006139

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Department of Energy

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

MAR 14 2006

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

DOE-0088-06

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

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF THE DRAFT CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6 GENERAL AREA EAST

Enclosed for your review is the draft Certification Design Letter and Certification Project Specific Plan for Area 6 General Area East.

If you have any questions regarding this transmittal, please contact me at (513) 648-3139.

Sincerely,

Johnny Reising

Johnny W. Reising
Director

Enclosure

cc w/enclosure:
J. Desormeau, OH/FCP
T. Schneider, OEPA-Dayton (three copies of enclosure)
G. Jablonowski, USEPA-V, SR-6J
M. Cullerton, Tetra Tech
M. Shupe, HSI GeoTrans
R. Vandegrift, ODH
AR Coordinator, Fluor Fernald, Inc./MS6

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

006139

CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6 GENERAL AREA EAST

FERNALD CLOSURE PROJECT
FERNALD, OHIO

MARCH 2006

U.S. DEPARTMENT OF ENERGY

20600-PSP-0018
REVISION A
DRAFT

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CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6 GENERAL AREA EAST

Document Number 20600-PSP-0018
Draft Revision A

March 2006

APPROVAL:

Jyh-Dong Chiou, Project Manager Environmental Closure Project	Date
Frank Miller, Characterization Manager Environmental Closure Project	Date
Tom Buhrlage, Sampling Manager Environmental Closure Project	Date
Reinhard Friske, Quality Assurance/Quality Control Safety, Health and Quality Division	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
DOE	U.S. Department of Energy
DQO	Data Quality Objectives
EPA	U.S. Environmental Protection Agency
FACTS	Fernald Analytical Computerized Tracking System
FAL	Field Activity Log
FCP	Fernald Closure Project
FRL	final remediation level
GC-MS	gas chromatography/mass spectroscopy
GPC	gas proportional counting
GPS	Global Positioning System
HWMU	hazardous waste management unit
ICP-AES	inductively coupled plasma - atomic emission spectroscopy
ICP-MS	inductively coupled plasma - mass spectroscopy
LSC	liquid scintillation counting
µg/L	micrograms per Liter
MDC	Main Drainage Corridor
MDC	minimum detectable concentration
MDL	minimum detectable level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NAD83	North American Datum of 1983
OEPA	Ohio Environmental Protection Agency
OU	Operable Unit
OSDF	On-Site Disposal Facility
PAHs	polyaromatic hydrocarbons
QA/QC	Quality Assurance/Quality Control
PCB	polychlorinated biphenyl
pCi/g	picoCuries per gram
pCi/L	picoCuries per liter
ppm	parts per million
PSP	Project Specific Plan
RCRA	Resource, Conservation, and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RWP	Radiation Worker Permit
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

SEP	Sitewide Excavation Plan
SP	Soil Stockpile
SPL	Sample Processing Laboratory
SVOC	semi-volatile organic compound
TAL	Target Analyte List
TAT	turnaround-time
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

EXECUTIVE SUMMARY

This document is a combination of the Certification Design Letter (CDL) and Certification Project Specific Plan (PSP) for the Area 6 General Area East into one document. This document describes the certification design, sampling, analysis, and validation for Area 6 General Area East. Certification demonstrates that risk based, area-specific constituents of concern (ASCOCs) meet the final remediation levels (FRLs). The following information is included:

- The boundaries and a description of the areas to be certified under the guidance of this document;
- A discussion of historical data from the areas proposed for certification;
- A discussion of the ASCOC selection process and list of ASCOCs assigned to Area 6 General Area East;
- A presentation of the certification unit 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 CDL/Certification PSP is limited to the Area 6 General Area East as shown in Figure 1-1. This area consists of those formerly known as Area 6B, Area 6I, the Operable Unit (OU) 1 Stockpile Area, and the Area 3B Main Drainage Corridor. Remediation of these areas was completed in January 2006, thus initiating the certification process described herein.

The certification design presented in this document follows the general approach outlined in Section 3.4 of the Sitewide Excavation Plan (DOE 1998). The subject areas have been characterized through previous sampling investigations and FRL scanning with real-time equipment as well as physical sampling for non-radiological constituents.

The selection of Area 6 General Area East ASCOCs was accomplished using constituent of concern (COC) lists in the OU5 Record of Decision (DOE 1996) as well as the COCs and known contaminants historically stored in the Quonset Huts, the KC-2 Warehouse, and the Plant 1 Pad. Area 6 General Area East consists of 18 CUs as shown in Figure 4-1. Total uranium, thorium-228, thorium-232, radium-226, and radium-228 (the sitewide primary radiological COCs) are considered ASCOCs for all CUs in the Area 6 General Area East area. Additionally, secondary COCs are identified for specific CUs within the certification area. Ecological COCs will be analyzed as needed.

Upon completion of the certification activities described in this document, a Certification Report will be issued.

1.0 INTRODUCTION

This Certification Design Letter (CDL)/Certification Sampling Project Specific Plan (PSP) describes the certification design, sampling, analysis, and validation necessary to demonstrate that soil in Area 6 General Area East has 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 (in general) guidelines presented in the Sitewide Excavation Plan (SEP, DOE 1998) and SEP Addendum (DOE 2001). Accordingly, it consists of ten sections:

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

2.0 Historical and Precertification Data - Presentation and discussion of historical soil data and presentation of precertification data from Area 6 General Area East

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

4.0 Certification Design and Sampling Program - 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, and data validation requirements

7.0 Health and Safety

8.0 Disposition of Waste

9.0 Data Management

References

The major remediation actions for the areas covered by this document included the excavation of all at- and below-grade structures, excavation of above-waste acceptance criteria (WAC) and/or above-FRL areas, the removal of overburden and debris and utility removal. The area to be certified is clearly defined within this document as shown in Figure 1-1. The scope of this document pertains only to the Area 6 General Area East.

1.1 OBJECTIVES

The primary objectives of this document are to:

- Define the boundaries of the areas to be certified under the guidance of this CDL/Certification PSP;
- Define the ASCOC selection process and list the selected Area 6 General Area East ASCOCs;
- Present the certification unit (CU) boundaries and proposed certification sampling strategy;
- Present the details of certification sampling, analysis and validation that will take place;
- Summarize the analytical requirements and the statistical methodology employed;
- Present maps for acquired real-time precertification data; and
- Present the proposed schedule for the certification activities.

1.2 SCOPE AND AREA DESCRIPTION

The scope of this CDL/Certification PSP includes details of certification sampling, analysis and validation that will take place in the Area 6 General Area East, an area consisting of approximately 18.9 acres. Figure 1-1 depicts the boundaries, location, and layout of the Area 6 General Area East.

Just as with other areas, certification of Area 6 and Area 3 is being performed in several phases based on the required action for each of the defined sections to be found in this area. This document only deals with the Area 6 General Area East. Other portions of Area 6 and Area 3 will be submitted for certification under separate documentation.

Field activities for Area 6 General Area East is consistent with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) and Section 3.4 of the SEP. However, due to the proposed construction of a load-out area for surrogate material from the Silos Project which has since been canceled, it was necessary to collect samples in the footprint of the designated area before beginning construction activities. These samples were collected and analyzed for the ASCOC list presented herein utilizing the appropriate certification protocols. This certification sampling program as discussed in Section 4.0 of this document will continue to be consistent with Data Quality Objective (DQO) SL-052, Revision 3, which is included as Appendix B.

Area 6B is an irregularly shaped area in the north-central portion of the site. It is bordered on the north by Area 6F (the railyard) and Area 6H, on the south by Area 3B and the Area 3B Main Drainage Corridor (MDC), on the west by Soil Stockpile (SP) 7, and on the east by the On-Site Disposal Facility (OSDF) Material Transfer Area. This area once contained the three Quonset Hut slabs and the KC-2 Warehouse footprint as well as various other utilities, slabs, footers and foundations. The KC-2 Warehouse was a storage facility for Resource, Conservation, and Recovery Act (RCRA) waste. The easternmost Quonset Hut was a storage/treatment facility for soil contaminated with various volatile organic constituents. At

one time, SP-7 was expanded into the westernmost portion of Area 6B. This material has since been removed.

Area 6I is bordered on the east by the Area 3B MDC, on the south by the lime sludge pond, on the west by the Biodenitrification Surge Lagoon Area, and on the north by Area 6H (the Solid Waste Landfill Area). It consists of the Operable Unit (OU) 1 Stockpile area and a triangular section of Area 6 Subarea 4 (Hooperville). The OU1 Stockpile Area was once used as temporary storage for clay soil from liner construction of Waste Pit 4 as well as to stockpile debris. There is no known history of a production facility or process being located in this area. There is, however, one monitoring well currently located in this area that is still in use. This well will remain in use beyond the certification of this area. The remainder of Area 6I (Hooperville) acted as an administrative and support area for the Waste Pit Remediation effort. Because the constituents of concern (COCs) as well as the activities done in these two areas differed significantly, it was decided to address the OU1 Stockpile Area separately from the rest of Area 6I in this document.

Area 3B MDC is an oddly shaped area in the northwest of the Former Production Area. It is bordered on the east by Area 3B, the west by Area 6I (Hooperville and the OU1 Stockpile), the north by Area 6B, and on the south by Area 4B. At one time, a portion of this area included part of the Plant 1 Pad [Hazardous Waste Management Unit (HWMU) 20]. This HWMU was closed as part of the certification effort in Area 3B. The Area 3B MDC area was extended for this certification effort to include the area surrounding the west water tower, which was originally part of the Area 4B MDC remediation effort. Area 3B MDC also includes two high-leachability zones where the total uranium FRL is 20 milligrams per kilogram (mg/kg). Various utilities, slabs, footers, pavement, and foundations once comprised this area.

The historical surface features for the Area 6 General Area East are shown on Figure 1-2. Figure 1-3 depicts the topography of this area.

The ASCOCs for the CUs in the Area 6 General Area East are total uranium, thorium-228, thorium-232, radium-226, and radium-228 (the sitewide primary radiological COCs). Additionally, secondary COCs are identified for specific CUs within the certification area. Ecological COCs will be analyzed as needed.

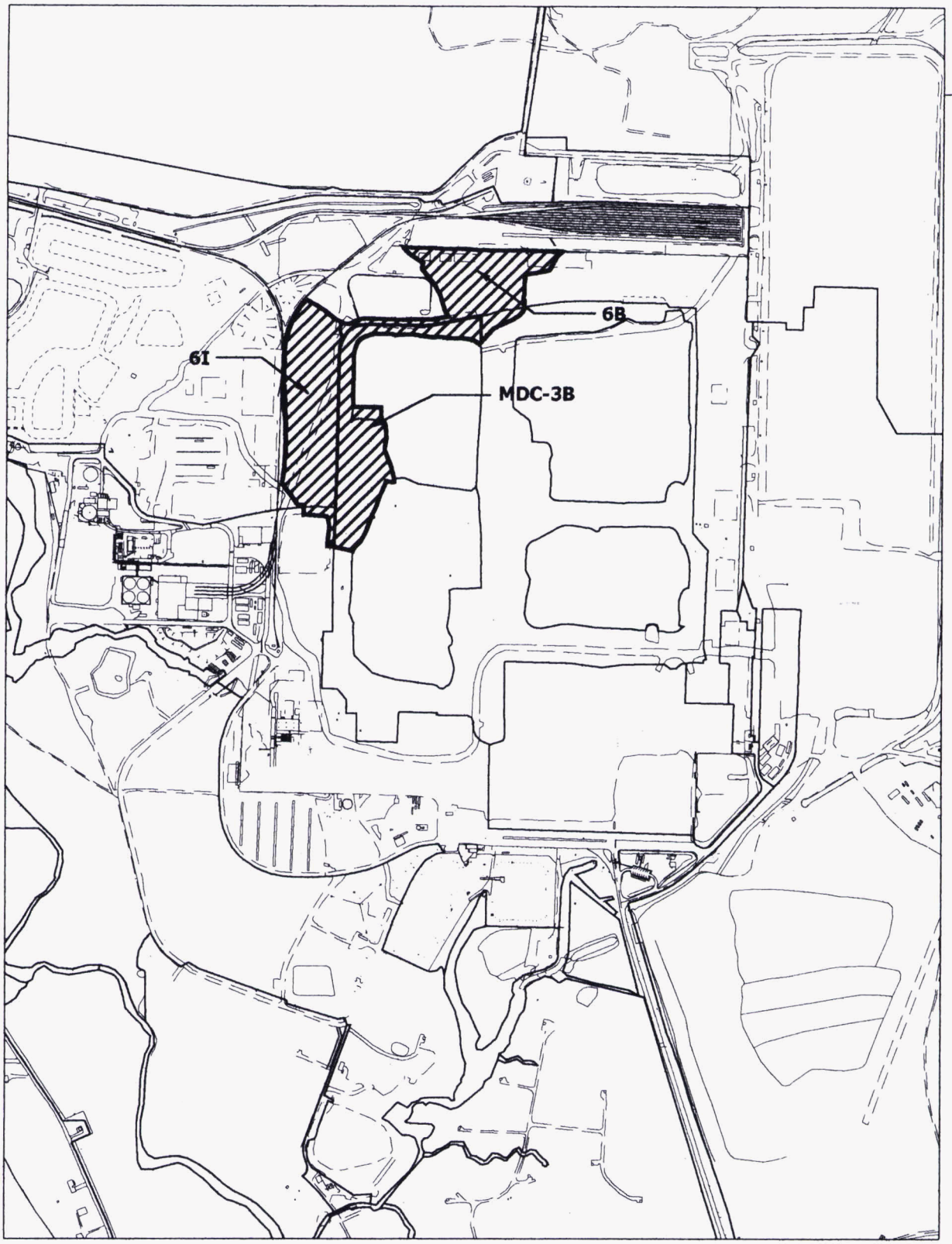
1.3 KEY PROJECT PERSONNEL

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

TABLE 1-1
KEY PERSONNEL

Title	Primary	Alternate
Department of Energy (DOE) Contact	Johnny Reising	TBD
Project Manager	Jyh-Dong Chiou	Frank Miller
Characterization Manager	Frank Miller	Debbie Brennan
Area 6 General Area East Characterization Lead	Debbie Brennan	Krista Flaugh
Field Sampling Manager	Tom Buhrlage	Jim Hey
Surveying Manager	Jim Schwing	Andy Clinton/Bernie Kienow
WAO Contact	Christa Walls	Scott Osborn
Laboratory Contact	Paul McSwigan	Amy Meyer
Data Validation Contact	Jim Chambers	Baohe Chen
Field Data Validation Contact	Dee Dee Edwards	Jim Chambers
Data Management Lead	Debbie Brennan	Krista Flaugh
FACTS/SED Database Contact	Kym Lockard	Susan Marsh
Quality Assurance Contact	Reinhard Friske	TBD
Safety and Health Contact	Gregg Johnson	Pete Bolig

FACTS - Fernald Analytical Computerized Tracking
SED - Sitewide Environmental Database
WAO - Waste Acceptance Organization



LEGEND:

AREA 6 GENERAL AREA EAST

SCALE

800 400 0 800 FEET

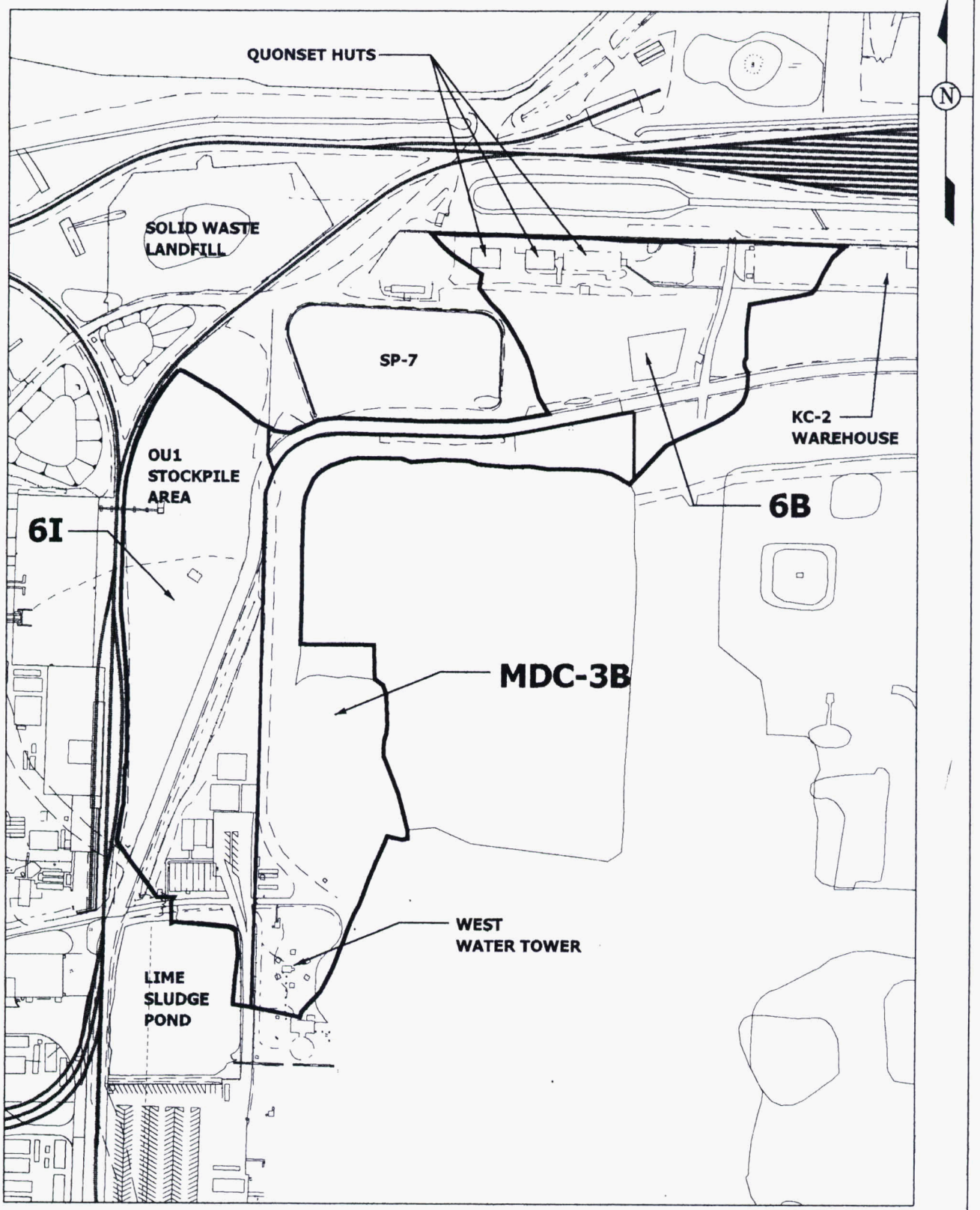
DRAFT

FIGURE 1-1. AREA 6 GENERAL AREA EAST CERTIFICATION AREA LOCATION MAP

v:\82fm12\dgn\mc6_ge_001.dgn

STATE PLANAR COORDINATE SYSTEM 1983

22-FEB-2006



LEGEND:

SCALE

300 150 0 300 FEET

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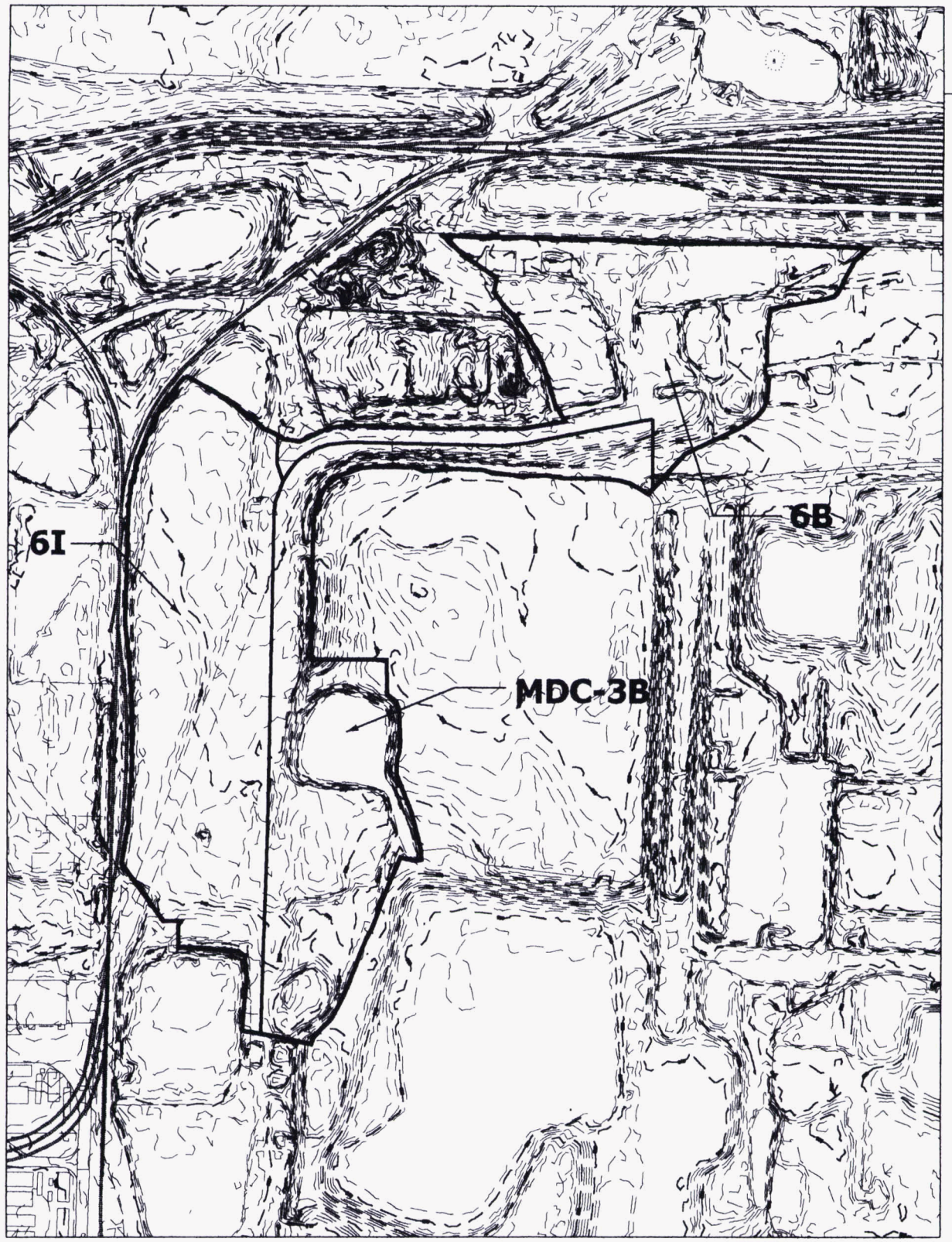
FIGURE 1-2. AREA 6 GENERAL AREA EAST HISTORICAL SURFACE FEATURES

v:\82fm12\dgn\m6b_ga_002.dgn

STATE PLANAR COORDINATE SYSTEM 1983

22-FEB-2006



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SCALE
300 150 0 300 FEET

FIGURE 1-3. AREA 6 GENERAL AREA EAST TOPOGRAPHY

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 OUs 3 and 5 were used for remedial design of the areas included in this certification effort. 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 6 General Area East certification area were pulled from the Sitewide Environmental Database (SED). The data is summarized in Sections 2.1 through 2.4.

