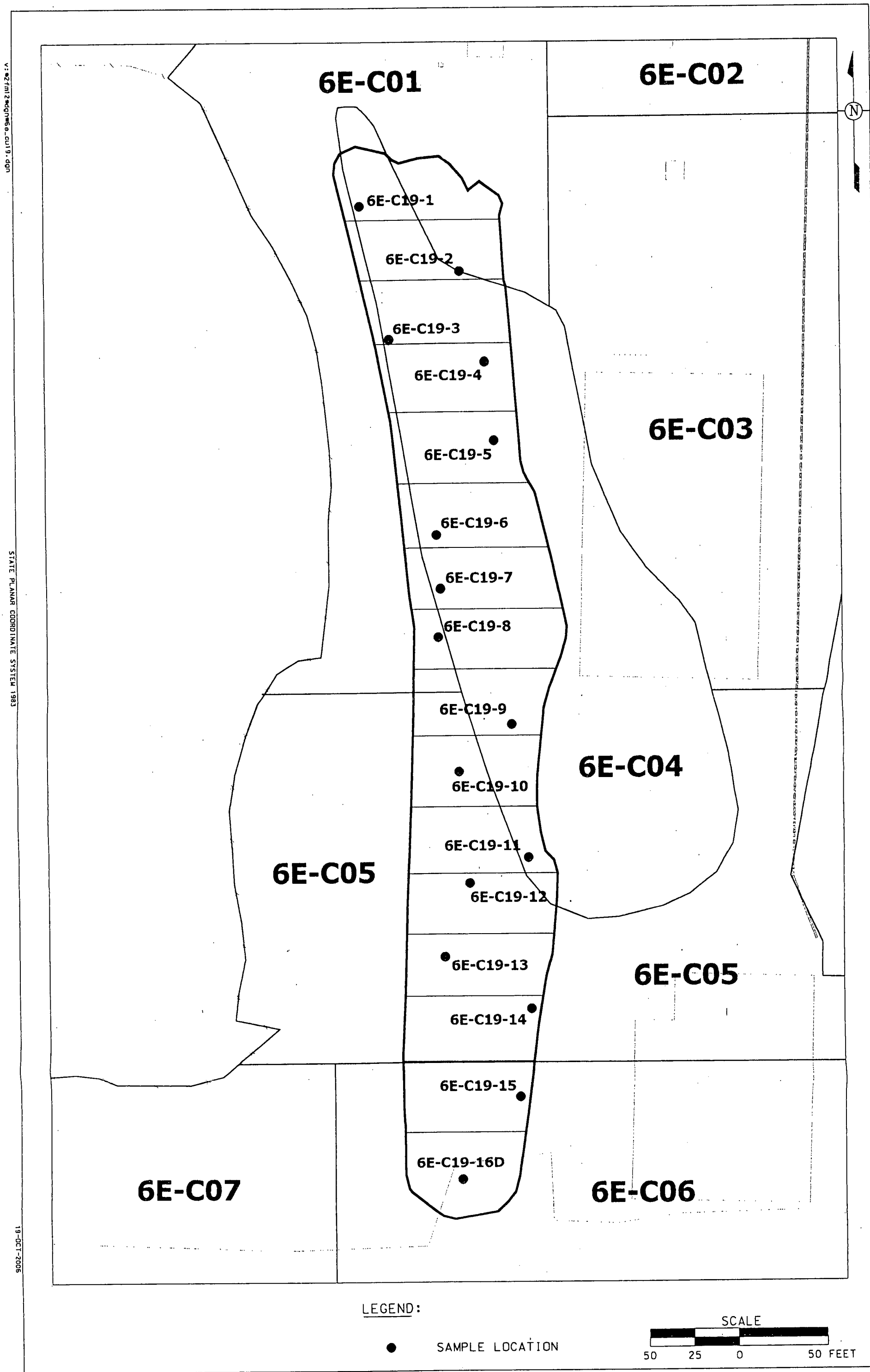


FIGURE 4-11. CERTIFICATION SAMPLE LOCATIONS FOR CU 6E-C19

5.0 SCHEDULE

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

Activity	Target Date
Submittal of Certification Design Letter	October 20, 2006
Start of Certification Sampling	Complete
Complete Field Work	October 20, 2006
Complete Analytical Work	October 27, 2006
Complete Data Validation and Statistical Analysis	October 27, 2006
Submit Certification Report	October 27, 2006

[a]The date for submittal of the Certification Report is a commitment to EPA and OEPA. Other dates are internal target completion dates.

6.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

6.1 FIELD QUALITY CONTROL SAMPLES, ANALYTICAL REQUIREMENTS AND DATA VALIDATION

Per requirements of the SEP and Data Quality Objectives SL-052, Revision 3 (Appendix C), the field quality control, analytical and data validation requirements are as follows:

- Field QC requirements include one field duplicate for the CU, as noted in Section 4.3 and identified in Appendix B. The field duplicate sample will be analyzed for the same COCs as the other samples in the CU from which the field duplicate has been collected.

  If "push tubes" are used for sample collection, one container blank will be collected before sample collection begins and one will be collected at the conclusion of sample collection for the entire Area 6E area. The container blank sample will be analyzed for all of the metal COCs required for Area 6E. If an alternate sample collection method is used, one rinsate will be collected and analyzed for all of the metal COCs required for Area 6E at a minimum frequency of one per 20 pieces of equipment reused in the field.

  A trip blank is required if VOC samples are being collected. The trip blanks will be analyzed for all of the VOC COCs required for Area 6E. The frequency for a trip blank is one per day, or one per batch of 20 VOC samples collected, or one per cooler to be shipped, whichever is more frequent.

- All analyses will be performed at ASL D or E, where E meets the minimum detection level of 20 percent of the FRL and is above the SCQ ASL D detection level, but the analyses meet all other SCQ ASL D criteria. An ASL D data package will be provided for all of the data.

- All field data will be validated. A minimum of 10 percent of the laboratory data will be validated to VSL D with the remainder validated to VSL B. The following CUs will be validated to VSL D: 6E-C03, 6E-C12, and 6E-C14. If any result is rejected during validation, the sample will be re-analyzed or an additional random location from that sub-CU will be sampled and analyzed in its place. If necessary, this change will be documented in a V/FCN.

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

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

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

- variations from the SCQ methodology are documented in a variance, or

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

6.2 PROJECT SPECIFIC PROCEDURES, MANUALS AND DOCUMENTS

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

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

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

6.3 INDEPENDENT ASSESSMENT

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

6.4 IMPLEMENTATION OF CHANGES

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

7.0 HEALTH AND SAFETY

Coordinate with representatives of the Health and Safety and Industrial Hygiene and Construction for requirements to enter this area. Any hazards identified during the project walk-down must be corrected/controlled prior to the start of work. Weekly walk-downs will be conducted throughout the course of the project in accordance with SPR 1-10, Safety Walk-Throughs. All work performed on this project will be performed in accordance with applicable Environmental Services procedures, RM-0020, (Radiological Control Requirements Manual), RM-0021 (Safety Performance Requirements Manual), Fluor Fernald work permits, Radiological Work Permit (RWP), penetration permits, Construction Traveler, and other applicable permits as determined by project management. The radiological work requirements for activities will be detailed in the activity-specific RWPs. Concurrence with applicable safety permits is required for each technician in the performance of their assigned duties.

A safety briefing will be conducted prior to the initiation of field activities. Fluor Fernald managers and supervisors are responsible for ensuring that all field activities comply with the Safety and Health requirements and ensuring compliance with the Work Plan. These briefings will be documented. Personnel who are not documented as having completed these briefings will not participate in the execution of field activities.

Personnel will also be briefed on any health and safety documents (such as Travelers) that may apply to the project work scope. During the course of this project, operators shall maintain a 50-foot buffer zone between equipment and sampling personnel where field conditions and working space permit. When this buffer zone cannot be maintained, sampling personnel must communicate their intentions to move around or near the equipment with the operators through eye contact and verbal communication or hand signals. At no time shall the sampling activities be within 25 feet of operating heavy equipment without approval of both the project health and safety representative and construction management. Additionally, the sampling team will utilize traffic cones or other equipment to designate a safe buffer zone for their needs when the 50-foot boundary is not practical. Additional safety information can be found in 20100-HS-0002, Soil and Disposal Facility Project Integrated Health and Safety Plan. All personnel have stop-work authority for imminent safety hazards or other hazards resulting from noncompliance with the applicable safety and health practices.

All personnel entering the Construction Area will obtain a pre-entry briefing on current activities or hazards that may affect their work from construction management. Additionally, prior to entry into an excavation area, the Competent Person for Excavation shall be contacted to assure that the daily inspection has been completed and the excavation is safe to enter.

Sampling Leads will be provided with cellular phones for all sampling activities, and **all emergencies will be reported by dialing 911 and 648-6511**. Announcements for severe weather will be provided to select company issued cellular phones. Cellular phones are provided to the Technicians by FCP as needed. As soon as possible, field personnel are to contact their supervisor and Health and Safety Representative after any unplanned event or injury.

8.0 DISPOSITION OF WASTE

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

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

9.0 DATA MANAGEMENT

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

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

Samples will be assigned a unique sample number as explained in Section 2.3 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. Sample Data Management personnel will enter analytical data into the SED. 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. The Data Management Lead will review analytical data when it is received from the off-site laboratories.

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

To ensure that correct coordinates and survey information are tied to the final sample locations in the database, the following process will take place. Upon surveying all locations identified in the PSP, the Surveying Manager will provide the Data Management Lead (i.e., 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 sample 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.

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U.S. Department of Energy, 2005b, "Excavation Plan for Area 7 Silos and General Area," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

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APPENDIX A

PRECERTIFICATION REAL-TIME SCAN DATA FOR AREA 6E

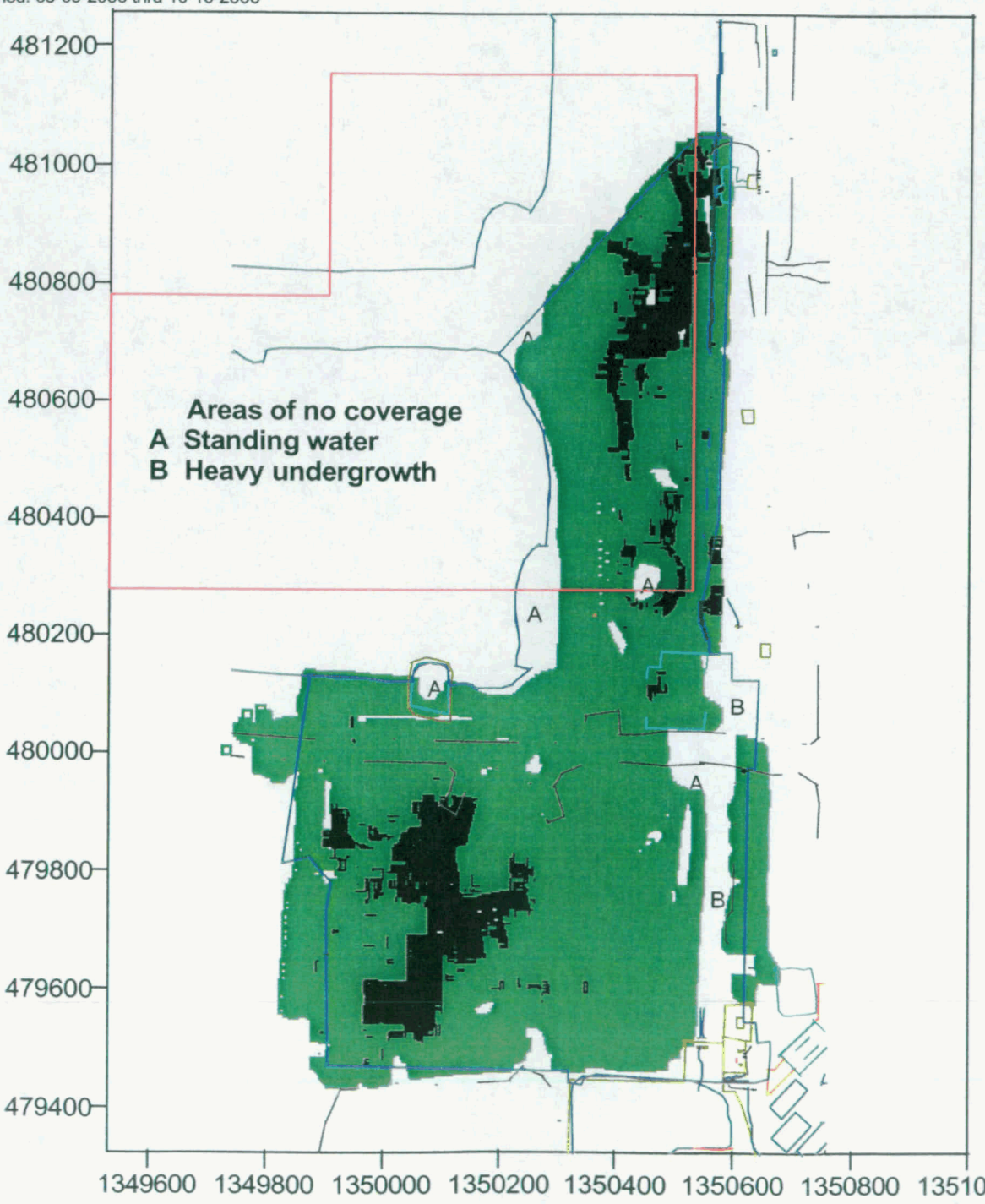
Figure A-1, Area 6E - Phase 1 Total Gross Counts per Second

Data Groups:RSS1_2840_09-09-2006,2841_09-09-2006,2890_09-27-2006,2902_10-01-2006,2908_10-03-2006,2922_10-04-2006,2942_10-08-2006
2943_10-08-2006 ,2951_10-10-2006
RSS2_1502_09-30-2006,1509_10-02-2006,1512_10-03-2006,1517_10-04-2006,1518_10-04-2006,1521_10-06-2006,1526_10-08-2006
RSS3_1692_0909-2006,1730_10-01-2006,1716_09-26-2006,1719_10-02-2006,1720_09-27-2006,1749_10-06-2006,1750_10-06-2006
1756_10-10-2006,1757_10-10-2006
RSS4_1628_09-30-2006,1631_10-01-2006,1640_10-04-2006,1649_10-06-2006,1651_10-06-2006,1654_10-08-2006,1660_10-09-2006
1664_10-10-2006,1665_10-10-2006
GATOR_1084_09-09-2006,1096_09-27-2006,1099_10-10-2006
EMS_0850_10-09-2006,0851_10-09-2006,0855_10-10-2006
40227_10-02-2006,40293_10-02-2006,40743_10-02-2006

Surface Phase 1 Data: RSS1_2925_10-04-2006

Surface and Design Grade Data no Phase 2s:RSS3_1746_10-04-2006,RSS1_2923_10-04-2006

