

**CERTIFICATION DESIGN LETTER
FOR AREA 3A AND AREA 3B**

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



JUNE 2004

U.S. DEPARTMENT OF ENERGY

**20803-PL-0001
REVISION A
DRAFT**

000001

TABLE OF CONTENTS

	<u>Page</u>
List of Acronyms and Abbreviations	iii
List of Figures	ii
List of Tables	ii
 Executive Summary	 ES-1
 1.0 Introduction	 1-1
1.1 Objectives	1-1
1.2 Scope and Area Description	1-1
 2.0 Historical and Precertification Data	 2-1
2.1 Area 3A	2-1
2.1.1 Area 3A Historical, Predesign and Excavation Control	2-1
2.1.2 Area 3A Precertification Data	2-3
2.2 Area 3B	2-3
2.2.1 Area 3B Historical, Predesign and Excavation Control	2-3
2.2.2 Area 3B Precertification Data	2-4
 3.0 Area-Specific Constituents of Concern	 3-1
3.1 Selection Criteria	3-1
3.1.1 Area 3A ASCOC Selection	3-2
3.1.2 Area 3B ASCOC Selection	3-2
 4.0 Certification Approach	 4-1
4.1 Certification Design	4-1
4.1.1 Area 3A Certification Unit Design	4-1
4.2 Analytical Methodology and Statistical Analysis	4-2
 5.0 Schedule	 5-1
 References	 R-1

APPENDICES

Appendix A	Precertification Real-Time Scan Data for Area 3A
Appendix B	Precertification Real-Time Scan Data for Area 3B

000002

LIST OF TABLES

Table 3-1	Area 3 Secondary ASCOC List
Table 3-2	ASCOC List for Area 3A
Table 3-3	ASCOC List for Area 3B
Table A-1	Area 3A Phase I – HPGe Results Detector Height 100 cm
Table A-2	Area 3A Phase 2 – HPGe Results Detector Height 31 cm
Table B-1	Area 3B Phase I – HPGe Results Detector Height 100 cm
Table B-2	Area 3B Phase 2 – HPGe Results Detector Height 31 cm

LIST OF FIGURES

Figure 1-1	Area 3A and Area 3B Location Map
Figure 1-2	Area 3A and Area 3B Certification Area Boundaries
Figure 1-3	Area 3A Historical Surface Features
Figure 1-4	Area 3A Topography
Figure 1-5	Area 3B Historical Surface Features
Figure 1-6	Area 3B Topography
Figure 2-1	Area 3A Final Grade Contours
Figure 2-2	Area 3B Final Grade Contours
Figure 4-1	Area 3A CU Boundary Map
Figure 4-2	Area 3A North Sub-CU Boundary and Certification Sampling Locations
Figure 4-3	Area 3A South Sub-CU Boundary and Certification Sampling Locations
Figure 4-4	Area 3A UST #3 Sub-CU Boundary and Certification Sampling Locations
Figure 4-5	Area 3A Discovered UST Sub-CU Boundary and Certification Sampling Locations
Figure 4-6	Area 3B CU Boundary Map
Figure 4-7	Area 3B Sub-CU Boundary and Certification Sampling Locations
Figure 4-8	Area 3B Additional HWMU Closure Samples Outside Certification Area Boundary
Figure A-1	Area 3A Phase 1 Total Gross Counts per Second
Figure A-2	Area 3A Phase 1 Moisture Corrected Radium-226
Figure A-3	Area 3A Phase 1 Moisture Corrected Thorium-232
Figure A-4	Area 3A Phase 1 Moisture Corrected Total Uranium
Figure A-5	Area 3A Phase 2 Moisture Corrected Radium-226
Figure A-6	Area 3A Phase 2 Moisture Corrected Thorium-232
Figure A-7	Area 3A Phase 2 Moisture Corrected Total Uranium
Figure A-8	Initial Hot Spot Delineation
Figure A-9	Post-Excavation Hot Spot Delineation (1)
Figure A-10	Post-Excavation Hot Spot Delineation (2)
Figure A-11	Post-Excavation Confirmation of Hot Spot Removal
Figure B-1	Area 3B Phase 1 Total Gross Counts per Second
Figure B-2	Area 3B Phase 1 Moisture Corrected Radium-226
Figure B-3	Area 3B Phase 1 Moisture Corrected Thorium-232
Figure B-4	Area 3B Phase 1 Moisture Corrected Total Uranium
Figure B-5	Area 3B Phase 2 Moisture Corrected Radium-226
Figure B-6	Area 3B Phase 2 Moisture Corrected Thorium-232
Figure B-7	Area 3B Phase 2 Moisture Corrected Total Uranium

000003

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
EPA	U.S. Environmental Protection Agency
FPA	Former Production Area
FCP	Fernald Closure Project
FRL	final remediation level
GMA	Great Miami Aquifer
HPGe	high-purity germanium (detector)
HWMU	hazardous waste management unit
MDC	Main Drainage Corridors
MDL	minimum detection level
mg/kg	milligrams per kilogram
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
OU3	Operable Unit 3
OU5	Operable Unit 5
pCi/g	picoCuries per gram
PAH	polyaromatic hydrocarbon
PCB	polychlorinated biphenyl
PSP	Project Specific Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
UCL	Upper Confidence Limit
UST	underground storage tank
WAC	waste acceptance criteria

EXECUTIVE SUMMARY

This Certification Design Letter (CDL) describes the certification approach for Area 3A and Area 3B. The following information is included:

- The boundary of Area 3A and Area 3B (Figure 1-1) and a description of the areas to be certified under the guidance of this CDL;
- A discussion of historical data from the area proposed for certification;
- A discussion of the area-specific constituent of concern (ASCOC) selection process and list of ASCOCs assigned to Area 3A and Area 3B;
- A presentation of the certification unit (CU) boundaries and proposed sampling strategy;
- The analytical requirements and the statistical methodology that will be employed; and
- The proposed schedule for the certification activities.

The scope of this CDL is limited to the certification of Area 3A and Area 3B, as shown on Figure 1-1. Remediation was complete in Area 3A in 2004 and complete in Area 3B in 2004, thus initiating the certification process described in this CDL. Field sampling in Area 3A and Area 3B is scheduled to begin immediately following approval of the Area 3A and Area 3B CDL and Project Specific Plan (PSP) for Certification for Areas 3A and 3B.

The certification design presented in this CDL follows the general approach outlined in Section 3.4 of the Sitewide Excavation Plan (SEP, DOE 1998a). The selection of Area 3A and Area 3B ASCOCs was accomplished using constituent of concern (COC) lists in the Operable Unit 5 Record of Decision (DOE 1996), previous investigation data, and process knowledge. 35 CUs have been defined for this CDL. Total uranium, thorium-228, thorium-232, radium-226, and radium-228 (the sitewide primary radiological constituents of concern (COCs)) are considered ASCOCs in each CUs. Secondary COCs are identified for specific CUs within the certification area, including those for closure of the USTs, and HWMU-20. Ecological COCs will also be analyzed.

000005

1.0 INTRODUCTION

This Certification Design Letter (CDL) describes the certification approach for demonstrating that soil in both Area 3A and Area 3B meets the final remediation levels (FRLs) for all area-specific constituents of concern (ASCOCs). The format of this CDL follows guidelines presented in the Sitewide Excavation Plan (SEP, DOE 1998a). Accordingly, this CDL consists of six sections:

- 1.0 Introduction - Presentation of the purpose, objectives, and scope of this CDL
 - 2.0 Historical and Precertification Data - Discussion of historical soil data and presentation of precertification data from Area 3A and 3B
 - 3.0 Area-Specific Constituents of Concern - Discussion of selection criteria and ASCOCs for Area 3A and 3B
 - 4.0 Certification Approach - Presentation of design, sampling and analytical methodologies for Area 3A and 3B
 - 5.0 Schedule
- References

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;
- Present maps for newly acquired real-time data;
- Define the ASCOC selection process and list the selected Area 3A and Area 3B ASCOCs;
- Present the certification unit (CU) boundaries and proposed certification sampling strategy;
- Summarize the analytical requirements and the statistical methodology that will be employed; and
- Present the proposed schedule for the certification activities.

1.2 SCOPE AND AREA DESCRIPTION

The scope of this CDL includes details of certification sampling, analysis and validation that will take place in Areas 3A and 3B. The certification areas for 3A and 3B have been reduced for the scope of this CDL due to the location of the Main Drainage Corridor (MDC) and the field location of the run-on/run-off controls, which were based on the current area topography. Figure 1-1 depicts the original layout of Areas 3A and 3B. Figure 1-2 depicts the areas in 3A and 3B that are to be certified under this CDL.

000006

Area 3A

Area 3A is located in the northeast quadrant of the Former Production Area (FPA) and is bound by the Impacted Material Haul Road to the north, 'E' Street to the east, 2nd Street to the south, and 'B' Street to the west, as shown on Figure 1-1. Predominant structures formerly located in Area 3A included: the Maintenance Building (12), the Boiler Plant (10A), Plant 9, and Building 64/65. Area 3A also includes the footprint of the former Incinerator Pad (10D), two underground storage tanks (USTs), UST 3 and a discovered UST in the former Plant 9, and two high-leachability zones where the uranium FRL is lower at 20 milligram per kilogram (mg/kg) (Figure 1-3). The entire Area 3A was approximately 24 acres. However, for the reasons stated above, only approximately 16 acres will be included in the scope of this CDL (Figure 1-2). The 3A area perimeter to the north, to the east, and to the west outside of the run-on control ditches, and UST 6 will be included in the scope of the MDC CDL or another adjacent area. Figure 1-4 depicts the topography of Area 3A to be certified.

Area 3B

Originally, area 3B was approximately 23 acres; however, only 11 acres will be certified at this time due to some of the area being consumed for run-on control ditches and the Main Drainage Corridor. The area lies in the northwest quadrant of the FPA. The area is bound by the Impacted Material Haul Road to the North, 'B' Street to the east, 2nd Street to the south, and the FPA fence line to the west. Facilities previously located in Area 3B excavation area included the Preparation Plant (1A), Plant 1 Storage Building (1B), Drum Reconditioning Building, Plant 1 Ore Silos (1C), NFS Storage and Pump House (2E), Conveyor Tunnel (2H), Chemical Warehouse (30A), Drum Storage Warehouse (30B), CP Storage Warehouse (56A), General In Process Warehouse (71), and Plant 1 Storage Pad (74T). Plant 1 Storage Pad also encompasses Hazardous Waste Management Unit (HWMU) 20. Figure 1-5 shows outlines of former buildings/structures within Area 3B and Figure 1-6 depicts the topography of Area 3B to be certified.

Within Area 3B there is one defined high-leachability zone in the northeast where the uranium FRL is lower (20 mg/kg) (Figure 1-5). While a majority of Area 3B is included in this CDL, a portion of the area is not scheduled for certification at this time due to the location of the run-on control ditch, and is therefore not included in the scope of this CDL. Notably, HWMU 20 will be targeted for closure under the scope of this CDL.

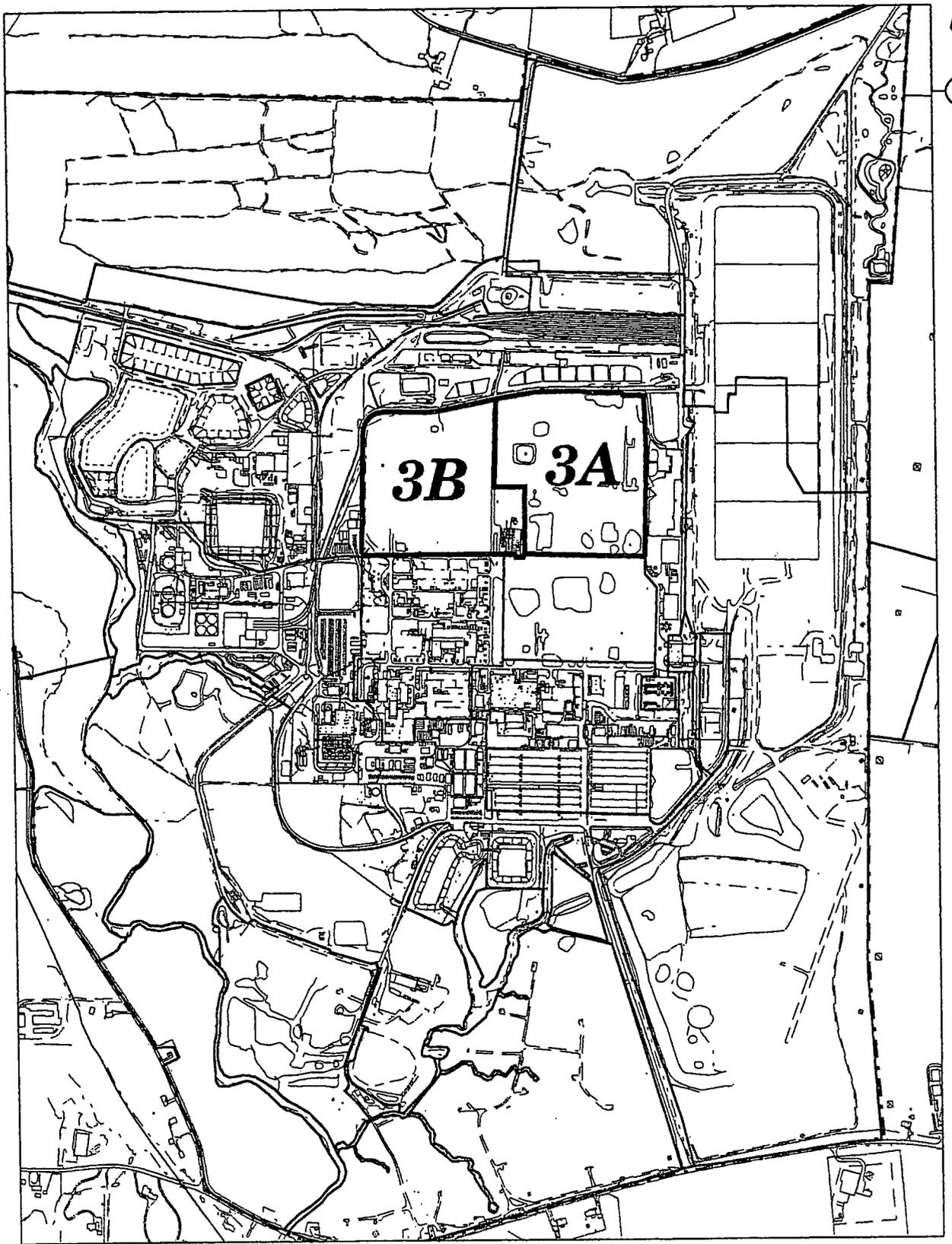
1 The final certification boundaries, with the exception of the southwest corner of the area, were bound on
2 the west, north, and east sides by the designed run-on and runoff control drainage ditches. These ditches
3 now include storm water collection capacity, which had been previously planned to be within Area 4B.
4 Because Area 4B is not fully excavated as planned, the storm water management area had to be relocated
5 to the southwest portion of Area 3B. The southwest corner of the original area was established to contain
6 any water draining from the ditches for the entire Area 3B. Therefore, this area along with the rest of the
7 run-on control ditches will not be included in the scope of this CDL. Originally, any runoff water was
8 going to be contained within Area 4B; however, 2nd Street could not be removed since it is still necessary
9 for hauling soil to the cell. The 3B area perimeter to the north, south, east, and west outside of the run-on
10 control ditches will be included in the scope of the MDC CDL or another adjacent area.