Based on the results of sampling and scanning activities summarized in Sections 2.1 through 2.4, it has been determined that no further remedial actions are necessary to remove above-FRL or above-WAC soil.

Those utilities removed as part of the remediation process were taken out after all excavation was completed to design grade and precertification had been completed. Once the utility had been removed as required by the technical specification, precertification was performed on the trench bottom created by the removal of these utilities and then back-filled with the precertified overburden soil. These sampling events are described in Variance/Field Change Notices (V/FCNs) 20600-PSP-0016-47 and 20810-PSP-0006-138 written to the PSP for Excavation Control and Precertification of the Area 6 Waste Pits and General Area (Supplement to 20300-PSP-0011) (DOE 2005a) and the PSP for Excavation Control of Areas 3B, 4B, and 5 (DOE 2004a) respectively.

2.1 AREA 6B

2.1.1 Historical, Predesign and Excavation Control

Using historical data, computer generated modeling was utilized to approximate the parameters needed for the excavation. Uranium was used as the indicator for this process because, in general, the total uranium contamination exceeded that of other COCs. Predesign analyses were used to fill in the blanks and to supplement data especially where it appeared that other COC contamination exceeded the parameters laid out by the modeling. The results of the investigations are presented in the Excavation Plan for Area 6 - Former Production Area (DOE 2005b). A small section of the southwestern corner of Area 6B is represented by the Excavation Plan for Area 6 Waste Pits and General Area (DOE 2005c).

Excavation of the Area 6 General Area East - Area 6B began in May 2005. Existing foundations, slabs, footers, piers, as well as other support structures were removed as part of the excavation effort. Likewise, all utilities and miscellaneous debris and gravel were removed.

2.1.2 Precertification

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 for Excavation Control of Area 6 Former Production Area (Supplement to 20300-PSP-0011) (DOE 2005d) and/or the PSP for Excavation Control and Precertification of Area 6 Waste Pits and General Area. Precertification real-time scanning results are provided in Appendix A.

2.2 AREA 6I

2.2.1 Historical, Predesign and Excavation Control

Based on the results of historical data collection, predesign sampling was done to determine the nature and extent of contamination present in Area 6I. Additionally, samples were collected to fill in any data gaps left in this area. The results of the investigations are presented in the Excavation Plan for Area 6 Former Production Area.

Excavation of the Area 6 General Area East - Area 6I began in May 2005. Existing foundations, slabs, footers, piers as well as other support structures were removed as part of the excavation effort. Likewise, all utilities and miscellaneous debris and gravel were removed. Due to the proposed construction of a load-out area for surrogate material from the Silos Project which has since been cancelled, sampling was needed in the footprint of the designated area. This area is located in the southwest corner of Area 6I. This sampling was done under V/FCN 20600-PSP-0016-69 (see Appendix D).

2.2.2 Precertification

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 Excavation Control PSP for the Area 6 Former Production Area. Precertification real-time scanning results are provided in Appendix A.

2.3 OU1 STOCKPILE AREA

2.3.1 Historical, Predesign and Excavation Control

Prior to beginning predesign, all historical data from the OU1 Stockpile Area were evaluated. Predesign samples were then collected to determine the nature and extent of the contamination as well as to fill in any existing data gaps. Data were also collected to bound above-WAC and above-FRL areas with physical sampling as well as to confirm the location of surface above-WAC areas using real-time measurement

systems. The results of the investigations are presented in the Implementation Plan for the Area 6 OU1 Stockpile Area (DOE 2003a).

Excavation of the Area 6 General Area East - OU1 Stockpile Area began in March 2004. In addition to the removal of contamination present in areas designated as either above-WAC or above-FRL, existing at-grade concrete and asphalt pads/roads were excavated as part of the remediation process. Additional at- and below-grade structures that were removed included the soil stockpile conveyor foundations and associated hopper and stair pads. These activities are presented in the Implementation Plan for Area 6 OU1 Stockpile Area.

2.3.2 Precertification

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 for Excavation Control of the Area 6 OU1 Stockpile Area (Supplement to 20300-PSP-0011) (DOE 2003b). Precertification real-time scanning results are provided in Appendix A.

2.4 AREA 3B MDC

2.4.1 Historical, Predesign and Excavation Control

As with Area 6B, historical data was used to create a computer generated three-dimensional model representing the extent of the total uranium contamination. Again, uranium was used as an indicator due to the expectation that the total uranium contamination exceeded that of all other parameters. Predesign samples were collected to support the historical data set and the model as well as to supplement information on other COCs. The results of the investigations are presented in the Implementation Plan for Area 3B/4B/5 (DOE 2004b).

Excavation of the Area 6 General Area East - 3B MDC began in April 2004. All contaminated materials were excavated as described in the PSP for Excavation Control of Areas 3B, 4B, and 5. One HWMU was originally part of this area. However, it was closed as part of the Area 3B certification effort. Also, remediation of the Area 3B MDC involved the removal of the remaining storm sewers, adjacent isolation trench corridors, and at- and below-grade structures and utilities.

2.4.2 Precertification

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 for Excavation Control of Areas 3B, 4B, and 5. Precertification real-time scanning results are provided in Appendix A.

3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN

In the OU5 Record of Decision (ROD, DOE 1996), there are 80 soil 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

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

- It is listed as a soil COC in the OU5 ROD, and it is listed as an ASCOC in Table 2-7 of the SEP for the Remediation Area of interest;
- It is listed as a COC for a HWMU or underground storage tank (UST) that lie within the certified area boundary;
- Analytical results show that a contaminant is present above its FRL, and the above-FRL concentrations are not attributable to false positives or elevated CRDLs;
- It can be traced to site use, either through process knowledge or known release of the constituent to the environment; or
- 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.

Using the above process, the ASCOCs were refined to those listed in Table 2-7 of the SEP. The list of ASCOCs is also presented in Table 3-1.

3.2 ASCOC SELECTION PROCESS

3.2.1 Area 6B ASCOC Selection

Each ASCOC on the Area 6 list (see Table 3-1) was evaluated for its relevance to Area 6B. Table 3-2 presents the reasoning for either retaining or eliminating the ASCOCs. Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary ASCOCs, and will be retained as ASCOCs for the Area 6B CUs. Additional secondary COCs have been retained in this area due to historical above-WAC or above-FRL results as well as former land use. The complete list of COCs that are going to be retained for certification can be found in Table 3-3. The specific secondary COCs for this area are as follows:

Area 6B Secondary ASCOCs

- Antimony
- Aroclor-1254
- Aroclor-1260
- Benzo(a)pyrene
- Beryllium
- Bromodichloromethane
- Cadmium
- Dibenzo(a,h)anthracene
- 1,1-Dichloroethene
- 1,2-Dichloroethene
- Dieldrin
- Methylene Chloride
- Molybdenum
- Silver
- Technetium-99
- Tetrachloroethene
- Thorium-230
- Toluene
- 1,1,1-Trichloroethane
- Trichloroethene
- Xylenes

3.2.2 Area 6I ASCOC Selection

Each ASCOC on the Area 6 list (see Table 3-1) was evaluated for its relevance to Area 6I. Table 3-2 presents the reasoning for either retaining or eliminating the ASCOCs. Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary ASCOCs, and will be retained as ASCOCs for the Area 6I CUs. Additional secondary COCs have been retained in this area due to

historical above-WAC or above-FRL results as well as former land use. The complete list of COCs that are going to be retained for certification can be found in Table 3-3. The specific secondary COCs for this area are as follows:

Area 6I Secondary ASCOCs

- Antimony
- Beryllium
- Cadmium
- Cesium-137

3.2.3 OU1 Stockpile Area ASCOC Selection

Each ASCOC on the Area 6 list (see Table 3-1) was evaluated for its relevance to the OU1 Stockpile Area. Table 3-2 presents the reasoning for either retaining or eliminating the ASCOCs. Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary ASCOCs, and will be retained as ASCOCs for the OU1 Stockpile Area CUs. Additional secondary COCs have been retained in this area due to historical above-WAC or above-FRL results as well as former land use. The complete list of COCs that are going to be retained for certification can be found in Table 3-3. The specific secondary COCs for this area are as follows:

OU1 Stockpile Secondary ASCOCs

- Antimony
- Beryllium
- Aroclor-1254
- Aroclor-1260
- Cadmium
- Cesium-137
- Dieldrin
- Technetium-99

3.2.4 Area 3B MDC ASCOC Selection

Each ASCOC on the Area 3 list (see Table 3-1) was evaluated for its relevance to MDC 3B. Table 3-2 presents the reasoning for either retaining or eliminating the ASCOCs. Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary ASCOCs, and will be retained as ASCOCs for the MDC 3B CUs. Additional secondary COCs have been retained in this area due to historical above-WAC or above-FRL results as well as former land use. The complete list of COCs that are going to be retained for certification can be found in Table 3-3. The specific secondary COCs for this area are as follows:

Area 3B MDC Secondary ASCOCs

- Antimony
- Aroclor-1254
- Aroclor-1260
- Benzo(a)pyrene
- Beryllium
- Bromodichloromethane
- Cadmium
- Cesium-137
- Dibenzo(a,h)anthracene
- 1,1-Dichloroethene
- 1,2-Dichloroethene
- Dieldrin
- Molybdenum
- Silver
- Technetium-99
- Tetrachloroethene
- Thorium-230
- Trichloroethene

TABLE 3-1
ASCOCs FOR AREA 6 AND AREA 3 FROM THE SEP

Primary COCs	Secondary COCs for Area 3	Secondary COCs for Area 6
Radium-226	Aroclor-1254	Aroclor-1254
Radium-228	Aroclor-1260	Aroclor-1260
Thorium-228	Arsenic	Arsenic
Thorium-232	Benzo(a)anthracene	Benzo(a)pyrene
Total Uranium	Benzo(a)pyrene	Benzo(b)fluoranthene
	Benzo(b)fluoranthene	Beryllium
	Beryllium	Bromodichloromethane
	Bromodichloromethane	Cesium-137
	Cesium-137	Dibenzo(a,h)anthracene
	Dibenzo(a,h)anthracene	1,1-Dichloroethene
	1,1-Dichloroethene	Dieldrin
	Dieldrin	Fluoride
	Fluoride	Heptachlorodibenzo-p-dioxins
	Indeno(1,2,3-c,d)pyrene	Indeno(1,2,3-c,d)pyrene
	Lead	Octachlorodibenzo-p-dioxins
	Technetium-99	Technetium-99
	Tetrachloroethene	Tetrachloroethene
	Thorium-230	Thorium-230
	Trichloroethene	
	Ecological COCs for Area 3	**Ecological COCs for Area 6**
	Cadmium	Cadmium
	Silver	Silver
	Antimony	Antimony
	Molybdenum	PAHs
	PAHs	

PAHs - polyaromatic hydrocarbons

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TABLE 3-2
ASCOC LIST FOR AREA 6 GENERAL AREA EAST

Area 6 ASCOCs	Retained As ASCOC?	Justification	CUs
PRIMARY ASCOCs			
Radium-226	Yes	Retained as primary ASCOC	All
Radium-228	Yes	Retained as primary ASCOC	All
Thorium-228	Yes	Retained as primary ASCOC	All
Thorium-232	Yes	Retained as primary ASCOC	All
Total Uranium	Yes	Retained as primary ASCOC	All
SECONDARY ASCOCs			
Aroclor-1254	Yes	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC Exceeds FRL results in 6B, OU1 Stockpile Area, and 3B MDC	CUs 1 - 6, 8 - 12, 14 - 16, 18
Aroclor-1260	Yes	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC Exceeds FRL results in 6B, OU1 Stockpile Area, and 3B MDC	CUs 1 - 6, 8 - 12, 14 - 16, 18
Arsenic	No	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC No above-FRL results present	None
Benzo(a)anthracene	No	No above-FRL results present	None
Benzo(a)pyrene	Yes	KC-2 Warehouse and Plant 1 Pad COC Exceeds FRL results in 6B	CUs 14 - 16
Benzo(b)fluoranthene	No	No above-FRL results present	None
Beryllium	Yes	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC Exceeds FRL results in all areas	CUs 1 - 9, 14 - 16, 18
Bromodichloromethane	Yes	Quonset Hut COC No above-FRL results present	CUs 10, 11, 14 - 16
Cesium-137	Yes	Plant 1 Pad COC Above-FRL results in 6I, OU1 Stockpile Area and 3B MDC	CUs 1 - 10, 18
Dibenzo(a,h)anthracene	Yes	KC-2 Warehouse and Plant 1 Pad COC Exceeds FRL results in 6B	CUs 14 - 16
1,1-Dichloroethene	Yes	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC No above-FRL results present	CUs 10, 11, 14 - 16
1,2-Dichloroethene	Yes	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC No above-FRL results present	CUs 10, 11, 14 - 16

TABLE 3-2
ASCOC LIST FOR AREA 6 GENERAL AREA EAST

Area 6 ASCOCs	Retained As ASCOC?	Justification	CUs
SECONDARY COCs (Cont'd)			
Dieldrin	Yes	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC Exceeds FRL results in 6B, OU1 Stockpile Area, and 3B MDC	CUs 8 - 12, 14 - 16
Fluoride	No	No above-FRL results present	None
Heptachlorodibenzo-p-dioxins	No	No above-FRL results present	None
Indeno(1,2,3-c,d)pyrene	No	KC-2 Warehouse and Plant 1 Pad COC No above-FRL results present	None
Octachlorodibenzo-p-dioxins	No	No above-FRL results present	None
Lead	No	No above-FRL results present	None
Methylene Chloride	Yes	Quonset Hut COC No above-FRL results present	CUs 14 - 16
Technetium-99	Yes	Exceeds FRL results in 6B, OU1 Stockpile Area, and 3B MDC	CUs 1, 7 - 13, 16, 17
Tetrachloroethene	Yes	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC No above-FRL results present	CUs 10, 11, 14 - 16
Thorium-230	Yes	KC-2 Warehouse and Plant 1 Pad COC No above-FRL results present	CUs 10, 11, 14 - 16
Toluene	Yes	Quonset Hut COC No above-FRL results present	CUs 14 - 16
1,1,1-Trichloroethane	Yes	Quonset Hut COC No above-FRL results present	CUs 14 - 16
Trichloroethene	Yes	Quonset Hut, KC-2 Warehouse, and Plant 1 Pad COC No above-FRL results present	CUs 10, 11, 14 - 16
Xylenes	Yes	Quonset Hut COC No above-FRL results present	CUs 14 - 16
ECOLOGICAL ASCOCs			
Cadmium	Yes	KC-2 Warehouse, and Plant 1 Pad COC Retained for BTV - Mapped in all areas	All
Silver	Yes	KC-2 Warehouse, and Plant 1 Pad COC Retained for BTV - Mapped in 6B and 3B MDC	CUs 10 - 16
Antimony	Yes	KC-2 Warehouse, and Plant 1 Pad COC Retained for BTV - Mapped in all areas	All
Molybdenum	Yes	KC-2 Warehouse, and Plant 1 Pad COC Retained for BTV - Mapped in 6B and 3B MDC	CUs 10 - 17
PAHs	No	No above-FRL results present	None

1 BTV - benchmark toxicity value

TABLE 3-3
ASCOC LIST FOR AREA 6 GENERAL AREA EAST CERTIFICATION UNITS

ASCOC	FRL/*BTV***	MDC
Radiological		
Total Uranium	82 .0mg/kg	8.2 mg/kg
Total Uranium (high-leachability)	20.0 mg/kg	2.0 mg/kg
Radium-226	1.7 pCi.g	0.17 pCi/g
Radium-228	1.8 pCi/g	0.18 pCi/g
Thorium-228	1.7 pCi/g	0.17 pCi/g
Thorium-232	1.5 pCi/g	0.15 pCi/g
Cesium-137	1.4 pCi/g	0.14 pCi/g
Technetium-99	29.1 pCi/g*	2.91 pCi/g*
Thorium-230	280 pCi/g	28.0 pCi/g
PCBs/Pesticides		
Aroclor-1254	0.13 mg/kg	0.013 mg/kg
Aroclor-1260	0.13 mg/kg	0.013 mg/kg
Dieldrin	0.015 mg/kg	0.0015 mg/kg
Semi-Volatile Organics		
Benzo(a)pyrene	*1.0 mg/kg*	*0.1 mg/kg*
Dibenzo(a,h)anthracene	2.0 mg/kg	0.2 mg/kg
Metals		
Beryllium	1.5 mg/kg	0.15 mg/kg
Cadmium	*5.0 mg/kg*	*0.5 mg/kg*
Silver	*10.0 mg/kg*	*1.0 mg/kg*
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Molybdenum	*10.0 mg/kg*	*1.0 mg/kg*
Volatile Organics		
Bromodichloromethane	4.0 mg/kg	0.4 mg/kg
1,1-Dichloroethene	0.41 mg/kg	0.041 mg/kg
1,2-Dichloroethene	0.16 mg/kg	0.016 mg/kg
Methylene Chloride	37.0 mg.kg	3.7 mg.kg
Tetrachloroethene	3.6 mg/kg	0.36 mg/kg
Toluene	100,000 mg/kg	10,000 mg/kg
1,1,1-Trichloroethane	4.3 mg/kg	0.43 mg/kg
Trichloroethene	25.0 mg/kg	2.5 mg/kg
Xylenes	920,000 mg/kg	92,000 mg/kg

* Where the WAC is less than the FRL (as with technetium-99), the WAC value will be used when evaluating data.

** BTVs apply to Ecological COCs.

MDC - minimum detectable concentration

pCi/g - picoCuries per gram

4.0 CERTIFICATION DESIGN AND SAMPLING PROGRAM

4.1 CERTIFICATION DESIGN

The intent of this effort is to certify the soil within the Area 6 General Area East. The certification design for Area 6 General Area East follows the general approach outlined in Section 3.4 of the SEP. The CU design is shown in Figure 4-1 and sample locations are depicted in Figures 4-2 through 4-5. Eighteen Group 1 CUs were designed to represent the Area 6 General Area East. As discussed in Section 3.0 of this document, the five primary ASCOCs (total uranium, radium-226, radium-228, thorium-228, thorium-232) will be retained in each CU as well as various other secondary ASCOC as outlined in Table 3-2.

Several factors were taken into consideration when determining the boundaries for each CU within the Area 6 General Area East. Some of these include: historical land use, proximity to other areas of the site, and COC data. Additionally, because the areas contain impacted material, they will be comprised of Group 1 CUs to allow for more concentrated sampling and ensure excavation activities and removal of above and below grade structures had no effect on the soil.