Measurement Period: 09-09-2006 thru 10-10-2006



High Leachability boundary

CDL Boundary

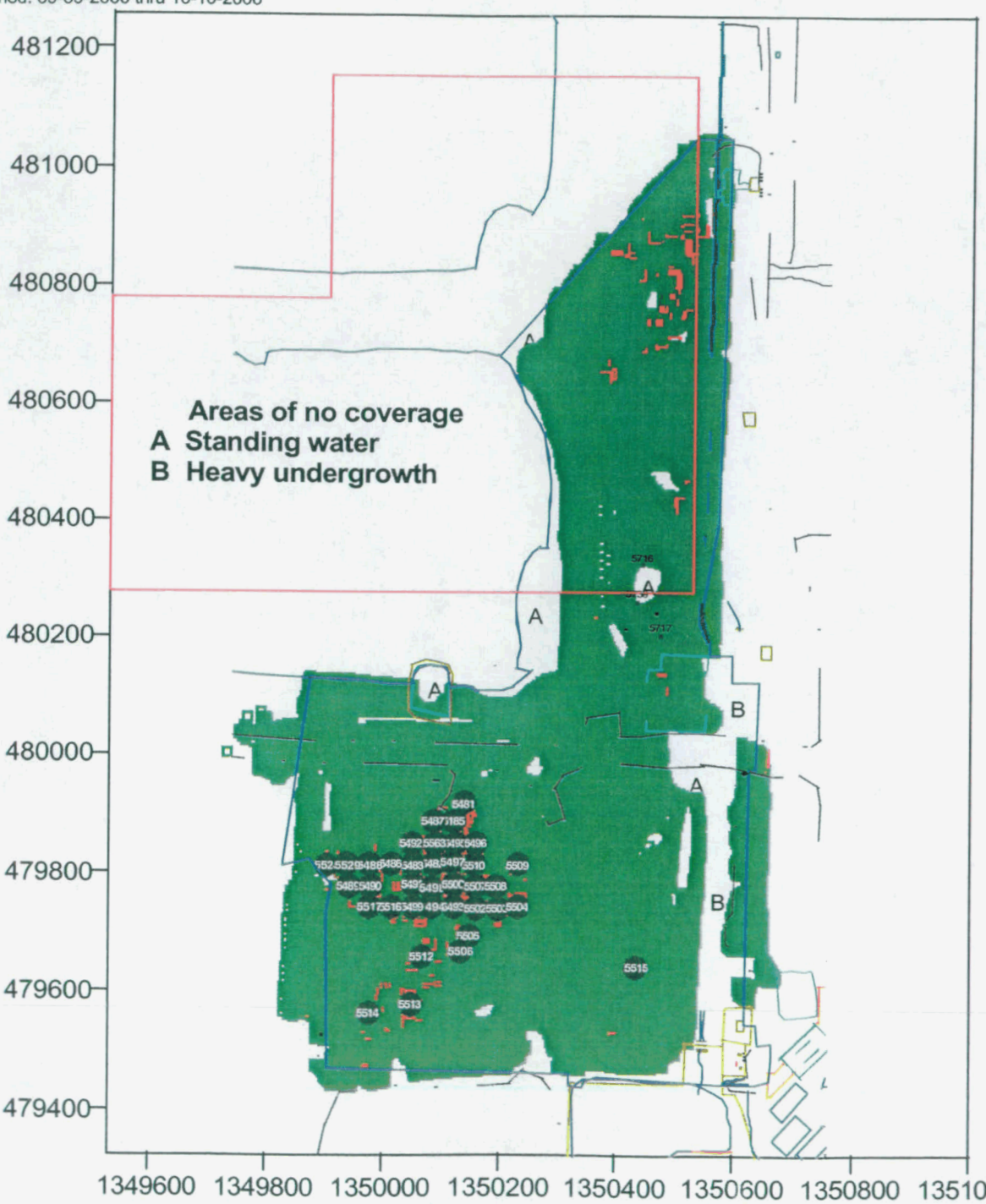
Sub Area Boundary

Nal Tcps
- 0 to 3000
- 3000 to 5000
- 5000 to 15000
- 15000 to 18000
- 18000 to 99999

RTIMP DWG ID: A6E_P1_TC.srf
Project ID: Gen Char Site Soil Rem
20300-PSP-0011
Prepared: D.Seiller 10-19-2006
Support Data: A6E_P1.xls

Figure A-2, Area 6E - Phase 1 Moisture Corrected Radium-226

Data Groups:RSS1_2840_09-09-2006,2841_09-09-2006,2890_09-27-2006,2902_10-01-2006,2908_10-03-2006,2922_10-04-2006,2942_10-08-2006
2943_10-08-2006 ,2951_10-10-2006
RSS2_1502_09-30-2006,1509_10-02-2006,1512_10-03-2006,1517_10-04-2006,1518_10-04-2006,1521_10-06-2006,1526_10-08-2006
RSS3_1692_0909-2006,1730_10-01-2006,1716_09-26-2006,1719_10-02-2006,1720_09-27-2006,1749_10-06-2006,1750_10-06-2006
1756_10-10-2006,1757_10-10-2006
RSS4_1628_09-30-2006,1631_10-01-2006,1640_10-04-2006,1649_10-06-2006,1651_10-06-2006,1654_10-08-2006,1660_10-09-2006
1664_10-10-2006,1665_10-10-2006
GATOR_1084_09-09-2006,1096_09-27-2006,1099_10-10-2006
EMS_0850_10-09-2006,0851_10-09-2006,0855_10-10-2006
40227_10-02-2006,40293_10-02-2006,40743_10-02-2006
Surface Phase 1 Data: RSS1_2925_10-04-2006
Surface and Design Grade Data no Phase 2s:RSS3_1746_10-04-2006,RSS1_2923_10-04-2006
Measurement Period: 09-09-2006 thru 10-10-2006



High Leachability boundary

CDL Boundary

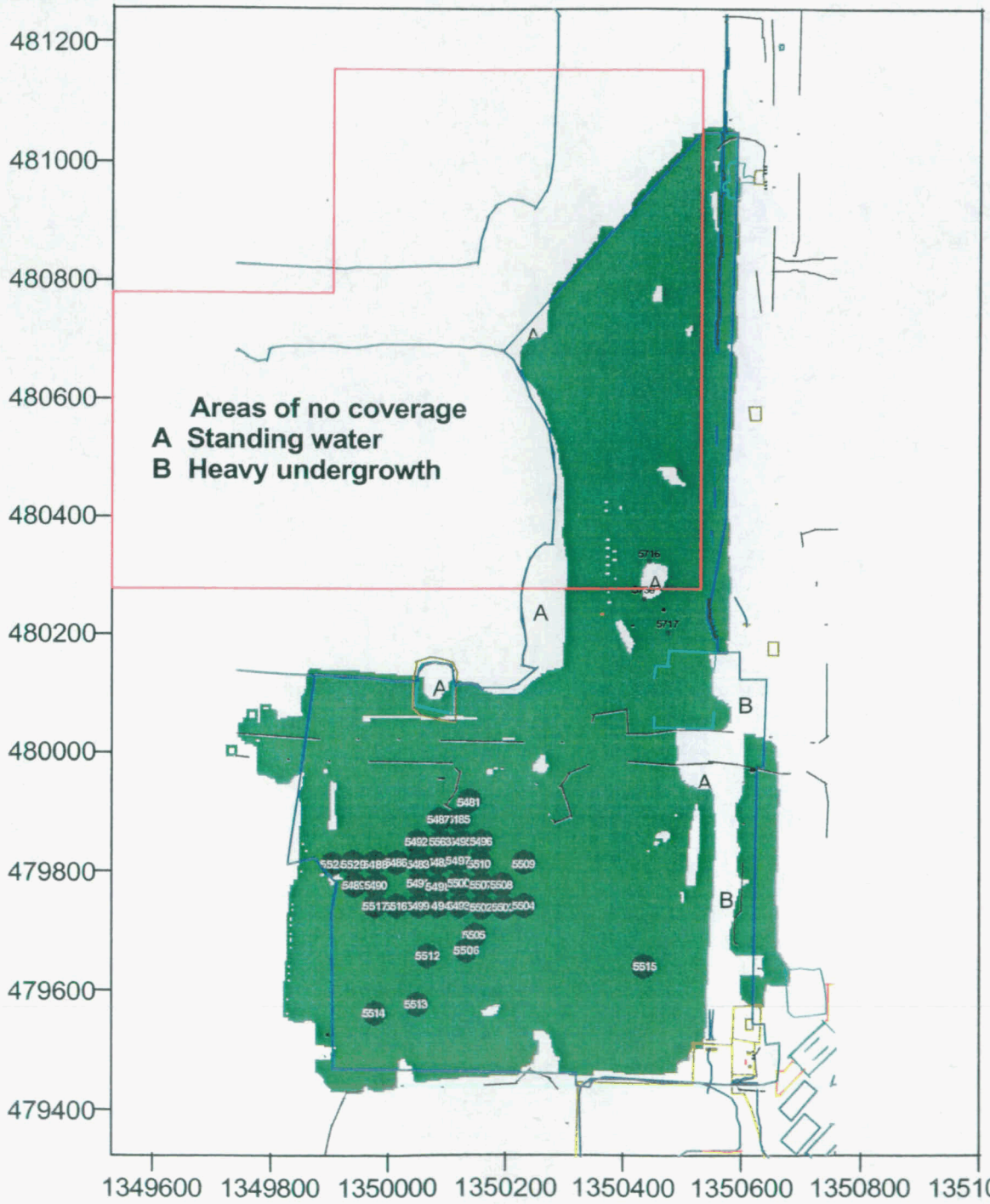
Sub Area Boundary

NaI Ra-226 pCi/g	HPGe Ra-226 pCi/g
-9999 to 5.1	-9999 to 5.1
5.1 to 9999	5.1 to 9999

RTIMP DWG ID: A6E_P1_RA.srf
Project ID: Gen Char Site Soil Rem
20300-PSP-0011
Prepared: D.Seiller 10-19-2006
Support Data: A6E_P1.xls

Figure A-3, Area 6E - Phase 1 Moisture Corrected Thorium-232

Data Groups:RSS1_2840_09-09-2006,2841_09-09-2006,2890_09-27-2006,2902_10-01-2006,2908_10-03-2006,2922_10-04-2006,2942_10-08-2006
2943_10-08-2006 ,2951_10-10-2006
RSS2_1502_09-30-2006,1509_10-02-2006,1512_10-03-2006,1517_10-04-2006,1518_10-04-2006,1521_10-06-2006,1526_10-08-2006
RSS3_1692_0909-2006,1730_10-01-2006,1716_09-26-2006,1719_10-02-2006,1720_09-27-2006,1749_10-06-2006,1750_10-06-2006
1756_10-10-2006,1757_10-10-2006
RSS4_1628_09-30-2006,1631_10-01-2006,1640_10-04-2006,1649_10-06-2006,1651_10-06-2006,1654_10-08-2006,1660_10-09-2006
1664_10-10-2006,1665_10-10-2006
GATOR_1084_09-09-2006,1096_09-27-2006,1099_10-10-2006
EMS_0850_10-09-2006,0851_10-09-2006,0855_10-10-2006
40227_10-02-2006,40293_10-02-2006,40743_10-02-2006
Surface Phase 1 Data: RSS1_2925_10-04-2006
Surface and Design Grade Data no Phase 2s:RSS3_1746_10-04-2006,RSS1_2923_10-04-2006
Measurement Period: 09-09-2006 thru 10-10-2006



High Leachability boundary

CDL Boundary

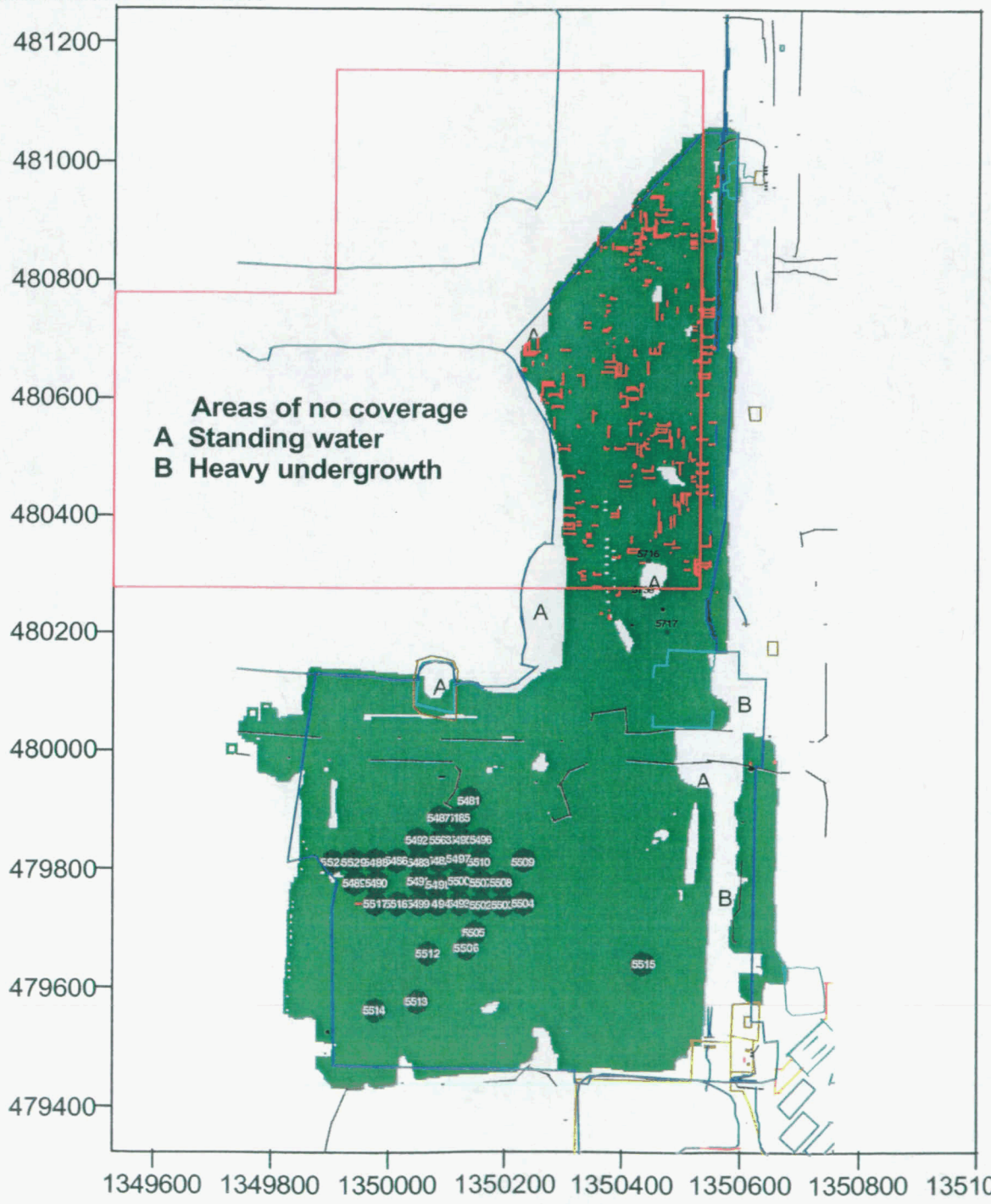
Sub Area Boundary

NaI Th-232 pCi/g	HPGe Th-232 pCi/g
-9999 to 4.5	-9999 to 4.5
4.5 to 9999	4.5 to 9999

RTIMP DWG ID: A6E_P1_TH.srf
Project ID: Gen Char Site Soil Rem
20300-PSP-0011
Prepared: D.Seiller 10-19-2006
Support Data: A6E_P1.xls

Figure A-4, Area 6E - Phase 1 Moisture Corrected Total Uranium

Data Groups:RSS1_2840_09-09-2006,2841_09-09-2006,2890_09-27-2006,2902_10-01-2006,2908_10-03-2006,2922_10-04-2006,2942_10-08-2006
2943_10-08-2006 ,2951_10-10-2006
RSS2_1502_09-30-2006,1509_10-02-2006,1512_10-03-2006,1517_10-04-2006,1518_10-04-2006,1521_10-06-2006,1526_10-08-2006
RSS3_1692_0909-2006,1730_10-01-2006,1716_09-26-2006,1719_10-02-2006,1720_09-27-2006,1749_10-06-2006,1750_10-06-2006
1756_10-10-2006,1757_10-10-2006
RSS4_1628_09-30-2006,1631_10-01-2006,1640_10-04-2006,1649_10-06-2006,1651_10-06-2006,1654_10-08-2006,1660_10-09-2006
1664_10-10-2006,1665_10-10-2006
GATOR_1084_09-09-2006,1096_09-27-2006,1099_10-10-2006
EMS_0850_10-09-2006,0851_10-09-2006,0855_10-10-2006
40227_10-02-2006,40293_10-02-2006,40743_10-02-2006
Surface Phase 1 Data: RSS1_2925_10-04-2006
Surface and Design Grade Data no Phase 2s:RSS3_1746_10-04-2006,RSS1_2923_10-04-2006
Measurement Period: 09-09-2006 thru 10-10-2006



High Leachability boundary CDL Boundary Sub Area Boundary

NaI TU ppm Non-Hi Leach	NaI TU ppm Hi Leach Area	HPGe TU ppm Non-Hi Leach	HPGe TU ppm Hi Leach Area
-9999 to 246	-9999 to 60	-999 to 246	-999 to 60
246 to 9999	60 to 9999	246 to 999	60 to 999

RTIMP DWG ID: A6E_P1_TU.srf
Project ID: Gen Char Site Soil Rem
20300-PSP-0011
Prepared: D.Seiller 10-19-2006
Support Data: A6E_P1.xls