000008

v:\wz\fm\zwdg\wz\cb\300.dgn

STATE PLANNING COORDINATE SYSTEM 1983

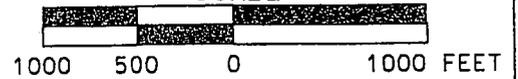
24-JUN-2004



LEGEND:

----- FCP BOUNDARY

SCALE



DRAFT

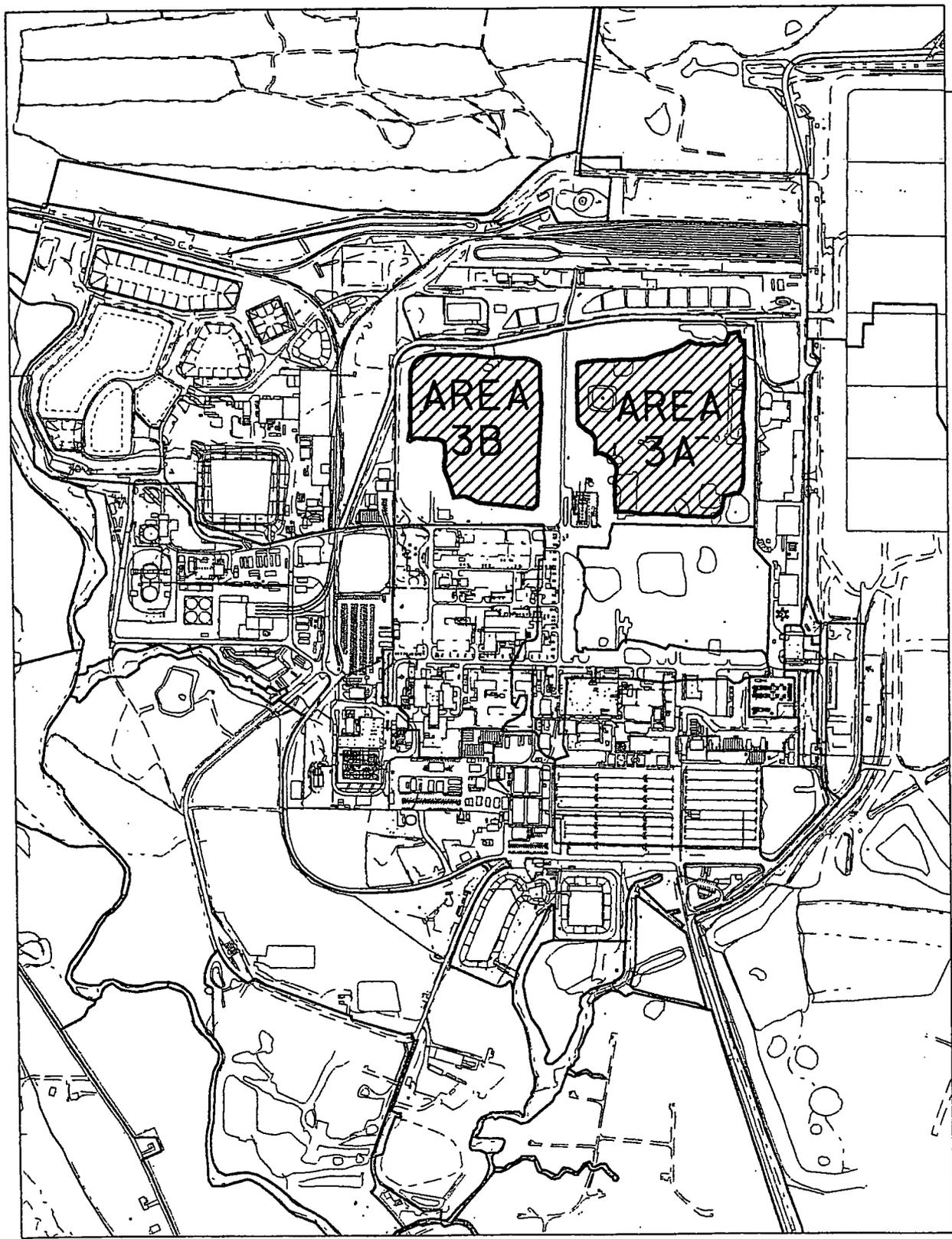
FIGURE 1-1. AREA 3A AND AREA 3B LOCATION MAP

000009

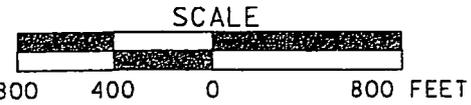
v:\257\m\244\p\03b_303.dgn

STATE PLANAR COORDINATE SYSTEM 1983

24-JUN-2004



LEGEND:



DRAFT

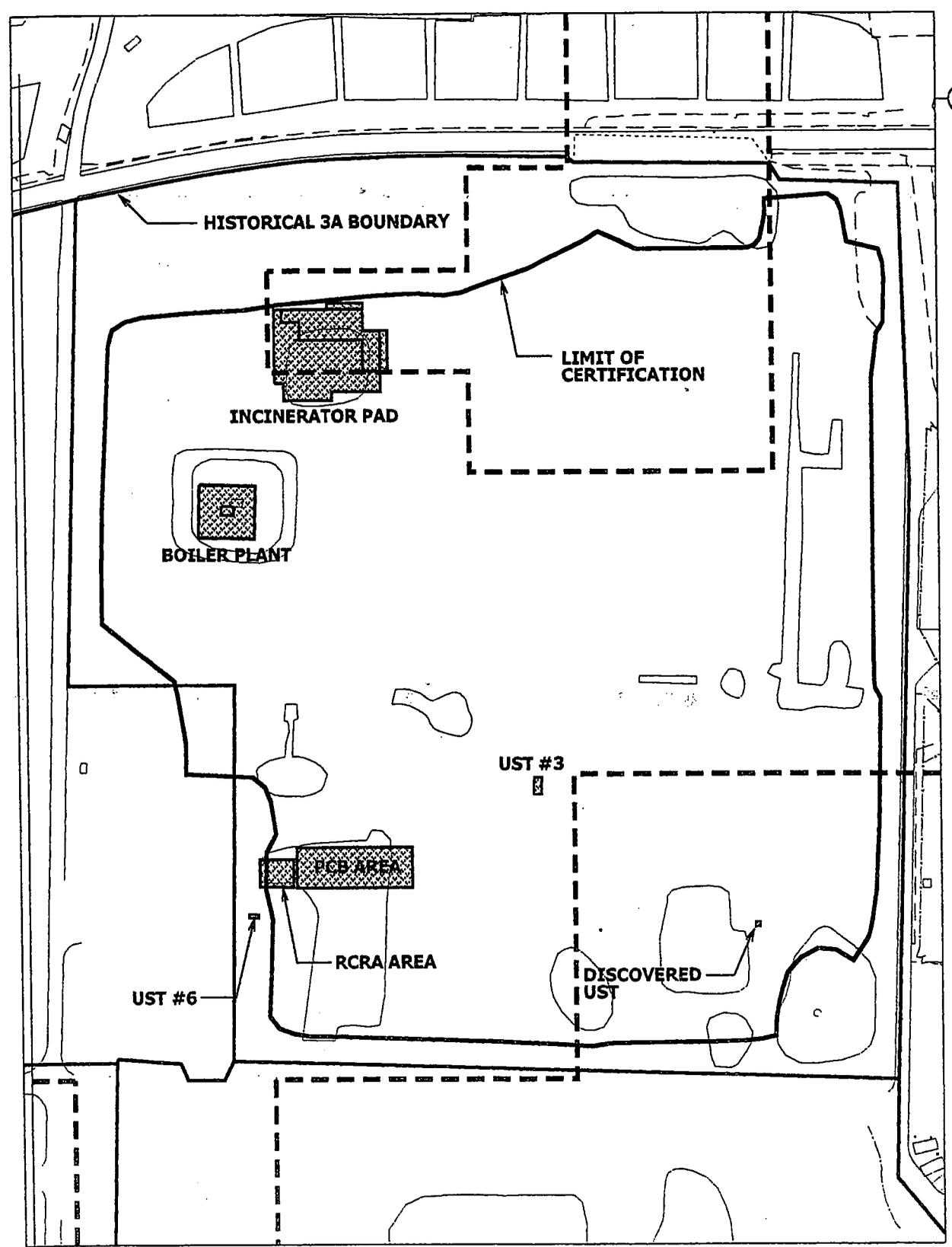
FIGURE 1-2. AREA 3A AND AREA 3B CERTIFICATION AREA BOUNDARIES

000010

v:\2\fm12\edg\301.dgn

STATE PLANNING COORDINATE SYSTEM 1983

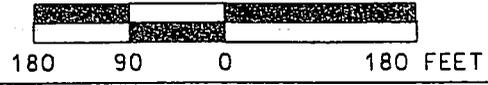
28-JUN-2004



LEGEND:

--- HIGH LEACHATE ZONE

SCALE



DRAFT

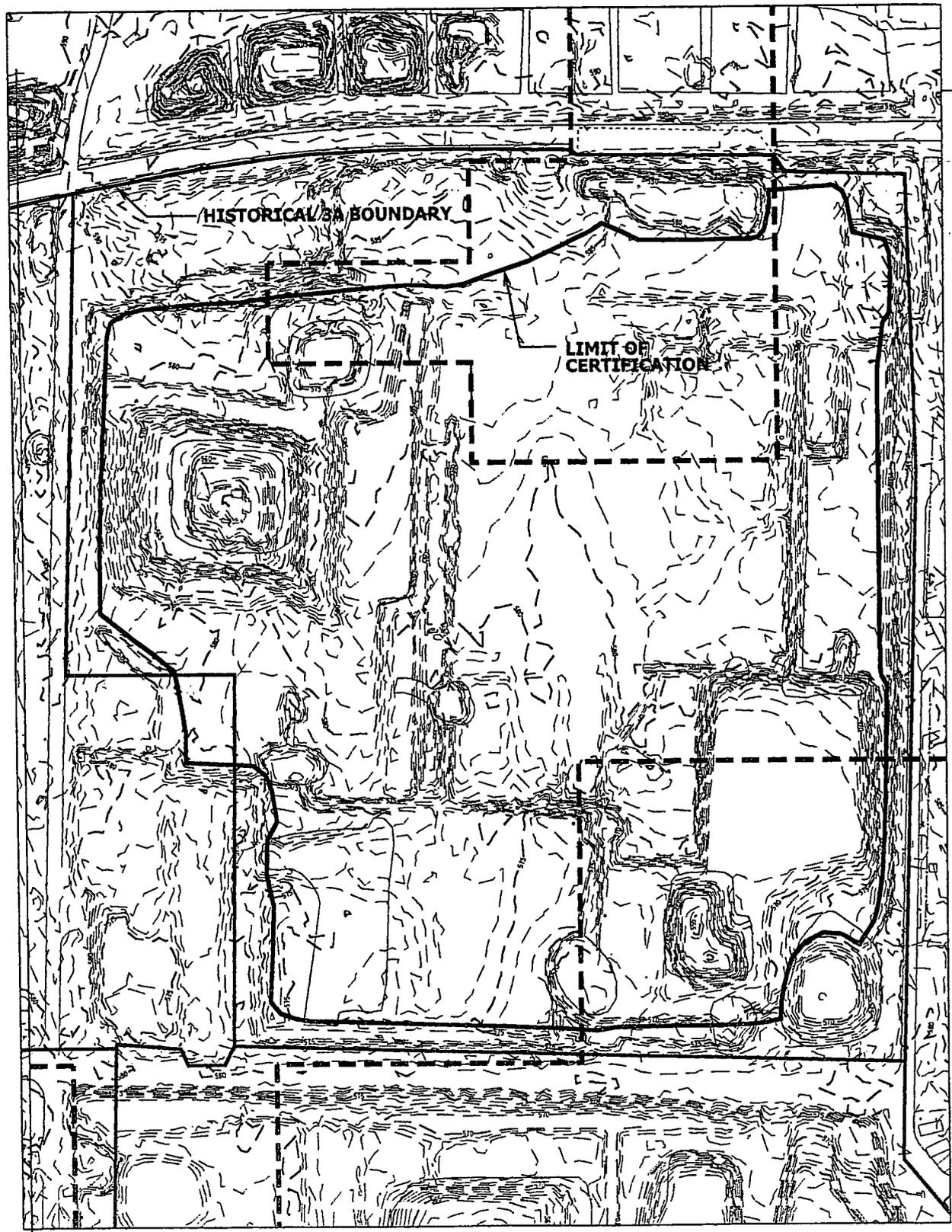
FIGURE 1-3. AREA 3A HISTORICAL SURFACE FEATURES

000011

VI:82:fm1 2 mcdgrnd 0_302.dgn

STATE PLANNING COORDINATE SYSTEM 1983

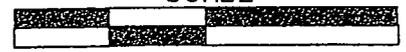
25-JUN-2004



LEGEND:

--- HIGH LEACHATE ZONE

SCALE



DRAFT

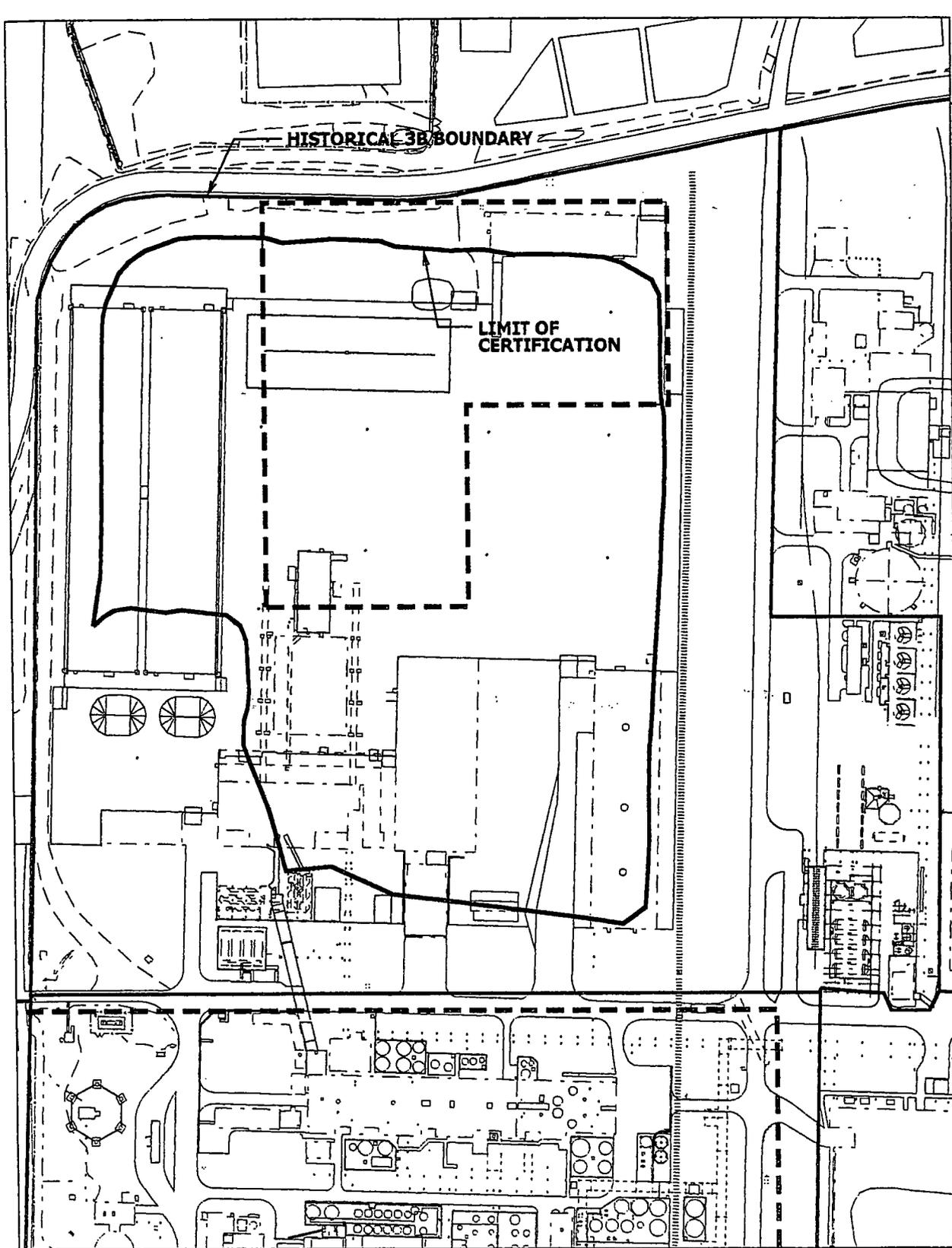
FIGURE 1-4. AREA 3A TOPOGRAPHY

000012

v:\2004\12\24\04\12\24\04.dwg

STATE PLANNING COORDINATE SYSTEM 1983

24-JUN-2004

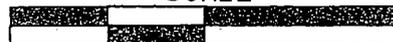


N

LEGEND:

--- HIGH LEACHATE ZONE

SCALE



180 90 0 180 FEET

DRAFT

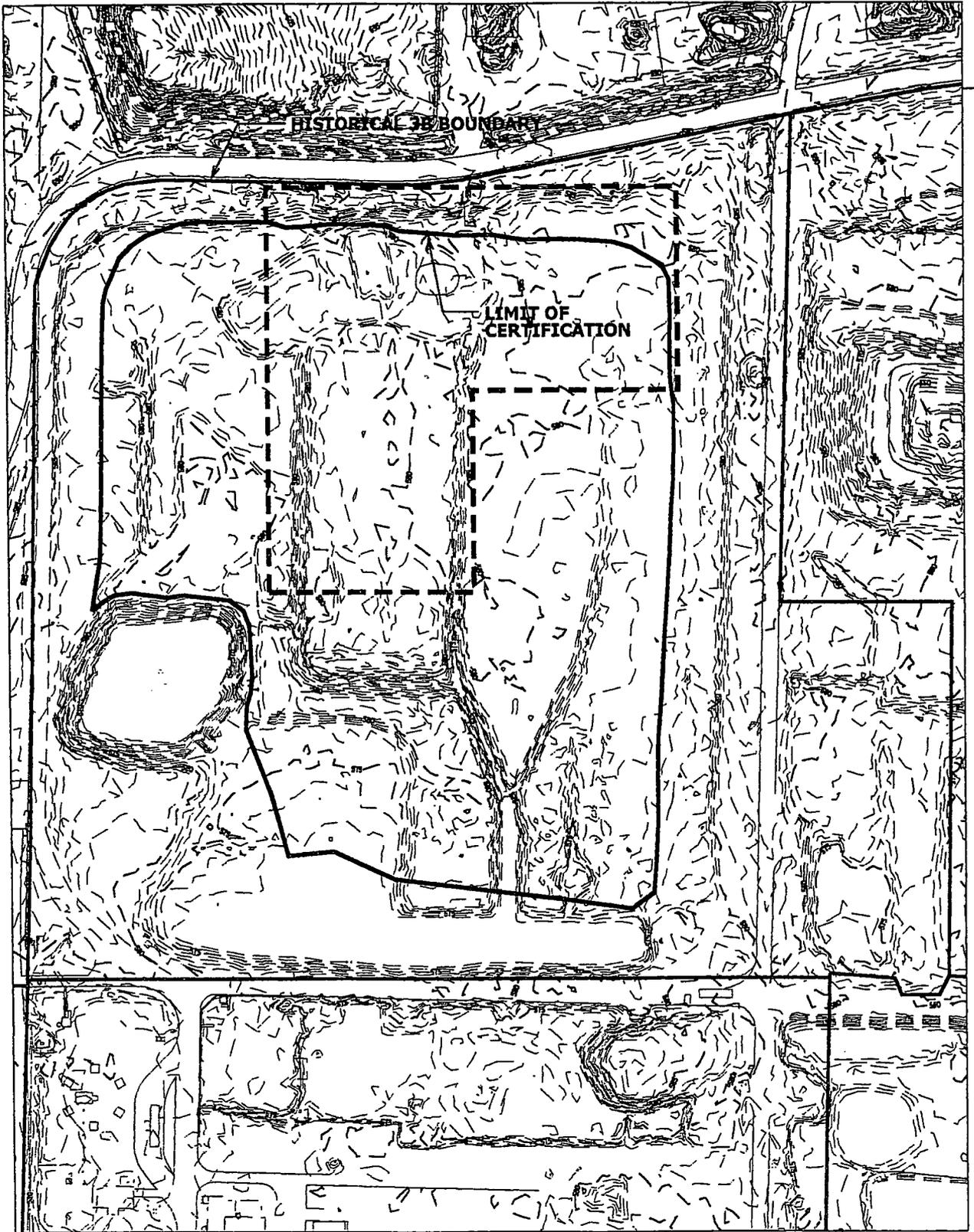
FIGURE 1-5. AREA 3B HISTORICAL SURFACE FEATURES

000013

V:\22\fm12\edgn\kb_305.dgn

STATE PLANNING COORDINATE SYSTEM 1983

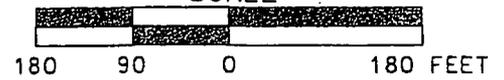
25-JUN-2004



LEGEND:

--- HIGH LEACHATE ZONE

SCALE



DRAFT

FIGURE 1-6. AREA 3B TOPOGRAPHY

000014

2.0 HISTORICAL AND PRECERTIFICATION DATA

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

In addition to the Predesign Investigations, the Remedial Investigation Reports (RI, DOE 1995a and 1995b), and Feasibility Study Reports (FS, DOE 1995c and 1995d) for Operable Units (OU) 3 and 5 were used for remedial design of Area 3A and Area 3B. 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 3A and Area 3B certification areas were pulled from the Sitewide Environmental Database (SED). The data for Area 3A is summarized in section 2.1 and Area 3B is summarized in section 2.2.

Based on the results of sampling and scanning activities summarized in sections 2.1 and 2.2, it has been determined that no further remedial actions are necessary to remove above-FRL or above-waste acceptance criteria (WAC) soil.

2.1 AREA 3A

2.1.1 Area 3A Historical, Predesign and Excavation Control

All historical data for Area 3A is presented in the Implementation Plan for 3A/4A (DOE 2001). This includes data during the RI/FS and during five separate predesign investigations; PSP for The Area 3 Predesign Investigation of Plant 9 (DOE 1998b), PSP for Predesign Investigation Sampling in the Northeast Corner of Area 3 (DOE 1997), PSP for The Area 3 Predesign Investigation of Potentially Characteristic Areas (DOE 1998c), PSP for Area 3A/4A Surface Predesign Investigation (DOE 1999a), and PSP for Area 3A/4A Subsurface Predesign Investigation (DOE 1999b). Data were also collected during the remediation/excavation activities for excavation control and following the remediation/excavation activities for precertification per the PSP for Area 3A/4A Excavation Characterization and Precertification (DOE 2002a). Additional information on the latter will be discussed in the following paragraphs.

000015

1 Below is a brief discussion of the remediation/excavation activities in Area 3A that follow this order:
2 above-WAC Areas, Resource Conservation and Recovery Act (RCRA) Areas, USTs, excavation areas not
3 driven by contamination, and breaching the sand lens of the Great Miami Aquifer (GMA),
4

5 The designed above-WAC Areas in Area 3A were in the Incinerator Pad and Plant 9. Both areas were
6 above-WAC for total uranium and technetium-99. All of the above-WAC material was removed during
7 the remediation/excavation activities in Area 3A. During remediation/excavation activities in Area 3A the
8 above-WAC area in Plant 9 was expanded laterally and vertically due to the presence of visible product
9 material. Additional excavation was performed until all of the product material was removed. Once all of
10 the above-WAC material was removed from these areas, the excavation proceeded to remove the
11 remaining above-FRL material.
12

13 The one RCRA Area in Area 3A was located north of the Maintenance Building and had hazardous levels
14 of trichloroethene. This is discussed in detail in the Implementation Plan for Area 3A/4A. The area was
15 remediated/excavated in the winter of 2001 and 2002.
16

17 The footprints of two USTs in Area 3A will be closed under the scope of this CDL, UST #3 and a
18 discovered UST in the Plant 9 area. UST #3 was located 25 feet northeast of the Railroad Engine
19 House (24B). Additional information about the UST #3 can be found in Section 2 of the SEP and
20 Section 4 of this CDL. The UST in Plant 9 was discovered in November 2002 and is an area that is
21 approximately 10-feet. It was filled with mortar, but there was an odor emitted and black sludge like
22 material was found around the area of the UST. Sampling was performed around the area under the PSP
23 for Area 3A/4A Excavation Characterization and Precertification and it was determined that the UST and
24 the 10' by 10' area surrounding the UST did not contain above-FRL radiological or organic material.
25 Additional information about the constituents of concern (COCs) for the closure of the discovered UST is
26 discussed in Section 3.
27

28 Excavation activities in the Boiler Plant were driven by the removal of structural features not
29 contamination, however excavations came within 5 feet of the sands and gravels of the GMA. Excavation
30 in Plant 9 also came within 5 feet of the sands and gravels of the GMA. Prior to backfilling the area
31 sampling was performed per PSP for Area 3A/4A Excavation Characterization and Precertification.