4.1.1 Certification Unit Design

The Area 6 General Area East consists of 18 Group 1 CUs that were designed around a combination of former land use, location, and COCs for each area. As shown in Figure 4-1, the separate areas included in this certification effort are represented by groups of CUs as follows:

- CUs 1 through 6 - OU1 Stockpile Area and remainder of Area 6I
- CUs 7 through 12 - Area 3B MDC
- CUs 13 through 17 - Area 6B
- CU 18 - Southwest Corner of Area 6I

Also, in the former Area 3B MDC, CUs 7 and 12 contain high leachability zones. The minimum detectable level (MDL) for total uranium in these CUs reflect the more restrictive criteria imposed for these areas. CUs 10 and 11 include what is left of the former Plant 1 Pad footprint area. In the northern section of Area 6B, the footprints of the former Quonset Huts and the KC-2 Warehouse are covered by CUs 14, 15, and 16.

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. 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 of 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 16 random locations met the minimum distance criteria.

All Area 6 General Area East sub-CUs and planned certification sampling locations are shown on Figures 4-2 through 4-5. Four of the 16 sample locations in each CU are designated with a "V", indicating archive sample locations. One sample location per CU is designated with a "D", indicating a field duplicate sample collection location. The sample locations, field duplicate samples, and archive samples are identified in Appendix C.

4.2 SURVEYING

Before certification sampling activities begin, the North American Datum of 1983 (NAD83) State Planar coordinates for each selected sampling location 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 the planned location. The Area 6 General Area East CU boundaries are shown on Figure 4-1. Appendix C and Figures 4-2 through 4-5 show the sub-CU boundaries and the tentative certification sampling locations, all of which meet the minimum distance criterion.

4.3 PHYSICAL SOIL SAMPLE COLLECTION

4.3.1 Sample Collection

Certification samples will be collected according to procedure SMPL-01, Solids Sampling, using 3-inch diameter, 6-inch long, plastic or stainless steel liners. At the discretion of the Field Sampling Lead, samples may be collected using alternative methods specified in SMPL-01, as long as sufficient volume is collected from the appropriate depth to perform the prescribed analyses. If necessary, the soil core shall be divided and placed into the proper sample containers. Samples will be collected from 12 of the 16 sample locations in the CU, including one field duplicate sample. The archive locations will not be collected unless necessary. Thirteen samples from the CU (12 plus one field duplicate) will be submitted for analysis. Upon completion of sample collection, the 0 to 6-inch boreholes will be collapsed and no additional abandonment is necessary.

Quality control requirements will include a duplicate field sample and two container blanks as outlined in Section 6.1, 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 location that requires the collection of a duplicate sample is identified in Appendix C. Container blanks will be collected (as specified in Section 6.1) from both the core liner and the end caps that will be used to seal it. 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; and
- If the distance moved is greater than 3 feet, the move must be documented in a V/FCN, considered as significant, which will be approved by the agencies prior to collection.
- Anytime a location is moved, Figures 4-2, 4-3 or 4-4 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 Certification Report for this area.

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 blanks 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 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 collection of sample intervals, and again after the sampling performed under this PSP is completed. Following decontamination, clean disposable wipes may be used to replace air-drying of the equipment.

4.3.3 Physical Sample Identification

Each soil certification sample will be assigned a unique sample identification number as *Remediation Area-CU Number/Identifier-Location^Depth Interval-Analysis-QC,* where:

A6GAE	=	Sample collected from Area 6 General Area East
C01	=	Certification sample representing the 1st certification unit from the area (all subsequent CUs will be consecutively numbered)
Location	=	Sample Location number within each CU (1 through 16)
^	=	Separates Location from Depth Interval
Depth Interval	=	(only if needed) Equals twice the bottom depth (in feet) (i.e., "1" = 0.0 to 0.5', "2" = 0.5 to 1.0', etc.)
Analysis	=	"R" indicates radiological analysis, "L" indicates a volatile analysis, "M" indicates a metals analysis, "P" indicates a PCB (polychlorinated biphenyls)/pesticides analysis, "S" indicates a semi-volatile analysis, and "V' indicates an archive sample.
QC	=	Quality control sample, if applicable. A "D" indicates a field duplicate sample; "Y" indicates a container blank sample; "TB" indicates a trip blank, and "X" indicates a rinsate.

For example, a field duplicate sample taken from the tenth sample location from the 1st Area 6 General Area East CU for radiological, metals, and pesticides/PCBs analysis would be identified as A6GAE-C01-10^RMP-D. Because the proposed load-out area necessitated sampling of the designated area prior to submission of this document, the sample identifiers for CU 18 do not follow the convention outlined above. The sample identifiers are as presented in Appendix C.

4.4 ANALYTICAL METHODOLOGY

All samples will be prepared for shipment to off-site laboratories per procedure 9501, Shipping Samples to Off-site Laboratories. Samples will only be shipped to off-site laboratories that are listed on the Fluor Fernald Approved Laboratories List. The total uranium value from predesign sample boring 3BE-P1NW-DG-3, 328 mg/kg, will be used to ship the samples off site. This is the highest total uranium result from the area.

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), and radiological samples should be sealed to begin the in-growth period for radium analysis. A 14-day turnaround time (TAT) will be required for all

non-gamma (i.e., chemical analyses and technetium-99) analyses and data reporting. A 30-day TAT will be required for the standard in-growth gamma analysis and data reporting.

The sampling and analytical requirements for CUs 1 through 17 are listed in Table 4-1 and the Target Analyte Lists (TAL) are shown in Table 4-2. Those used for CU 18 are presented in V/FCN 20600-PSP-0016-69 (see Appendix D).

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

Laboratory analysis of certification samples will be conducted using an approved analytical method, as discussed in Appendix H of the SEP. 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 minimum detection level for the selected analytical method must be at least 10 percent of FRL. All results will be validated to Validation Support Level (VSL) B, and a minimum of 10 percent of the results will be validated to VSL D. The CU(s) to be validated to VSL D will be randomly selected. Samples rejected during validation will be re-analyzed, or an alternate sample may be collected and substituted if there is insufficient material available from the initial sample. If any sample fails validation, all data from the laboratory with the rejected result will then be validated to VSL D to determine the integrity of all data from that laboratory. Once data are validated, results will be entered into the SED.

4.5 STATISTICAL ANALYSIS

Once data are entered into the SED, 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, Appendix G of the SEP, and Section 3.4.8 of the SEP Addendum.

Two criteria must be met for the CU to pass certification. If the data distribution is normal or lognormal, the first criterion compares the 95 percent upper confidence limit (UCL) on the mean of each primary COC to its FRL, or the 90 percent UCL on the mean of each secondary ASCOC. On an individual CU basis, any ASCOC with the 95 percent UCL 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 second criterion. The second criterion is the hotspot criterion, which states that primary or secondary ASCOC results must not exceed two times the FRL. When the given UCL on the

mean for each COC is less than its FRL and the hotspot criterion is met, the CU 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 the CU 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 Ohio Environmental Protection Agency (OEPA) to receive acknowledgement that the pertinent operable unit remedial action was completed and the individual CU is certified 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 Reports.

TABLE 4-1
SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Method	Sample Matrix	ASL	Preservation	Hold Time	TAT	Container[b]	Minimum Mass/ Volume
Any combination of Rads, Metals, PCBs, and/or SVOCs (any combination of TALs A, B, C, D, E, F, G, J, K, L, M and/or N)	Gamma Spec and LSC or GPC	Solid	D/E[a]	Cool to 4°C	12 months	10-day preliminary 30-day final (for gamma spec) 10-day final (for all other Rads)	Glass with Teflon-lined lid	700 g (2100 g)[c]
	ICP-AES or ICP-MS				6 months	10 days		
	GC				14 days	10 days		
	GC				14 days	10 days		
Radiological (TALs A, E, F, and/or J)	Gamma Spec and LSC or SPC	Liquid[d]	D/E[a]	HNO_3 to pH<2	6 months	30 days	Polyethylene	4 Liters
Metals (TALs D, G, K, M and/or N)	ICP-AES or ICP-MS	Liquid[d]	D/E[a]	HNO_3 to pH<2	6 months	10 days	Polyethylene	500 mL
VOCs (TALs H and/or I)	GC-MS	Solid	D/E[a]	Cool to 4°C	48 hours	10 days	3 x 1-Encore Sampler[c] plus 1 x 2-oz. Jar for % moisture	Each full Encore Sampler[c] will hold approx. 5 g.
VOCs (TALs H and/or I)	GC-MS	Liquid (trip blank)	D/E[a]	H_2SO_4 to pH<2 Cool to 4°C	14 days	10 days	3 x 40-mL glass with Teflon-lined septa	120 mL (no head space)

[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, a rinsate will be collected by the Field Technicians.

GC-MS - gas chromatography/mass spectroscopy
GPC - gas proportional counting
ICP-AES - inductively coupled plasma - atomic emission spectroscopy
ICP-MS - inductively coupled plasma - mass spectroscopy
LSC - liquid scintillation counting
SVOC - semi-volatile compound
VOC - volatile organic compound

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TABLE 4-2
TARGET ANALYTE LIST

20600-PSP-0018-A
(ASL D/E[1])

Analyte	FRL	MDL	MDL (water)
Total Uranium	82 mg/kg	8.2 mg/kg	3000 µg/L
Total Uranium (hi-leach)	20 mg/kg	2.0 mg/kg	3000 µg/L
Radium-226	1.7 pCi/g	0.17 pCi/g	255 pCi/L
Radium-228	1.8 pCi/g	0.18 pCi/g	270 pCi/L
Thorium-228	1.7 pCi/g	0.17 pCi/g	255 pCi/L
Thorium-232	1.5 pCi/g	0.15 pCi/g	210 pCi/L

20600-PSP-0018-B
(ASL D/E[1])

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

20600-PSP-0018-C
(ASL D/E[1])

Analyte	FRL	MDL
Benzo(a)pyrene	2.0 mg/kg	0.2 mg/kg
Dibenzo(a,h)anthracene	2.0 mg/kg	0.2 mg/kg

20600-PSP-0018-D
(ASL D/E[1])

Analyte	FRL	MDL	MDL (water)
Beryllium	1.5 mg/kg	0.15 mg/kg	0.225 mg/L

20600-PSP-0018-E
(ASL D/E[1])

Analyte	FRL	MDL	MDL (water)
Technetium-99	29.1 mg/kg[2]	2.91 mg/kg[2]	45,000 pCi/L

TABLE 4-2
TARGET ANALYTE LIST

20600-PSP-0018-F
(ASL D/E[1])

Analyte	FRL	MDL	MDL (water)
Cesium-137	1.4 pCi/g	0.14 pCi/g	210 pCi/L

20600-PSP-0018-G
(ASL D/E[1])

Analyte	FRL/*BTV*	MDL[4]	MDL (water)
Antimony	96 mg/kg / *10.0 mg/kg*	*1.0 mg/kg*	1.5 mg/L
Cadmium	82 mg/kg / *5.0 mg/kg*	*0.5 mg/kg*	0.75 mg/L

20600-PSP-0018-H
(ASL D/E[1])

Analyte	FRL	MDL	MDL (water)
Bromodichloromethane	4.0 mg/kg	0.4 mg/kg	10 µg/L
1,1-Dichloroethene	0.41 mg/kg	0.041 mg/kg	10 µg/L
1,2-Dichloroethene	0.16 mg/kg	0.016 mg/kg	10 µg/L
Tetrachloroethene	3.6 mg/kg	0.36 mg/kg	10 µg/L
Trichloroethene	25.0 mg/kg	2.5 mg/kg	10 µg/L

20600-PSP-0018-I
(ASL D/E[1])

Analyte	FRL	MDL	MDL (water)
Methylene Chloride	37 mg/kg	3.7 mg/kg	10 µg/L
Toluene	100,000 mg/kg	10,000 mg/kg	10 µg/L
1,1,1-Trichloroethane[3]	4.3 mg/kg	0.43 mg/kg	10 µg/L
Xylenes	920,000 mg/kg	92,000 mg/kg	10 µg/L

20600-PSP-0018-J
(ASL D/E[1])

Analyte	FRL	MDL	MDL (water)
Thorium-230	280 pCi/g	28.0 pCi/g	50 pCi/L

TABLE 4-2
TARGET ANALYTE LIST

20600-PSP-0018-K
(ASL D/E[1])

Analyte	FRL/*BTV*	MDL[4]	MDL (water)
Molybdenum	2,900 mg/kg / *10 mg/kg*	*1.0 mg/kg*	1.5 mg/L
Silver	29,000 mg/kg / *10 mg/kg*	*1.0 mg/kg*	1.5 mg/L

20600-PSP-0018-L
(ASL D/E[1])

Analyte	FRL	MDL
Dieldrin	*0.015 mg/kg*	*0.0015 mg/kg*

20600-PSP-0018-M
(ASL D/E[1])

Analyte	FRL/*BTV*	MDL[4]	MDL (water)
Antimony	96 mg/kg / *10.0 mg/kg*	*1.0 mg/kg*	1.5 mg/L

20600-PSP-0018-N
(ASL D/E[1])

Analyte	FRL/*BTV*	MDL[4]	MDL (water)
Molybdenum	2,900 mg/kg / *10 mg/kg*	*1.0 mg/kg*	1.5 mg/L

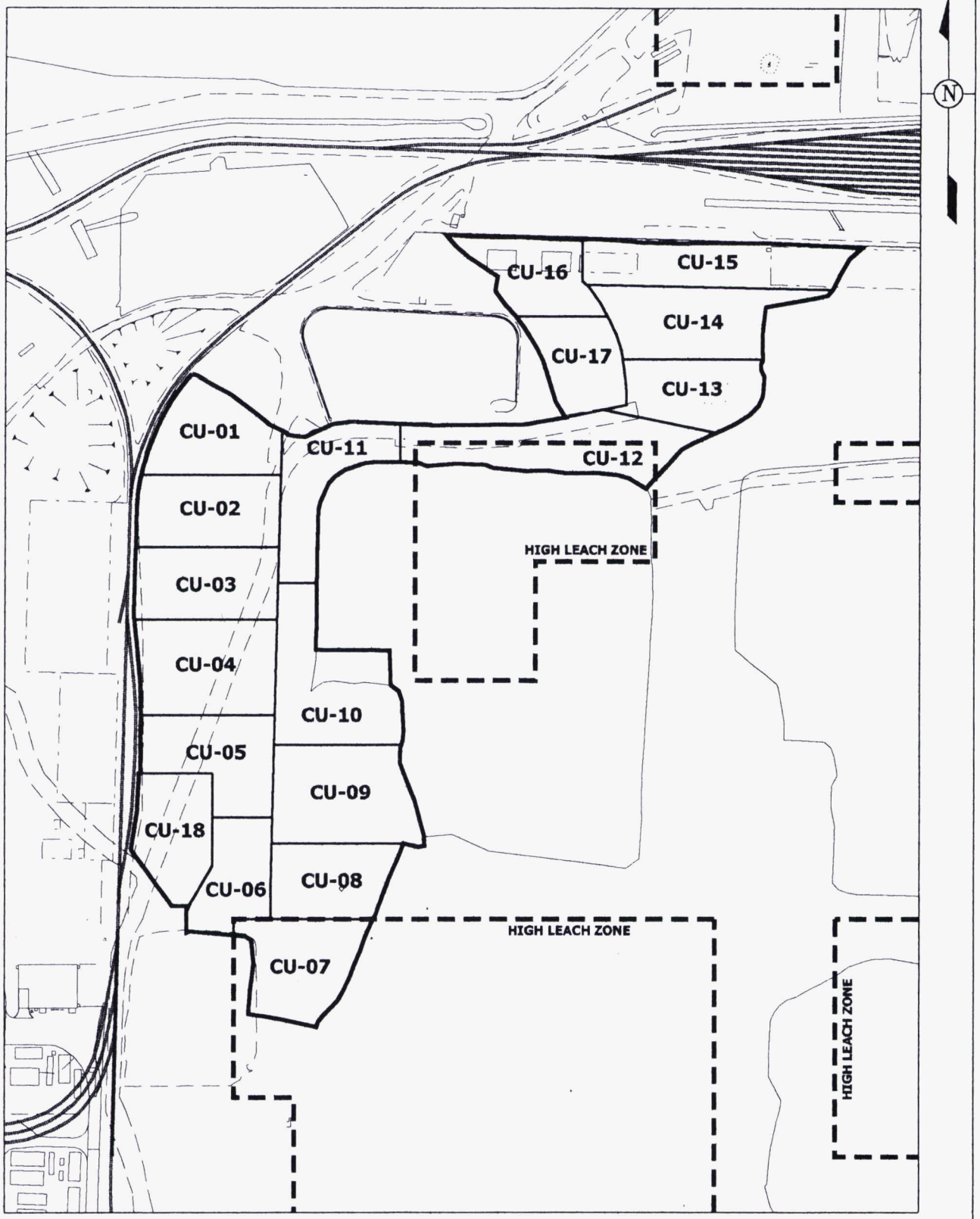
[1] Analytical requirements will meet ASL D but the MDL may cause some analyses to be considered ASL E.

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

[3] The FRL sited is actually for 1,1,2-trichloroethane. This was used because there is no FRL for 1,1,1-trichloroethane.

[4] Where both the FRL and the BTV are present, the MDL is based on the lower of the two values given.

µg/L - micrograms per liter
mg/L - milligrams per liter
pCi/L - picoCuries per liter



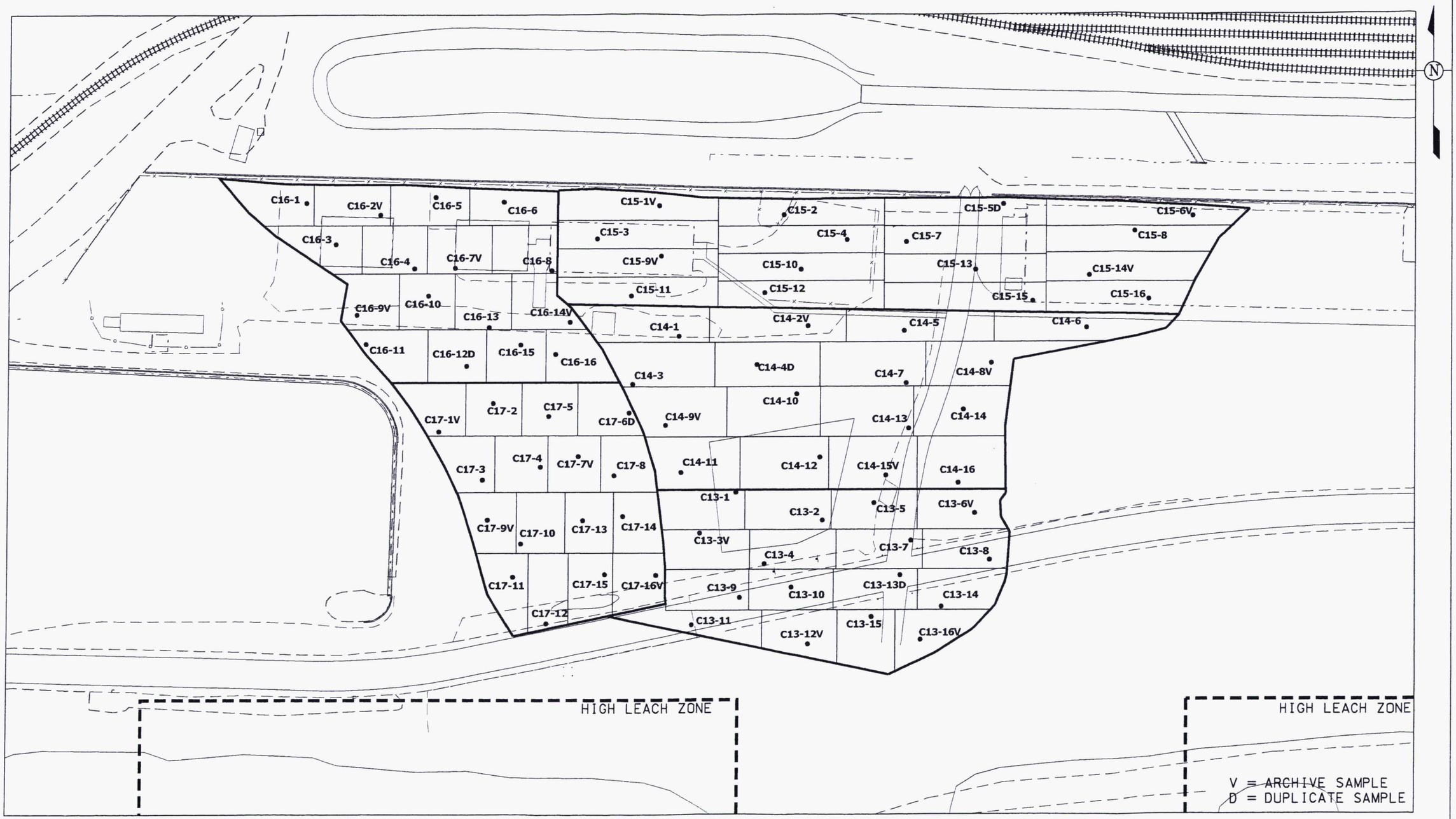
v:\82fm12\dgn\06_ga_004.dgn

STATE PLANAR COORDINATE SYSTEM 1983

22-FEB-2006

DRAFT

FIGURE 4-1. AREA 6 GENERAL AREA EAST CU LOCATION MAP



LEGEND:

• SAMPLE LOCATION

SCALE

80 40 0 80 FEET

DRAFT

v:\2fm12\dgn\a6_ge_005.dgn STATE PLANAR COORDINATE SYSTEM 1983 22-FEB-2006

FIGURE 4-2. AREA 6 GENERAL AREA EAST SUB CU AND SAMPLE LOCATION MAP FOR AREA 6B

v:\82fm12\dgn\ec6_ge_007.dgn

STATE PLANAR COORDINATE SYSTEM 1983

22-FEB-2006

C01-1
C01-2
C01-3
C01-4V
C01-5V
C01-6
C01-9
C01-10
C01-7
C01-8D
C01-11V
C01-12
C01-13
C01-14V
C01-15
C01-16
C02-1V
C02-2
C02-5
C02-6V
C02-3
C02-4
C02-7
C02-8
C02-9
C02-10D
C02-13
C02-14
C02-11V
C02-12
C02-15
C02-16V
C03-1D
C03-2V
C03-5
C03-6
C03-3
C03-4
C03-7V
C03-8
C03-9V
C03-10
C03-13
C03-14
C03-11
C03-12
C03-15V
C03-16
C04-1
C04-2
C04-5
C04-6
C04-3V
C04-4D
C04-7
C04-8V
C04-9
C04-10
C04-13V
C04-14
C04-11
C04-12V
C04-15
C04-16
C05-1V
C05-2
C05-5
C05-6
C05-3
C05-4
C05-7V
C05-8
C05-9
C05-10
C05-11
C05-12V
C05-13V
C05-14
C05-15
C05-16D
C06-1
C06-2D
C06-3V
C06-4
C06-5
C06-6V
C06-8
C06-9
C06-7
C06-12
C06-11
C06-10V
C06-16V
C06-15
C06-13
C06-14

HIGH LEACH ZONE

V = ARCHIVE SAMPLE
D = DUPLICATE SAMPLE

LEGEND:

• SAMPLE LOCATION

SCALE
90 45 0 90 FEET

DRAFT

FIGURE 4-3. AREA 6 GENERAL AREA EAST SUB CU AND SAMPLE LOCATION MAP
FOR AREA 6I (HOOPERVILLE AND OU1 STOCKPILE AREA)

006139

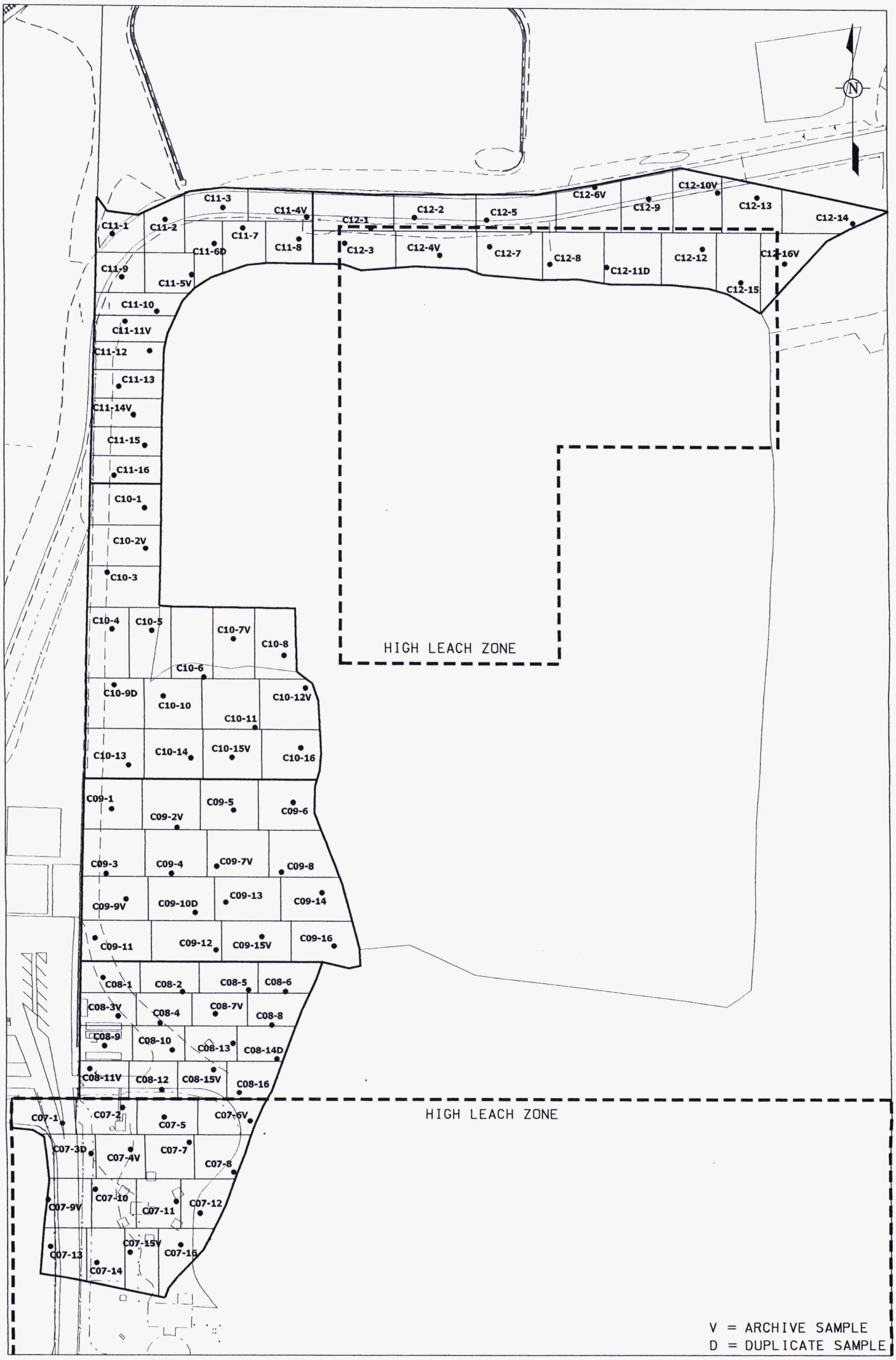


FIGURE 4-4. AREA 6 GENERAL AREA EAST SUB CU AND SAMPLE LOCATION MAP FOR AREA 3B MDC

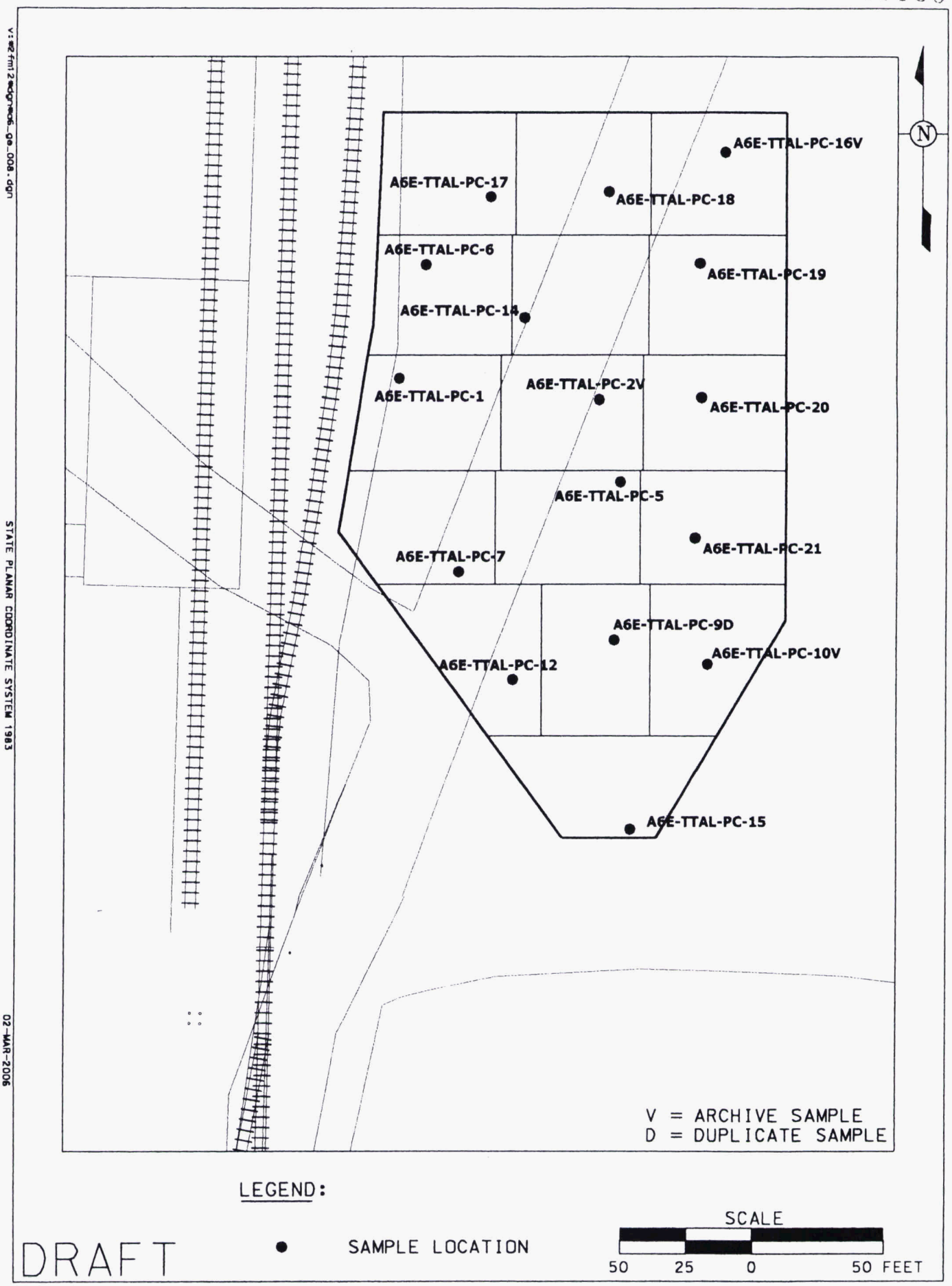


FIGURE 4-5. AREA 6 GENERAL AREA EAST SUB CU & SAMPLE LOCATIONS FOR THE SOUTHWEST CORNER OF AREA 6I

5.0 SCHEDULE

The following draft schedule shows key activities for the completion of the work within the scope of this CDL.

Activity	Target Date
Submittal of Certification Design Letter	March 13, 2006
Start of Certification Sampling	April 13, 2006
Complete Field Work	April 20, 2006
Complete Analytical Work	May 22, 2006
Complete Data Validation and Statistical Analysis	May 29, 2006
Submit Certification Report	June 1, 2006*

*Only the date for submittal of the Certification Report is a commitment to the EPA and OEPA. Others 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 DQO SL-052, Revision 3, the field quality control, analytical and data validation requirements are as follows:

- Field QC requirements include one field duplicate for the CU, as noted in Section 4.3 and identified in Appendix C. The field duplicate sample will be analyzed for the ASCOCs from the CU in which they were collected.

  If "push tubes" are used for sample collection, two container blanks will be collected - one before sample collection begins and one at the conclusion of sample collection. The container blank samples will be analyzed for the primary radiological COCs that are identified in TAL A (see Table 4-2). If an alternate sample collection method is used, one rinsate will be collected at a minimum frequency of one per 20 pieces of equipment reused in the field.

  A trip blank is required if VOC samples are being collected. The frequency for a trip blank is one per day, one per batch of 20 VOC samples, 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 MDL of 10 percent of the FRL and is above the SCQ ASL D detection level, but the analyses meet all other SCQ ASL D criteria. An ASL D data package will be provided for all of the data.

- All field data will be validated. A minimum of 10 percent of the laboratory data will be validated to VSL D with the remainder validated to VSL B. The CUs to be validated to VSL D will be chosen at random by the characterization representative. If any result is rejected during validation, the sample will be re-analyzed or an archive location 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 to the PSP will be written to document references confirming that the new method supports data needs,

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

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

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 and in the References section.

- 20100-HS-0002, Soil and Disposal Facility Project Integrated Health and Safety Plan
- 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
- EQT-33, Real-Time Differential Global Positioning System
- SMPL-01, Solids Sampling
- SMPL-21, Collection of Field Quality Control Samples
- 9501, Shipping Samples to Off-site Laboratories
- Trimble Pathfinder Pro-XL GPS Operation Manual

6.3 INDEPENDENT ASSESSMENT

An independent assessment may be performed by the Fernald Closure Project (FCP) Quality Assurance (QA)/QC organization by conducting a surveillance, consisting of monitoring/observing ongoing 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 walkdown must be corrected/controlled prior to the start of work. Weekly walkdowns 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), Flour Fernald work permits, Radiological Work Permit (RWP), penetration permits, Construction Traveler, and other applicable permits. The radiological work requirements for activities will be detailed in activity-specific RWPs. Concurrence with applicable safety permits is required by 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 surpervisors 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. 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 cell 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 4.3 and listed in Appendix C. This unique sample identifier will appear on the Sample Collection Log and Chain of Custody/Request for Analysis form and will be used to identify the samples during analysis, data entry, and data management.

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

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

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

REFERENCES

U.S. Department of Energy, 1995a, "Remedial Investigation for Operable Unit 3," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

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

U.S. Department of Energy, 1995c, "Feasibility Study for Operable Unit 3," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 1995d, "Feasibility Study for Operable Unit 5," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

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

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

U.S. Department of Energy, 2001, "Addendum to the Sitewide Excavation Plan," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2003a, "Implementation Plan for Area 6 OU1 Stockpile Area," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio

U.S. Department of Energy, 2003b, "Project Specific Plan for Excavation Control of Area 6 OU1 Stockpile Area (Supplement to 20300-PSP-0011)," Revision 0, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2004a, "Project Specific Plan for Excavation Control of Areas 3B, 4B, and 5," Revision 1, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2004b, "Implementation Plan for Area 3B/4B/5," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2005a, "Project Specific Plan for Excavation Control and Precertification of the Area 6 Waste Pits and General Area (Supplement to 20300-PSP-0011)," Revision 0, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2005b, "Excavation Plan for Area 6 - Former Production Area," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2005c, "Excavation Plan for Area 6 Waste Pits and General Area," Final, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2005d, "Project Specific Plan for Excavation Control of Area 6 - Former Production Area (Supplement to 20300-PSP-0011)," Revision 0, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

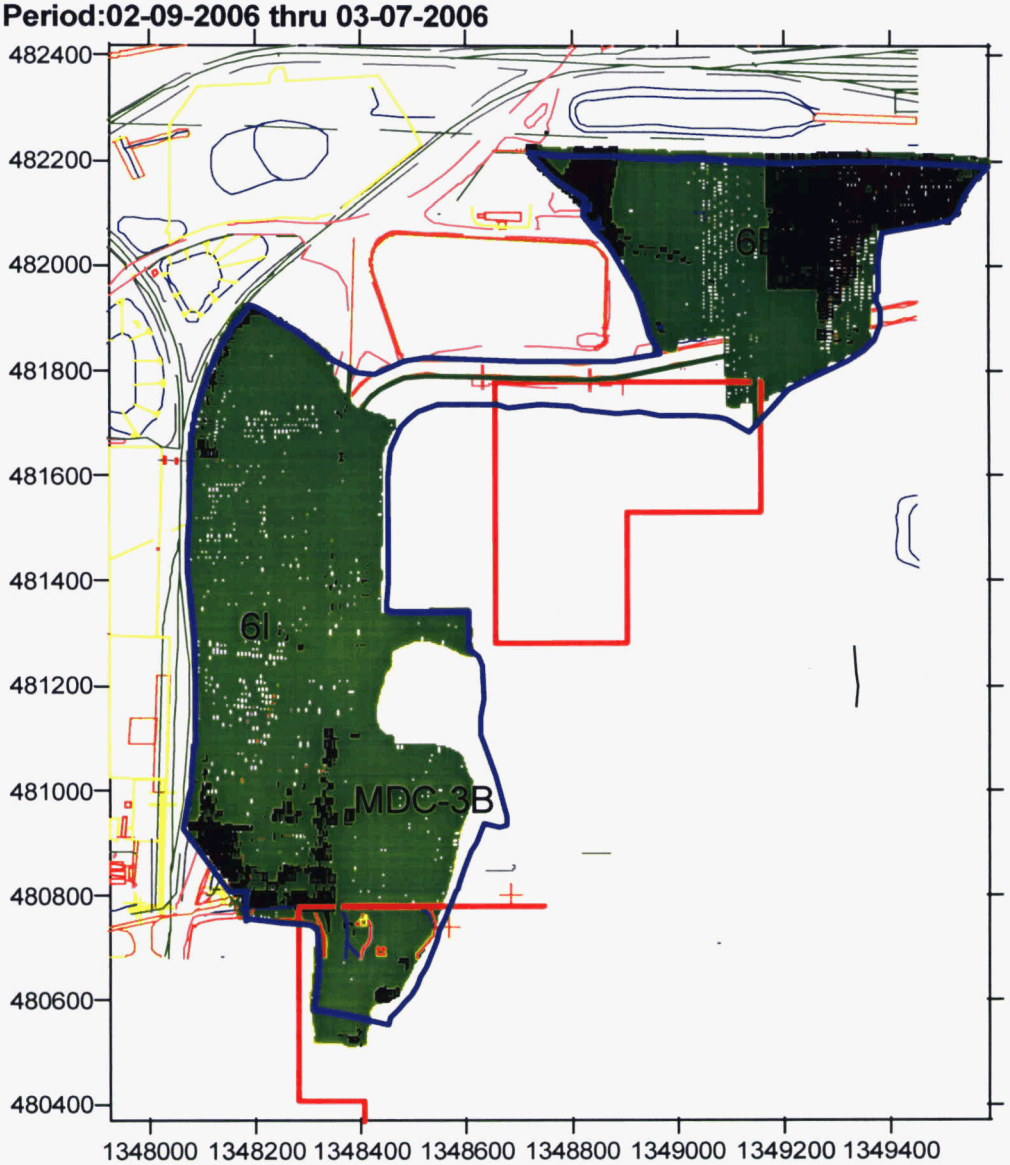
APPENDIX A

REAL-TIME DATA MAPS FOR AREA 6 GENERAL AREA EAST

Figure A-1 Area 6 General Area - East - Phase 1
Total Gross Counts per Second

Data Groups: GATOR_0843_02-09-2006,0846_02-14-2006,2432_02-24-2006
RSS1_2417_02-14-2006,2429_02-23-2006,2454_03-07-2006
RSS2_1252_02-14-20061253_02-14-2006,1263_02-23-2006,1271_03-02-2006
RSS3_1228_02-09-2006,1229_02-09-2006,1252_02-14-2006,1262_02-23-2006
1265_02-24-2006,1286_03-02-2006,1289_03-03-2006,1298_03-07-2006
RSS4_0829_02-09-2006,0880_02-23-2006,0909_03-02-2006,0925_03-07-2006