TABLE A-1
AREA 6E PHASE 2 - HPGe RESULTS DETECTOR HEIGHT 31 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A6E-P2-5241	15Sep061	479674	1349979	31	1.788	0.87	15.2
A6E-P2-5242	15Sep061	479696	1349970	31	2.722	0.816	17.6
A6E-P2-5243	15Sep061	479686	1349915	31	1.652	0.84	27
A6E-P2-5244	15Sep061	479569	1349868	31	2.635	0.705	11
A6E-P2-5245	15Sep061	479464	1349977	31	2.494	0.75	12.7
A6E-P2-5246	15Sep061	479553	1350006	31	3.885	0.831	17.3
A6E-P2-5247	15Sep061	479558	1350017	31	3.76	0.754	31.3
A6E-P2-5249	15Sep061	479817	1349943	31	3.362	0.811	17.9
A6E-P2-5250	15Sep061	479849	1349927	31	2.816	0.855	14.8
A6E-P2-5251	15Sep061	479887	1350109	31	3.291	0.733	21.1
A6E-P2-5252	15Sep061	479886	1350133	31	3.779	0.721	19.3
A6E-P2-5253	15Sep061	479875	1350133	31	3.898	0.763	24
A6E-P2-5254	15Sep061	479789	1350064	31	4.548	0.784	17.9
A6E-P2-5255	15Sep061	479721	1350053	31	4.027	0.747	20.6
A6E-P2-5378	25Sep061	479880	1349923	31	3.15	0.885	17.4
A6E-P2-5410	26Sep061	479522	1350398	31	2.434	0.74	15.8
A6E-P2-5411	26Sep061	479588	1350408	31	2.976	0.655	15.7
A6E-P2-5412	26Sep061	479641	1350445	31	2.658	0.703	10.9
A6E-P2-5413	26Sep061	479646	1350425	31	2.637	0.753	20.4
A1P4-P2-5425	27Sep061	480001	1350632	31	2.162	0.579	6.92E-02
A1P4-P2-5426	27Sep061	479992	1350651	31	3.441	0.681	15.8
A6E-P2-5422	27Sep061	479522	1349980	31	3.34	0.7	15.1
A6E-P2-5423	27Sep061	479679	1349946	31	2.098	0.602	21.5
A1P4-P2-5425	27Sep061	480001	1350632	31	2.162	0.579	6.92E-02
A1P4-P2-5426	27Sep061	479992	1350651	31	3.441	0.681	15.8
A1P4-P2-5425	27Sep061	480001	1350632	31	2.162	0.579	6.92E-02
A1P4-P2-5426	27Sep061	479992	1350651	31	3.441	0.681	15.8
A6E-P2-5405	29Sep061	479785	1350165	31	2.99	0.956	18.6
A6E-P2-5406	29Sep061	479731	1350046	31	4.471	0.902	17.7
A6E-P2-5474	01Oct061	479669	1350135	31	5.176	0.795	23.5
A6E-P2-5474-D	01Oct061	479669	1350135	31	5.068	0.624	28.9
A6E-P2-5475	01Oct061	479896	1350160	31	63.776	0.798	27.9
A6E-P2-5518	02Oct061	479752	1349954	31	2.712	0.724	22.3
A6E-P2-5519	02Oct061	479679	1349981	31	1.958	0.758	15.7
A6E-P2-5523	02Oct061	479621	1350054	31	3.251	0.657	9.91E-02
A6E-P2-5587	02Oct061	479474	1349978	31	3.858	0.679	31.8
A6E-P2-5521	02Oct061	479608	1350343	31	2.921	0.661	15.5
A6E-P2-5524	02Oct061	479522	1350398	31	2.625	0.697	16.9
A6E-P2-5522	02Oct061	479678	1349946	31	1.866	0.871	13.4
A6E-P2-5526	02Oct061	479696	1349915	31	2.954	0.737	26.1
A6E-P2-5527	02Oct061	479615	1349929	31	2.224	0.771	17
A6E-P2-5558	04Oct061	480194	1350310	31	1.196	0.748	86.9
A6E-P2-5558-D	04Oct061	480194	1350310	31	1.246	0.764	95.1

TABLE A-1
AREA 6E PHASE 2 - HPGe RESULTS DETECTOR HEIGHT 31 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A6E-P2-5752	10Oct061	479539	1349975	31	2.742	0.757	14.7
A6E-P2-5753	10Oct061	479553	1349992	31	3.261	0.724	8.57
A6E-P2-5754	10Oct061	479564	1349996	31	2.731	0.808	12.9
A6E-P2-5755	10Oct061	479585	1349983	31	2.272	0.68	13.4
A6E-P2-5756	10Oct061	479605	1349993	31	2.377	0.767	19.1
A6E-P2-5757	10Oct061	479605	1350007	31	2.573	0.73	13.1
A6E-P2-5758	10Oct061	479593	1350002	31	2.932	0.781	16
A6E-P2-5771	10Oct061	479616	1350445	31	2.278	0.734	13.2
A6E-P2-5772	10Oct061	479637	1350051	31	2.952	0.824	17.8
A6E-P2-5772-D	10Oct061	479637	1350051	31	3.62	0.875	13.4
A6E-P2-5881	10Oct061	480910	1350564	31	3.381	0.899	20.2
A6E-P2-5889	14Oct061	479465	1349978	31	1.755	0.637	25.9
A6E-P2-5889-D	14Oct061	479465	1349978	31	1.9	0.686	25.8
A6E-P2-5891	14Oct061	479716	1350025	31	1.446	0.836	14.3
A6E-P2-5892	14Oct061	479628	1350051	31	1.411	0.755	17.3
A6E-P2-5896	14Oct061	479828	1350153	31	3.722	0.788	21.2
A6E-P2-5897	14Oct061	479841	1350163	31	3.38	0.841	20.8
A6E-P2-5898	14Oct061	479817	1350287	31	1.305	0.981	15.4
A6E-P2-5907	14Oct061	479762	1350235	31	2.214	0.78	21.6
A6E-P2-5908	14Oct061	479811	1350210	31	1.692	0.73	17.3
A6E-P2-5909	14Oct061	479697	1350125	31	1.498	0.858	17.4
A6E-P2-5910	14Oct061	479920	1350981	31	0.935	0.767	25.7
A6E-P2-5911	14Oct061	480127	1350475	31	2.118	0.656	19
A6E-P2-5912	14Oct061	480108	1350495	31	1.352	0.628	19.5
A6E-P2-5953	16Oct061	479718	1350210	31	1.875	0.822	17.9
A6E-P2-5954	16Oct061	479817	1350287	31	1.752	0.937	7.93E-02
A6E-P2-5958	18Oct061	479896	1350140	31	2.13	0.493	6.76E-02
A6E-P2-5962	18Oct061	479912	1350162	31	2.59	0.752	18.4
A6E-P2-5963	18Oct061	479896	1350178	31	1.78	0.782	18.2
A6E-P2-5964	18Oct061	479876	1350162	31	4.08	0.81	14.4
A6E-P2-HL-5559	04Oct061	480370	1350357	31	1.304	0.746	29.2
A6E-P2-HL-5560	04Oct061	480595	1350356	31	1.631	0.867	30.8
A6E-P2-HL-5570	05Oct061	480361	1350347	31	1.665	0.637	29.5
A6E-P2-HL-5573	05Oct061	480584	1350356	31	1.739	1.04	25.3
A6E-P2-HL-5574	05Oct061	480652	1350383	31	8.673	0.967	29.9
A6E-P2-HL-5575	05Oct061	480644	1350375	31	6.091	1.07	34.3
A6E-P2-HL-5576	05Oct061	480657	1350393	31	4.318	0.936	26.2
A6E-P2-HL-5577	05Oct061	480642	1350391	31	3.288	1.09	22.6
A6E-P2-HL-5578	05Oct061	480664	1350378	31	5.462	0.794	26.5
A6E-P2-HL-5579	05Oct061	480670	1350384	31	5.224	0.864	30.2
A6E-P2-HL-5580	05Oct061	480674	1350371	31	1.156	0.487	23.9
A6E-P2-HL-5586	06Oct061	480635	1350367	31	1.98	0.685	23
A6E-P2-HL-5588	06Oct061	480654	1350368	31	0.938	0.519	23.6

TABLE A-1
AREA 6E PHASE 2 - HPGe RESULTS DETECTOR HEIGHT 31 cm

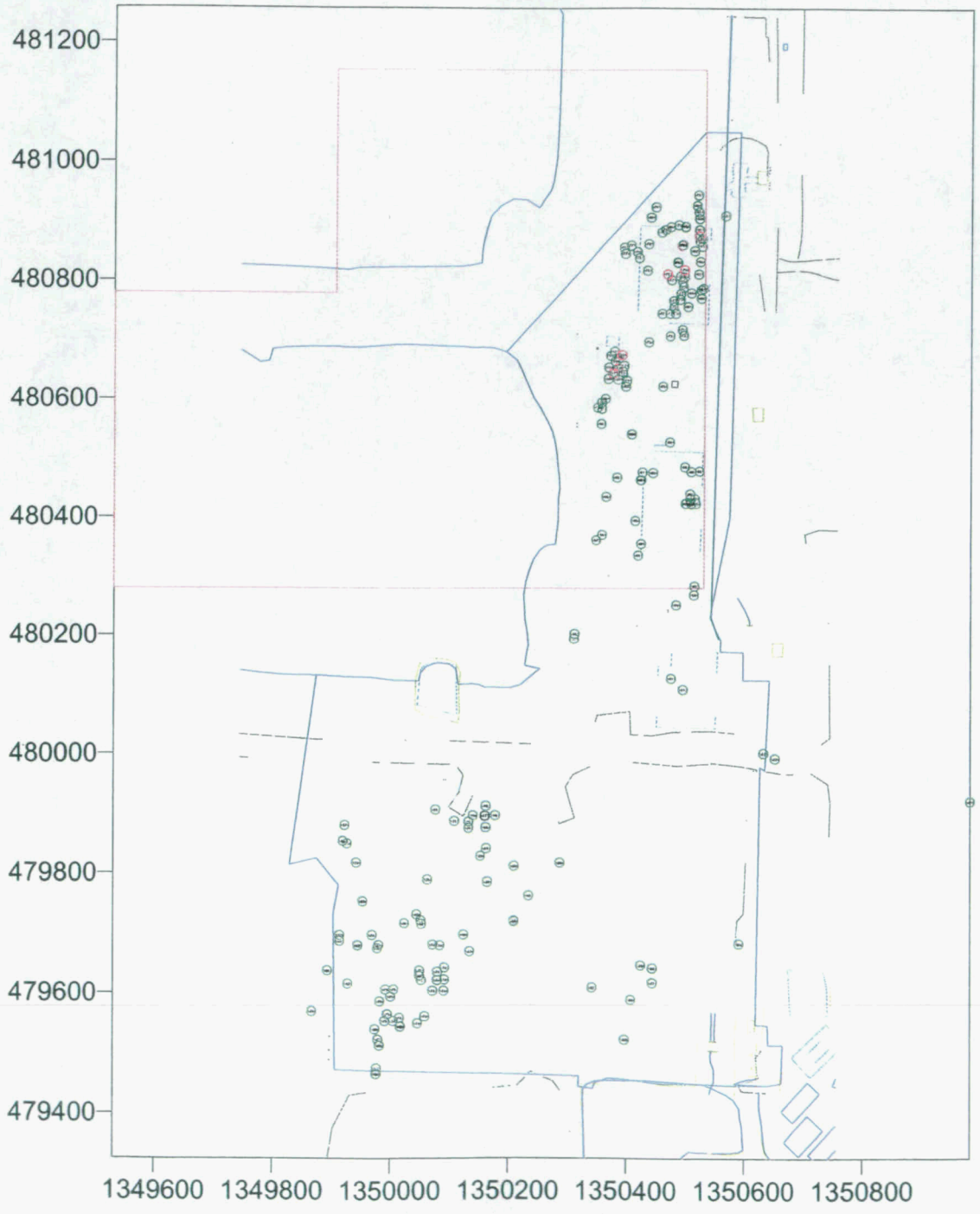
Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A6E-P2-HL-5737	10Oct061	480779	1350489	31	3.017	0.931	23.6
A6E-P2-HL-5738	10Oct061	480799	1350492	31	4.359	0.912	18.6
A6E-P2-HL-5696	09Oct061	480355	1350423	31	1.49	1.08	19.9
A6E-P2-HL-5697	09Oct061	480335	1350418	31	1.8	1.13	0.142
A6E-P2-HL-5779	10Oct061	480860	1350404	31	2.499	0.789	18
A6E-P2-HL-5780	10Oct061	480849	1350415	31	2.886	0.818	21.7
A6E-P2-HL-5781	10Oct061	480856	1350392	31	2.783	0.759	24.9
A6E-P2-HL-5782	10Oct061	480839	1350418	31	2.973	0.848	19.9
A6E-P2-HL-5785	10Oct061	480862	1350434	31	3.426	0.831	16.9
A6E-P2-HL-5787	10Oct061	480812	1350466	31	7.232	0.917	19.8
A6E-P2-HL-5789	10Oct061	480818	1350432	31	2.895	0.964	22.8
A6E-P2-HL-5791	10Oct061	480882	1350456	31	2.907	0.829	15.8
A6E-P2-HL-5793	10Oct061	480886	1350462	31	2.265	0.837	14.7
A6E-P2-HL-5795	10Oct061	480924	1350446	31	1.967	0.986	11.4
A6E-P2-HL-5797	10Oct061	480945	1350518	31	1.631	0.99	0.112
A6E-P2-HL-5778	10Oct061	480846	1350394	31	3.94	0.702	23
A6E-P2-HL-5799	11Oct061	480876	1350520	31	6.372	0.972	0.171
A6E-P2-HL-5799-D	11Oct061	480876	1350520	31	6.341	1.07	21.5
A6E-P2-HL-5801	11Oct061	480886	1350520	31	3.688	1.09	12.9
A6E-P2-HL-5803	11Oct061	480867	1350521	31	3.256	0.943	19.2
A6E-P2-HL-5804	11Oct061	480833	1350522	31	4.776	1.21	25.5
A6E-P2-HL-5805	11Oct061	480851	1350512	31	3.97	0.922	16.9
A6E-P2-HL-5806	11Oct061	480905	1350520	31	3.393	1.11	16.3
A6E-P2-HL-5807	11Oct061	480916	1350519	31	2.856	1.12	19.5
A6E-P2-HL-5808	11Oct061	480927	1350516	31	2.277	1.15	28.8
A6E-P2-HL-5809	11Oct061	480907	1350438	31	2.125	1.1	14.7
A6E-P2-HL-5810	11Oct061	480871	1350525	31	1.962	0.947	20.3
A6E-P2-HL-5811	11Oct061	480859	1350525	31	2.065	0.872	18.3
A6E-P2-HL-5818	11Oct061	480788	1350527	31	2.168	0.821	20.8
A6E-P2-HL-5887	13Oct061	480892	1350496	31	2.765	0.837	0
A6E-P2-HL-5888	13Oct061	480891	1350471	31	4.573	1.04	20.7
A6E-P2-HL-5888-D	13Oct061	480891	1350471	31	3.673	1.04	21.4
A6E-P2-HL-5882	13Oct061	480861	1350492	31	1.822	0.851	19.3
A6E-P2-HL-5883	13Oct061	480832	1350483	31	3.743	0.916	0.128
A6E-P2-HL-5884	13Oct061	480780	1350507	31	4.352	0.893	16.3
A6E-P2-HL-5885	13Oct061	480757	1350501	31	3.246	0.969	21
A6E-P2-HL-5886	13Oct061	480675	1350390	31	6.496	0.807	28.3
A6E-P2-HL-5899	14Oct061	480632	1350398	31	0.931	0.998	27.4
A6E-P2-HL-5899-D	14Oct061	480632	1350398	31	0.894	0.997	31.1
A6E-P2-HL-5900	14Oct061	480622	1350396	31	1.008	1.74	36
A6E-P2-HL-5902	14Oct061	480558	1350355	31	0.953	0.84	24.7
A6E-P2-HL-5903	14Oct061	480467	1350382	31	0.853	0.734	15.5
A6E-P2-HL-5904	14Oct061	480394	1350413	31	0.972	1.02	14.6

Figure A-5, Area 6E - Phase 2 Moisture Corrected Radium-226

Data Groups: 30687_09-15-2006,09-26-2006,10-10-2006
30699_09-25-2006,09-27-2006,10-04-2006,10-06-2006,10-08-2006,10-09-2006,10-11-2006
30716_10-09-2006
31144_10-18-2006
40227_09-29-2006,10-02-2006,10-07-2006,10-09-2006
40293_10-01-2006,10-02-2006,10-04-2006,10-06-2006,10-08-2006,10-10-2006,10-13-2006
10-14-2006,10-16-2006
40743_10-02-2006
31204_10-10-2006,10-14-2006

Measurement Period:09-15-2006 thru 10-18-2006

Includes all Phase 2 Measurements (including the "screened pile" area)