32 Further discussion on sampling of these areas is located in Section 4 of this CDL.
33

1 The final above-WAC soil volume removed from Area 3A was 19,701 (bank) yd³. The final above-FRL
2 soil volume removed from Area 3A was 251,195 (bank) yd³. Figure 2-1 shows a color gradient map of
3 Area 3A that compares the final excavation grade to that of the design grade. Shades of blue represent the
4 areas where the design grade has been met or exceeded. Shades of red represent areas where additional
5 excavation is necessary. This figure demonstrates that all planned soil excavation has been performed.

6 7 2.1.2 Area 3A Precertification Data

8 According to guidelines established in Section 3.3.3 of the SEP, precertification activities were conducted
9 to evaluate residual radiological contamination patterns as specified in the Area 3A/4A Excavation
10 Characterization and Precertification PSP. Prior to conducting a precertification real-time scan, Area 3A
11 was scanned with a magnetometer to determine if residual debris remained following excavation activities.
12 Minor occurrences of metallic objects were located and were either excavated or hand picked from the
13 area.

14
15 During Phase I of Precertification Activities a hotspot for total uranium was detected greater than 3 times
16 the FRL (20 mg/kg) in the southeast portion of Area 3A. (Figure A-4). This hotspot was delineated
17 (Figure A-8) and the area was excavated. Following this excavation, Phase III Precertification Activities
18 were performed to confirm that the excavation removed the contamination, but there were locations that
19 still exceeded greater than 3 times the FRL. Again, this area was delineated (Figure A-9) and excavated.
20 Following the second excavation, Phase III Precertification Activities were performed again and there were
21 locations that still exceeded greater than 3 times the FRL. This area was delineated (Figure A-10) and
22 excavated for a third time. Following the third excavation, Phase III Precertification Activities were
23 performed and the area passed the precertification requirements. (Figure A-11)

24
25 With the successful removal of the hot spot, all areas in 3A passed the requirements of precertification.
26 The results of the precertification scans are presented on data maps in Appendix A.

27 28 2.2 AREA 3B

29 2.2.1 Area 3B Historical, Predesign and Excavation Control

30 Extensive historical data have been collected within Area 3B. This includes data collected during
31 RI/FS and during predesign sampling per Project Specific Plan for Delineating Known Exceedances of the
32 On-Site Disposal Facility Waste Acceptance Criteria in Areas 3B/4B/5 (DOE 2002b). Data were also
33 collected during excavation control sampling of the area per Project Specific Plan For Area 3A/4A

000017

1 Excavation Characterization And Precertification, and Project Specific Plan For Excavation Control Of
2 Areas 3B, 4B, And 5 (DOE 2004a).

3
4 The following above-WAC Areas were defined in the Implementation Plan for Area 3B/4B/5
5 (DOE 2004b) and removed during excavation of Area 3B: Plant 1 Pad – Northwest (part of HWMU 20),
6 Plant 1 Pad - North Central, Plant 1 Pad - TS 4 (part of HWMU 20), and Plant 1 Pad – Southwest (part of
7 HWMU 20). During remediation/excavation activities in Area 3B, additional excavation control sampling
8 was performed to ensure that all visible product material was removed. These activities have been
9 documented with Variance/Field Change Notices (V/FCNs) to the PSP for Area 3A/4A Excavation
10 Characterization and Precertification as well as Project Specific Plan For Excavation Control Of Areas 3B,
11 4B, And 5.

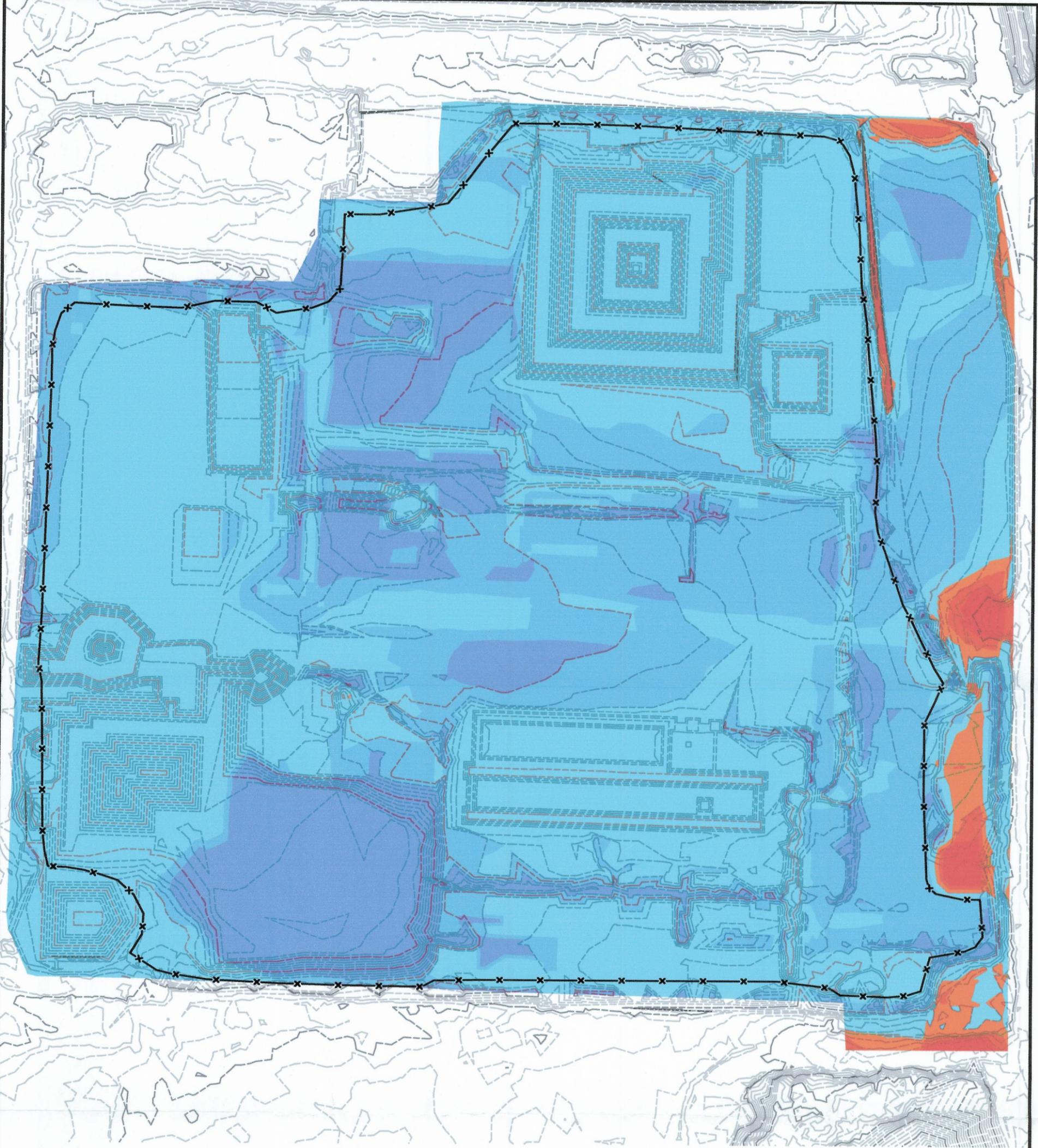
12
13 The former Plant 1 Storage Pad was defined as a HWMU (HWMU 20) because it was an active outdoor
14 and indoor container storage area.

15
16 Excavation of Area 3B began in July 2003 with the removal of railroad tracks along the eastern side of the
17 area. The majority of the excavation took place within Plant 1 Pad footprint area. Excavation continued
18 into Building 71 footprint, Chemical Warehouse, Plant 1 Storage Building, and Plant 1 Ore Silos. Once
19 the major structures were removed and the above-WAC areas cleared, excavation continued to the depth of
20 the modeled uranium contamination grade.

21
22 The final above-WAC soil volume removed from Area 3B was 2,531 (bank) yd³. The final above-FRL
23 soil volume removed from Area 3B was 193,584 (bank) yd³. Figure 2-2 shows a color gradient map of
24 Area 3B that compares the final excavation grade to that of the design grade. Shades of blue represent the
25 areas where the design grade has been met or exceeded. Shades of red represent areas where additional
26 excavation is necessary. This figure demonstrates that all planned soil excavation has been performed.

27 28 2.2.2 Area 3B Precertification Data

29 According to guidelines established in Section 3.3.3 of the SEP, precertification activities were conducted
30 to evaluate residual radiological contamination patterns. Prior to conducting a precertification real-time
31 scan, Area 3B was scanned with a magnetometer to determine if residual debris remained following
32 excavation activities. Minor occurrences of metallic objects were located and either excavated or hand
33 picked from the area. Precertification results are provided in Appendix B.



Over/Under Cut Legend

Color	Layer
Dark Blue	>4 FT BELOW
Light Blue	2-4 FT BELOW
White	0-2 FT BELOW
Light Blue	1-3 FT ABOVE
Dark Blue	3-5 FT ABOVE
Red	>5 FT ABOVE

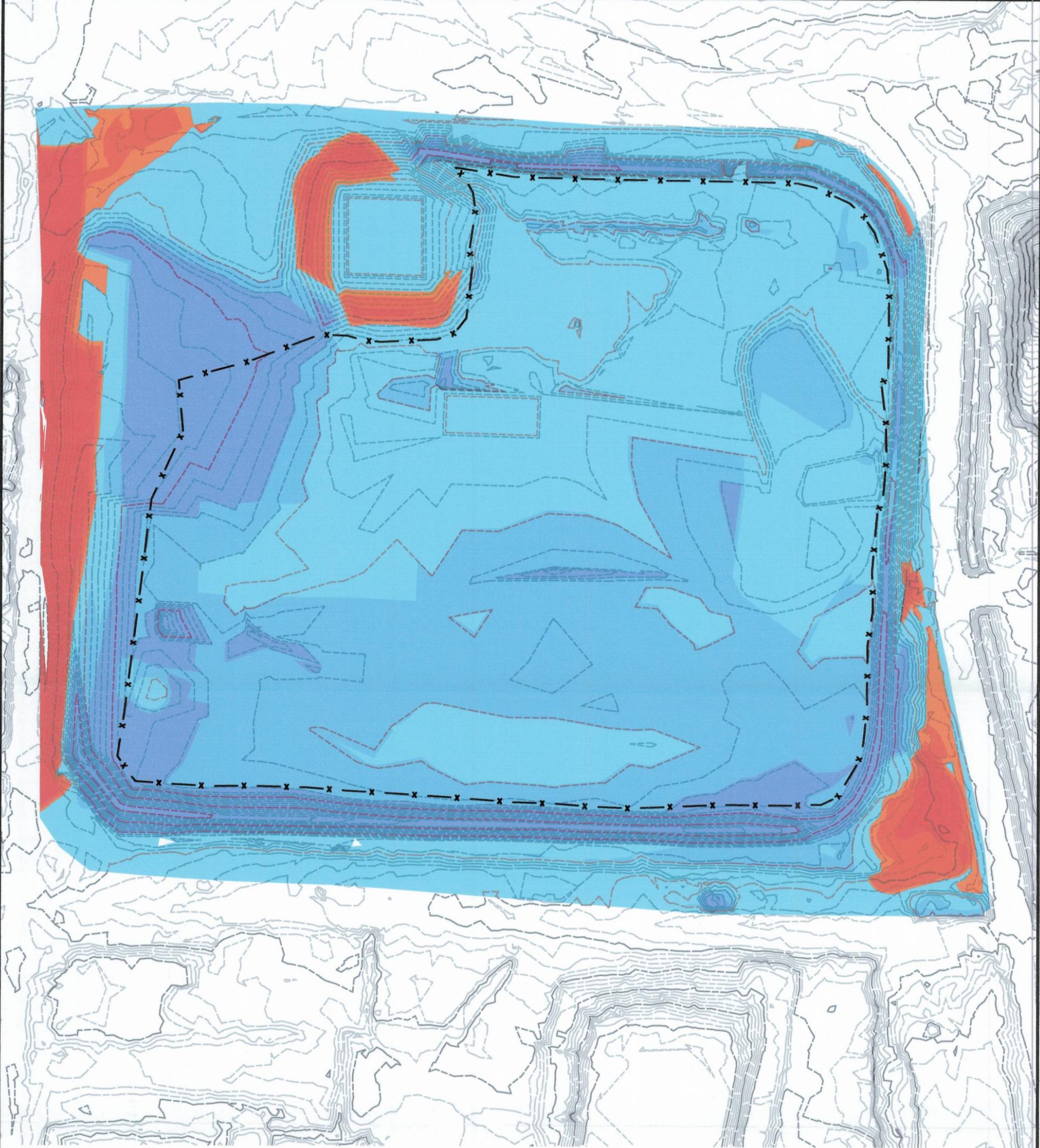


5536

000019

Figure 2-1 Area 3A Final Grade Contours

<p>Date: 6-25-2004 Scale: NTS Project No.</p>	<p>Designed By: Drawn By: M.C.K. Checked By: Approved By:</p>	<p>REVISIONS:</p> <table border="1" style="width: 100%; height: 40px;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>							<p>FLUOR FERNALD, INC. FERNALD ENVIRONMENTAL MANAGEMENT PROJECT EXCAVATION 3A</p>	<p>TECUMSEH SURVEYING, INC. 4948 CINCINNATI-BROOKVILLE ROAD SHANDON, OHIO 45013 TELEPHONE: 513 738-2134 FAX: 513 738-2756</p>