Measurement Period:02-09-2006 thru 03-07-2006



High Leachability boundary CDL Boundary Sub Area Boundary

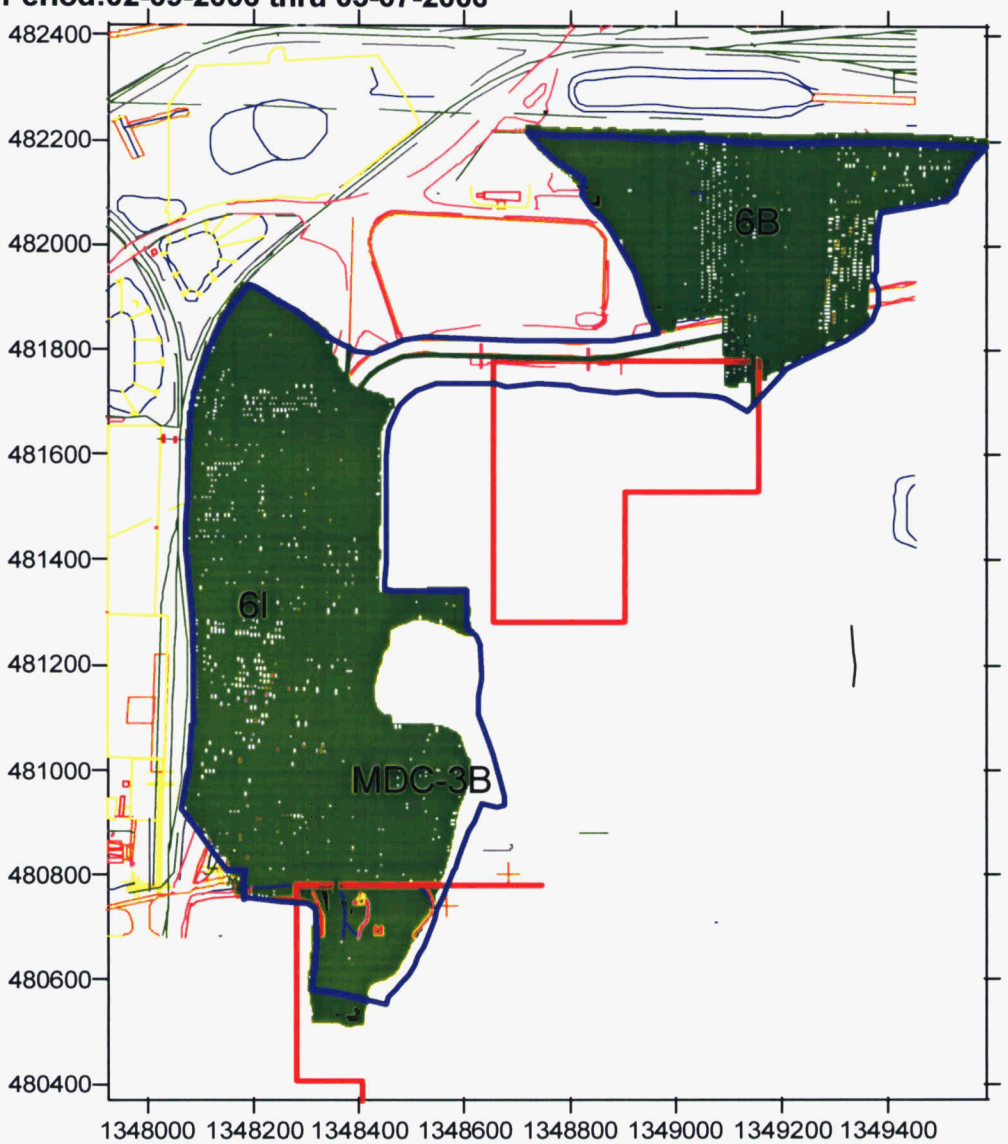
Nal Tcps
- 0 to 3000
- 3000 to 5000
- 5000 to 15000
- 15000 to 18000
- 18000 to 99000

RTIMP DWG ID: GAE_P1_TC.srf
Project ID: Gen Char for Site Soil Remed 20300-PSP-0011
Prepared: D.Seiller 03-08-2006
Support Data: GAE_P1.xls

Figure A-2 Area 6 General Area - East - Phase 1
Moisture corrected - Radium 226

Data Groups: GATOR_0843_02-09-2006,0846_02-14-2006,2432_02-24-2006
RSS1_2417_02-14-2006,2429_02-23-2006,2454_03-07-2006
RSS2_1252_02-14-20061253_02-14-2006,1263_02-23-2006,1271_03-02-2006
RSS3_1228_02-09-2006,1229_02-09-2006,1252_02-14-2006,1262_02-23-2006
1265_02-24-2006,1286_03-02-2006,1289_03-03-2006,1298_03-07-2006
RSS4_0829_02-09-2006,0880_02-23-2006,0909_03-02-2006,0925_03-07-2006

Measurement Period: 02-09-2006 thru 03-07-2006



High Leachability boundary
CDL Boundary
Sub Area Boundary

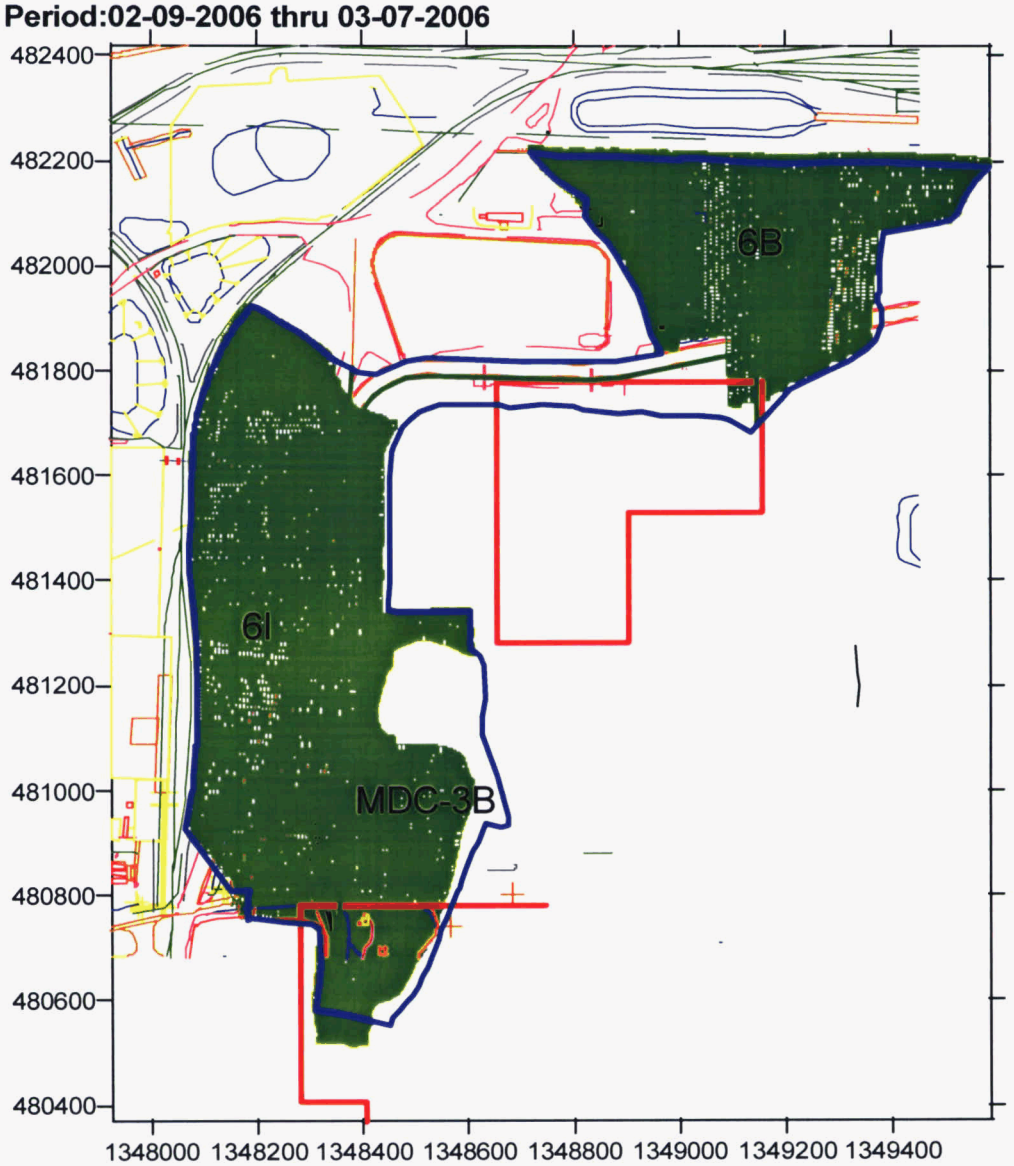
NaI Ra-2326 in pCi/g
-9999 to 5.1
5.1 to 9999

RTIMP DWG ID: GAE_P1_RA.srf
Project ID: Gen Char for Site Soil Remed 20300-PSP-0011
Prepared: D.Seiller 03-08-2006
Support Data: GAE_P1.xls

Figure A-3 Area 6 General Area - East - Phase 1
Moisture corrected - Thorium 232

Data Groups: GATOR_0843_02-09-2006,0846_02-14-2006,2432_02-24-2006
RSS1_2417_02-14-2006,2429_02-23-2006,2454_03-07-2006
RSS2_1252_02-14-20061253_02-14-2006,1263_02-23-2006,1271_03-02-2006
RSS3_1228_02-09-2006,1229_02-09-2006,1252_02-14-2006,1262_02-23-2006
1265_02-24-2006,1286_03-02-2006,1289_03-03-2006,1298_03-07-2006
RSS4_0829_02-09-2006,0880_02-23-2006,0909_03-02-2006,0925_03-07-2006

Measurement Period:02-09-2006 thru 03-07-2006



High Leachability boundary
CDL Boundary
Sub Area Boundary

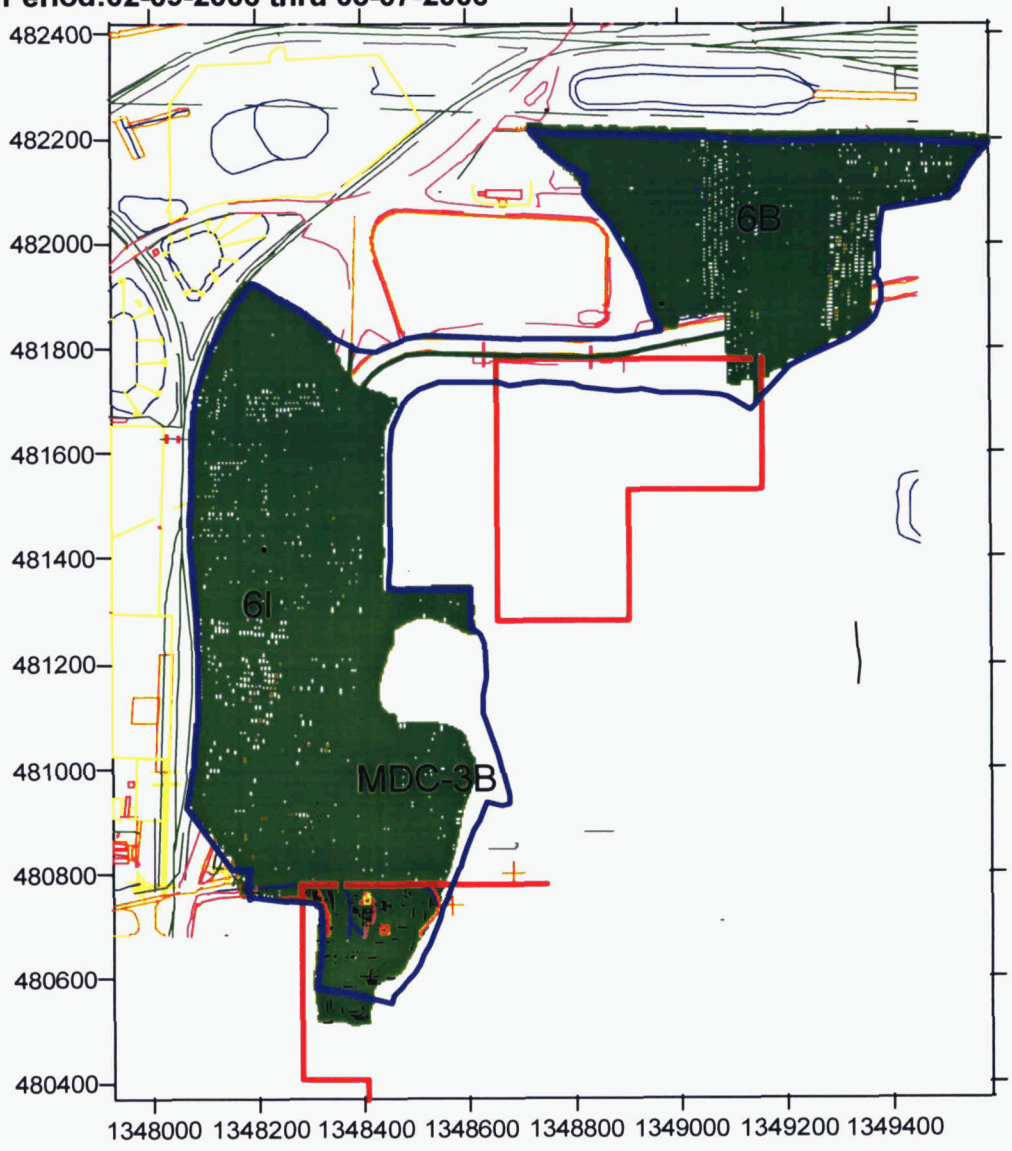
NaI Th-232 in pCi/g
-9999 to 4.5
4.5 to 9999

RTIMP DWG ID: GAE_P1_TH.srf
Project ID: Gen Char for Site Soil Remed 20300-PSP-0011
Prepared: D.Seiller 03-08-2006
Support Data: GAE_P1.xls

Figure A-4 Area 6 General Area - East - Phase 1
Moisture corrected - Total Uranium

Data Groups: GATOR_0843_02-09-2006,0846_02-14-2006,2432_02-24-2006
RSS1_2417_02-14-2006,2429_02-23-2006,2454_03-07-2006
RSS2_1252_02-14-20061253_02-14-2006,1263_02-23-2006,1271_03-02-2006
RSS3_1228_02-09-2006,1229_02-09-2006,1252_02-14-2006,1262_02-23-2006
1265_02-24-2006,1286_03-02-2006,1289_03-03-2006,1298_03-07-2006
RSS4_0829_02-09-2006,0880_02-23-2006,0909_03-02-2006,0925_03-07-2006

Measurement Period:02-09-2006 thru 03-07-2006



N

High Leachability boundary
CDL Boundary
Sub Area Boundary

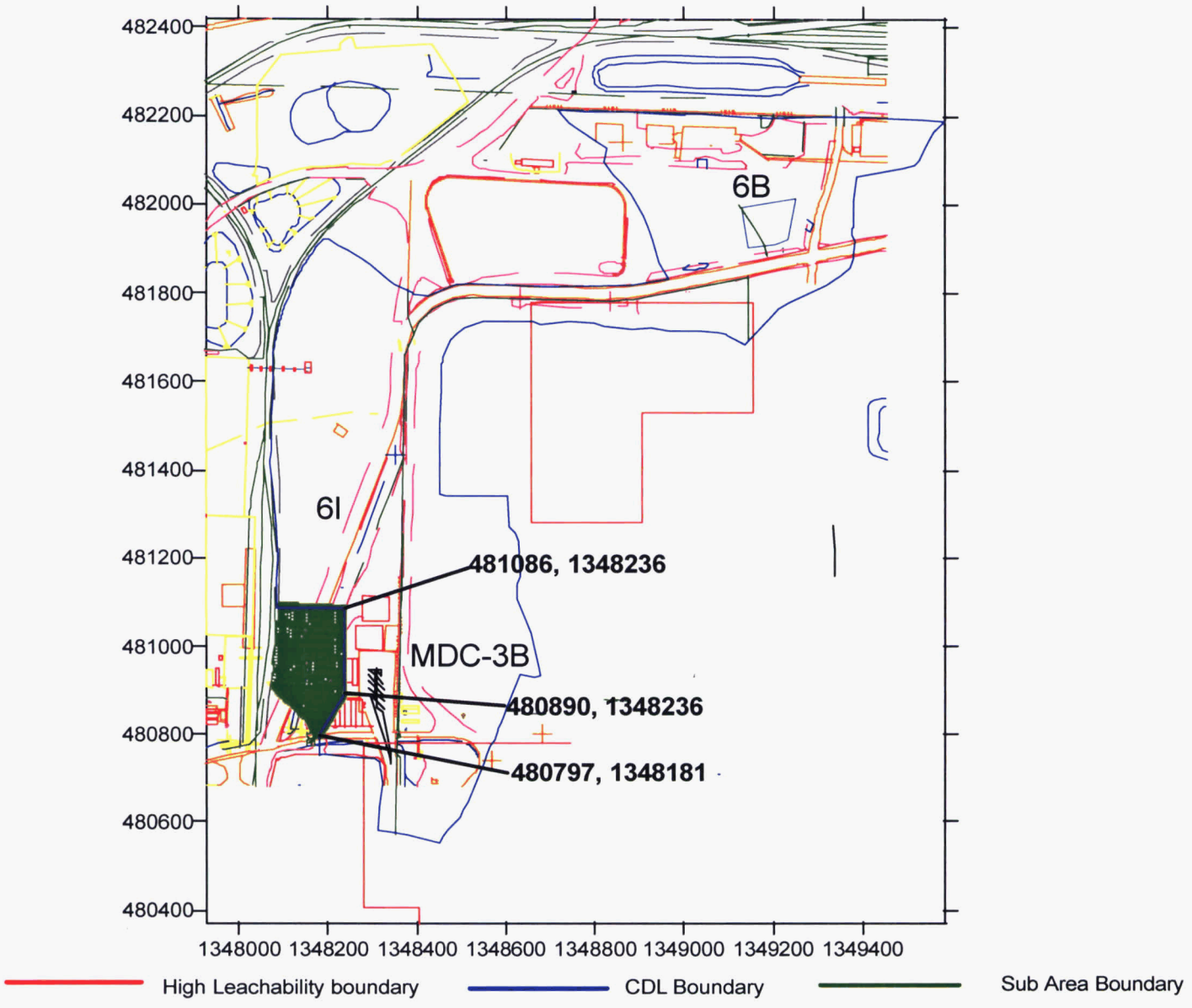
NaI TUin ppm High Leachability Area	TU in ppm Non-High leachability Area
-9999 to 60	-9999 to 246
60 to 9999	246 to 9999

RTIMP DWG ID: GAE_P1_TU.srf
Project ID: Gen Char for Site Soil Remed 20300-PSP-0011
Prepared: D.Seiller 03-08-2006
Support Data: GAE_P1.xls

Figure A-4b Area 6 General Area East Rerun Area 1 - Phase 1 Moisture Corrected - Total Uranium

Data Groups: RSS3_1291_03-03-2006

Measurement Date:03-03-2006

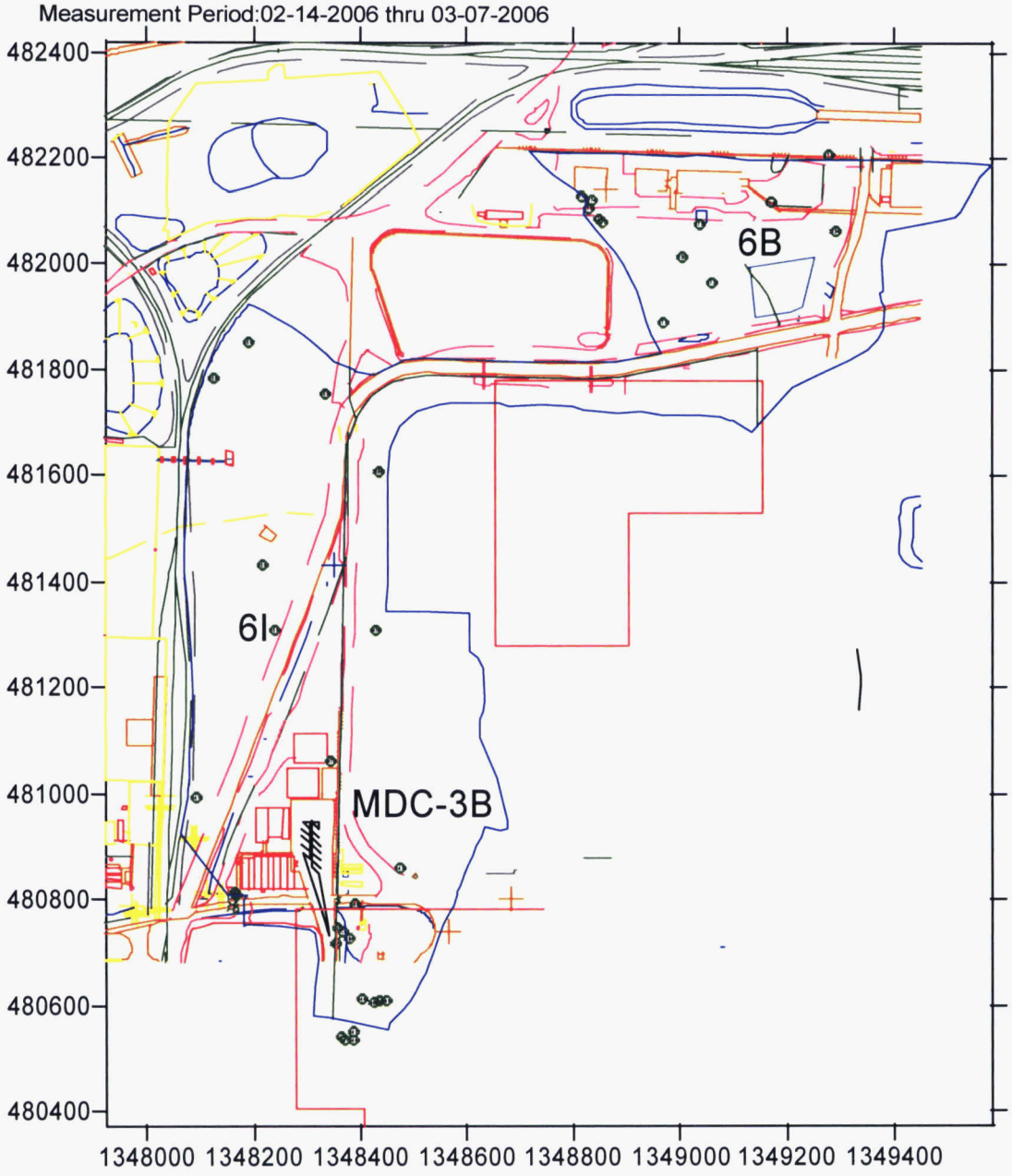


RTIMP DWG ID: GAE_P1_RERUN_1_TU.srf
Project ID: Gen Char for Site Soil Remed 20300-PSP-0011
Prepared: D.Seiller 03-08-2006
Support Data: GAE_P1_RERUN_1_RSS3_1291_03-03-2006.xls