High Leachability boundary

CDL Boundary

Sub Area Boundary

HPGe Ra-226 pCi/g
-999 to 5.1
5.1 to 999

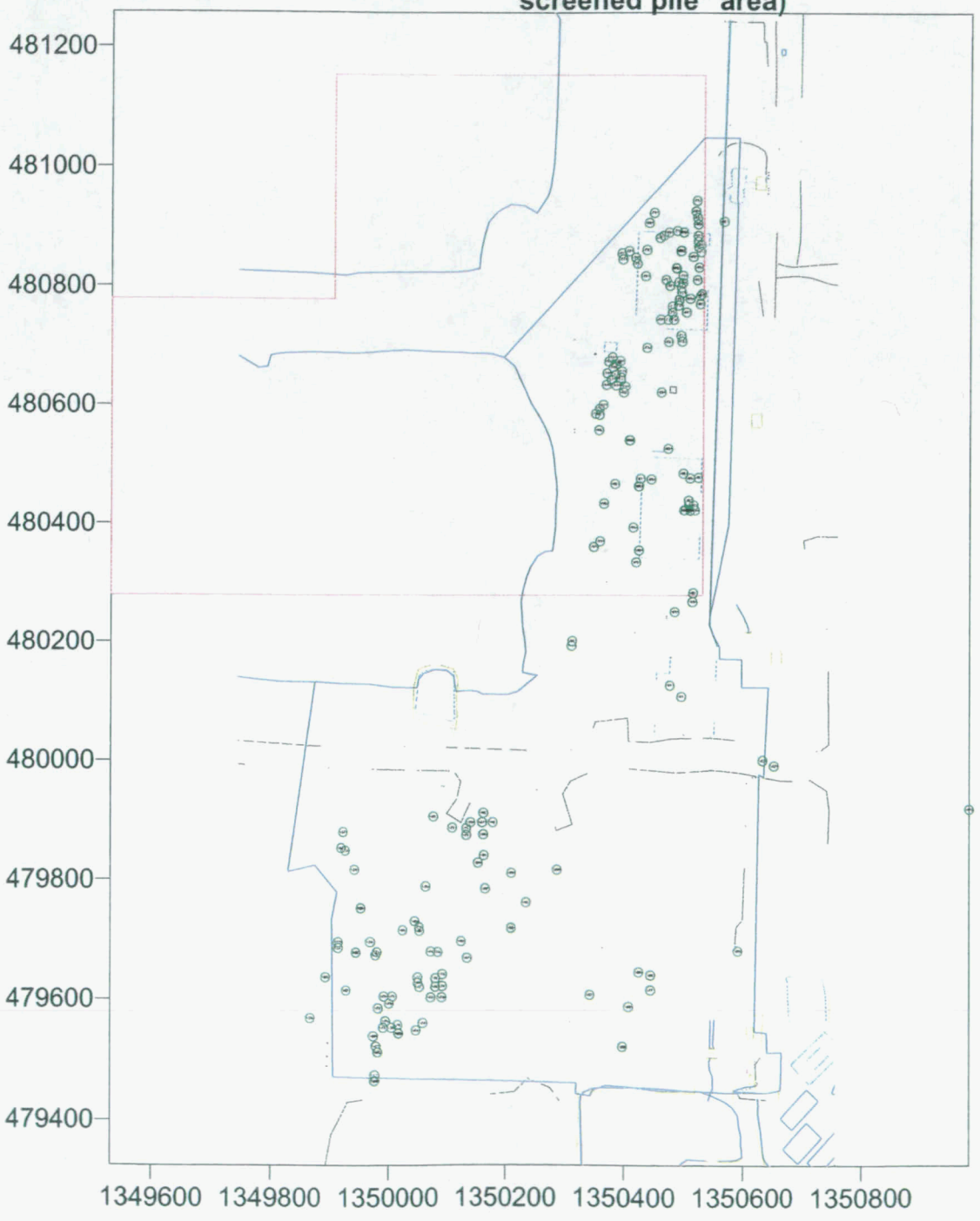
RTIMP DWG ID: A6E_P2_RA.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: Joe Nikstenas 10-20-2006
Support Data: A6E_P2.xls

Figure A-6, Area 6E - Phase 2 Moisture Corrected Thorium-232

Data Groups: 30687_09-15-2006,09-26-2006,10-10-2006
30699_09-25-2006,09-27-2006,10-04-2006,10-06-2006,10-08-2006,10-09-2006,10-11-2006
30716_10-09-2006
31144_10-18-2006
40227_09-29-2006,10-02-2006,10-07-2006,10-09-2006
40293_10-01-2006,10-02-2006,10-04-2006,10-06-2006,10-08-2006,10-10-2006,10-13-2006
10-14-2006,10-16-2006
40743_10-02-2006
31204_10-10-2006,10-14-2006

Measurement Period:09-15-2006 thru 10-18-2006

Includes all Phase 2 Measurements (including the "screened pile" area)



High Leachability boundary

CDL Boundary

Sub Area Boundary

HPGe Th-232 pCi/g
-999 to 4.5
4.5 to 999

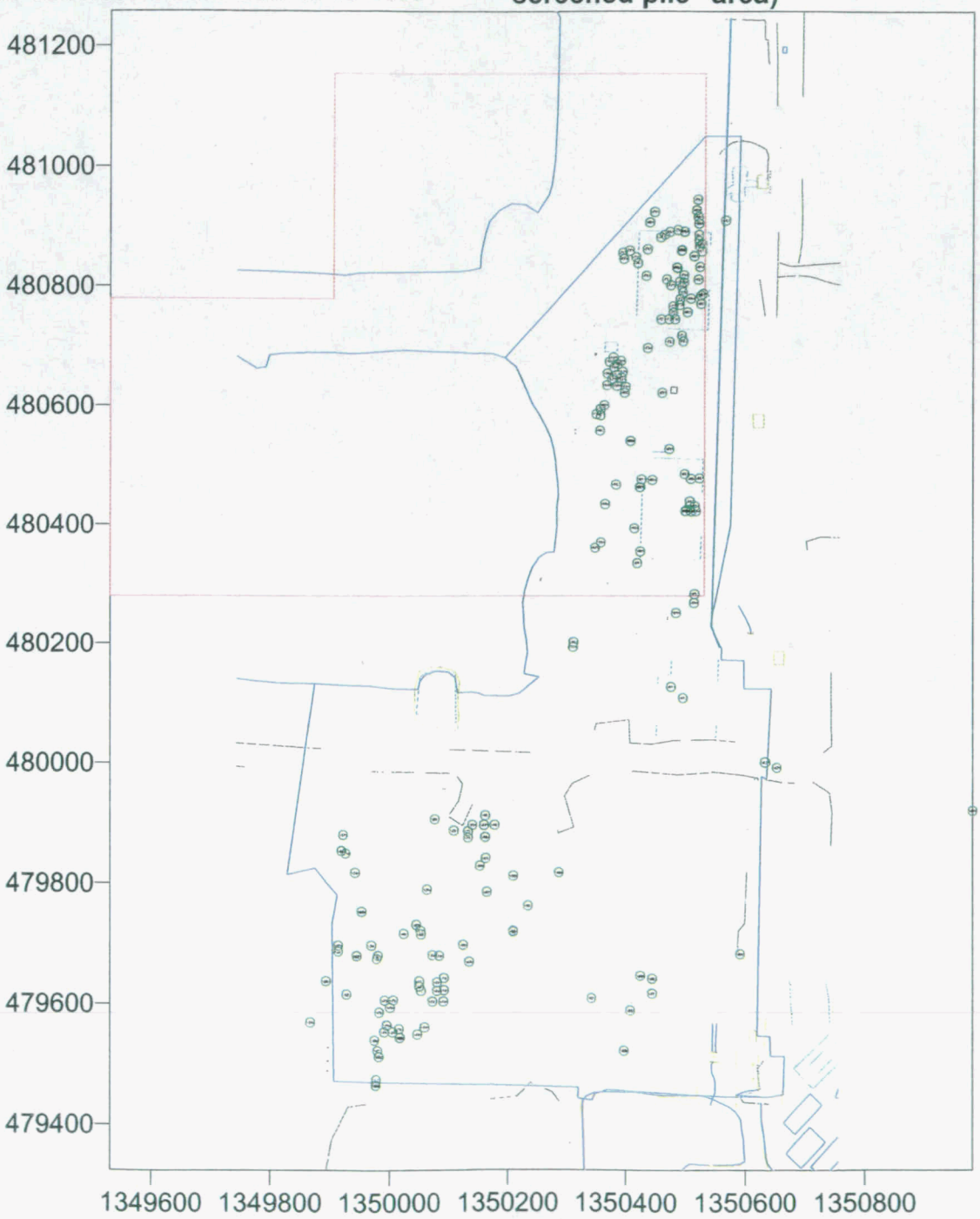
RTIMP DWG ID: A6E_P2_TH.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: Joe Nikstenas 10-20-2006
Support Data: A6E_P2.xls

Figure A-7, Area 6E - Phase 2 Moisture Corrected Total Uranium

Data Groups: 30687_09-15-2006,09-26-2006,10-10-2006
30699_09-25-2006,09-27-2006,10-04-2006,10-06-2006,10-08-2006,10-09-2006,10-11-2006
30716_10-09-2006
31144_10-18-2006
40227_09-29-2006,10-02-2006,10-07-2006,10-09-2006
40293_10-01-2006,10-02-2006,10-04-2006,10-06-2006,10-08-2006,10-10-2006,10-13-2006
10-14-2006,10-16-2006
40743_10-02-2006
31204_10-10-2006,10-14-2006

Measurement Period: 09-15-2006 thru 10-18-2006

Includes all Phase 2 Measurements (including the "screened pile" area)



High Leachability boundary

CDL Boundary

Sub Area Boundary

HPGe TU ppm Non-Hi Leach Area	
○	-999 to 246
○	246 to 999

HPGe TU ppm Hi Leach Area	
○	-999 to 60
○	60 to 999

RTIMP DWG ID: A6E_P2_TU.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: Joe Nikstenas 10-20-2006
Support Data: A6E_P2.xls

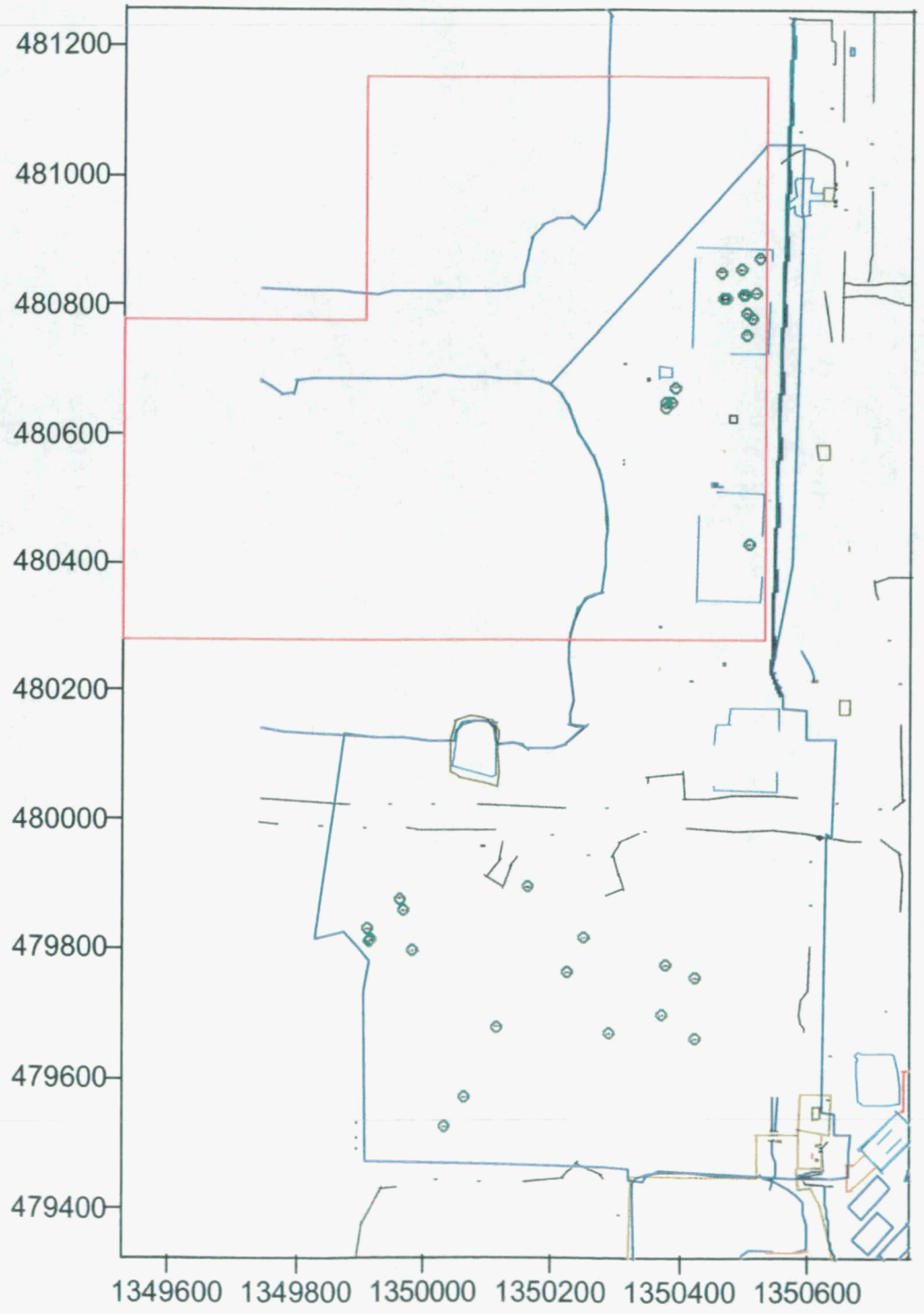
TABLE A-2
AREA 6E PHASE 3 - HPGe RESULTS DETECTOR HEIGHT 31 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A6E-P3-5600	06Oct061	479896	1350162	31	2.119	0.806	19.8
A6E-P3-5759	10Oct061	479796	1349983	31	2.108	1.17	16.1
A6E-P3-5760	10Oct061	479814	1349916	31	1.856	0.875	18.7
A6E-P3-5768	10Oct061	479859	1349968	31	1.721	0.85	10.9
A6E-P3-5773	10Oct061	479661	1350422	31	1.947	0.737	18.2
A6E-P3-5773-D	10Oct061	479661	1350422	31	1.839	0.745	14.7
A6E-P3-5774	10Oct061	479754	1350422	31	1.747	0.709	15.2
A6E-P3-5775	10Oct061	479774	1350377	31	1.331	0.715	0.105
A6E-P3-5776	10Oct061	479817	1350252	31	1.514	1.03	21.5
A6E-P3-5777	10Oct061	479762	1350224	31	3.095	0.778	16.7
A6E-P3-5812	11Oct061	479524	1350033	31	1.812	1.07	9.39E-02
A6E-P3-5812 -D	11Oct061	479524	1350033	31	1.59	0.972	15.8
A6E-P3-5813	11Oct061	479570	1350063	31	2.67	1.22	0
A6E-P3-5814	11Oct061	479679	1350115	31	2.045	1.02	0
A6E-P3-5817	11Oct061	479670	1350291	31	1.419	1.04	0.12
A6E-P3-5821	11Oct061	479698	1350373	31	1.86	0.923	19.6
A6E-P3-5829	13Oct061	479877	1349962	31	1.371	0.875	20.3
A6E-P3-5830	13Oct061	479831	1349911	31	1.473	0.912	10.2
A6E-P3-5831	13Oct061	479811	1349915	31	1.553	1.13	0.13
A6E-P3-HL-5720	10Oct061	480652	1350383	31	9.314	0.794	23.5
A6E-P3-HL-5721	10Oct061	480644	1350375	31	5.517	0.92	23.8
A6E-P3-HL-5722	10Oct061	480757	1350501	31	3.12	0.991	16.8
A6E-P3-HL-5723	10Oct061	480780	1350507	31	3.817	0.919	10.3
A6E-P3-HL-5724	10Oct061	480789	1350500	31	3.137	0.989	16.1
A6E-P3-HL-5901	14Oct061	480652	1350383	31	1.772	1.09	6.57E-02
A6E-P3-HL-5905	14Oct061	480819	1350496	31	0.909	0.873	7.52
A6E-P3-HL-5906	14Oct061	480812	1350468	31	1.49	1.01	11.6
A6E-P3-HL-5862	13Oct061	480652	1350375	31	2.853	1.32	16.4
A6E-P3HL--5866	13Oct061	480813	1350464	31	1.636	0.897	23.2
A6E-P3-HL-5865	13Oct061	480818	1350495	31	1.675	0.745	11.4
A6E-P3-HL-5864	13Oct061	480858	1350491	31	1.601	0.851	0
A6E-P3-HL-5934	16Oct061	480853	1350459	15	1.176	0.8	0
A6E-P3-HL-5934-D	16Oct061	480853	1350459	15	1.156	0.801	0
A6E-P3-HL-5965	18Oct061	480876	1350520	31	4.365	1.24	0.22
A6E-P3-HL-5965-D	18Oct061	480876	1350520	31	4.986	1.22	19.6
A6E-P3-HL-5966	18Oct061	480820	1350514	31	1.535	1.12	10.9
A6E-P3-HL-5967	18Oct061	480675	1350390	31	2.96	1.14	18.3
A6E-P3-HL-5973	19Oct061	480644	1350375	31	2.994	1.4	0.102
A6E-P3-HL-5973-D	19Oct061	480644	1350375	31	2.932	1.3	13.7
A6E-P3-HL-5974	19Oct061	480431	1350506	31	2.793	0.827	14.1

Figure A-8, Area 6E - Phase 3 Moisture Corrected Radium-226

Data Groups: 40293_10-10-2006,10-11-2006,10-13-2006,10-14-2006,10-16-2006
30699_10-09-2006,10-10-2006,10-11-2006,10-18-2006
31204_10-10-2006,10-13-2006
31144_10-18-2006
30687_10-19-2006