5536

Over/Under Cut Legend

Color	Layer
Light Blue	>4 FT BELOW
Medium Blue	2-4 FT BELOW
Dark Blue	0-2 FT BELOW
Light Green	1-3 FT ABOVE
Yellow	3-5 FT ABOVE
Red	>5 FT ABOVE



000020

Figure 2-2 Area 3B Final Grade Contours

3B TOPOGRAPHIC SURFACE LIDAR 05-06-2004 AWAC 1 OF 1	Date: 06-15-2004 Scale: 1" = 50' Project No.	Designed By: Drawn By: M.C.K. Checked By: Approved By:	REVISIONS: _____ _____ _____	FLUOR FERNALD, INC. FERNALD ENVIRONMENTAL MANAGEMENT PROJECT EXCAVATION 3B	TECUMSEH SURVEYING, INC. 4948 CINCINNATI-BROOKVILLE ROAD SHANDON, OHIO 45013 TELEPHONE: 513 738-2134 FAX: 513 738-2756
--	--	---	---------------------------------------	---	---

3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN

In the OU5 ROD, 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

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

- It is listed as a soil COC in the OU5 ROD, and it is listed as an ASCOC in Table 2-7 of the SEP for the Remediation Area of interest;
- It is listed as a COC for a HWMU or UST that lies within the certification area boundary;
- It can be traced to site use in the remediation area of interest, either through process knowledge or known release of the constituent to the environment;
- Analytical results indicate that a contaminant is present above its FRL, and the above-FRL concentrations are not attributable to false positives or elevated CRDLs;
- Physical characteristics of the contaminant, such as degradation rate and volatility, indicate it is likely to persist in the soil between time of release and remediation; or
- The contaminant is one of the sitewide primary COCs (total uranium, radium-226, radium-228, thorium-238, and thorium-232).

000021

1 Table 2-7 of the SEP also identifies several additional COCs as ecological COCs based on a screening
2 process presented in Appendix C of the SEP. For Areas 3A and 3B, the ecological COCs include four metals
3 (antimony, cadmium, molybdenum, and silver) plus polycyclic aromatic hydrocarbons (PAHs). As discussed in
4 Section C.4.1.4.2 of the SEP, the metals and PAHs are listed for Area 3 specifically due to their presence in
5 the Former Production Area. While cadmium, molybdenum, and silver were identified in both Areas 3A and
6 3B, antimony was only identified in Area 3B. PAHs were only identified in Area 3A, specifically north of the
7 Maintenance Building. Cadmium, molybdenum, and silver will be carried into certification sampling and
8 analysis for all Area 3A and 3B CUs while antimony will be limited to the Area 3B CUs. The PAHs will be
9 limited to CUs 1, 12, 13, 15, and 16 in Area 3A based on Figure C-8 from Appendix C of the SEP. While
10 these ecological COCs are being added to certification sampling and analysis, certification is not necessarily
11 contingent on benchmark toxicity value (BTV) data.

12
13 Using the above process, the ASCOCs were refined to those listed in Table 2-7 of the SEP. The list of
14 ASCOCs is also presented in Table 3-1 with their respective FRLs and, if applicable, BTVs.

15 16 3.1.1 Area 3A ASCOC Selection

17 Each COC on the Remediation Area 3 ASCOC list (Table 3-1) was evaluated for its relevance to Area 3A.
18 Table 3-2 presents the reasoning for either retaining or eliminating the ASCOC. In addition to the assigned
19 COCs for Remediation Area 3, another COC with above-WAC concentrations includes 1,2-dichloroethene
20 which will be retained for certification.

21 22 3.1.2 Area 3B ASCOC Selection

23 Each COC on the Remediation Area 3 ASCOC list (Table 3-1) was evaluated for its relevance to Area 3B.
24 Table 3-3 presents the reasoning for either retaining or eliminating the ASCOC.

TABLE 3-1
AREA 3 ASCOC LIST^a

ASCOC	FRL/(BTV) ^b
Radionuclides	
Total Uranium	82 mg/kg
Total Uranium ^c	20 mg/kg
Radium-226	1.7 pCi/g
Radium-228	1.8 pCi/g
Thorium-228	1.7 pCi/g
Thorium-232	1.5 pCi/g
Technetium-99	30.0 pCi/g
Thorium-230	280 pCi/g
Cesium-137	1.4 pCi/g
Chemical	
Aroclor-1254	0.13 mg/kg
Aroclor-1260	013 mg/kg
Benzo(a)anthracene ^d	20.0 mg/kg (1.0 mg/kg)
Benzo(a)pyrene ^d	20. mg/kg (1.0 mg/kg)
Benzo(b)fluoranthene ^d	20.0 mg/kg (1.0 mg/kg)
Bromodichloromehtane	4.0 mg/kg
Dibenzo(a,h)anthracene ^d	2.0 mg/kg (0.088 mg/kg)
1-1-Dichloroethene	0.41 mg/kg
Dieldrin	0.015 mg/kg
Fluoride	78,000 mg/kg
Indeno(1,2,3-cd)pyrene ^d	20 mg/kg (1.0 mg/kg)
Tetrachloroethene	3.6 mg/kg
Trichloroethene	25.0 mg/kg
Metals	
Arsenic	12.0 mg/kg
Beryllium	1.5 mg/kg
Lead	400 mg/kg

000023

TABLE 3-1
(Continued)

ASCOC	FRL/(BTV) ^b
Ecological	
Antimony	96.0 mg/kg (10.0 mg/kg)
Cadmium	82.0 mg/kg (5.0 mg/kg)
Molybdenum	2900 mg/kg (10.0 mg/kg)
Silver	29,000 mg/kg (10.0 mg/kg)
Benzo(g,h,i)perylene	(1.0 mg/kg)
Benzo(k)fluoranthene	200 mg/kg (1.0 mg/kg)
Chrysene	200 mg/kg (1.0 mg/kg)
Fluoranthene	(10.0 mg/kg)
Phenanthrene	(5.0 mg/kg)
Pyrene	(10.0 mg/kg)

1

2 ^aAs listed in Table 2-7 of the SEP.

3

^bBTV applies to Ecological COCs

4

^cThe total uranium FRL is lower in the defined high leachability zones

5

^dSecondary and Ecological COC

1
2
3
4

TABLE 3-2
ASCOC LIST FOR AREA 3A

ASCOC	Retained as ASCOC?	Justification	CU(s)
Radionuclides			
Total Uranium	Yes	Primary Radionuclide	All ^a
Radium-226	Yes	Primary Radionuclide	All
Radium-228	Yes	Primary Radionuclide	All
Thorium-228	Yes	Primary Radionuclide	All
Thorium-232	Yes	Primary Radionuclide	All
Technetium-99	Yes	Above-FRL concentrations within Area 3A	All
Thorium-230	No	Not detected at concentrations above the FRL	None
Cesium-137	No	Not detected at concentrations above the FRL	None
Chemical			
Aroclor-1254	Yes	Above-FRL concentrations within Area 3A	1,2,5,6,15
Aroclor-1260	Yes	Above-FRL concentrations within Area 3A	1,2,5,6,15
Benzene	Yes	UST-3 Specific COC	19
Benzo(a)anthracene ^b	Yes	Above-FRL concentrations within Area 3A and required per Appendix C of SEP.	1,6,12,13,15,16
Benzo(a)pyrene ^b	Yes	Above-FRL concentrations within Area 3A and required per Appendix C of SEP.	1,6,12,13,15,16
Benzo(b)fluoranthene ^b	Yes	Above-FRL concentrations within Area 3A and required per Appendix C of SEP.	1,6,12,13,15,16
Bromodichloromehtane	No	Not detected at concentrations above the FRL	None
Dibenzo(a,h)anthracene ^b	Yes	Above-FRL concentrations within Area 3A and required per Appendix C of SEP.	1,6,12,13,15,16
1,1-Dichloroethene	Yes	Above-FRL concentrations within Area 3A	1,2,5,6
1,2-Dichloroethene	Yes	Above-FRL concentrations within Area 3A	1,2,5,6,15
Dieldrin	No	Not detected at concentrations above the FRL	None
Ethylbenzene	Yes	UST-3 Specific COC	19
Fluoride	No	Not detected at concentrations above the FRL	None
Indeno(1,2,3-cd)pyrene ^b	Yes	Above-FRL concentrations within Area 3A and required per Appendix C of SEP.	1,6,12,13,15,16
Tetrachloroethene	Yes	Above-FRL concentrations within Area 3A	1,2,5,6

000025

TABLE 3-2
(Continued)

ASCOC	Retained as ASCOC?	Justification	CU(s)
Trichloroethene	Yes	Above-FRL concentrations within Area 3A	1,2,5,6
Toluene	Yes	UST-3 Specific COC	19
Xylene	Yes	UST-3 Specific COC	19
Metals			
Arsenic	Yes	Above-FRL concentrations within Area 3A	2,5,9
Barium	Yes	UST-3 Specific COC	19
Beryllium	Yes	Above-FRL concentrations within Area 3A	2,5,6,9
Lead	Yes	UST-3 Specific COC	6,19
Mercury	Yes	UST-3 Specific COC	19
Ecological			
Antimony	No	Not detected at concentrations above the FRL or the BTV.	None
Cadmium	Yes	Required per Appendix C of SEP.	All
Molybdenum	Yes	Required per Appendix C of SEP.	All
Silver	Yes	Required per Appendix C of SEP.	All
Benzo(g,h,i)perylene	Yes	Required per Appendix C of SEP.	1,6,12,13,15,16
Benzo(k)fluoranthene	Yes	Required per Appendix C of SEP.	1,6,12,13,15,16
Chrysene	Yes	Required per Appendix C of SEP.	1,6,12,13,15,16
Fluoranthene	Yes	Required per Appendix C of SEP.	1,6,12,13,15,16
Phenanthrene	Yes	Required per Appendix C of SEP.	1,6,12,13,15,16
Pyrene	Yes	Required per Appendix C of SEP.	1,6,12,13,15,16

¹ CUs 2, 4, 17, 18, and 20 fall in the high leachability zones where the uranium FRL = 20 mg/kg

² Secondary and Ecological COC

1
2
3
4

TABLE 3-3
ASCOC LIST FOR AREA 3B

ASCOC	Retained as ASCOC?	Justification	CU(s)
Radionuclides			
Total Uranium	Yes	Primary Radionuclide	All ^a
Radium-226	Yes	Primary Radionuclide	All
Radium-228	Yes	Primary Radionuclide	All
Thorium-228	Yes	Primary Radionuclide	All
Thorium-232	Yes	Primary Radionuclide	All
Technetium-99	Yes	Above-FRL concentrations within Area 3B	All
Thorium-230	No	Not detected at concentrations above the FRL	None
Cesium-137	No	Not detected at concentrations above the FRL	None
Chemical			
Aroclor-1254	No	Not detected at concentrations above the FRL	None
Aroclor-1260	No	Not detected at concentrations above the FRL	None
Benzo(a)anthracene ^b	No	Not detected at concentrations above the FRL	None
Benzo(a)pyrene ^b	No	Not detected at concentrations above the FRL	None
Benzo(b)fluoranthene ^b	No	Not detected at concentrations above the FRL	None
Bromodichloromehtane	No	Not detected at concentrations above the FRL	None
Dibenzo(a,h)anthracene ^b	No	Not detected at concentrations above the FRL	None
1,1-Dichloroethene	No	Not detected at concentrations above the FRL	None
Dieldrin	No	Not detected at concentrations above the FRL	None
Fluoride	No	Not detected at concentrations above the FRL	None
Indeno(1,2,3-cd)pyrene ^b	No	Not detected at concentrations above the FRL	None
Methylene Chloride	Yes	HWMU-20 – specific COC	All
Tetrachloroethene	Yes	HWMU-20 – specific COC	All
1,1,1-Trichloroethane ^c	Yes	HWMU-20 – specific COC	All
Trichloroethene	No	Not detected at concentrations above the FRL	None
Xylenes	Yes	HWMU-20 – specific COC	All

5

TABLE 3-3
(Continued)

ASCOC	Retained as ASCOC?	Justification	CU(s)
Metals			
Arsenic	No	Not detected at concentrations above the FRL	None
Barium	Yes	HWMU-20 – specific COC	All
Beryllium	No	Not detected at concentrations above the FRL	None
Lead	Yes	HWMU-20 – specific COC	All
Ecological			
Antimony	Yes	Required per Appendix C of SEP.	All
Cadmium	Yes	Required per Appendix C of SEP.	All
Molybdenum	Yes	Required per Appendix C of SEP.	All
Silver	Yes	Required per Appendix C of SEP.	All
Benzo(g,h,i)perylene	No	Not detected at concentrations above the FRL	None
Benzo(k)fluoranthene	No	Not detected at concentrations above the FRL	None
Chrysene	No	Not detected at concentrations above the FRL	None
Fluoranthene	No	Not detected at concentrations above the FRL	None
Phenanthrene	No	Not detected at concentrations above the FRL	None
Pyrene	No	Not detected at concentrations above the FRL	None

^a CUs 1, 6, 7, and 9 fall in the high leachability zones where the uranium FRL = 20 mg/kg

^b Secondary and Ecological COC

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

1
2
3
4

000028

4.0 CERTIFICATION APPROACH

4.1 CERTIFICATION DESIGN

The certification design for Area 3A and Area 3B follows the general approach outlined in Section 3.4 of the SEP. The design for Area 3A is depicted on Figure 4-1 and the sample locations are depicted in Figures 4-2 through 4-5. The CU design for Area 3B is depicted on Figure 4-6 and the sample locations are shown on Figures 4-7 and 4-8. As discussed in Section 3.0 of this document, the five primary ASCOCs (total uranium, radium-226, radium-228, thorium 228, and thorium-232) will be retained in each CU. Additional secondary and ecological COCs are identified for specific CUs within the certification area as well as unique COCs for hazardous waste management units (HWMUs) and underground storage tanks (USTs).