Figure A-5 Area 6 General Area East
Phase 2 - Moisture Corrected Radium 226

Data Groups: 30687_02-14-2006, 31144_02-14-2006,30687_02-23-2006,30687_02-24-2006
31204_03-03-2006,30687_03-04-2006,30687_03-07-2006

Measurement Period:02-14-2006 thru 03-07-2006



High Leachability boundary

CDL Boundary

Sub Area Boundary

HPGe Ra-226 in pCi/g

-999 to 5.1

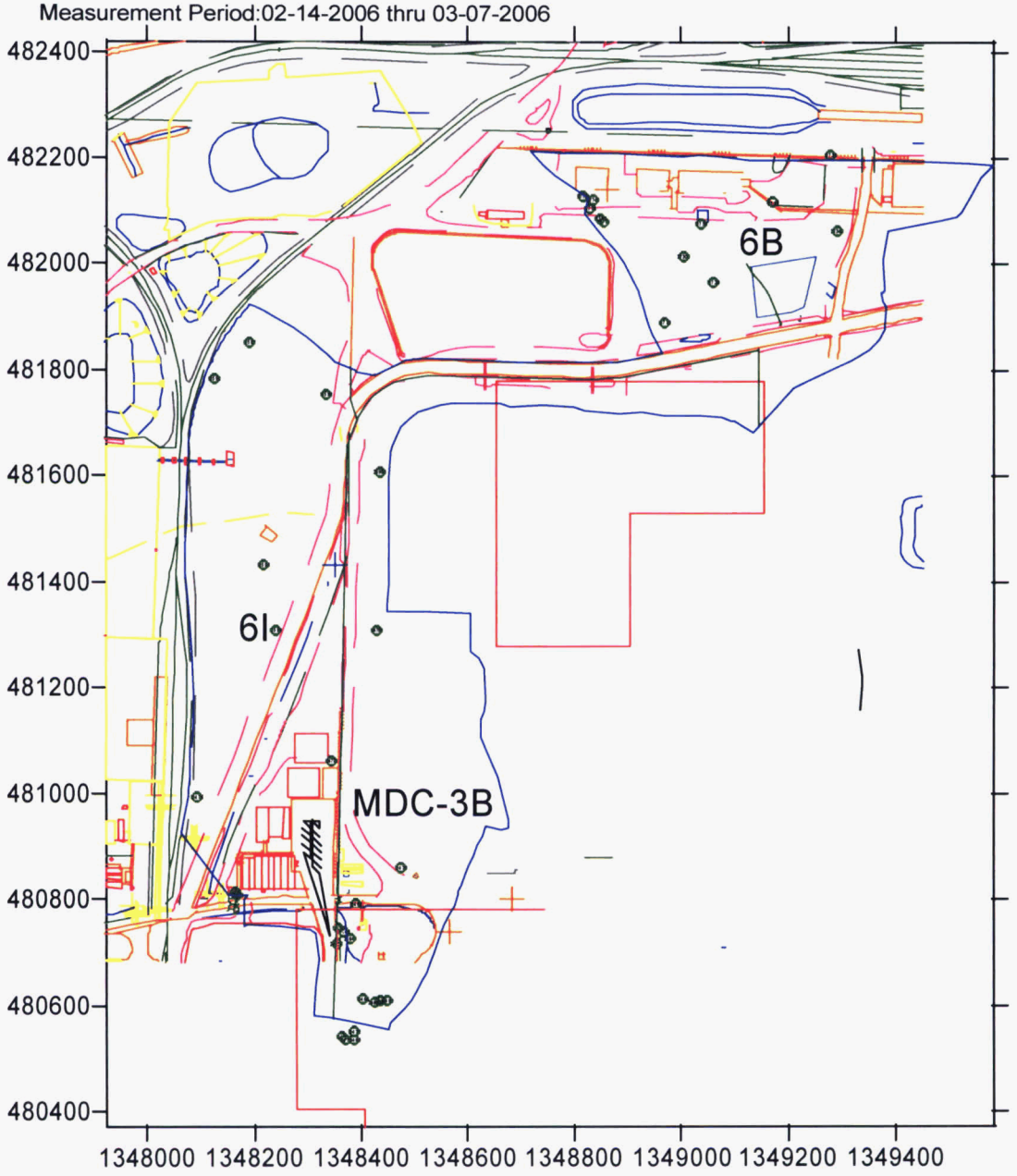
5.1 to 999

RTIMP DWG ID: GAE_P2_RA.srf
Project ID: Gen Char for Site Soil Remed 20300-PSP-0011
Prepared: D.Seiller 03-08-2006
Support Data: GAE_P2.xls

Figure A-6 Area 6 General Area East
Phase 2 - Moisture Corrected Thorium 232

Data Groups: 30687_02-14-2006, 31144_02-14-2006,30687_02-23-2006,30687_02-24-2006
31204_03-03-2006,30687_03-04-2006,30687_03-07-2006

Measurement Period:02-14-2006 thru 03-07-2006



N

High Leachability boundary

CDL Boundary

Sub Area Boundary

HPGe Th-232 in pCi/g

-999 to 4.5

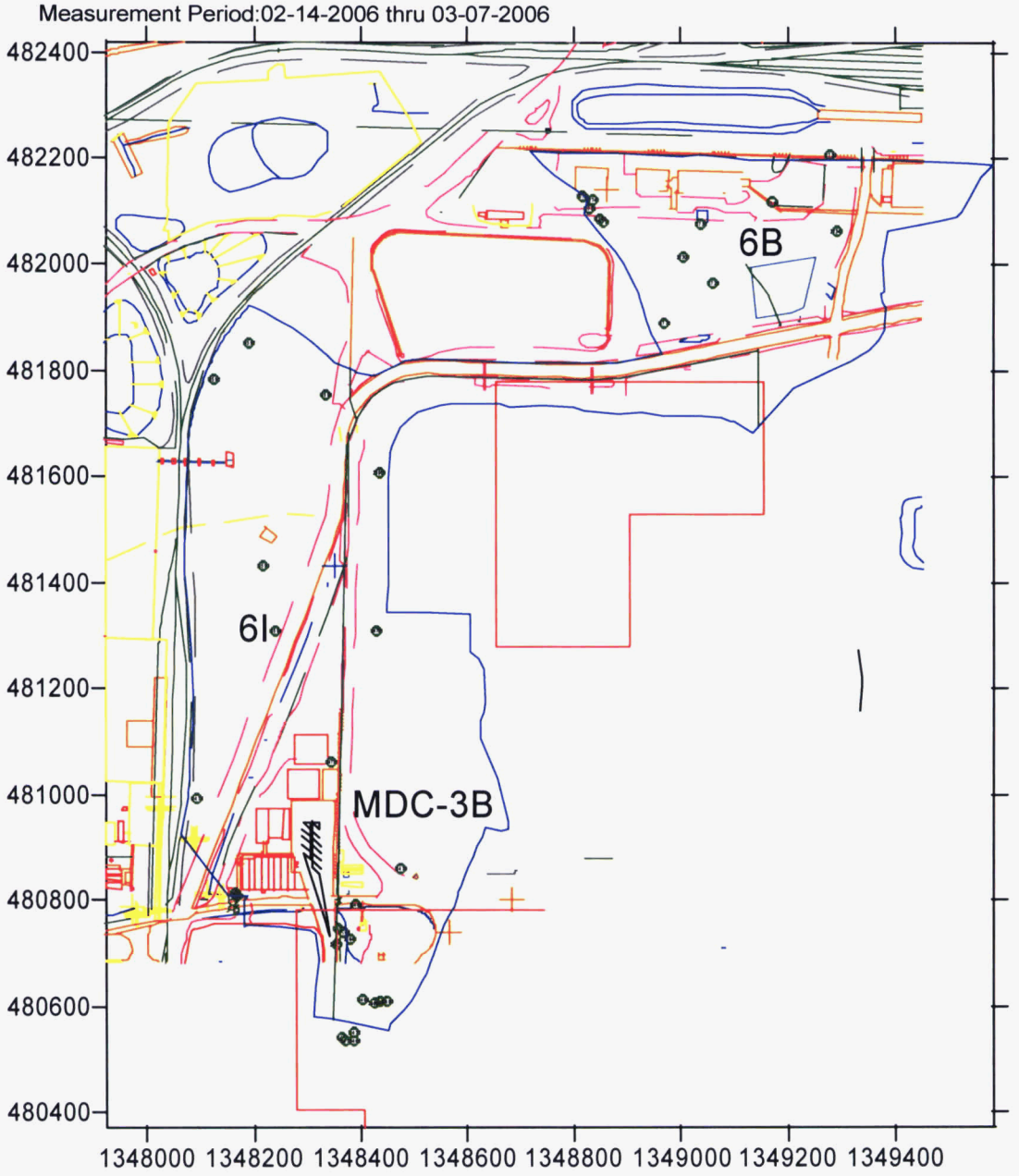
4.5 to 999

RTIMP DWG ID: GAE_P2_TH.srf
Project ID: Gen Char for Site Soil Remed 20300-PSP-0011
Prepared: D.Seiller 03-08-2006
Support Data: GAE_P2.xls

Figure A-7 Area 6 General Area East
Phase 2 - Moisture Corrected Total Uranium

Data Groups: 30687_02-14-2006, 31144_02-14-2006,30687_02-23-2006,30687_02-24-2006
31204_03-03-2006,30687_03-04-2006,30687_03-07-2006

Measurement Period:02-14-2006 thru 03-07-2006



High Leachability boundary

CDL Boundary

Sub Area Boundary

HPGe TU in ppm High Leacchability Area	HPGe TU in ppm Non-High Leachability Area
-999 to 60	-999 to 246
60 to 999	246 to 999

RTIMP DWG ID: GAE_P2_TU.srf
Project ID: Gen Char for Site Soil Remed 20300-PSP-0011
Prepared: D.Seiller 03-08-2006
Support Data: GAE_P2.xls

APPENDIX B

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.

APPENDIX C

AREA 6 GENERAL AREA EAST
CU SAMPLE LOCATIONS AND IDENTIFIERS

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C01	01-1	0.0 - 0.5'	A6GAE-C01-1^RMP	A/B/D/E/F/G	481903.38	1348186.04
	01-2	0.0 - 0.5'	A6GAE-C01-2^RMP	A/B/D/E/F/G	481847.58	1348155.5
	01-3	0.0 - 0.5'	A6GAE-C01-3^RMP	A/B/D/E/F/G	481853.93	1348215.54
	01-4V	0.0 - 0.5'	A6GAE-C01-4^V	archive	481855.24	1348265.46
	01-5V	0.0 - 0.5'	A6GAE-C01-5^V	archive	481801.22	1348138.11
	01-6	0.0 - 0.5'	A6GAE-C01-6^RMP	A/B/D/E/F/G	481821.32	1348229.46
	01-7	0.0 - 0.5'	A6GAE-C01-7^RMP	A/B/D/E/F/G	481774.47	1348153.13
	01-8D	0.0 - 0.5'	A6GAE-C01-8^RMP	A/B/D/E/F/G	481765.94	1348203.22
			A6GAE-C01-8^RMP-D			
	01-9	0.0 - 0.5'	A6GAE-C01-9^RMP	A/B/D/E/F/G	481810.38	1348278.59
	01-10	0.0 - 0.5'	A6GAE-C01-10^RMP	A/B/D/E/F/G	481801.47	1348342.25
	01-11V	0.0 - 0.5'	A6GAE-C01-11^V	archive	481778.26	1348278.92
	01-12	0.0 - 0.5'	A6GAE-C01-12^RMP	A/B/D/E/F/G	481782.24	1348374.5
	01-13	0.0 - 0.5'	A6GAE-C01-13^RMP	A/B/D/E/F/G	481728.74	1348111.97
	01-14V	0.0 - 0.5'	A6GAE-C01-14^V	archive	481717.58	1348211.5
	01-15	0.0 - 0.5'	A6GAE-C01-15^RMP	A/B/D/E/F/G	481737.05	1348277.61
	01-16	0.0 - 0.5'	A6GAE-C01-16^RMP	A/B/D/E/F/G	481723.46	1348352.64
C02	02-1V	0.0 - 0.5'	A6GAE-C02-1^V	archive	481703.8	1348093.46
	02-2	0.0 - 0.5'	A6GAE-C02-2^RMP	A/B/D/F/G	481681.78	1348204.45
	02-3	0.0 - 0.5'	A6GAE-C02-3^RMP	A/B/D/F/G	481654.16	1348105.25
	02-4	0.0 - 0.5'	A6GAE-C02-4^RMP	A/B/D/F/G	481638.92	1348205.34
	02-5	0.0 - 0.5'	A6GAE-C02-5^RMP	A/B/D/F/G	481691.67	1348266.25
	02-6V	0.0 - 0.5'	A6GAE-C02-6^V	archive	481699.46	1348334.83
	02-7	0.0 - 0.5'	A6GAE-C02-7^RMP	A/B/D/F/G	481644.7	1348263.24
	02-8	0.0 - 0.5'	A6GAE-C02-8^RMP	A/B/D/F/G	481647.47	1348351.94
	02-9	0.0 - 0.5'	A6GAE-C02-9^RMP	A/B/D/F/G	481614.71	1348119.84
	02-10D	0.0 - 0.5'	A6GAE-C02-10^RMP	A/B/D/F/G	481604.58	1348189.97
			A6GAE-C02-10^RMP-D			
	02-11V	0.0 - 0.5'	A6GAE-C02-11^V	archive	481584.17	1348107.15
	02-12	0.0 - 0.5'	A6GAE-C02-12^RMP	A/B/D/F/G	481570.31	1348198.28
	02-13	0.0 - 0.5'	A6GAE-C02-13^RMP	A/B/D/F/G	481602.38	1348277.04
	02-14	0.0 - 0.5'	A6GAE-C02-14^RMP	A/B/D/F/G	481612.35	1348340.57
	02-15	0.0 - 0.5'	A6GAE-C02-15^RMP	A/B/D/F/G	481576.31	1348256.45
	02-16V	0.0 - 0.5'	A6GAE-C02-16^V	archive	481570.72	1348335.2

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C03	03-1D	0.0 - 0.5'	A6GAE-C03-1^RMP	A/B/D/F/G	481538.87	1348114.8
			A6GAE-C03-1^RMP-D			
	03-2V	0.0 - 0.5'	A6GAE-C03-2^V	archive	481539.22	1348177.61
	03-3	0.0 - 0.5'	A6GAE-C03-3^RMP	A/B/D/F/G	481489.19	1348080.12
	03-4	0.0 - 0.5'	A6GAE-C03-4^RMP	A/B/D/F/G	481494.01	1348198.69
	03-5	0.0 - 0.5'	A6GAE-C03-5^RMP	A/B/D/F/G	481526.99	1348262.79
	03-6	0.0 - 0.5'	A6GAE-C03-6^RMP	A/B/D/F/G	481546.76	1348309.47
	03-7V	0.0 - 0.5'	A6GAE-C03-7^V	archive	481497.43	1348251.35
	03-8	0.0 - 0.5'	A6GAE-C03-8^RMP	A/B/D/F/G	481517.03	1348342.2
	03-9V	0.0 - 0.5'	A6GAE-C03-9^V	archive	481447.21	1348104.81
	03-10	0.0 - 0.5'	A6GAE-C03-10^RMP	A/B/D/F/G	481447.92	1348149.7
	03-11	0.0 - 0.5'	A6GAE-C03-11^RMP	A/B/D/F/G	481424.55	1348088.83
	03-12	0.0 - 0.5'	A6GAE-C03-12^RMP	A/B/D/F/G	481418.88	1348179.03
	03-13	0.0 - 0.5'	A6GAE-C03-13^RMP	A/B/D/F/G	481469.44	1348266.68
	03-14	0.0 - 0.5'	A6GAE-C03-14^RMP	A/B/D/F/G	481476.27	1348348.25
	03-15V	0.0 - 0.5'	A6GAE-C03-15^V	archive	481442.33	1348254.75
	03-16	0.0 - 0.5'	A6GAE-C03-16^RMP	A/B/D/F/G	481430.8	1348340.34
C04	04-1	0.0 - 0.5'	A6GAE-C04-1^RMP	A/B/D/F/G	481378.12	1348113.92
	04-2	0.0 - 0.5'	A6GAE-C04-2^RMP	A/B/D/F/G	481391.6	1348190.27
	04-3V	0.0 - 0.5'	A6GAE-C04-3^V	archive	481355.03	1348083.79
	04-4D	0.0 - 0.5'	A6GAE-C04-4^RMP	A/B/D/F/G	481313.06	1348169.9
			A6GAE-C04-4^RMP-D			
	04-5	0.0 - 0.5'	A6GAE-C04-5^RMP	A/B/D/F/G	481400.7	1348251.18
	04-6	0.0 - 0.5'	A6GAE-C04-6^RMP	A/B/D/F/G	481379.9	1348311.65
	04-7	0.0 - 0.5'	A6GAE-C04-7^RMP	A/B/D/F/G	481315.35	1348237.72
	04-8V	0.0 - 0.5'	A6GAE-C04-8^V	archive	481345.79	1348333.67
	04-9	0.0 - 0.5'	A6GAE-C04-9^RMP	A/B/D/F/G	481286.65	1348123.32
	04-10	0.0 - 0.5'	A6GAE-C04-10^RMP	A/B/D/F/G	481275.99	1348187.26
	04-11	0.0 - 0.5'	A6GAE-C04-11^RMP	A/B/D/F/G	481224.1	1348110.52
	04-12V	0.0 - 0.5'	A6GAE-C04-12^V	archive	481238.73	1348214.75
	04-13V	0.0 - 0.5'	A6GAE-C04-13^V	archive	481281.41	1348249.32
	04-14	0.0 - 0.5'	A6GAE-C04-14^RMP	A/B/D/F/G	481291.39	1348307.83
	04-15	0.0 - 0.5'	A6GAE-C04-15^RMP	A/B/D/F/G	481225.56	1348268.48
	04-16	0.0 - 0.5'	A6GAE-C04-16^RMP	A/B/D/F/G	481245.04	1348324.95

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C05	05-1V	0.0 - 0.5'	A6GAE-C05-1^V	archive	481198.31	1348125.18
	05-2	0.0 - 0.5'	A6GAE-C05-2^RMP	A/B/D/F/M	481179.79	1348206.79
	05-3	0.0 - 0.5'	A6GAE-C05-3^RMP	A/B/D/F/M	481147.07	1348097.98
	05-4	0.0 - 0.5'	A6GAE-C05-4^RMP	A/B/D/F/M	481143.21	1348178
	05-5	0.0 - 0.5'	A6GAE-C05-5^RMP	A/B/D/F/M	481191.59	1348274.42
	05-6	0.0 - 0.5'	A6GAE-C05-6^RMP	A/B/D/F/M	481178.78	1348336.56
	05-7V	0.0 - 0.5'	A6GAE-C05-7^V	archive	481146.52	1348246.37
	05-8	0.0 - 0.5'	A6GAE-C05-8^RMP	A/B/D/F/M	481141.57	1348347.07
	05-9	0.0 - 0.5'	A6GAE-C05-9^RMP	A/B/D/F/M	481094.61	1348097.28
	05-10	0.0 - 0.5'	A6GAE-C05-10^RMP	A/B/D/F/M	481107.97	1348160.23
	05-11	0.0 - 0.5'	A6GAE-C05-11^RMP	A/B/D/F/M	481099.17	1348266.41
	05-12V	0.0 - 0.5'	A6GAE-C05-12^V	archive	481093.83	1348312.34
	05-13V	0.0 - 0.5'	A6GAE-C05-13^V	archive	481053.93	1348254.69
	05-14	0.0 - 0.5'	A6GAE-C05-14^RMP	A/B/D/F/M	481060.25	1348324.65
	05-15	0.0 - 0.5'	A6GAE-C05-15^RMP	A/B/D/F/M	481016.88	1348276.48
	05-16D	0.0 - 0.5'	A6GAE-C05-16^RMP	A/B/D/F/M	481003.65	1348329.69
			A6GAE-C05-16^RMP-D			
C06	06-1	0.0 - 0.5'	A6GAE-C06-1^RMP	A/B/D/F/M	480980.74	1348265.3
	06-2D	0.0 - 0.5'	A6GAE-C06-2^RMP	A/B/D/F/M	480974.87	1348335.99
			A6GAE-C06-2^RMP-D			
	06-3V	0.0 - 0.5'	A6GAE-C06-3^V	archive	480954.41	1348239.62
	06-4	0.0 - 0.5'	A6GAE-C06-4^RMP	A/B/D/F/M	480940.23	1348345.13
	06-5	0.0 - 0.5'	A6GAE-C06-5^RMP	A/B/D/F/M	480905.31	1348258.79
	06-6V	0.0 - 0.5'	A6GAE-C06-6^V	archive	480917.43	1348314.53
	06-7	0.0 - 0.5'	A6GAE-C06-7^RMP	A/B/D/F/M	480866.87	1348243.1
	06-8	0.0 - 0.5'	A6GAE-C06-8^RMP	A/B/D/F/M	480871.84	1348288.16
	06-9	0.0 - 0.5'	A6GAE-C06-9^RMP	A/B/D/F/M	480860.17	1348349.41
	06-10V	0.0 - 0.5'	A6GAE-C06-10^V	archive	480824.28	1348213.03
	06-11	0.0 - 0.5'	A6GAE-C06-11^RMP	A/B/D/F/M	480833.37	1348266.85
	06-12	0.0 - 0.5'	A6GAE-C06-12^RMP	A/B/D/F/M	480822.52	1348340.99
	06-13	0.0 - 0.5'	A6GAE-C06-13^RMP	A/B/D/F/M	480778.72	1348185.57
	06-14	0.0 - 0.5'	A6GAE-C06-14^RMP	A/B/D/F/M	480759.13	1348223.26
	06-15	0.0 - 0.5'	A6GAE-C06-15^RMP	A/B/D/F/M	480792.9	1348268.61
	06-16V	0.0 - 0.5'	A6GAE-C06-16^V	archive	480791.93	1348325.5