Measurement Period: 10-09-2006 - 10-19-2006



High Leachability boundary

CDL Boundary

Sub Area Boundary

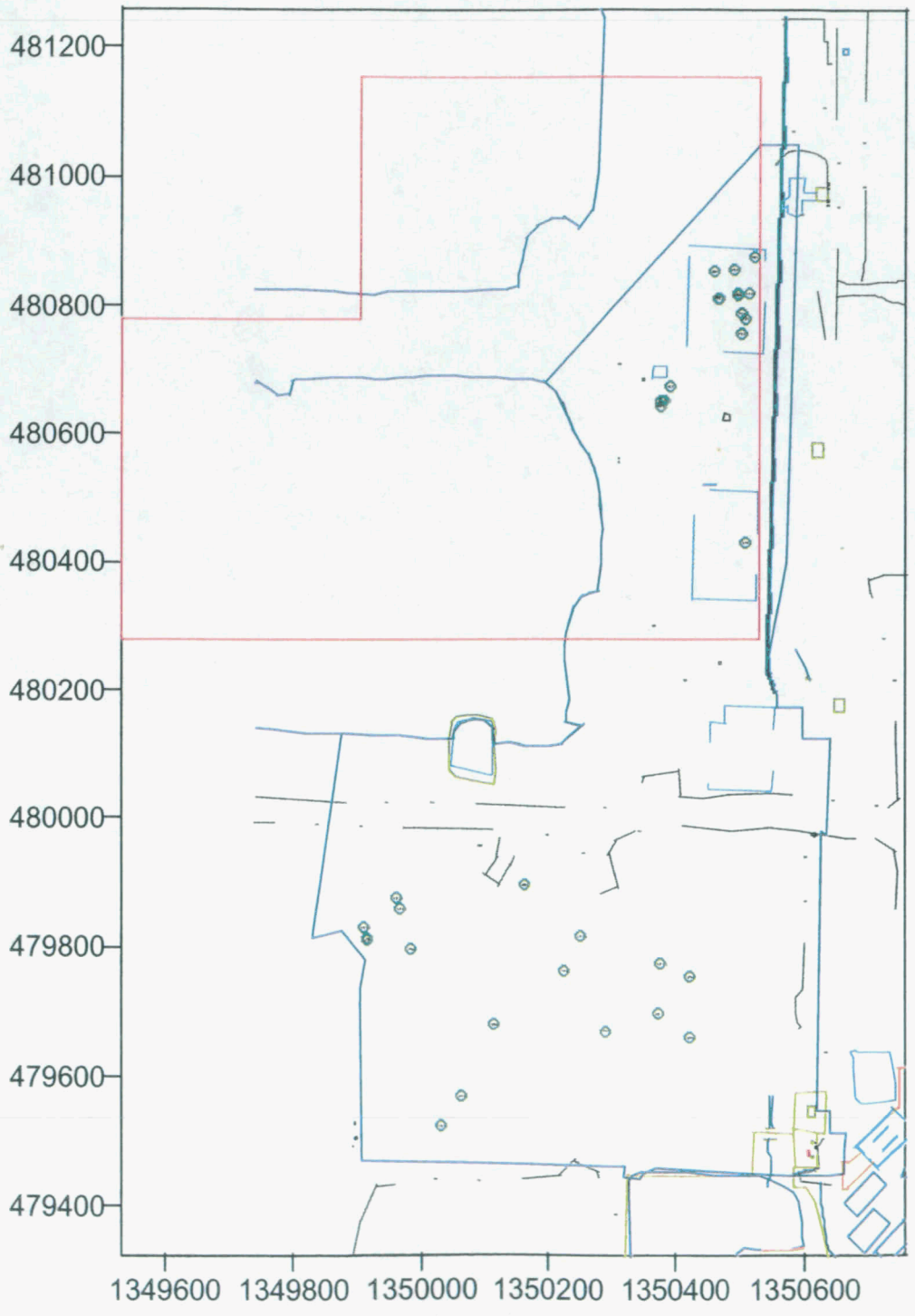
HPGe Ra-226 pCi/g	PHYS HPGe @ 15/31 cm Ra-226 (pCi/g)
-999 to 5.1	-999 to 3.4
5.1 to 999	3.4 to 999

RTIMP DWG ID: A6E_P3_RA.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: Joe Nikstenas 10-20-2006
Support Data: A6E_P3.xls

Figure A-9, Area 6E - Phase 3 Moisture Corrected Thorium-232

Data Groups: 40293_10-10-2006,10-11-2006,10-13-2006,10-14-2006,10-16-2006
30699_10-09-2006,10-10-2006,10-11-2006,10-18-2006
31204_10-10-2006,10-13-2006
31144_10-18-2006
30687_10-19-2006

Measurement Period: 10-09-2006 - 10-19-2006



High Leachability boundary

CDL Boundary

Sub Area Boundary

HPGe Th-232 pCi/g	
-999 to 4.5	
4.5 to 999	

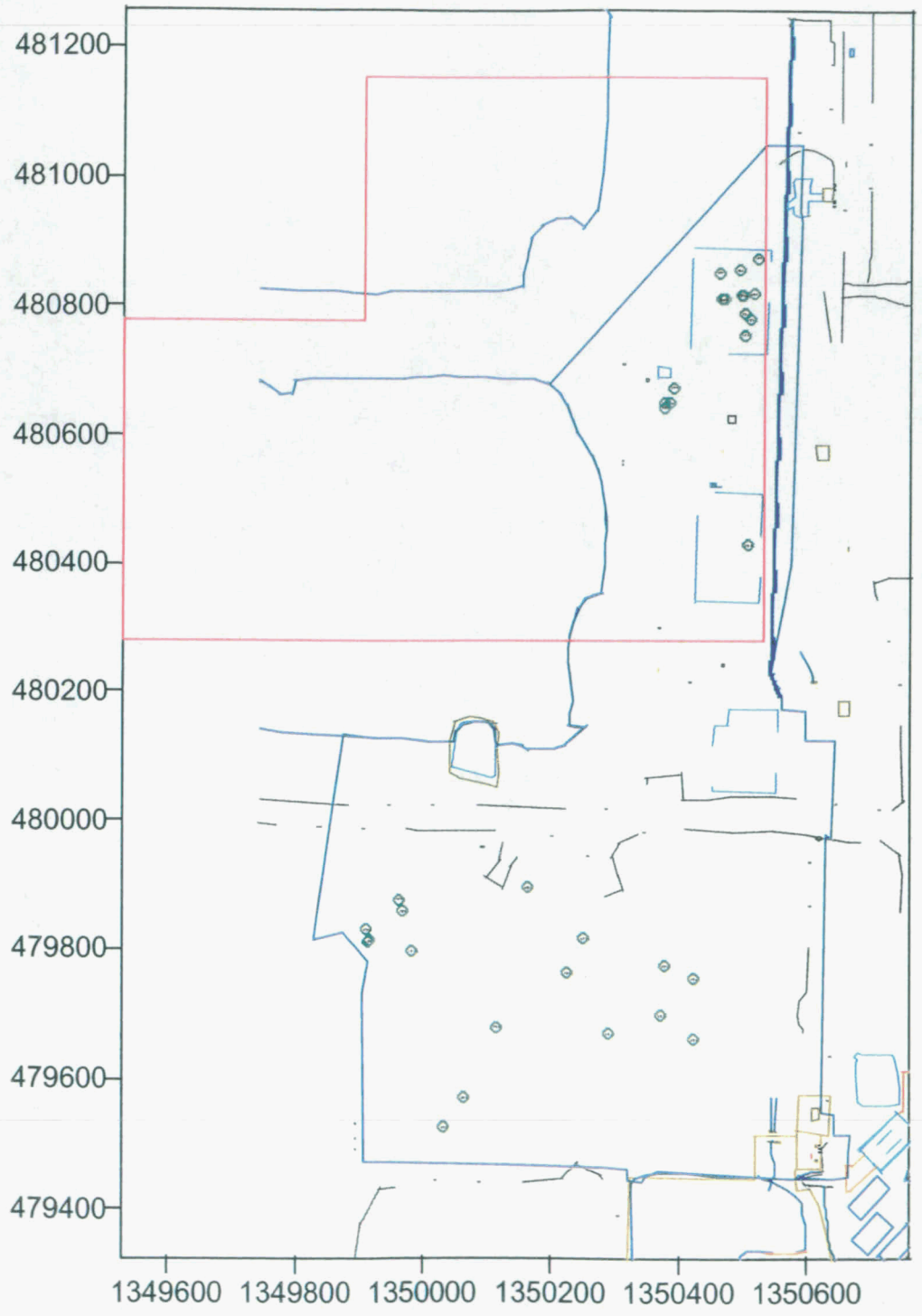
PHYS HPGe @ 15/31 cm Th-232 pCi/g	
-999 to 3	
3 to 999	

RTIMP DWG ID: A6E_P3_TH.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: Joe Nikstenas 10-20-2006
Support Data: A6E_P3.xls

Figure A-10, Area 6E - Phase 3 Moisture Corrected Total Uranium

Data Groups: 40293_10-10-2006,10-11-2006,10-13-2006,10-14-2006,10-16-2006
30699_10-09-2006,10-10-2006,10-11-2006,10-18-2006
31204_10-10-2006,10-13-2006
31144_10-18-2006
30687_10-19-2006

Measurement Period: 10-09-2006 - 10-19-2006



High Leachability boundary

CDL Boundary

Sub Area Boundary

HPGe TU ppm
-999 to 60
60 to 999

PHYS
HPGe @ 15/31 cm
Tu ppm
-999 to 164
164 to 999

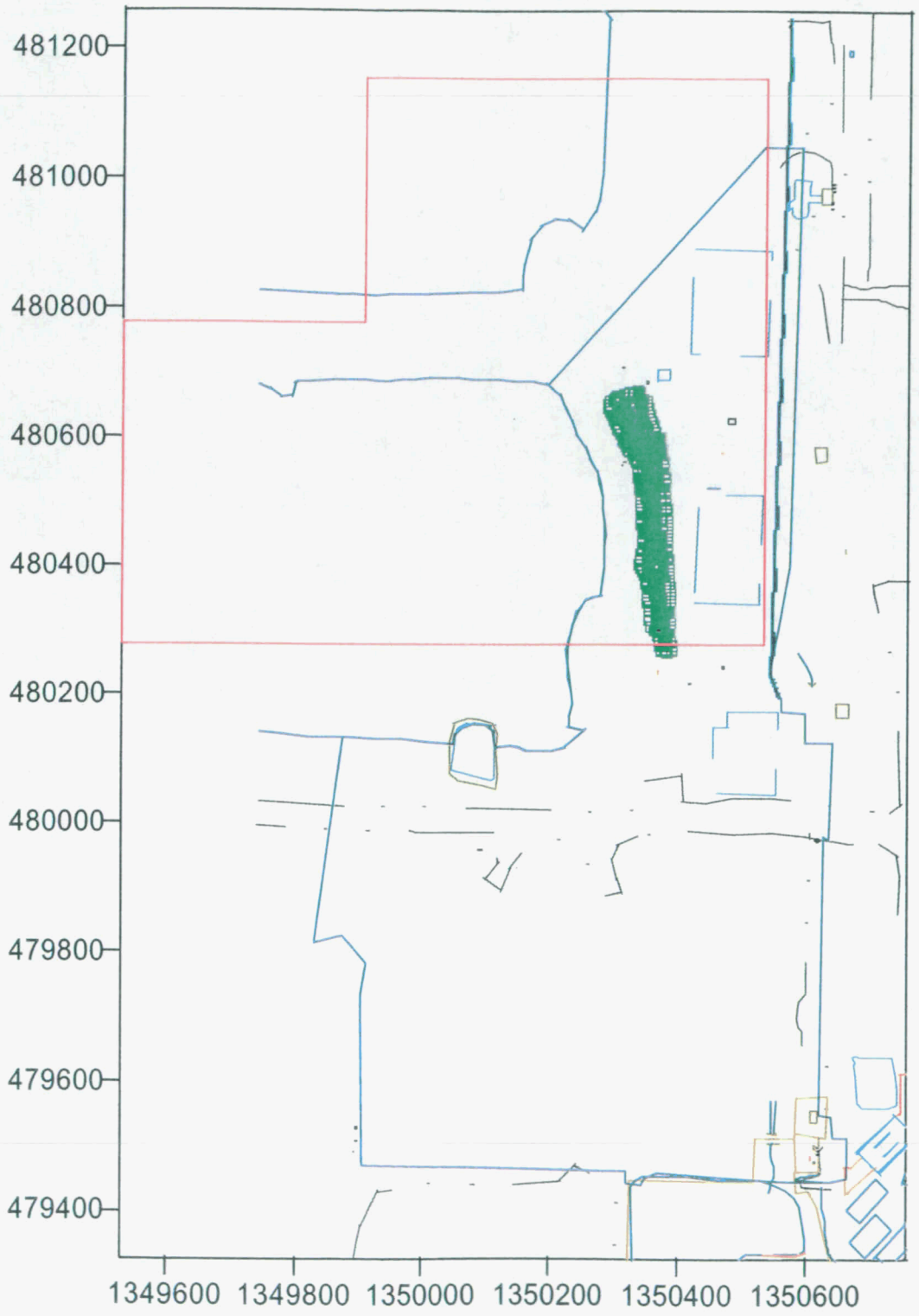
RTIMP DWG ID: A6E_P3_TU.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: Joe Nikstenas 10-20-2006
Support Data: A6E_P3.xls

Figure A-11, Area 6E Screened Pile Material Layer 1
Phase 1 Moisture Corrected Radium-226

Data Groups: RSS1_2829_10-05-2006, RSS4_1644_10-05-2006

Measurement Period: 10-05-2006

All Th-232 and Total U values are less than 3xFRL



High Leachability boundary

CDL Boundary

Sub Area Boundary

NaI Ra-226 pCi/g
-9999 to 5.1
5.1 to 9999

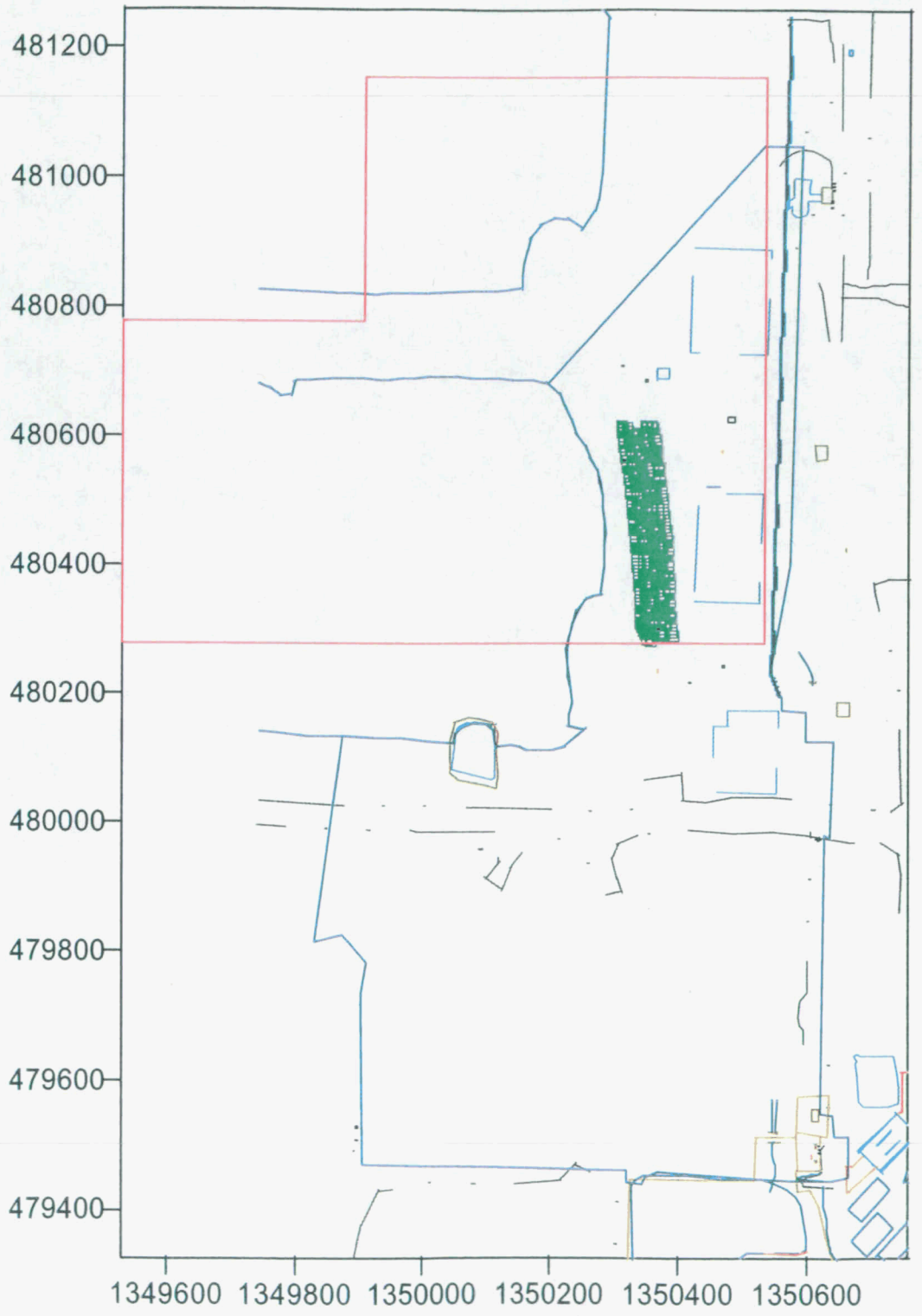
RTIMP DWG ID: A6E_SPL1_P1_RA.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: D.Seiller 10-19-2006
Support Data: A6E_SPL1_P1.xls