Many factors were taken into consideration when determining the boundaries for each CU within Area 3A and Area 3B. These factors include: areas defined as high leachability zones, historical land use, proximity to other areas of the site, residual COC data, and previous existence of UST and HWMUs. Additionally, since Area 3A and Area 3B fall within the former production area, both areas are considered to be impacted areas, and will therefore be comprised of Group 1 CUs to allow for more concentrated sampling and ensure excavation activities had no effect on the soil.

As discussed in section 1.0, ditches were constructed surrounding each area to prevent the run-on of water that has come in contact with contaminated surfaces. Narrow CUs were designed as buffer CUs on the interior of these run-on ditches to concentrate sampling around the perimeter of the areas.

4.1.1 Area 3A Certification Unit Design

Area 3A will consist of 20 Group 1 CUs. Two of the CUs (CU 19 and CU 20) were established because of UST removal. One CU was added for the footprint of each UST that was removed from Area 3A. Other CUs were designed to encompass the high-leachability areas on the north and south ends of 3A and to concentrate sampling around the former process structures such as the incinerator pad, maintenance building, and Plant 9. The Area 3A certification area, as shown on Figure 4-1, consists of the following:

- CU 1 through CU 4 Group 1 buffer CUs along the perimeter of the stormwater run-on/run-off control ditches
Note: CU 1 goes through the Maintenance Building RCRA Area
Note: CU 2 and CU 4 are entirely within the uranium high leachability area
- CU 5 and CU 6 Group 1 CUs around the former Incinerator Pad
Note: CU 6 is entirely within the uranium high leachability area

- 1 • CU 7 Group 1 CU entirely within the uranium high leachability area
- 2 • CU 8 Group 1 CU surrounding the former Boiler Plant
- 3 • CU 9 through CU 14 Group 1 CUs in general area of Area 3A
- 4 • CU 15 Group 1 CU surrounding the Maintenance Building PCB area
- 5 • CU 16 Group 1 CU in general area of Area 3A
- 6 • CU 17 and CU 18 Group 1 CUs in former Plant 9
- 7 Note: these CUs are entirely with the uranium high leachability area
- 8 • CU 19 UST #3 CU
- 9 • CU 20 Discovered UST CU

10
11 Due to the presence of the two USTs (UST #3 and a discovered UST) in Area 3A, the certification effort
12 must include demonstration of soil FRL attainment and UST closure. Per Section 2.2.5 of the SEP:

- 13
- 14 • Each UST footprint will form a distinct CU.
- 15 • At least eight samples will be collected from the excavated base and sidewalls for each UST.
- 16 • Samples will be analyzed for the COCs identified for each particular UST in Table 2-2 of the SEP.
- 17 If the UST was discovered during remediation, the samples will be analyzed for the COCs that
- 18 were defined following discovery.

19

20 **4.1.2 Area 3B Certification Unit Design**

21 The design of the CUs in Area 3B is more complex than that of Area 3A. As described in the
22 Implementation Plan for Area 3B/4B/5, Area 3B was designed with two distinct excavation grades. The
23 first and uppermost grade was termed 'contamination grade' and was designed to capture the entirety of
24 the soil contamination. The second and lower grade was termed the 'design grade' where the excavation
25 was only designed to capture man-made structures. All soil beneath the contamination grade was
26 considered to be 'certifiable' and therefore was not planned to be sent to the On-Site Disposal
27 Facility (OSDF) as impacted/contaminated material. During the excavation, grading of the area was
28 minimized, however, in order to protect the area from contaminated surface water run-on, the perimeter
29 run-on control ditches were constructed immediately. The soil that was removed while constructing the
30 ditches surrounding Area 3B was from soil below the contamination grade, which is considered certifiable.
31 This soil was not sent to the OSDF. In turn, it was placed on the inside the ditch line so that it could be
32 certified with the rest of the area. This soil was confined to small areas near the west ditch line, the
33 southwest ditch line, and the east ditch line as depicted on Figure 4-6. These collections of sub grade soil
34 will be certified as individual certification units that are stratified above the plane of surface certification.
35 Sampling of these piles will be performed at the same locations as identified for the general area CUs but
36 will be collected from varying depths. The highest pile is approximately four and a half feet high.

1 In the footprints of the areas that the sub grade soil occupies, sampling will be conducted through the pile
2 and a core will be obtained at the surface that existed prior to the placement of the ditch soil. Since the sub
3 grade soil piles only occupy portions of the underlying surface CUs, all samples taken of the pre-existing
4 surface through the pile will be associated with the respective general CU. For example, the eastern ditch
5 line pile occupies an area that covers sections of CU 2, CU 10, and CU 12. Therefore, at
6 location A3B-C10-13, samples will be collected from the pile as well as from the footprint of the pile. The
7 sample of the soil from the pile will be included with the statistics of Soil Pile #2 CU and the sample
8 collected from the footprint will be treated as a sample from CU 10.

9
10 Additionally, for vehicle access to the various areas of 3B that were isolated by deep trench excavations,
11 certain discrete areas were 'bridged' with this same soil. The soil in these isolated bridge areas will also be
12 sampled and included with the statistics of the CU that they are in. The affected CUs and their respective
13 sample locations are as follows: CU 9 – sample locations 1 and 3, CU 11 – sample locations 8 and 10,
14 CU 2 – sample location 14. These samples will be in addition to the sixteen routine sample locations
15 per CU; therefore, these CUs will have more than the typical number of samples for certification statistics.

16
17 Due to the presence of a HWMU (HWMU #20) in Area 3B, the certification effort must include
18 demonstration of soil FRL attainment and HWMU closure. Per Section 2.2.5 of the SEP:

- 19
20
- Each HWMU footprint will form a distinct CU.
 - At least eight samples will be collected from the excavated base and sidewalls for each HWMU.
 - Samples will be analyzed for the COCs identified for each particular HWMU in Table 2-1 of the SEP. If the HWMU was discovered during remediation, the samples will be analyzed for the COCs that were defined following discovery.
- 21
22
23
24

25
26 The size of HWMU #20 encompasses most of Area 3B, therefore all 12 Group 1 CUs established in
27 Area 3B and the three soil pile CUs will be sampled for the ASCOCs as well as the COCs identified
28 specifically for HWMU #20. However, the certification area for 3B does not fully encompass the lateral
29 extent of HWMU #20. Four additional samples have been placed outside of the Area 3B certification
30 boundary yet within the HWMU boundary to provide full coverage of the HWMU and to satisfy
31

1 HWMU closure. Figure 4-8 depicts these additional sample locations. The Area 3B certification area as
2 shown on Figure 4-6, consists of the following:

- 3
- 4 • CU 1 through CU 4 Group 1 buffer CUs along the perimeter of the stormwater run-on/run-off
5 control ditches
6 Note: CU 2 and CU 4 area entirely within the uranium high leachability area
- 7 • CU 5 Group 1 CU in general area of Area 3B
- 8 • CU 6 and CU 7 Group 1 CU entirely within uranium high leachability area
- 9 • CU 8 Group 1 CU in general area of Area 3B
- 10 • CU 9 Group 1 CU entirely within uranium high leachability area
- 11 • CU 10 through CU 12 Group 1 CU in general area of Area 3B
- 12 • Soil Pile #1 CU Group 1 CU along the western side of Area 3B
- 13 • Soil Pile #2 CU Group 1 CU along the eastern side of Area 3B
- 14 • Soil Pile #3 CU Group 1 CU along the southern side of Area 3B
- 15

16 4.1.3 Sample Location Design for Both Area 3A and Area 3B

17 The selection of certification sampling locations was conducted according to Section 3.4.2 of the SEP.
18 Each CU was first divided into 16 approximately equal sub-CUs. Sample locations were then generated by
19 randomly selecting an easting and northing coordinate within the boundaries of each sub-CU, then testing
20 those locations against the minimum distance criteria for the CU. If the minimum distance criteria were
21 not met, an alternative random location was selected for that sub-CU, and all the locations were re-tested.
22 This process continued, until all 16 random locations met the minimum distance criteria.

23
24 As discussed in Section 2.0, several breaches of the Great Miami Aquifer occurred in Area 3A. During the
25 excavation and backfill process, samples were collected from either the exposed sand/soil or the clay plugs
26 in accordance with Section 3.5 of the Implementation Plan for Area 3A/4A. These samples were analyzed
27 and validated consistent with the certification protocols. Each location will be factored into the
28 certification sample selection and the results will be included with their respective CU during the statistical
29 analysis. For the footprint of the former boiler plant, CU 8 contains these previously collected samples:
30 3ADBPSM-1, 3ABPFGOR-1, 3ABPFGOR-2, 3ABPFGOR-3, and 3ABPFGOR-4, which are identified on
31 Figure 4-2. For the deep excavation in Plant 9, CU 18 contains these previously collected samples:
32 3ALTCP9C-1 and 3ALTCP9C-2, which are identified on Figure 4-3.

33
34 All Area 3A sub-CUs and planned certification sampling locations are shown on Figures 4-2 through 4-5
35 and the Area 3B sub-CUs and planned certification sampling locations are shown on Figures 4-6
36 through 4-8. Four of the 16 sample locations (one location from each quadrant of the CU) are designated
37 with a "V," indicating archive sample locations. One sample location in the CU is designated with a "D,"
38 indicating a field duplicate sample collection location. Sample location A3A-C18-8 has been biased
39 towards the hot spot identified during precertification scanning in Area 3A, as discussed in Section 2.0.

000032

1 Prior to commencement of certification sampling field activities, all certification sample locations will be
2 surveyed and field verified to make sure no surface obstacles will prevent collection at the planned location.

3 Locations may be moved if a subsurface obstacle prevents collection. Requirements for moving a
4 certification sample location will be discussed in the PSP for Area 3A and Area 3B Certification Sampling.
5

6 Other than the soil pile CUs, samples will be collected for analysis from 0 to 6 inches at 12 of the
7 16 locations in each CU. The four samples designated as "archive" will not be collected unless they are
8 needed for additional analysis.
9

10 4.2 ANALYTICAL METHODOLOGY AND STATISTICAL ANALYSIS

11 Laboratory analysis of certification samples will be conducted using an approved analytical method, as
12 discussed in Appendix H of the SEP. Analyses will be conducted to Analytical Support Level (ASL) D
13 or E, where all requirements for ASL E are the same as ASL D except the minimum detection level for the
14 selected analytical method must be at least 10 percent of the FRL. All results will be validated to
15 validation support level (VSL) D. Samples rejected during validation will be re-analyzed, or an archive
16 sample will be submitted for analysis. Once data are validated, results will be entered into the Sitewide
17 Environmental Database (SED) and a statistical analysis will be performed to evaluate the pass/fail criteria
18 for each CU. The statistical approach is discussed in Section 3.4.3 and Appendix G of the SEP, and will
19 be the same for Area 3A and Area 3B as for previous certification efforts.
20

21 Two criteria must be met for the CU to pass certification. If the data distribution is normal or lognormal, the
22 first criterion compares the 95 percent Upper Confidence Limit (UCL) on the mean of each primary ASCOC
23 to its FRL. On an individual CU basis, any ASCOC with the 95 percent UCL above the FRL results in that
24 CU failing certification. If the data distribution is not normal or lognormal, the appropriate nonparametric
25 approach discussed in Appendix G of the SEP will be used to evaluate the second criterion. The second
26 criterion is related to individual samples. An individual sample cannot be greater than two times the FRL or
27 three times the FRL, based on the area size (see Section 3.4.6 and Figure 3-11 of the SEP for further details).
28 When the given UCL on the mean for each ASCOC is less than its FRL, and the hot spot criterion is met, the
29 CU has met both criteria and will be considered certified.
30