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C07	07-1	0.0 - 0.5'	A6GAE-C07-1^RM	A/D/E/F/M (HL)	480751.1	1348338.36
	07-2	0.0 - 0.5'	A6GAE-C07-2^RM	A/D/E/F/M (HL*)	480769.3	1348405.81
	07-3D	0.0 - 0.5'	A6GAE-C07-3^RM	A/D/E/F/M (HL*)	480716.65	1348369.68
			A6GAE-C07-3^RM-D			
	07-4V	0.0 - 0.5'	A6GAE-C07-4^V	archive	480721.37	1348414.56
	07-5	0.0 - 0.5'	A6GAE-C07-5^RM	A/D/E/F/M (HL*)	480759.3	1348454.32
	07-6V	0.0 - 0.5'	A6GAE-C07-6^V	archive	480754.62	1348551.04
	07-7	0.0 - 0.5'	A6GAE-C07-7^RM	A/D/E/F/M (HL*)	480730.65	1348481.39
	07-8	0.0 - 0.5'	A6GAE-C07-8^RM	A/D/E/F/M (HL*)	480696.03	1348530.75
	07-9V	0.0 - 0.5'	A6GAE-C07-9^V	archive	480664.34	1348320.76
	07-10	0.0 - 0.5'	A6GAE-C07-10^RM	A/D/E/F/M (HL*)	480677.29	1348375.57
	07-11	0.0 - 0.5'	A6GAE-C07-11^RM	A/D/E/F/M (HL*)	480611.87	1348322.54
	07-12	0.0 - 0.5'	A6GAE-C07-12^RM	A/D/E/F/M (HL*)	480593.51	1348375.66
	07-13	0.0 - 0.5'	A6GAE-C07-13^RM	A/D/E/F/M (HL*)	480664.01	1348465.4
	07-14	0.0 - 0.5'	A6GAE-C07-14^RM	A/D/E/F/M (HL*)	480650.2	1348493.4
	07-15V	0.0 - 0.5'	A6GAE-C07-15^V	archive	480605.93	1348413.08
	07-16	0.0 - 0.5'	A6GAE-C07-16^RM	A/D/E/F/m. (HL*)	480614.16	1348471
C08	08-1	0.0 - 0.5'	A6GAE-C08-1^RMP	A/B/D/E/F/L/M	480918.08	1348385.14
	08-2	0.0 - 0.5'	A6GAE-C08-2^RMP	A/B/D/E/F/L/M	480902.76	1348473.56
	08-3V	0.0 - 0.5'	A6GAE-C08-3^V	archive	480874.48	1348401.91
	08-4	0.0 - 0.5'	A6GAE-C08-4^RMP	A/B/D/E/F/L/M	480866.9	1348448.35
	08-5	0.0 - 0.5'	A6GAE-C08-5^RMP	A/B/D/E/F/L/M	480904.34	1348548.88
	08-6	0.0 - 0.5'	A6GAE-C08-6^RMP	A/B/D/E/F/L/M	480902.6	1348591.37
	08-7V	0.0 - 0.5'	A6GAE-C08-7^V	archive	480876.92	1348511.23
	08-8	0.0 - 0.5'	A6GAE-C08-8^RMP	A/B/D/E/F/L/M	480864.47	1348574.63
	08-9	0.0 - 0.5'	A6GAE-C08-9^RMP	A/B/D/E/F/L/M	480840.31	1348385.74
	08-10	0.0 - 0.5'	A6GAE-C08-10^RMP	A/B/D/E/F/L/M	480834.63	1348462.52
	08-11V	0.0 - 0.5'	A6GAE-C08-11^V	archive	480813.37	1348367.62
	08-12	0.0 - 0.5'	A6GAE-C08-12^RMP	A/B/D/E/F/L/M	480791.24	1348450.16
	08-13	0.0 - 0.5'	A6GAE-C08-13^RMP	A/B/D/E/F/L/M	480842.42	1348530.26
	08-14D	0.0 - 0.5'	A6GAE-C08-14^RMP	A/B/D/E/F/L/M	480825.81	1348580.66
			A6GAE-C08-14^RMP-D			
	08-15V	0.0 - 0.5'	A6GAE-C08-15^V	archive	480812.34	1348508.04
	08-16	0.0 - 0.5'	A6GAE-C08-16^RMP	A/B/D/E/F/L/M	480787.33	1348537.05

* HL denotes a high leachability zone (20 ppm FRL, 2 ppm MDC).

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C09	09-1	0.0 - 0.5'	A6GAE-C09-1^RMP	A/B/D/E/F/G/L	481111.07	1348394.82
	09-2V	0.0 - 0.5'	A6GAE-C09-2^V	archive	481091.49	1348468.17
	09-3	0.0 - 0.5'	A6GAE-C09-3^RMP	A/B/D/E/F/G/L	481037.08	1348389.11
	09-4	0.0 - 0.5'	A6GAE-C09-4^RMP	A/B/D/E/F/G/L	481037.79	1348461.86
	09-5	0.0 - 0.5'	A6GAE-C09-5^RMP	A/B/D/E/F/G/L	481110.74	1348533.65
	09-6	0.0 - 0.5'	A6GAE-C09-6^RMP	A/B/D/E/F/G/L	481119.7	1348601.43
	09-7V	0.0 - 0.5'	A6GAE-C09-7^V	archive	481045.84	1348513.47
	09-8	0.0 - 0.5'	A6GAE-C09-8^RMP	A/B/D/E/F/G/L	481039.55	1348587.35
	09-9V	0.0 - 0.5'	A6GAE-C09-9^V	archive	481009.45	1348410.5
	09-10D	0.0 - 0.5'	A6GAE-C09-10^RMP	A/B/D/E/F/G/L	480993.19	1348488.39
			A6GAE-C09-10^RMP-D			
	09-11	0.0 - 0.5'	A6GAE-C09-11^RMP	A/B/D/E/F/G/L	480963.09	1348375.69
	09-12	0.0 - 0.5'	A6GAE-C09-12^RMP	A/B/D/E/F/G/L	480950.34	1348512.12
	09-13	0.0 - 0.5'	A6GAE-C09-13^RMP	A/B/D/E/F/G/L	481005.44	1348523.84
	09-14	0.0 - 0.5'	A6GAE-C09-14^RMP	A/B/D/E/F/G/L	481016.82	1348633.36
	09-15V	0.0 - 0.5'	A6GAE-C09-15^V	archive	480965.99	1348563.88
	09-16	0.0 - 0.5'	A6GAE-C09-16^RMP	A/B/D/E/F/G/L	480955.95	1348647.49

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C10	10-1	0.0 - 0.5'	A6GAE-C10-1^RMP	A/B/E/F/G/J/K/L	481456.34	1348433.3
			A6GAE-C10-1^L	H		
	10-2V	0.0 - 0.5'	A6GAE-C10-2^V	archive	481409.64	1348434.42
	10-3	0.0 - 0.5'	A6GAE-C10-3^RMP	A/B/E/F/G/J/K/L	481381.46	1348390.97
			A6GAE-C10-3^L	H		
	10-4	0.0 - 0.5'	A6GAE-C10-4^RMP	A/B/E/F/G/J/K/L	481317.07	1348396.44
			A6GAE-C10-4^L	H		
	10-5	0.0 - 0.5'	A6GAE-C10-5^RMP	A/B/E/F/G/J/K/L	481315.89	1348441.14
			A6GAE-C10-5^L	H		
	10-6	0.0 - 0.5'	A6GAE-C10-6^RMP	A/B/E/F/G/J/K/L	481263.08	1348500.12
			A6GAE-C10-6^L	H		
	10-7V	0.0 - 0.5'	A6GAE-C10-7^V	archive	481306.37	1348533.69
	10-8	0.0 - 0.5'	A6GAE-C10-8^RMP	A/B/E/F/G/J/K/L	481288.13	1348591.02
			A6GAE-C10-8^L	H		
	10-9D	0.0 - 0.5'	A6GAE-C10-9^RMP	A/B/E/F/G/J/K/L	481253.27	1348398
			A6GAE-C10-9^L	H		
			A6GAE-C10-9^RMP-D	A/B/E/F/G/J/K/L		
			A6GAE-C10-9^L-D	H		
	10-10	0.0 - 0.5'	A6GAE-C10-10^RMP	A/B/E/F/G/J/K/L	481240.86	1348453.44
			A6GAE-C10-10^L	H		
	10-11	0.0 - 0.5'	A6GAE-C10-11^RMP	A/B/E/F/G/J/K/L	481204.84	1348557.62
			A6GAE-C10-11^L	H		
	10-12V	0.0 - 0.5'	A6GAE-C10-12^V	archive	481250.67	1348615.3
	10-13	0.0 - 0.5'	A6GAE-C10-13^RMP	A/B/E/F/G/J/K/L	481160.92	1348413.72
			A6GAE-C10-13^L	H		
	10-14	0.0 - 0.5'	A6GAE-C10-14^RMP	A/B/E/F/G/J/K/L	481169.5	1348484.76
			A6GAE-C10-14^L	H		
	10-15V	0.0 - 0.5'	A6GAE-C10-15^V	archive	481170.44	1348531.37
	10-16	0.0 - 0.5'	A6GAE-C10-16^RMP	A/B/E/F/G/J/K/L	481181.43	1348610
			A6GAE-C10-16^L	H		

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C11	11-1	0.0 - 0.5'	A6GAE-C11-1^RMP	A/B/E/G/J/K/L	481769.6	1348397.31
			A6GAE-C11-1^L	H		
	11-2	0.0 - 0.5'	A6GAE-C11-2^RMP	A/B/E/G/J/K/L	481786.77	1348456.97
			A6GAE-C11-2^L	H		
	11-3	0.0 - 0.5'	A6GAE-C11-3^RMP	A/B/E/G/J/K/L	481800.5	1348522.66
			A6GAE-C11-3^L	H		
	11-4V	0.0 - 0.5'	A6GAE-C11-4^V	archive	481790.97	1348617.94
	11-5V	0.0 - 0.5'	A6GAE-C11-5^V	archive	481723.61	1348486.43
	11-6D	0.0 - 0.5'	A6GAE-C11-6^RMP	A/B/E/G/J/K/L	481759.29	1348512.86
			A6GAE-C11-6^L	H		
			A6GAE-C11-6^RMP-D	A/B/E/G/J/K/L		
			A6GAE-C11-6^L-D	H		
	11-7	0.0 - 0.5'	A6GAE-C11-7^RMP	A/B/E/G/J/K/L	481777.49	1348545.38
			A6GAE-C11-7^L	H		
	11-8	0.0 - 0.5'	A6GAE-C11-8^RMP	A/B/E/G/J/K/L	481764.2	1348608.93
			A6GAE-C11-8^L	H		
	11-9	0.0 - 0.5'	A6GAE-C11-9^RMP	A/B/E/G/J/K/L	481720.08	1348407.4
			A6GAE-C11-9^L	H		
	11-10	0.0 - 0.5'	A6GAE-C11-10^RMP	A/B/E/G/J/K/L	481680.75	1348446.42
			A6GAE-C11-10^L	H		
	11-11V	0.0 - 0.5'	A6GAE-C11-11^V	archive	481669.56	1348411.25
	11-12	0.0 - 0.5'	A6GAE-C11-12^RMP	A/B/E/G/J/K/L	481635.28	1348438.59
			A6GAE-C11-12^L	H		
	11-13	0.0 - 0.5'	A6GAE-C11-13^RMP	A/B/E/G/J/K/L	481594.34	1348403.42
			A6GAE-C11-13^L	H		
	11-14V	0.0 - 0.5'	A6GAE-C11-14^V	archive	481561.46	1348421.14
	11-15	0.0 - 0.5'	A6GAE-C11-15^RMP	A/B/E/G/J/K/L	481527.87	1348433.16
			A6GAE-C11-15^L	H		
	11-16	0.0 - 0.5'	A6GAE-C11-16^RMP	A/B/E/G/J/K/L	481493.25	1348398.83
			A6GAE-C11-16^L	H		

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C12	12-1	0.0 - 0.5'	A6GAE-C12-1^RMP	A/B/E/G/K/L (HL*)	481778.9	1348690.88
	12-2	0.0 - 0.5'	A6GAE-C12-2^RMP	A/B/E/G/K/L (HL*)	481791.15	1348741.56
	12-3	0.0 - 0.5'	A6GAE-C12-3^RMP	A/B/E/G/K/L (HL*)	481760.89	1348661.89
	12-4V	0.0 - 0.5'	A6GAE-C12-4^V	archive	481746.91	1348770.05
	12-5	0.0 - 0.5'	A6GAE-C12-5^RMP	A/B/E/G/K/L (HL*)	481788.54	1348824.74
	12-6V	0.0 - 0.5'	A6GAE-C12-6^V	archive	481826.33	1348948.16
	12-7	0.0 - 0.5'	A6GAE-C12-7^RMP	A/B/E/G/K/L (HL*)	481757.06	1348828.23
	12-8	0.0 - 0.5'	A6GAE-C12-8^RMP	A/B/E/G/K/L (HL*)	481738.17	1348897.15
	12-9	0.0 - 0.5'	A6GAE-C12-9^RMP	A/B/E/G/K/L (HL*)	481813.57	1349009.26
	12-10V	0.0 - 0.5'	A6GAE-C12-10^V	archive	481821.63	1349088
	12-11D	0.0 - 0.5'	A6GAE-C12-11^RMP	A/B/E/G/K/L (HL*)	481734.68	1348961.08
			A6GAE-C12-11^RMP-D			
	12-12	0.0 - 0.5'	A6GAE-C12-12^RMP	A/B/E/G/K/L (HL*)	481756.03	1349070.61
	12-13	0.0 - 0.5'	A6GAE-C12-13^RMP	A/B/E/G/K/L (HL*)	481814.99	1349132.31
	12-14	0.0 - 0.5'	A6GAE-C12-14^RMP	A/B/E/G/K/L (HL*)	481786.14	1349241.37
	12-15	0.0 - 0.5'	A6GAE-C12-15^RMP	A/B/E/G/K/L (HL*)	481717.91	1349115.27
	12-16V	0.0 - 0.5'	A6GAE-C12-16^V	archive	481739.95	1349164.09
C13	13-1	0.0 - 0.5'	A6GAE-C13-1^RM	A/E/G/K	481952.12	1349153.54
	13-2	0.0 - 0.5'	A6GAE-C13-2^RM	A/E/G/K	481928.69	1349225.5
	13-3V	0.0 - 0.5'	A6GAE-C13-3^V	archive	481918.01	1349122.99
	13-4	0.0 - 0.5'	A6GAE-C13-4^RM	A/E/G/K	481892.3	1349177.43
	13-5	0.0 - 0.5'	A6GAE-C13-5^RM	A/E/G/K	481942.86	1349268.5
	13-6V	0.0 - 0.5'	A6GAE-C13-6^V	archive	481934.47	1349352.99
	13-7	0.0 - 0.5'	A6GAE-C13-7^RM	A/E/G/K	481911.55	1349299.96
	13-8	0.0 - 0.5'	A6GAE-C13-8^RM	A/E/G/K	481895.48	1349365.45
	13-9V	0.0 - 0.5'	A6GAE-C13-9^RM	A/E/G/K	481864.49	1349157.12
	13-10	0.0 - 0.5'	A6GAE-C13-10^RM	A/E/G/K	481872.89	1349200.02
	13-11	0.0 - 0.5'	A6GAE-C13-11^RM	A/E/G/K	481841.92	1349116.32
	13-12	0.0 - 0.5'	A6GAE-C13-12^V	archive	481825.49	1349213.89
	13-13D	0.0 - 0.5'	A6GAE-C13-13^RM	A/E/G/K	481882.87	1349290.83
			A6GAE-C13-13^RM-D			
	13-14	0.0 - 0.5'	A6GAE-C13-14^RM	A/E/G/K	481856.64	1349325.14
	13-15	0.0 - 0.5'	A6GAE-C13-15^RM	A/E/G/K	481848.06	1349266.66
	13-16V	0.0 - 0.5'	A6GAE-C13-16^V	archive	481829	1349307.63

* HL denotes a high leachability zone (20 ppm FRL, 2 ppm MDC).

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C14	14-1	0.0 - 0.5'	A6GAE-C14-1^RMPS	A/B/C/D/G/J/K/L	482082.42	1349104.74
			A6GAE-C14-1^L	H/I		
	14-2V	0.0 - 0.5'	A6GAE-C14-2^V	archive	482090.85	1349212.94
	14-3	0.0 - 0.5'	A6GAE-C14-3^RMPS	A/B/C/D/G/J/K/L	482042.36	1349065.65
			A6GAE-C14-3^L	H/I		
	14-4D	0.0 - 0.5'	A6GAE-C14-4^RMPS	A/B/C/D/G/J/K/L	482058.62	1349170.37
			A6GAE-C14-4^L	H/I		
			A6GAE-C14-4^RMPS-D	A/B/C/D/G/J/K/L		
			A6GAE-C14-4^L-D	H/I		
	14-5	0.0 - 0.5'	A6GAE-C14-5^RMPS	A/B/C/D/G/J/K/L	482086.64	1349293.68
			A6GAE-C14-5^L	H/I		
	14-6	0.0 - 0.5'	A6GAE-C14-6^RMPS	A/B/C/D/G/J/K/L	482088.88	1349445.7
			A6GAE-C14-6^L	H/I		
	14-7	0.0 - 0.5'	A6GAE-C14-7^RMPS	A/B/C/D/G/J/K/L	482043.09	1349295.38
			A6GAE-C14-7^L	H/I		
	14-8V	0.0 - 0.5'	A6GAE-C14-8^V	archive	482059.74	1349366.29
	14-9V	0.0 - 0.5'	A6GAE-C14-9^V	archive	482008.08	1349093.71
	14-10	0.0 - 0.5'	A6GAE-C14-10^RMPS	A/B/C/D/G/J/K/L	482034.15	1349204.03
			A6GAE-C14-10^L	H/I		
	14-11	0.0 - 0.5'	A6GAE-C14-11^RMPS	A/B/C/D/G/J/K/L	481968.73	1349106.83
			A6GAE-C14-11^L	H/I		
	14-12	0.0 - 0.5'	A6GAE-C14-12^RMPS	A/B/C/D/G/J/K/L	481981.16	1349223.4
			A6GAE-C14-12^L	H/I		
	14-13	0.0 - 0.5'	A6GAE-C14-13^RMPS	A/B/C/D/G/J/K/L	482005.13	1349297.51
			A6GAE-C14-13^L	H/I		
	14-14	0.0 - 0.5'	A6GAE-C14-14^RMPS	A/B/C/D/G/J/K/L	482020.94	1349343.05
			A6GAE-C14-14^L	H/I		
	14-15V	0.0 - 0.5'	A6GAE-C14-15^V	archive	481966.02	1349278.63
	14-16	0.0 - 0.5'	A6GAE-C14-16^RMPS	A/B/C/D/G/J/K/L	481959.83	1349339.11
			A6GAE-C14-16^L	H/I		