Figure A-12, Area 6E Screened Pile Material Layer 2
Phase 1 Moisture Corrected Radium-226

Data Groups: RSS2_1522_10-06-2006

Measurement Period: 10-06-2006

All Th-232 and Total U values are less than 3xFRL



High Leachability boundary

CDL Boundary

Sub Area Boundary

NaI Ra-226 pCi/g
-9999 to 5.1
5.1 to 999

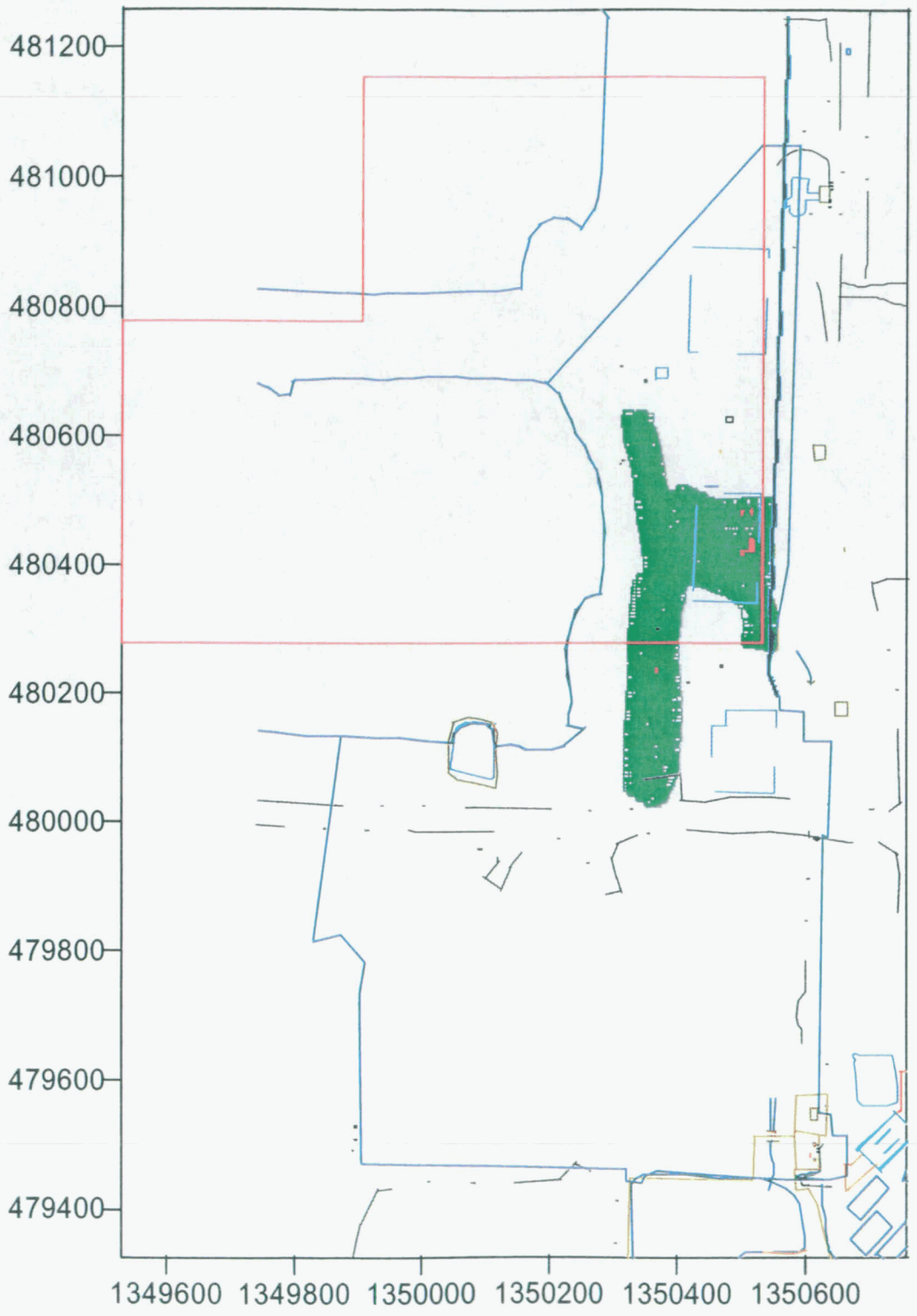
RTIMP DWG ID: A6E_SPL2_P1_RA.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: D.Seiller 10-19-2006
Support Data: A6E_SPL2_P1.xls

Figure A-13, Area 6E Screened Pile Material Layer 3
Phase 1 Moisture Corrected Radium-226

Data Groups: RSS3_1753_10-08-2006,RSS4_1654_10-08-2006

Measurement Period: 10-08-2006

All Th-232 and Total U values are less than 3xFRL



High Leachability boundary

CDL Boundary

Sub Area Boundary

NaI Ra-226 pCi/g
-9999 to 5.1
5.1 to 999

RTIMP DWG ID: A6E_SPL3_P1_RA.srf
Project ID: Gen. Char. for Site. Soil Rem 20300-PSP-0011
Prepared: D.Seiller 10-19-2006
Support Data: A6E_SPL3_P1.xls

APPENDIX B

AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
1*	C01-1	0-0.5	6E-C01-1^RMPS	ABCDE	480865.13	1350388.67
		0-0.5	6E-C01-1^L	F		
	C01-2	0-0.5	6E-C01-2^RMPS	ABCDE	480790.78	1350335.65
		0-0.5	6E-C01-2^L	F		
	C01-3	0-0.5	6E-C01-3^RMPS	ABCDE	480810.68	1350382.25
		0-0.5	6E-C01-3^L	F		
	C01-4	0-0.5	6E-C01-4^RMPS	ABCDE	480720.81	1350247.05
		0-0.5	6E-C01-4^L	F		
	C01-5	0-0.5	6E-C01-5^RMPS	ABCDE	480745.81	1350307.48
		0-0.5	6E-C01-5^L	F		
	C01-6	0-0.5	6E-C01-6^RMPS	ABCDE	480762.04	1350373.97
		0-0.5	6E-C01-6^L	F		
	C01-7	0-0.5	6E-C01-7^RMPS	ABCDE	480689.7	1350390.39
		0-0.5	6E-C01-7^L	F		
	C01-8D	0-0.5	6E-C01-8^RMPS	ABCDE	480591.27	1350386.89
			6E-C01-8^RMPS-D	ABCDE		
		0-0.5	6E-C01-8^L	F		
			6E-C01-8^L-D	F		
	C01-9	0-0.5	6E-C01-9^RMPS	ABCDE	480627.97	1350355.82
		0-0.5	6E-C01-9^L	F		
	C01-10	0-0.5	6E-C01-10^RMPS	ABCDE	480699.53	1350328.57
		0-0.5	6E-C01-10^L	F		
	C01-11	0-0.5	6E-C01-11^RMPS	ABCDE	480665.43	1350273.87
		0-0.5	6E-C01-11^L	F		
	C01-12	0-0.5	6E-C01-12^RMPS	ABCDE	480608.97	1350264.31
		0-0.5	6E-C01-12^L	F		
	C01-13	0-0.5	6E-C01-13^RMPS	ABCDE	480561.58	1350270.09
		0-0.5	6E-C01-13^L	F		
	C01-14	0-0.5	6E-C01-14^RMPS	ABCDE	480479.42	1350314.4
		0-0.5	6E-C01-14^L	F		
	C01-15	0-0.5	6E-C01-15^RMPS	ABCDE	480419.07	1350291.67
		0-0.5	6E-C01-15^L	F		
	C01-16	0-0.5	6E-C01-16^RMPS	ABCDE	480342.01	1350269.27
		0-0.5	6E-C01-16^L	F		

* This CU is in a high leachability zone, therefore the total uranium FRL = 20.0 mg/kg

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
2*	C02-1	0-0.5	6E-C02-1^RMPS	ABCDE	481041.97	1350573.22
		0-0.5	6E-C02-1^L	F		
	C02-2	0-0.5	6E-C02-2^RMPS	ABCDE	480970.49	1350475.02
		0-0.5	6E-C02-2^L	F		
	C02-3	0-0.5	6E-C02-3^RMPS	ABCDE	480981.71	1350560.75
		0-0.5	6E-C02-3^L	F		
	C02-4	0-0.5	6E-C02-4^RMPS	ABCDE	480913.35	1350425.38
		0-0.5	6E-C02-4^L	F		
	C02-5	0-0.5	6E-C02-5^RMPS	ABCDE	480902.26	1350497.03
		0-0.5	6E-C02-5^L	F		
	C02-6	0-0.5	6E-C02-6^RMPS	ABCDE	480927.71	1350574.25
		0-0.5	6E-C02-6^L	F		
	C02-7	0-0.5	6E-C02-7^RMPS	ABCDE	480856	1350459.4
		0-0.5	6E-C02-7^L	F		
	C02-8	0-0.5	6E-C02-8^RMPS	ABCDE	480865.78	1350566.69
		0-0.5	6E-C02-8^L	F		
	C02-9	0-0.5	6E-C02-9^RMPS	ABCDE	480798.46	1350456.98
		0-0.5	6E-C02-9^L	F		
	C02-10	0-0.5	6E-C02-10^RMPS	ABCDE	480797.11	1350515.72
		0-0.5	6E-C02-10^L	F		
	C02-11	0-0.5	6E-C02-11^RMPS	ABCDE	480755.91	1350440.05
		0-0.5	6E-C02-11^L	F		
	C02-12	0-0.5	6E-C02-12^RMPS	ABCDE	480757.99	1350571.29
		0-0.5	6E-C02-12^L	F		
	C02-13	0-0.5	6E-C02-13^RMPS	ABCDE	480710.5	1350423.2
		0-0.5	6E-C02-13^L	F		
	C02-14D	0-0.5	6E-C02-14^RMPS	ABCDE	480720.93	1350511.89
		0-0.5	6E-C02-14^RMPS-D	ABCDE		
		0-0.5	6E-C02-14^L	F		
		0-0.5	6E-C02-14^L-D	F		
	C02-15	0-0.5	6E-C02-15^RMPS	ABCDE	480685.69	1350480.99
		0-0.5	6E-C02-15^L	F		
	C02-16	0-0.5	6E-C02-16^RMPS	ABCDE	480666.17	1350533.2
		0-0.5	6E-C02-16^L	F		

* This CU is in a high leachability zone, therefore the total uranium FRL = 20.0 mg/kg

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
3*	C03-1	0-0.5	6E-C03-1^RMPS	ABCDE	480626.61	1350452.29
		0-0.5	6E-C03-1^L	F		
	C03-2	0-0.5	6E-C03-2^RMPS	ABCDE	480648.33	1350496.1
		0-0.5	6E-C03-2^L	F		
	C03-3	0-0.5	6E-C03-3^RMPS	ABCDE	480622.65	1350562.74
		0-0.5	6E-C03-3^L	F		
	C03-4	0-0.5	6E-C03-4^RMPS	ABCDE	480590.16	1350427.97
		0-0.5	6E-C03-4^L	F		
	C03-5	0-0.5	6E-C03-5^RMPS	ABCDE	480563.53	1350501.77
		0-0.5	6E-C03-5^L	F		
	C03-6	0-0.5	6E-C03-6^RMPS	ABCDE	480575.52	1350569.44
		0-0.5	6E-C03-6^L	F		
	C03-7	0-0.5	6E-C03-7^RMPS	ABCDE	480540.36	1350454.18
		0-0.5	6E-C03-7^L	F		
	C03-8	0-0.5	6E-C03-8^RMPS	ABCDE	480528.2	1350544.49
		0-0.5	6E-C03-8^L	F		
	C03-9	0-0.5	6E-C03-9^RMPS	ABCDE	480485.7	1350436.38
		0-0.5	6E-C03-9^L	F		
	C03-10	0-0.5	6E-C03-10^RMPS	ABCDE	480502.62	1350492.97
		0-0.5	6E-C03-10^L	F		
	C03-11	0-0.5	6E-C03-11^RMPS	ABCDE	480471.75	1350532.72
		0-0.5	6E-C03-11^L	F		
	C03-12	0-0.5	6E-C03-12^RMPS	ABCDE	480454.84	1350489.3
		0-0.5	6E-C03-12^L	F		
	C03-13D	0-0.5	6E-C03-13^RMPS	ABCDE	480420.39	1350459.4
			6E-C03-13^RMPS-D	ABCDE		
		0-0.5	6E-C03-13^L	F		
			6E-C03-13^L-D	F		
	C03-14	0-0.5	6E-C03-14^RMPS	ABCDE	480397.02	1350507.46
		0-0.5	6E-C03-14^L	F		
	C03-15	0-0.5	6E-C03-15^RMPS	ABCDE	480423.12	1350556.9
		0-0.5	6E-C03-15^L	F		
	C03-16	0-0.5	6E-C03-16^RMPS	ABCDE	480356.73	1350537.62
		0-0.5	6E-C03-16^L	F		

* This CU is in a high leachability zone, therefore the total uranium FRL = 20.0 mg/kg

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
4*	C04-1	0-0.5	6E-C04-1^RMPS	ABCDE	480619.93	1350301.67
		0-0.5	6E-C04-1^L	F		
	C04-2	0-0.5	6E-C04-2^RMPS	ABCDE	480538.3	1350332.37
		0-0.5	6E-C04-2^L	F		
	C04-3	0-0.5	6E-C04-3^RMPS	ABCDE	480554.56	1350372.22
		0-0.5	6E-C04-3^L	F		
	C04-4	0-0.5	6E-C04-4^RMPS	ABCDE	480480.26	1350334.9
		0-0.5	6E-C04-4^L	F		
	C04-5	0-0.5	6E-C04-5^RMPS	ABCDE	480500.35	1350387.52
		0-0.5	6E-C04-5^L	F		
	C04-6	0-0.5	6E-C04-6^RMPS	ABCDE	480431.85	1350352.24
		0-0.5	6E-C04-6^L	F		
	C04-7	0-0.5	6E-C04-7^RMPS	ABCDE	480454.11	1350410.91
		0-0.5	6E-C04-7^L	F		
	C04-8	0-0.5	6E-C04-8^RMPS	ABCDE	480373.71	1350361.23
		0-0.5	6E-C04-8^L	F		
	C04-9	0-0.5	6E-C04-9^RMPS	ABCDE	480400.13	1350436.34
		0-0.5	6E-C04-9^L	F		
	C04-10	0-0.5	6E-C04-10^RMPS	ABCDE	480353.57	1350426.48
		0-0.5	6E-C04-10^L	F		
	C04-11	0-0.5	6E-C04-11^RMPS	ABCDE	480320.39	1350395
		0-0.5	6E-C04-11^L	F		
	C04-12D	0-0.5	6E-C04-12^RMPS	ABCDE	480331.92	1350482.52
			6E-C04-12^RMPS-D	ABCDE		
		0-0.5	6E-C04-12^L	F		
			6E-C04-12^L-D	F		
	C04-13	0-0.5	6E-C04-13^RMPS	ABCDE	480255.1	1350389.72
		0-0.5	6E-C04-13^L	F		
	C04-14	0-0.5	6E-C04-14^RMPS	ABCDE	480286.38	1350439.95
		0-0.5	6E-C04-14^L	F		
	C04-15	0-0.5	6E-C04-15^RMPS	ABCDE	480271.23	1350489.02
		0-0.5	6E-C04-15^L	F		
	C04-16	0-0.5	6E-C04-16^RMPS	ABCDE	480219.92	1350460.94
		0-0.5	6E-C04-16^L	F		

* This CU is in a high leachability zone, therefore the total uranium FRL = 20.0 mg/kg

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
5*	C05-1	0-0.5	6E-C05-1^RMPS	ABCDE	480309.37	1350278.15
		0-0.5	6E-C05-1^L	F		
	C05-2	0-0.5	6E-C05-2^RMPS	ABCDE	480318.19	1350342.55
		0-0.5	6E-C05-2^L	F		
	C05-3	0-0.5	6E-C05-3^RMPS	ABCDE	480264.29	1350236.85
		0-0.5	6E-C05-3^L	F		
	C05-4	0-0.5	6E-C05-4^RMPS	ABCDE	480233.02	1350293.67
		0-0.5	6E-C05-4^L	F		
	C05-5	0-0.5	6E-C05-5^RMPS	ABCDE	480188.81	1350246.35
		0-0.5	6E-C05-5^L	F		
	C05-6	0-0.5	6E-C05-6^RMPS	ABCDE	480207.79	1350349.62
		0-0.5	6E-C05-6^L	F		
	C05-7D	0-0.5	6E-C05-7^RMPS	ABCDE	480136.81	1350268.62
			6E-C05-7^RMPS-D	ABCDE		
		0-0.5	6E-C05-7^L	F		
			6E-C05-7^L-D	F		
	C05-8	0-0.5	6E-C05-8^RMPS	ABCDE	480159.95	1350346.65
		0-0.5	6E-C05-8^L	F		
	C05-9	0-0.5	6E-C05-9^RMPS	ABCDE	480258.92	1350361.86
		0-0.5	6E-C05-9^L	F		
	C05-10	0-0.5	6E-C05-10^RMPS	ABCDE	480187.42	1350405.9
		0-0.5	6E-C05-10^L	F		
	C05-11	0-0.5	6E-C05-11^RMPS	ABCDE	480131.63	1350430.6
		0-0.5	6E-C05-11^L	F		
	C05-12	0-0.5	6E-C05-12^RMPS	ABCDE	480159.13	1350498.27
		0-0.5	6E-C05-12^L	F		
	C05-13	0-0.5	6E-C05-13^RMPS	ABCDE	480296.24	1350538.31
		0-0.5	6E-C05-13^L	F		
	C05-14	0-0.5	6E-C05-14^RMPS	ABCDE	480218.16	1350526.4
		0-0.5	6E-C05-14^L	F		
	C05-15	0-0.5	6E-C05-15^RMPS	ABCDE	480196.42	1350471.64
		0-0.5	6E-C05-15^L	F		
	C05-16	0-0.5	6E-C05-16^RMPS	ABCDE	480134.38	1350544.16
		0-0.5	6E-C05-16^L	F		

* This CU is in a high leachability zone, therefore the total uranium FRL = 20.0 mg/kg

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
6	C06-1	0-0.5	6E-C06-1^RMPS	ABCDE	480103.48	1350301.61
		0-0.5	6E-C06-1^L	F		
	C06-2	0-0.5	6E-C06-2^RMPS	ABCDE	480090.13	1350423.01
		0-0.5	6E-C06-2^L	F		
	C06-3D	0-0.5	6E-C06-3^RMPS	ABCDE	480043.42	1350302.94
			6E-C06-3^RMPS-D	ABCDE		
		0-0.5	6E-C06-3^L	F		
			6E-C06-3^L-D	F		
	C06-4	0-0.5	6E-C06-4^RMPS	ABCDE	480053.43	1350407
		0-0.5	6E-C06-4^L	F		
	C06-5	0-0.5	6E-C06-5^RMPS	ABCDE	480002.05	1350350.97
		0-0.5	6E-C06-5^L	F		
	C06-6	0-0.5	6E-C06-6^RMPS	ABCDE	480021.4	1350446.35
		0-0.5	6E-C06-6^L	F		
	C06-7	0-0.5	6E-C06-7^RMPS	ABCDE	479963.35	1350292.94
		0-0.5	6E-C06-7^L	F		
	C06-8	0-0.5	6E-C06-8^RMPS	ABCDE	479964.68	1350433.68
		0-0.5	6E-C06-8^L	F		
	C06-9	0-0.5	6E-C06-9^RMPS	ABCDE	480108.82	1350529.73
		0-0.5	6E-C06-9^L	F		
	C06-10	0-0.5	6E-C06-10^RMPS	ABCDE	480089.47	1350630.44
		0-0.5	6E-C06-10^L	F		
	C06-11	0-0.5	6E-C06-11^RMPS	ABCDE	480072.12	1350505.05
		0-0.5	6E-C06-11^L	F		
	C06-12	0-0.5	6E-C06-12^RMPS	ABCDE	480048.09	1350590.42
		0-0.5	6E-C06-12^L	F		
	C06-13	0-0.5	6E-C06-13^RMPS	ABCDE	480012.06	1350522.39
		0-0.5	6E-C06-13^L	F		
	C06-14	0-0.5	6E-C06-14^RMPS	ABCDE	479998.05	1350614.44
		0-0.5	6E-C06-14^L	F		
	C06-15	0-0.5	6E-C06-15^RMPS	ABCDE	479970.02	1350509.05
		0-0.5	6E-C06-15^L	F		
	C06-16	0-0.5	6E-C06-16^RMPS	ABCDE	479960.68	1350589.76
		0-0.5	6E-C06-16^L	F		

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
7	C07-1	0-0.5	6E-C07-1^RMPS	ABCDE	480116.83	1349891.24
		0-0.5	6E-C07-1^L	F		
	C07-2	0-0.5	6E-C07-2^RMPS	ABCDE	480067.45	1349917.25
		0-0.5	6E-C07-2^L	F		
	C07-3	0-0.5	6E-C07-3^RMPS	ABCDE	480017.4	1349891.9
		0-0.5	6E-C07-3^L	F		
	C07-4	0-0.5	6E-C07-4^RMPS	ABCDE	480032.75	1349946.6
		0-0.5	6E-C07-4^L	F		
	C07-5	0-0.5	6E-C07-5^RMPS	ABCDE	480076.79	1349985.28
		0-0.5	6E-C07-5^L	F		
	C07-6	0-0.5	6E-C07-6^RMPS	ABCDE	480106.82	1350037.31
		0-0.5	6E-C07-6^L	F		
	C07-7	0-0.5	6E-C07-7^RMPS	ABCDE	480129.5	1350096.01
		0-0.5	6E-C07-7^L	F		
	C07-8	0-0.5	6E-C07-8^RMPS	ABCDE	480076.12	1350100.68
		0-0.5	6E-C07-8^L	F		
	C07-9D	0-0.5	6E-C07-9^RMPS	ABCDE	480046.09	1350027.97
			6E-C07-9^RMPS-D	ABCDE		
		0-0.5	6E-C07-9^L	F		
			6E-C07-9^L-D	F		
	C07-10	0-0.5	6E-C07-10^RMPS	ABCDE	480035.42	1350144.7
		0-0.5	6E-C07-10^L	F		
	C07-11	0-0.5	6E-C07-11^RMPS	ABCDE	479994.71	1350008.63
		0-0.5	6E-C07-11^L	F		
	C07-12	0-0.5	6E-C07-12^RMPS	ABCDE	480003.38	1350110.01
		0-0.5	6E-C07-12^L	F		
	C07-13	0-0.5	6E-C07-13^RMPS	ABCDE	480064.11	1350201.39
		0-0.5	6E-C07-13^L	F		
	C07-14	0-0.5	6E-C07-14^RMPS	ABCDE	480111.49	1350250.75
		0-0.5	6E-C07-14^L	F		
	C07-15	0-0.5	6E-C07-15^RMPS	ABCDE	479998.71	1350193.39
		0-0.5	6E-C07-15^L	F		
	C07-16	0-0.5	6E-C07-16^RMPS	ABCDE	480044.09	1350266.09
		0-0.5	6E-C07-16^L	F		

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
8	C08-1	0-0.5	6E-C08-1^RMPS	ABCDE	479962.41	1349871.93
		0-0.5	6E-C08-1^L	F		
	C08-2	0-0.5	6E-C08-2^RMPS	ABCDE	479967.86	1349982.7
		0-0.5	6E-C08-2^L	F		
	C08-3	0-0.5	6E-C08-3^RMPS	ABCDE	479916.99	1349910.06
		0-0.5	6E-C08-3^L	F		
	C08-4	0-0.5	6E-C08-4^RMPS	ABCDE	479910.63	1349969.08
		0-0.5	6E-C08-4^L	F		
	C08-5	0-0.5	6E-C08-5^RMPS	ABCDE	479857.04	1349871.02
		0-0.5	6E-C08-5^L	F		
	C08-6	0-0.5	6E-C08-6^RMPS	ABCDE	479857.95	1349967.26
		0-0.5	6E-C08-6^L	F		
	C08-7	0-0.5	6E-C08-7^RMPS	ABCDE	479813.44	1349915.51
		0-0.5	6E-C08-7^L	F		
	C08-8	0-0.5	6E-C08-8^RMPS	ABCDE	479797.09	1349984.51
		0-0.5	6E-C08-8^L	F		
	C08-9	0-0.5	6E-C08-9^RMPS	ABCDE	479760.75	1349928.22
		0-0.5	6E-C08-9^L	F		
	C08-10	0-0.5	6E-C08-10^RMPS	ABCDE	479730.78	1349991.78
		0-0.5	6E-C08-10^L	F		
	C08-11	0-0.5	6E-C08-11^RMPS	ABCDE	479690.81	1349932.76
		0-0.5	6E-C08-11^L	F		
	C08-12	0-0.5	6E-C08-12^RMPS	ABCDE	479671.74	1349984.51
		0-0.5	6E-C08-12^L	F		
	C08-13	0-0.5	6E-C08-13^RMPS	ABCDE	479620.87	1349920.05
		0-0.5	6E-C08-13^L	F		
	C08-14	0-0.5	6E-C08-14^RMPS	ABCDE	479623.59	1350009.03
		0-0.5	6E-C08-14^L	F		
	C08-15	0-0.5	6E-C08-15^RMPS	ABCDE	479564.55	1349947.29
		0-0.5	6E-C08-15^L	F		
	C08-16D	0-0.5	6E-C08-16^RMPS	ABCDE	479564.55	1350016.29
			6E-C08-16^RMPS-D	ABCDE		
		0-0.5	6E-C08-16^L	F		
			6E-C08-16^L-D	F		

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
9	C09-1	0-0.5	6E-C09-1^RMPS	ABCDE	479934.54	1350056.96
		0-0.5	6E-C09-1^L	F		
	C09-2	0-0.5	6E-C09-2^RMPS	ABCDE	479974.29	1350120.66
		0-0.5	6E-C09-2^L	F		
	C09-3	0-0.5	6E-C09-3^RMPS	ABCDE	479883.67	1350019.56
		0-0.5	6E-C09-3^L	F		
	C09-4	0-0.5	6E-C09-4^RMPS	ABCDE	479871.39	1350107.22
		0-0.5	6E-C09-4^L	F		
	C09-5	0-0.5	6E-C09-5^RMPS	ABCDE	479952.08	1350183.78
		0-0.5	6E-C09-5^L	F		
	C09-6	0-0.5	6E-C09-6^RMPS	ABCDE	479970.2	1350262.67
		0-0.5	6E-C09-6^L	F		
	C09-7	0-0.5	6E-C09-7^RMPS	ABCDE	479895.95	1350171.51
		0-0.5	6E-C09-7^L	F		
	C09-8	0-0.5	6E-C09-8^RMPS	ABCDE	479875.48	1350232.29
		0-0.5	6E-C09-8^L	F		
	C09-9	0-0.5	6E-C09-9^RMPS	ABCDE	479822.28	1350018.39
		0-0.5	6E-C09-9^L	F		
	C09-10	0-0.5	6E-C09-10^RMPS	ABCDE	479815.85	1350087.35
		0-0.5	6E-C09-10^L	F		
	C09-11	0-0.5	6E-C09-11^RMPS	ABCDE	479771.41	1350047.61
		0-0.5	6E-C09-11^L	F		
	C09-12	0-0.5	6E-C09-12^RMPS	ABCDE	479760.3	1350108.39
		0-0.5	6E-C09-12^L	F		
	C09-13	0-0.5	6E-C09-13^RMPS	ABCDE	479832.8	1350182.61
		0-0.5	6E-C09-13^L	F		
	C09-14D	0-0.5	6E-C09-14^RMPS	ABCDE	479816.43	1350252.74
			6E-C09-14^RMPS-D	ABCDE		
		0-0.5	6E-C09-14^L	F		
			6E-C09-14^L-D	F		
	C09-15	0-0.5	6E-C09-15^RMPS	ABCDE	479788.95	1350165.66
		0-0.5	6E-C09-15^L	F		
	C09-16	0-0.5	6E-C09-16^RMPS	ABCDE	479762.05	1350224.69
		0-0.5	6E-C09-16^L	F		

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
10	C10-1	0-0.5	6E-C10-1^RMPS	ABCDE	479943.87	1350280.11
		0-0.5	6E-C10-1^L	F		
	C10-2	0-0.5	6E-C10-2^RMPS	ABCDE	479938.09	1350389.16
		0-0.5	6E-C10-2^L	F		
	C10-3	0-0.5	6E-C10-3^RMPS	ABCDE	479902.02	1350332.64
		0-0.5	6E-C10-3^L	F		
	C10-4	0-0.5	6E-C10-4^RMPS	ABCDE	479888.68	1350390.02
		0-0.5	6E-C10-4^L	F		
	C10-5	0-0.5	6E-C10-5^RMPS	ABCDE	479928.28	1350434.54
		0-0.5	6E-C10-5^L	F		
	C10-6D	0-0.5	6E-C10-6^RMPS	ABCDE	479910.48	1350496.38
			6E-C10-6^RMPS-D	ABCDE		
		0-0.5	6E-C10-6^L	F		
			6E-C10-6^L-D	F		
	C10-7	0-0.5	6E-C10-7^RMPS	ABCDE	479863.28	1350448.32
		0-0.5	6E-C10-7^L	F		
	C10-8	0-0.5	6E-C10-8^RMPS	ABCDE	479812.54	1350479.92
		0-0.5	6E-C10-8^L	F		
	C10-9	0-0.5	6E-C10-9^RMPS	ABCDE	479864.61	1350297.07
		0-0.5	6E-C10-9^L	F		
	C10-10	0-0.5	6E-C10-10^RMPS	ABCDE	479850.83	1350357.12
		0-0.5	6E-C10-10^L	F		
	C10-11	0-0.5	6E-C10-11^RMPS	ABCDE	479820.58	1350330.42
		0-0.5	6E-C10-11^L	F		
	C10-12	0-0.5	6E-C10-12^RMPS	ABCDE	479816.54	1350407.84
		0-0.5	6E-C10-12^L	F		
	C10-13	0-0.5	6E-C10-13^RMPS	ABCDE	479785.82	1350297.93
		0-0.5	6E-C10-13^L	F		
	C10-14	0-0.5	6E-C10-14^2-RMPS	ABCDE	479768.48	1350350.9
		0-0.5	6E-C10-14^2-L	F		
	C10-15	0-0.5	6E-C10-15^RMPS	ABCDE	479735.53	1350273.01
		0-0.5	6E-C10-15^L	F		
	C10-16	0-0.5	6E-C10-16^2-RMPS	ABCDE	479736.86	1350388.27
		0-0.5	6E-C10-16^2-L	F		

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
11	C11-1D	0-0.5	6E-C11-1^RMPS	ABCDE	479717.91	1350059.02
			6E-C11-1^RMPS-D	ABCDE		
		0-0.5	6E-C11-1^L	F		
			6E-C11-1^L-D	F		
	C11-2	0-0.5	6E-C11-2^RMPS	ABCDE	479732.93	1350190.4
		0-0.5	6E-C11-2^L	F		
	C11-3	0-0.5	6E-C11-3^RMPS	ABCDE	479679.08	1350115.32
		0-0.5	6E-C11-3^L	F		
	C11-4	0-0.5	6E-C11-4^RMPS	ABCDE	479632.12	1350139.15
		0-0.5	6E-C11-4^L	F		
	C11-5	0-0.5	6E-C11-5^RMPS	ABCDE	479568.98	1350063.43
		0-0.5	6E-C11-5^L	F		
	C11-6	0-0.5	6E-C11-6^RMPS	ABCDE	479496.96	1349936.39
		0-0.5	6E-C11-6^L	F		
	C11-7	0-0.5	6E-C11-7^RMPS	ABCDE	479524.5	1350032.14
		0-0.5	6E-C11-7^L	F		
	C11-8	0-0.5	6E-C11-8^RMPS	ABCDE	479496.96	1350142.86
		0-0.5	6E-C11-8^L	F		
	C11-9	0-0.5	6E-C11-9^RMPS	ABCDE	479664.75	1350276.09
		0-0.5	6E-C11-9^L	F		
	C11-10	0-0.5	6E-C11-10^2-RMPS	ABCDE	479697.87	1350373.09
		0-0.5	6E-C11-10^2-L	F		
	C11-11	0-0.5	6E-C11-11^RMPS	ABCDE	479614.06	1350252.31
		0-0.5	6E-C11-11^L	F		
	C11-12	0-0.5	6E-C11-12^RMPS	ABCDE	479620.21	1350394.33
		0-0.5	6E-C11-12^L	F		
	C11-13	0-0.5	6E-C11-13^RMPS	ABCDE	479543.28	1350216.06
		0-0.5	6E-C11-13^L	F		
	C11-14	0-0.5	6E-C11-14^RMPS	ABCDE	479561.48	1350322.99
		0-0.5	6E-C11-14^L	F		
	C11-15	0-0.5	6E-C11-15^RMPS	ABCDE	479470.73	1350276.74
		0-0.5	6E-C11-15^L	F		
	C11-16	0-0.5	6E-C11-16^RMPS	ABCDE	479474.43	1350353.07
		0-0.5	6E-C11-16^L	F		