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C15	15-1V	0.0 - 0.5'	A6GAE-C15-1^V	archive	482190.88	1349087.49
	15-2	0.0 - 0.5'	A6GAE-C15-2^RMPS	A/B/C/D/G/J/K/L	482183.03	1349192.97
			A6GAE-C15-2^L	H/I		
	15-3	0.0 - 0.5'	A6GAE-C15-3^RMPS	A/B/C/D/G/J/K/L	482163.37	1349035.18
			A6GAE-C15-3^L	H/I		
	15-4	0.0 - 0.5'	A6GAE-C15-4^RMPS	A/B/C/D/G/J/K/L	482162.18	1349245.11
			A6GAE-C15-4^L	H/I		
	15-5D	0.0 - 0.5'	A6GAE-C15-5^RMPS	A/B/C/D/G/J/K/L	482192.14	1349376.04
			A6GAE-C15-5^L	H/I		
			A6GAE-C15-5^RMPS-D	A/B/C/D/G/J/K/L		
			A6GAE-C15-5^L-D	H/I		
	15-6V	0.0 - 0.5'	A6GAE-C15-6^V	archive	482181.74	1349535.39
	15-7	0.0 - 0.5'	A6GAE-C15-7^RMPS	A/B/C/D/G/J/K/L	482160.47	1349295.1
			A6GAE-C15-7^L	H/I		
	15-8	0.0 - 0.5'	A6GAE-C15-8^RMPS	A/B/C/D/G/J/K/L	482169.01	1349486.47
			A6GAE-C15-8^L	H/I		
	15-9V	0.0 - 0.5'	A6GAE-C15-9^V	archive	482149.06	1349089.24
	15-10	0.0 - 0.5'	A6GAE-C15-10^RMPS	A/B/C/D/G/J/K/L	482137.93	1349207.16
			A6GAE-C15-10^L	H/I		
	15-11	0.0 - 0.5'	A6GAE-C15-11^RMPS	A/B/C/D/G/J/K/L	482116.02	1349064.11
			A6GAE-C15-11^L	H/I		
	15-12	0.0 - 0.5'	A6GAE-C15-12^RMPS	A/B/C/D/G/J/K/L	482118.36	1349176.85
			A6GAE-C15-12^L	H/I		
	15-13	0.0 - 0.5'	A6GAE-C15-13^RMPS	A/B/C/D/G/J/K/L	482137.46	1349352.95
			A6GAE-C15-13^L	H/I		
	15-14V	0.0 - 0.5'	A6GAE-C15-14^V	archive	482132.43	1349448.02
	15-15	0.0 - 0.5'	A6GAE-C15-15^RMPS	A/B/C/D/G/J/K/L	482111.24	1349400.35
			A6GAE-C15-15^L	H/I		
	15-16	0.0 - 0.5'	A6GAE-C15-16^RMPS	A/B/C/D/G/J/K/L	482112.63	1349498.27
			A6GAE-C15-16^L	H/I		

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C16	16-1	0.0 - 0.5'	A6GAE-C16-1^RMPS	A/B/C/D/E/G/J/K/L	482193.63	1348791.65
			A6GAE-C16-1^L	H/I		
	16-2V	0.0 - 0.5'	A6GAE-C16-2^V	archive	482183.73	1348853.69
	16-3	0.0 - 0.5'	A6GAE-C16-3^RMPS	A/B/C/D/E/G/J/K/L	482159.35	1348816.17
			A6GAE-C16-3^L	H/I		
	16-4	0.0 - 0.5'	A6GAE-C16-4^RMPS	A/B/C/D/E/G/J/K/L	482139.06	1348882.47
			A6GAE-C16-4^L	H/I		
	16-5	0.0 - 0.5'	A6GAE-C16-5^RMPS	A/B/C/D/E/G/J/K/L	482198.36	1348899.91
			A6GAE-C16-5^L	H/I		
	16-6	0.0 - 0.5'	A6GAE-C16-6^RMPS	A/B/C/D/E/G/J/K/L	482194.17	1348957.15
			A6GAE-C16-6^L	H/I		
	16-7V	0.0 - 0.5'	A6GAE-C16-7^V	archive	482139.42	1348916.75
	16-8	0.0 - 0.5'	A6GAE-C16-8^RMPS	A/B/C/D/E/G/J/K/L	482136.98	1348997.5
			A6GAE-C16-8^L	H/I		
	16-9V	0.0 - 0.5'	A6GAE-C16-9^V	archive	482100.58	1348834.38
	16-10	0.0 - 0.5'	A6GAE-C16-10^RMPS	A/B/C/D/E/G/J/K/L	482116.3	1348894.34
			A6GAE-C16-10^L	H/I		
	16-11	0.0 - 0.5'	A6GAE-C16-11^RMPS	A/B/C/D/E/G/J/K/L	482076.09	1348842.48
			A6GAE-C16-11^L	H/I		
	16-12D	0.0 - 0.5'	A6GAE-C16-12^RMPS	A/B/C/D/E/G/J/K/L	482057.87	1348926.88
			A6GAE-C16-12^L	H/I		
			A6GAE-C16-12^RMPS-D	A/B/C/D/E/G/J/K/L		
			A6GAE-C16-12^L-D	H/I		
	16-13	0.0 - 0.5'	A6GAE-C16-13^RMPS	A/B/C/D/E/G/J/K/L	482090.1	1348945.46
			A6GAE-C16-13^L	H/I		
	16-14V	0.0 - 0.5'	A6GAE-C16-14^V	archive	482094.3	1349012.78
	16-15	0.0 - 0.5'	A6GAE-C16-15^RMPS	A/B/C/D/E/G/J/K/L	482075.45	1348971.84
			A6GAE-C16-15^L	H/I		
	16-16	0.0 - 0.5'	A6GAE-C16-16^RMPS	A/B/C/D/E/G/J/K/L	482067.36	1349001.11
			A6GAE-C16-16^L	H/I		

APPENDIX C
AREA 6 GENERAL AREA EAST CU SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
C17	17-1V	0.0 - 0.5'	A6GAE-C17-1^V	archive	482002.99	1348903.6
	17-2	0.0 - 0.5'	A6GAE-C17-2^RM	A/E/G/N	482026.55	1348949.59
	17-3	0.0 - 0.5'	A6GAE-C17-3^RM	A/E/G/N	481962.59	1348941.18
	17-4	0.0 - 0.5'	A6GAE-C17-4^RM	A/E/G/N	481973.44	1348988.82
	17-5	0.0 - 0.5'	A6GAE-C17-5^RM	A/E/G/N	482015.75	1348995.58
	17-6D	0.0 - 0.5'	A6GAE-C17-6^RM	A/E/G/N	482018.4	1349062.91
			A6GAE-C17-6^RM-D			
	17-7V	0.0 - 0.5'	A6GAE-C17-7^V	archive	481982.09	1349020.35
	17-8	0.0 - 0.5'	A6GAE-C17-8^RM	A/E/G/N	481965.92	1349050.26
	17-9V	0.0 - 0.5'	A6GAE-C17-9^V	archive	481929.26	1348945.25
	17-10	0.0 - 0.5'	A6GAE-C17-10^RM	A/E/G/N	481909.42	1348972.76
	17-11	0.0 - 0.5'	A6GAE-C17-11^RM	A/E/G/N	481881.61	1348966.47
	17-12	0.0 - 0.5'	A6GAE-C17-12^RM	A/E/G/N	481842.96	1348994.49
	17-13	0.0 - 0.5'	A6GAE-C17-13^RM	A/E/G/N	481928.75	1349024.33
	17-14	0.0 - 0.5'	A6GAE-C17-14^RM	A/E/G/N	481931.99	1349057.83
	17-15	0.0 - 0.5'	A6GAE-C17-15^RM	A/E/G/N	481883.71	1349043.15
	17-16V	0.0 - 0.5'	A6GAE-C17-16^V	archive	481883.02	1349086.24
C18	A6E-TTAL-PC-1	0.0-0.5'	A6E-TTAL-PC-1^RMP	See Appendix D	480983.12	1348089.01
	A6E-TTAL-PC-2V	0.0-0.5'	A6E-TTAL-PC-2^V	archive	480974.96	1348165.18
	A6E-TTAL-PC-5	0.0-0.5'	A6E-TTAL-PC-5^RMP	See Appendix D	480943.39	1348173.34
	A6E-TTAL-PC-6	0.0-0.5'	A6E-TTAL-PC-6^RMP	See Appendix D	481026.985	1348098.97
	A6E-TTAL-PC-7	0.0-0.5'	A6E-TTAL-PC-7^RMP	See Appendix D	480908.72	1348111.66
	A6E-TTAL-PC-9D	0.0-0.5'	A6E-TTAL-PC-9^RMP	See Appendix D	480882.43	1348171.15
			A6E-TTAL-PC-9^RMP-D			
	A6E-TTAL-PC-10V	0.0-0.5'	A6E-TTAL-PC-10^V	archive	480873.1	1348206.6
	A6E-TTAL-PC-12	0.0-0.5'	A6E-TTAL-PC-12^RMP	See Appendix D	480867.2	1348132.52
	A6E-TTAL-PC-14	0.0-0.5'	A6E-TTAL-PC-14^RMP	See Appendix D	481006.527	1348136.654
	A6E-TTAL-PC-15	0.0-0.5'	A6E-TTAL-PC-15^RMP	See Appendix D	480809.75	1348177.45
	A6E-TTAL-PC-16V	0.0-0.5'	A6E-TTAL-PC-16^V	archive	481070.3	1348212.8
	A6E-TTAL-PC-17	0.0-0.5'	A6E-TTAL-PC-17^RMP	See Appendix D	481053.269	1348123.741
	A6E-TTAL-PC-18	0.0-0.5'	A6E-TTAL-PC-18^RMP	See Appendix D	481055.193	1348168.677
	A6E-TTAL-PC-19	0.0-0.5'	A6E-TTAL-PC-19^RMP	See Appendix D	481027.503	1348203.316
	A6E-TTAL-PC-20	0.0-0.5'	A6E-TTAL-PC-20^RMP	See Appendix D	480975.892	1348204.101
	A6E-TTAL-PC-21	0.0-0.5'	A6E-TTAL-PC-21^RMP	See Appendix D	480921.832	1348201.793

APPENDIX D

VARIANCE/FIELD CHANGE NOTICE 20600-PSP-0016-69 - SAMPLING OF CU18

VARIANCE / FIELD CHANGE NOTICE	Significant? (Yes or No): NO	V/F: 20600-PSP-0016-69
WBS NO.: PROJECT/DOCUMENT/ECDC # 20600-PSP-0016 Rev. 0		Page: 1 of 4
PROJECT TITLE: Project Specific Plan For Excavation Control And Precertification Of The Area 6 Waste Pits And General Area		Date: 02/14/06

VARIANCE / FIELD CHANGE NOTICE (Include justification):

EXCAVATION CONTROL SAMPLING

The V/FCN documents the collection of physical soil samples for the area in the southwest corner of Area 6I for precertification. This area is needed to build a pad with access to the rail line to load out TTA material. See Figure 1. Coordinate with the Construction Lead (Tim Hastings 476-3590).

The Sampling and Analytical Requirements and TALs are provided on Attachment 1 and the Sample Locations and Identifiers are provided on Attachment 2. The area specific constituents of concern (ASCOCs) for this sampling effort are the primary radionuclides (total uranium, radium-226, radium-228, thorium-228, and thorium-232 – TAL M), aroclor-1254 and aroclor-1260 (TAL T), cesium-137 (TAL F), and metals (antimony, beryllium, and cadmium – TAL B1).

Analysis will be conducted to Analytical Support Level (ASL) D or E, where all requirements for ASL E are the same as ASL D except the minimum detection level for the selected analytical method must be at least 10 percent of the FRL. A full analytical data package is to be provided and the data is to be validated to Validation Support Level (VSL) D. Any archive samples indicated on Figure 1 or Attachment 2 will not be collected at this time.

Surveying required: Yes, the surveyors will survey prior to sampling.
Field QC samples required: Yes See Attachment 1
Field data validation: Yes

Historical data for shipping of the samples to be collected is 16.2 mg/kg total uranium from boring A6-SA4-32.

Justification:
Sampling in this area is necessary so that the TTA load-out pad can be built in this area. Per Section 1.3 of the PSP, the collection of physical samples will be documented with a V/FCN.

REQUESTED BY: Debbie Brennan Date: 02/14/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske	2/29/06	X	PROJECT MANAGER: J.D. Chiou	2/16/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: F. Miller	2/16/06
X	ANALYTICAL CUSTOMER SUPPORT: Paul J. McIntyre	2/22/06		RTIMP Manager	
X	WSO: Patrick Hunter	3/2/06	X	SAMPLING MANAGER: T. Bultinge	2/22/06
VARIANCE/FCN APPROVED [X]YES [ ]NO			REVISION REQUIRED: [ ]YES [x]NO		

DISTRIBUTION

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

TAL	Method	Sample Matrix	ASL	Preservative	Hold Time	TAT	Container[a]	Minimum Mass/ Volume
Rads, Metals, and PCBs	Gamma Spec and LSC or GPC	Solid	D/E[a]	Cool to 4°C	12 months	10-days preliminary 30-days final	Glass with Teflon-lined lid	700 g (2100 g)[c]
	ICP-AES or ICP-MS				6 months	10 days		
	GC				14 days	10 days		

[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".

TAL F

Component	FRL	MDL
Cs-137	1.4 pCi/g	0.14 pCi/g

TAL M

Component	FRL	MDL
Total Uranium	82 mg/kg	8.2 mg/kg
Ra-226	1.7 pCi/g	0.17 pCi/g
Ra-228	1.8 pCi/g	0.18 pCi/g
Th-228	1.7 pCi/g	0.17 pCi/g
Th-232	1.5 pCi/g	0.15 pCi/g

TAL T

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

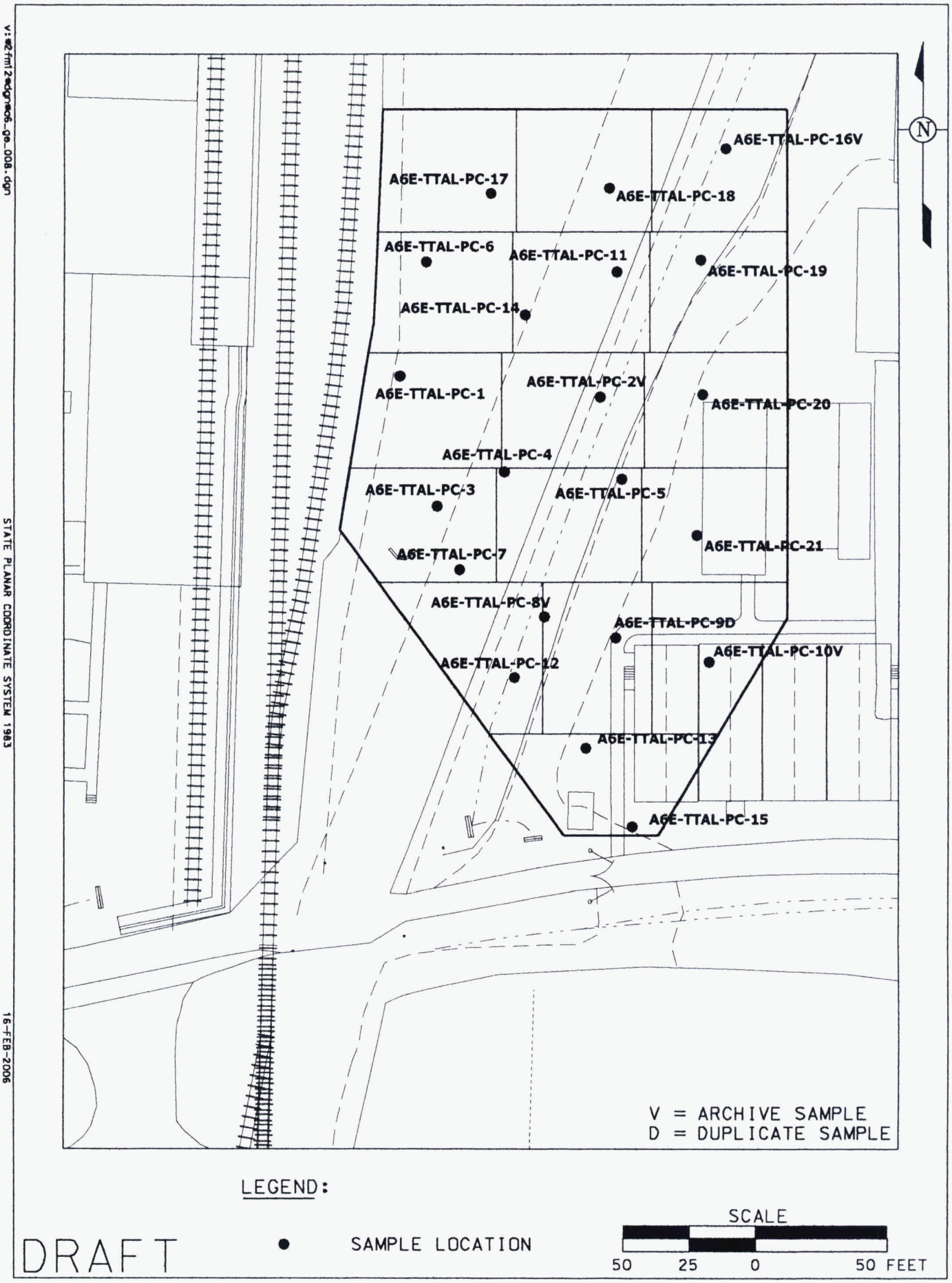
TAL B1

Component	FRL/*BTV*	MDL
Antimony	*10.0 mg/kg*	*1.0 mg/kg*
Beryllium	1.5 mg/kg	0.15 mg/kg
Cadmium	*5.0 mg/kg*	*0.5 mg/kg*

ATTACHMENT 2
V/FCN 20600-PSP-0016-69

SAMPLING TABLE

BORING	SAMPLE ID	Depth (in feet)	TALs	Northing	Easting
A6E-TTAL-PC-1	A6E-TTAL-PC-1^RMP	0.0-0.5'	F/M/T/B1	480983.12	1348089.01
A6E-TTAL-PC-2V	A6E-TTAL-PC-2^V	0.0-0.5'	Archive	480974.96	1348165.18
A6E-TTAL-PC-3	A6E-TTAL-PC-3^RMP	0.0-0.5'	F/M/T/B1	480933.05	1348103.15
A6E-TTAL-PC-4	A6E-TTAL-PC-4^RMP	0.0-0.5'	F/M/T/B1	480946.11	1348128.72
A6E-TTAL-PC-5	A6E-TTAL-PC-5^RMP	0.0-0.5'	F/M/T/B1	480943.39	1348173.34
A6E-TTAL-PC-6	A6E-TTAL-PC-6^RMP	0.0-0.5'	F/M/T/B1	481026.985	1348098.97
A6E-TTAL-PC-7	A6E-TTAL-PC-7^RMP	0.0-0.5'	F/M/T/B1	480908.72	1348111.66
A6E-TTAL-PC-8V	A6E-TTAL-PC-8^V	0.0-0.5'	Archive	480890.59	1348143.95
A6E-TTAL-PC-9D	A6E-TTAL-PC-9^RMP	0.0-0.5'	F/M/T/B1	480882.43	1348171.15
	A6E-TTAL-PC-9^RMP-D				
A6E-TTAL-PC-10V	A6E-TTAL-PC-10^V	0.0-0.5'	Archive	480873.1	1348206.6
A6E-TTAL-PC-11	A6E-TTAL-PC-11^RMP	0.0-0.5'	F/M/T/B1	481022.958	1348171.517
A6E-TTAL-PC-12	A6E-TTAL-PC-12^RMP	0.0-0.5'	F/M/T/B1	480867.2	1348132.52
A6E-TTAL-PC-13	A6E-TTAL-PC-13^RMP	0.0-0.5'	F/M/T/B1	480839.98	1348159.72
A6E-TTAL-PC-14	A6E-TTAL-PC-14^RMP	0.0-0.5'	F/M/T/B1	481006.527	1348136.654
A6E-TTAL-PC-15	A6E-TTAL-PC-15^RMP	0.0-0.5'	F/M/T/B1	480809.75	1348177.45
A6E-TTAL-PC-16V	A6E-TTAL-PC-16^V	0.0-0.5'	Archive	481070.3	1348212.8
A6E-TTAL-PC-17	A6E-TTAL-PC-17^RMP	0.0-0.5'	F/M/T/B1	481053.269	1348123.741
A6E-TTAL-PC-18	A6E-TTAL-PC-18^RMP	0.0-0.5'	F/M/T/B1	481055.193	1348168.677
A6E-TTAL-PC-19	A6E-TTAL-PC-19^RMP	0.0-0.5'	F/M/T/B1	481027.503	1348203.316
A6E-TTAL-PC-20	A6E-TTAL-PC-20^RMP	0.0-0.5'	F/M/T/B1	480975.892	1348204.101
A6E-TTAL-PC-21	A6E-TTAL-PC-21^RMP	0.0-0.5'	F/M/T/B1	480921.832	1348201.793



LEGEND:

DRAFT

● SAMPLE LOCATION

SCALE

50 25 0 50 FEET

FIGURE 1.