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
12	C12-1	0-0.5	6E-C12-1^RMPS	ABCDE	479912.6	1350538.79
		0-0.5	6E-C12-1^L	F		
	C12-2	0-0.5	6E-C12-2^RMPS	ABCDE	479886.39	1350607.44
		0-0.5	6E-C12-2^L	F		
	C12-3	0-0.5	6E-C12-3^RMPS	ABCDE	479811.13	1350511.26
		0-0.5	6E-C12-3^L	F		
	C12-4	0-0.5	6E-C12-4^RMPS	ABCDE	479805.62	1350580.05
		0-0.5	6E-C12-4^L	F		
	C12-5	0-0.5	6E-C12-5^RMPS	ABCDE	479712.02	1350429.63
		0-0.5	6E-C12-5^L	F		
	C12-6	0-0.5	6E-C12-6^RMPS	ABCDE	479737.83	1350499.99
		0-0.5	6E-C12-6^L	F		
	C12-7D	0-0.5	6E-C12-7^RMPS	ABCDE	479714.03	1350618.13
			6E-C12-7^RMPS-D	ABCDE		
		0-0.5	6E-C12-7^L	F		
			6E-C12-7^L-D	F		
	C12-8	0-0.5	6E-C12-8^RMPS	ABCDE	479671.65	1350516.77
		0-0.5	6E-C12-8^L	F		
	C12-9	0-0.5	6E-C12-9^RMPS	ABCDE	479616.59	1350445.23
		0-0.5	6E-C12-9^L	F		
	C12-10	0-0.5	6E-C12-10^RMPS	ABCDE	479620.26	1350571.8
		0-0.5	6E-C12-10^L	F		
	C12-11	0-0.5	6E-C12-11^RMPS	ABCDE	479590.21	1350526.86
		0-0.5	6E-C12-11^L	F		
	C12-12	0-0.5	6E-C12-12^RMPS	ABCDE	479560.26	1350467.58
		0-0.5	6E-C12-12^L	F		
	C12-13	0-0.5	6E-C12-13^RMPS	ABCDE	479535.16	1350609.4
		0-0.5	6E-C12-13^L	F		
	C12-14	0-0.5	6E-C12-14^RMPS	ABCDE	479477.35	1350436.05
		0-0.5	6E-C12-14^L	F		
	C12-15	0-0.5	6E-C12-15^RMPS	ABCDE	479492.93	1350535.8
		0-0.5	6E-C12-15^L	F		
	C12-16	0-0.5	6E-C12-16^RMPS	ABCDE	479459.91	1350626.83
		0-0.5	6E-C12-16^L	F		

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
13 (USTs 1 and 2)	C13-1D	0-0.5	6E-C13-1^RM	AHJK	479949.03	1350039.29
			6E-C13-1^RM-D	AHJK		
		0-0.5	6E-C13-1^L	PR		
			6E-C13-1^L-D	PR		
	C13-2	0-0.5	6E-C13-2^RM	AHJK	479951.28	1350045.34
		0-0.5	6E-C13-2^L	PR		
	C13-3	0-0.5	6E-C13-3^RM	AHJK	479945.28	1350035.54
		0-0.5	6E-C13-3^L	PR		
	C13-4	0-0.5	6E-C13-4^RM	AHJK	479942.86	1350046.44
		0-0.5	6E-C13-4^L	PR		
	C13-5	0-0.5	6E-C13-5^RM	AHJK	479937.49	1350038.19
		0-0.5	6E-C13-5^L	PR		
	C13-6	0-0.5	6E-C13-6^RM	AHJK	479935.99	1350047.01
		0-0.5	6E-C13-6^L	PR		
	C13-7	0-0.5	6E-C13-7^RM	AHJK	479932.19	1350034.1
		0-0.5	6E-C13-7^L	PR		
	C13-8	0-0.5	6E-C13-8^RM	AHJK	479931.13	1350043.3
		0-0.5	6E-C13-8^L	PR		
14 (UST 5)	C14-1	0-0.5	6E-C14-1^RMP	AGHIJKLU	479909.26	1349993.71
		0-0.5	6E-C14-1^L	MNOPQR		
	C14-2	0-0.5	6E-C14-2^RMP	AGHIJKLU	479910.28	1350002.4
		0-0.5	6E-C14-2^L	MNOPQR		
	C14-3	0-0.5	6E-C14-3^RMP	AGHIJKLU	479906.57	1349997.41
		0-0.5	6E-C14-3^L	MNOPQR		
	C14-4	0-0.5	6E-C14-4^RMP	AGHIJKLU	479905.73	1350000.54
		0-0.5	6E-C14-4^L	MNOPQR		
	C14-5	0-0.5	6E-C14-5^RMP	AGHIJKLU	479902.86	1349994.03
		0-0.5	6E-C14-5^L	MNOPQR		
	C14-6D	0-0.5	6E-C14-6^RMP	AGHIJKLU	479903.01	1349999.79
			6E-C14-6^RMP-D	AGHIJKLU		
		0-0.5	6E-C14-6^L	MNOPQR		
			6E-C14-6^L-D	MNOPQR		
	C14-7	0-0.5	6E-C14-7^RMP	AGHIJKLU	479900.21	1349996.28
		0-0.5	6E-C14-7^L	MNOPQR		
	C14-8	0-0.5	6E-C14-8^RMP	AGHIJKLU	479900.67	1350000.96
		0-0.5	6E-C14-8^L	MNOPQR		

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
15 (USTs 8 and 9)	C15-1	0-0.5	6E-C15-1^RM	AGL	479972.68	1349997.99
		0-0.5	6E-C15-1^L	OPRT		
	C15-2	0-0.5	6E-C15-2^RM	AGL	479978.95	1350003.3
		0-0.5	6E-C15-2^L	OPRT		
	C15-3	0-0.5	6E-C15-3^RM	AGL	479966.82	1349997.78
		0-0.5	6E-C15-3^L	OPRT		
	C15-4	0-0.5	6E-C15-4^RM	AGL	479963.14	1350001.59
		0-0.5	6E-C15-4^L	OPRT		
	C15-5	0-0.5	6E-C15-5^RM	AGL	479957.08	1349994.24
		0-0.5	6E-C15-5^L	OPRT		
	C15-6	0-0.5	6E-C15-6^RM	AGL	479952.41	1350001.94
		0-0.5	6E-C15-6^L	OPRT		
	C15-7D	0-0.5	6E-C15-7^RM	AGL	479944.85	1349997.58
			6E-C15-7^RM-D	AGL		
		0-0.5	6E-C15-7^L	OPRT		
			6E-C15-7^L-D	OPRT		
	C15-8	0-0.5	6E-C15-8^RM	AGL	479940.35	1350002.28
		0-0.5	6E-C15-8^L	OPRT		
16 (UST 10)	C16-1	0-0.5	6E-C16-1^RM	AHJK	479961.57	1350031.55
		0-0.5	6E-C16-1^L	OQS		
	C16-2	0-0.5	6E-C16-2^RM	AHJK	479959.34	1350035.24
		0-0.5	6E-C16-2^L	OQS		
	C16-3	0-0.5	6E-C16-3^RM	AHJK	479955.19	1350032.76
		0-0.5	6E-C16-3^L	OQS		
	C16-4D	0-0.5	6E-C16-4^RM	AHJK	479952.82	1350037.42
			6E-C16-4^RM-D	AHJK		
		0-0.5	6E-C16-4^L	OQS		
			6E-C16-4^L-D	OQS		
	C16-5	0-0.5	6E-C16-5^RM	AHJK	479948.08	1350031.5
		0-0.5	6E-C16-5^L	OQS		
	C16-6	0-0.5	6E-C16-6^RM	AHJK	479949.19	1350035.3
		0-0.5	6E-C16-6^L	OQS		
	C16-7	0-0.5	6E-C16-7^RM	AHJK	479943.78	1350029.43
		0-0.5	6E-C16-7^L	OQS		
	C16-8	0-0.5	6E-C16-8^RM	AHJK	479941.2	1350034.28
		0-0.5	6E-C16-8^L	OQS		

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
17 (UST 17)	C17-1	0-0.5	6E-C17-1^RM	AHL	479959.42	1350103.33
		0-0.5	6E-C17-1^L	NO		
	C17-2	0-0.5	6E-C17-2^RM	AHL	479959.92	1350105.45
		0-0.5	6E-C17-2^L	NO		
	C17-3	0-0.5	6E-C17-3^RM	AHL	479956.93	1350103.26
		0-0.5	6E-C17-3^L	NO		
	C17-4	0-0.5	6E-C17-4^RM	AHL	479957.7	1350106.09
		0-0.5	6E-C17-4^L	NO		
	C17-5	0-0.5	6E-C17-5^RM	AHL	479954.84	1350102.37
		0-0.5	6E-C17-5^L	NO		
	C17-6	0-0.5	6E-C17-6^RM	AHL	479954.45	1350104.74
		0-0.5	6E-C17-6^L	NO		
	C17-7	0-0.5	6E-C17-7^RM	AHL	479952.67	1350102.68
		0-0.5	6E-C17-7^L	NO		
	C17-8D	0-0.5	6E-C17-8^RM	AHL	479951.83	1350106.16
			6E-C17-8^RM-D	AHL		
		0-0.5	6E-C17-8^L	NO		
			6E-C17-8^L-D	NO		

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
18	C18-1	0-0.5	6E-C18-1^RMPS	ABCDE	479758.97	1350370.93
		0-0.5	6E-C18-1^L	F		
	C18-2	0-0.5	6E-C18-2^RMPS	ABCDE	479755.69	1350433.43
		0-0.5	6E-C18-2^L	F		
	C18-3	0-0.5	6E-C18-3^RMPS	ABCDE	479722.65	1350374.65
		0-0.5	6E-C18-3^L	F		
	C18-4	0-0.5	6E-C18-4^RMPS	ABCDE	479723.83	1350412.8
		0-0.5	6E-C18-4^L	F		
	C18-5	0-0.5	6E-C18-5^RMPS	ABCDE	479780.14	1350475.37
		0-0.5	6E-C18-5^L	F		
	C18-6	0-0.5	6E-C18-6^RMPS	ABCDE	479729.44	1350467.74
		0-0.5	6E-C18-6^L	F		
	C18-7	0-0.5	6E-C18-7^RMPS	ABCDE	479704.09	1350448.23
		0-0.5	6E-C18-7^L	F		
	C18-8	0-0.5	6E-C18-8^RMPS	ABCDE	479659.33	1350474.69
		0-0.5	6E-C18-8^L	F		
	C18-9	0-0.5	6E-C18-9^RMPS	ABCDE	479698.83	1350351.98
		0-0.5	6E-C18-9^L	F		
	C18-10	0-0.5	6E-C18-10^RMPS	ABCDE	479686.37	1350400.91
		0-0.5	6E-C18-10^L	F		
	C18-11D	0-0.5	6E-C18-11^RMPS	ABCDE	479643.85	1350352.24
			6E-C18-11^RMPS-D	ABCDE		
		0-0.5	6E-C18-11^L	F		
			6E-C18-11^L-D	F		
	C18-12	0-0.5	6E-C18-12^RMPS	ABCDE	479660.67	1350421.76
		0-0.5	6E-C18-12^L	F		
	C18-13	0-0.5	6E-C18-13^RMPS	ABCDE	479634.65	1350436.56
		0-0.5	6E-C18-13^L	F		
	C18-14	0-0.5	6E-C18-14^RMPS	ABCDE	479610.53	1350412.79
		0-0.5	6E-C18-14^L	F		
	C18-15	0-0.5	6E-C18-15^RMPS	ABCDE	479585.4	1350472.44
		0-0.5	6E-C18-15^L	F		
	C18-16	0-0.5	6E-C18-16^RMPS	ABCDE	479549.96	1350455.62
		0-0.5	6E-C18-16^L	F		

APPENDIX B
AREA 6E CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TALs	Northing	Easting
19	C19-1	0-0.5	6E-C19-1^1-RMPS	ABCDE	480607.49	1350301.16
		0-0.5	6E-C19-1^1-L	F		
	C19-2	1.5-2.0	6E-C19-2^4-RMPS	ABCDE	480570.32	1350357.21
		1.5-2.0	6E-C19-2^4-L	F		
	C19-3	0-0.5	6E-C19-3^1-RMPS	ABCDE	480532.03	1350317.28
		0-0.5	6E-C19-3^1-L	F		
	C19-4	1.5-2.0	6E-C19-4^4-RMPS	ABCDE	480519.15	1350371.01
		1.5-2.0	6E-C19-4^4-L	F		
	C19-5	2.5-3.0	6E-C19-5^6-RMPS	ABCDE	480474.94	1350375.9
		2.5-3.0	6E-C19-5^6-L	F		
	C19-6	2.0-2.5	6E-C19-6^5-RMPS	ABCDE	480422.05	1350343.15
		2.0-2.5	6E-C19-6^5-L	F		
	C19-7	1.0-1.5	6E-C19-7^3-RMPS	ABCDE	480391.88	1350345.06
		1.0-1.5	6E-C19-7^3-L	F		
	C19-8	0-0.5	6E-C19-8^1-RMPS	ABCDE	480364.69	1350343.61
		0-0.5	6E-C19-8^1-L	F		
	C19-9	1.5-2.0	6E-C19-9^4-RMPS	ABCDE	480315.11	1350384.86
		1.5-2.0	6E-C19-9^4-L	F		
	C19-10	0-0.5	6E-C19-10^1-RMPS	ABCDE	480288.66	1350354.84
		0-0.5	6E-C19-10^1-L	F		
	C19-11	0.5-1.0	6E-C19-11^2-RMPS	ABCDE	480240.04	1350393.77
		0.5-1.0	6E-C19-11^2-L	F		
	C19-12	1.5-2.0	6E-C19-12^4-RMPS	ABCDE	480225.67	1350360.37
		1.5-2.0	6E-C19-12^4-L	F		
	C19-13	0.5-1.0	6E-C19-13^2-RMPS	ABCDE	480184.11	1350346.11
		0.5-1.0	6E-C19-13^2-L	F		
	C19-14	0-0.5	6E-C19-14^1-RMPS	ABCDE	480154.53	1350394.85
		0-0.5	6E-C19-14^1-L	F		
	C19-15	0-0.5	6E-C19-15^1-RMPS	ABCDE	480103.99	1350387.84
		0-0.5	6E-C19-15^1-L	F		
	C19-16-D	0-0.5	6E-C19-16^1-RMPS	ABCDE	480056.58	1350355.01
			6E-C19-16^1-RMPS-D	ABCDE		
		0-0.5	6E-C19-16^1-L	F		
			6E-C19-16^1-L-D	F		

APPENDIX C

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

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

False Positive and False Negative Errors

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

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

7.0 Design for Obtaining Quality Data

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

Soil Sample Locations

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

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

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

Physical Samples

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

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

Laboratory Analysis

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

Validation

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

8.0 Use of Data to Test Null Hypothesis

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

Data Quality Objectives
Sitewide Certification Sampling and Analysis

1A. Task Description:

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

RI☐ FS☐ RD☐ RA☒ RvA☐ Other (specify) _____

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

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

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

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

Site Characterization	Risk Assessment
A☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☐ E☐
Evaluation of Alternatives	Engineering Design
A☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☐ E☐
Monitoring During Remediation	Other
A☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☒ E☐

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

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

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5. Site Information (Description):

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

6A. Data Types with appropriate Analytical Support Level Equipment Selection and SCQ Reference: (Place an "X" to the right of the appropriate box or boxes selecting the type of analysis or analyses required. Then select the type of equipment to perform the analysis if appropriate. Please include a reference to the SCQ Section.)

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

* As identified in the area certification PSP

6.B. Equipment Selection and SCQ Reference:

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

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

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

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

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

Background samples: OU5 RI

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

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

8A. Field Quality Control Samples:

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

Other (specify) _____

1) Collected for volatile organic sampling
2) As noted in the PSP
3) Split samples will be taken where required by the EPA

8B. Laboratory Quality Control Samples:

Method Blank	☒	Matrix Duplicate/Replicate	☒
Matrix Spike	☒	Surrogate Spikes	☒
Tracer Spike	☒	Other (specify) _____	

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

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