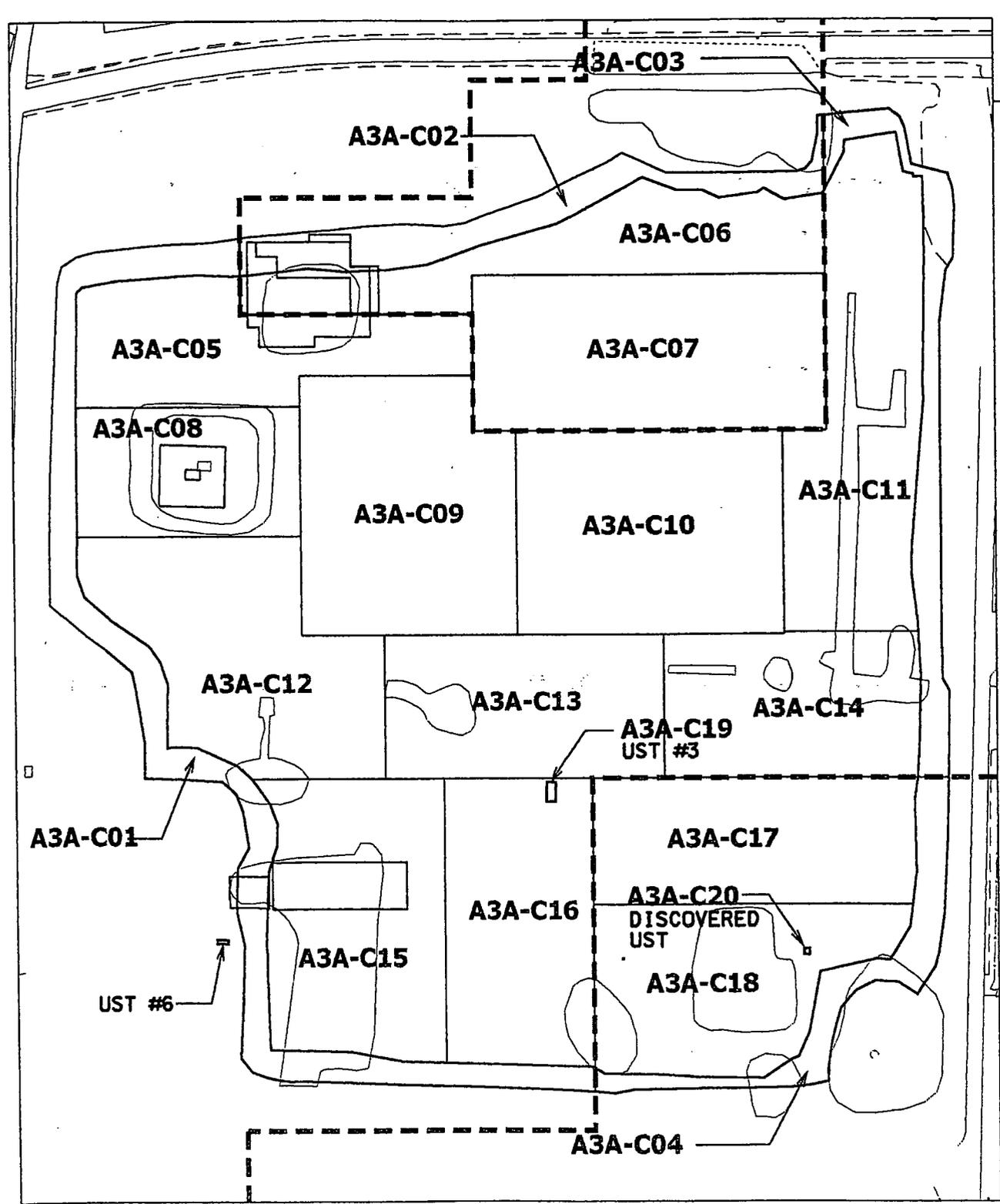
31 There are three conditions that could result in a CU failing certification: 1) high variability in the data set, 2)
32 localized contamination, and 3) widespread contamination. Details on the evaluation and responses to these
33 possible outcomes are provided in Section 3.4.5 of the SEP. When all CUs within the scope of this CDL
34 have passed certification, a certification report will be issued. The certification report will be submitted to the
35 EPA and OEPA to receive acknowledgement that the pertinent operable unit remedial actions were completed
36 and the individual CUs are certified to be released for interim or final land use. Section 7.4 of the SEP
37 provides additional details and describes the required content of the certification report.

000033

V:\2001\2001\2001\2001.dgn

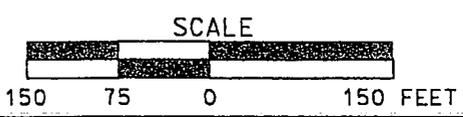
STATE PLANNING COORDINATE SYSTEM 1983

28-JUN-2004



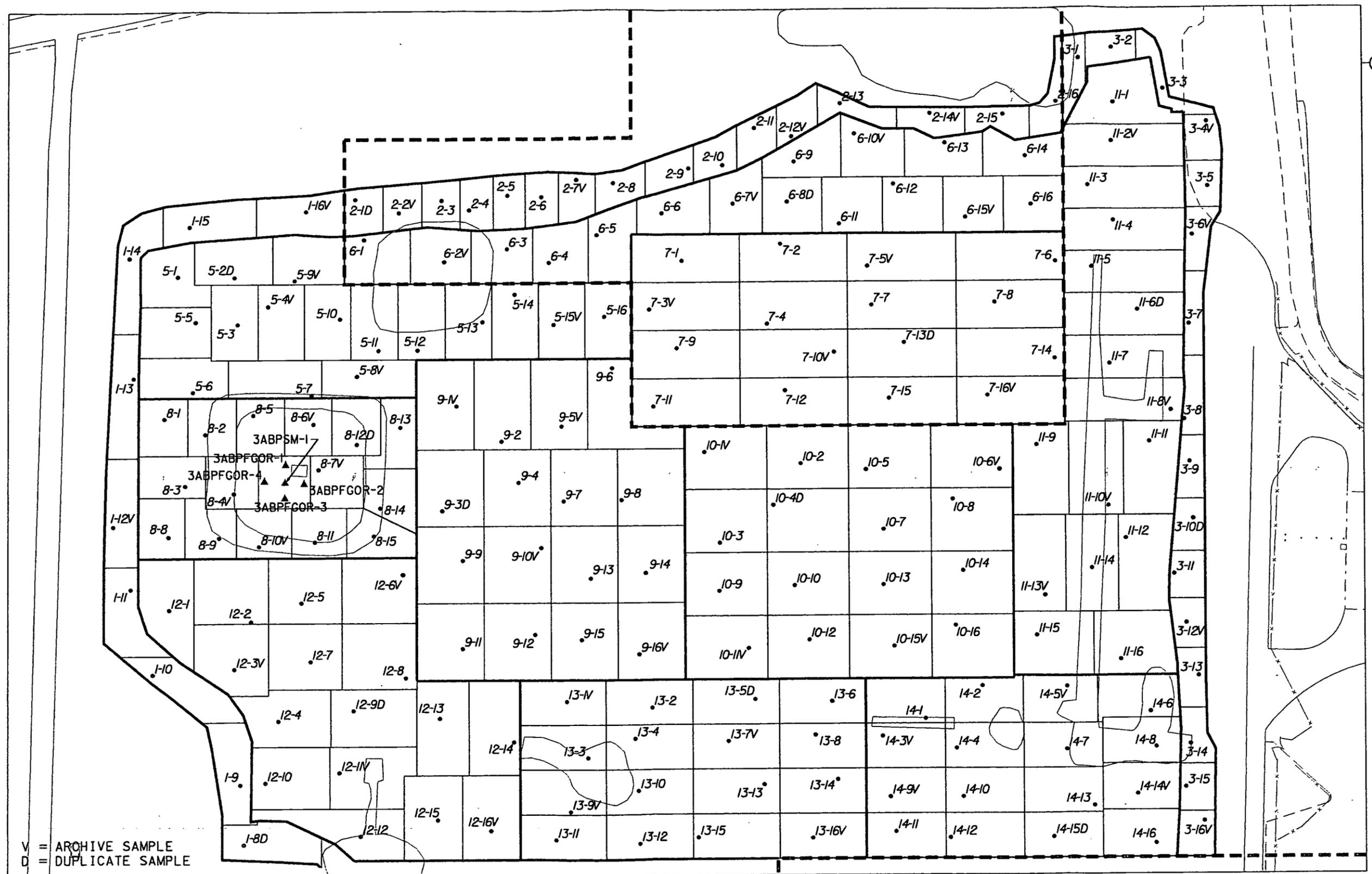
LEGEND:

----- HIGH LEACHATE ZONE



DRAFT

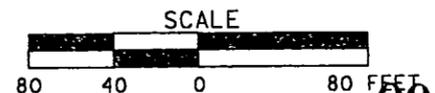
FIGURE 4-1. AREA 3A CU BOUNDARY MAP



V = ARCHIVE SAMPLE
 D = DUPLICATE SAMPLE

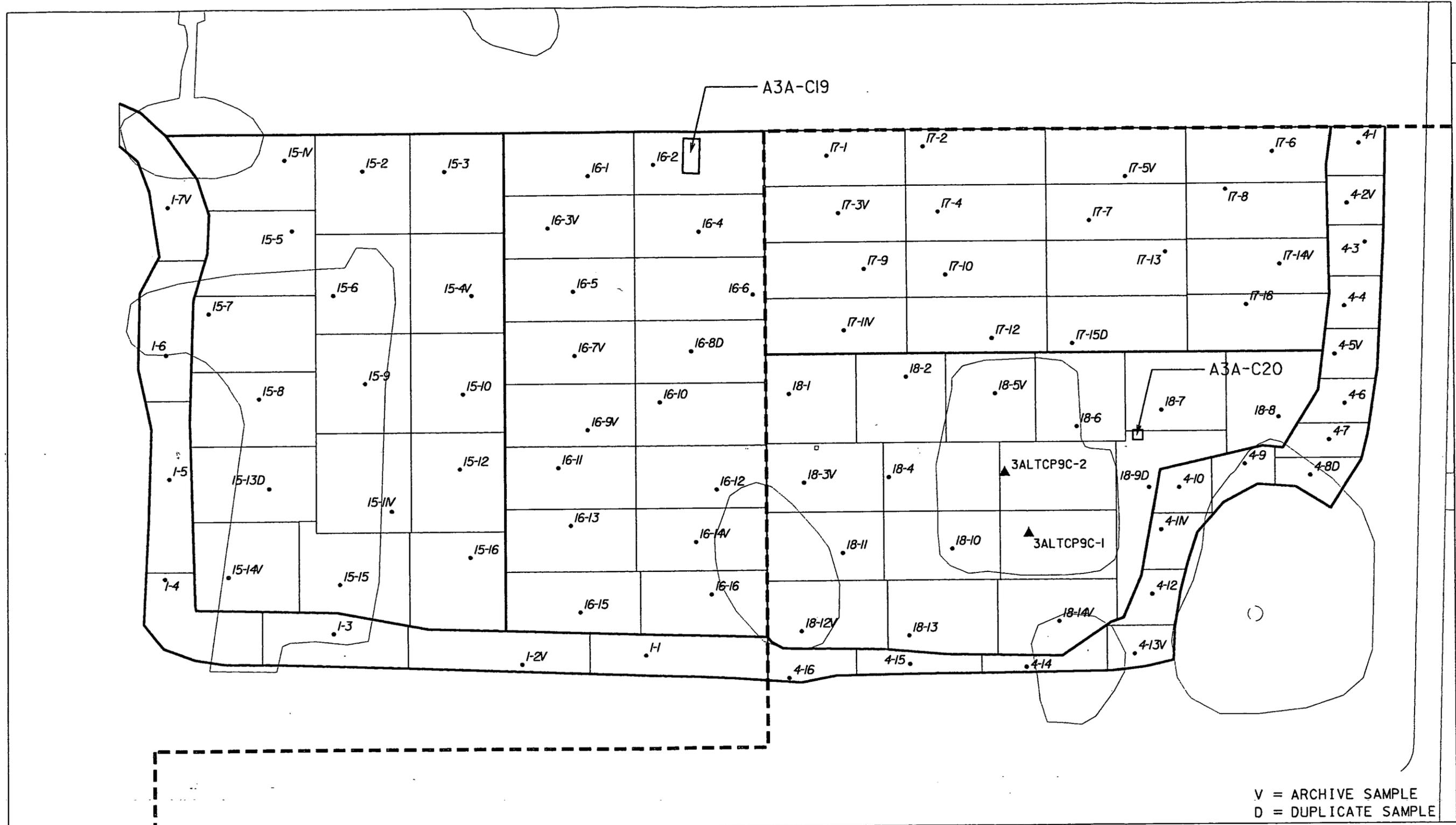
LEGEND:

- CU BOUNDARY
- - - HIGH LEACHATE ZONE
- 14-10 SAMPLE LOCATION
- ▲ PREVIOUSLY COLLECTED SAMPLE



DRAFT

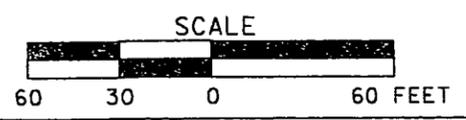
FIGURE 4-2. AREA 3A NORTH SUB-CU BOUNDARY AND CERTIFICATION SAMPLING LOCATIONS



V = ARCHIVE SAMPLE
 D = DUPLICATE SAMPLE

LEGEND:

- CU BOUNDARY
- - - HIGH LEACHATE ZONE
- 18-4 SAMPLE LOCATION
- ▲ PREVIOUSLY COLLECTED SAMPLE



DRAFT

FIGURE 4-3. AREA 3A SOUTH SUB-CU BOUNDARY AND CERTIFICATION SAMPLING LOCATIONS

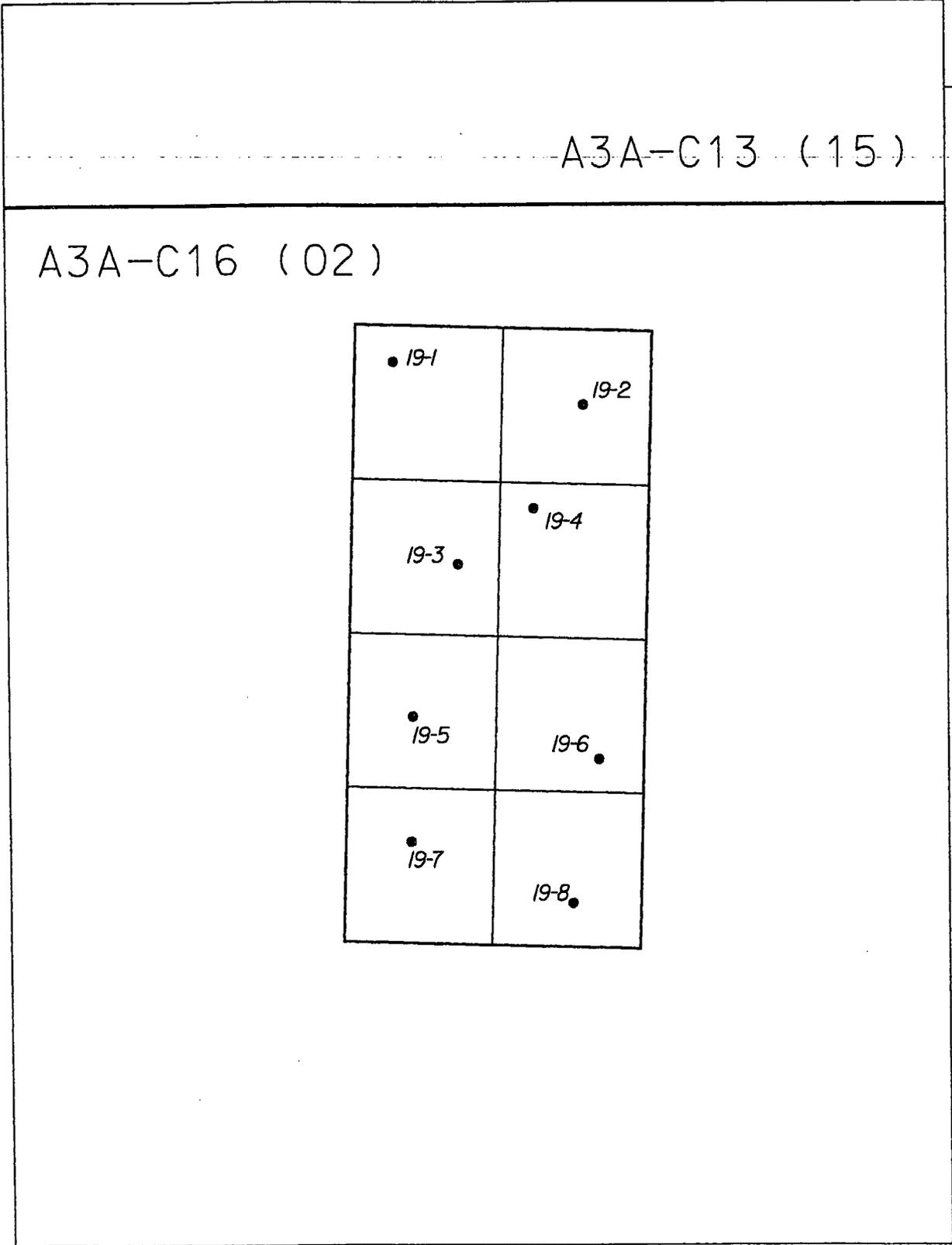
000036

2803

v:\a2\fm12\edg\mka_310.dgn

STATE PLANNER COORDINATE SYSTEM 1983

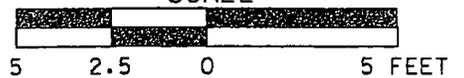
24-JUN-2004



LEGEND:

• 19-5 SAMPLE LOCATION

SCALE



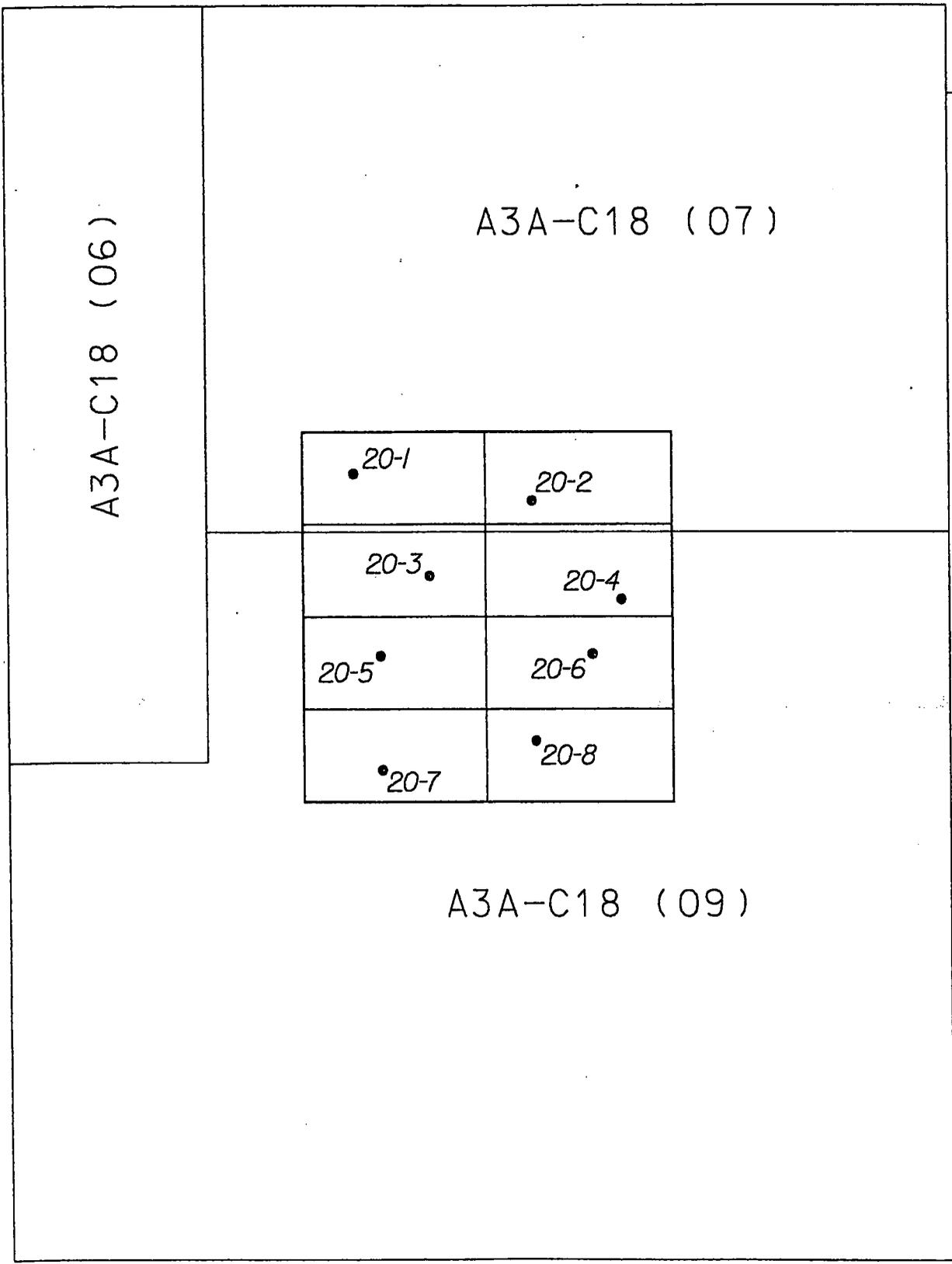
DRAFT

FIGURE 4-4. AREA 3A UST #3 SUB-CU BOUNDARY AND CERTIFICATION SAMPLING LOCATIONS 000037

vs27mi2adgn3a_311.dgn

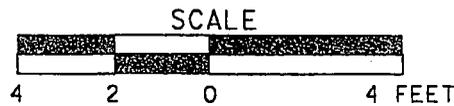
STATE PLANAR COORDINATE SYSTEM 1983

28-JUN-2004



LEGEND:

 20-7
 SAMPLE LOCATION



DRAFT

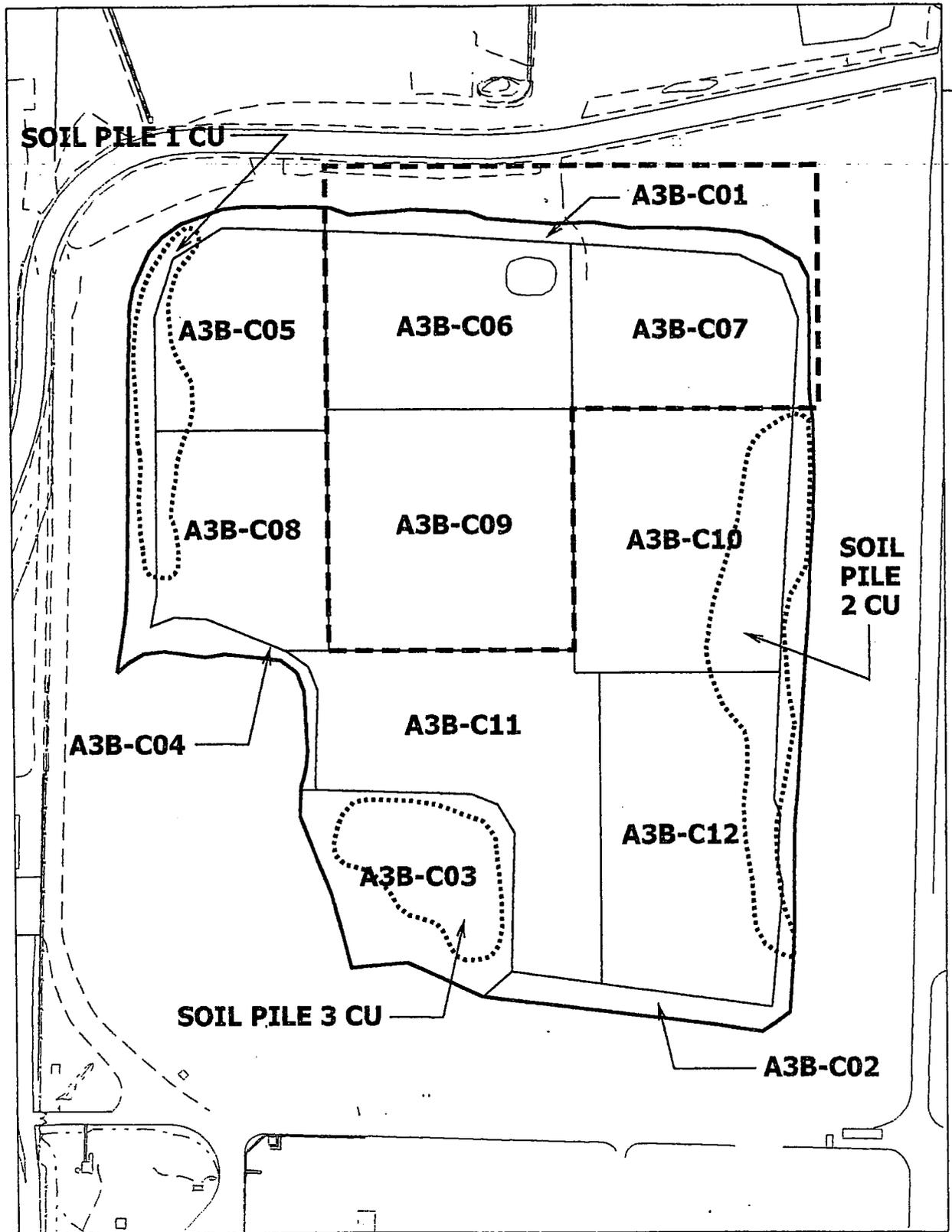
FIGURE 4-5. AREA 3A DISCOVERED UST SUB-CU BOUNDARY AND CERTIFICATION SAMPLING LOCATIONS

000038

V:\287m\287m\307.dgn

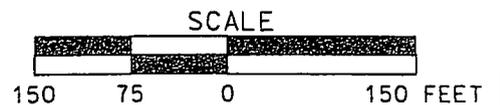
STATE PLANAR COORDINATE SYSTEM 1983

28-JUN-2004



LEGEND:

- HIGH LEACHATE ZONE
- PILE BOUNDARIES



DRAFT

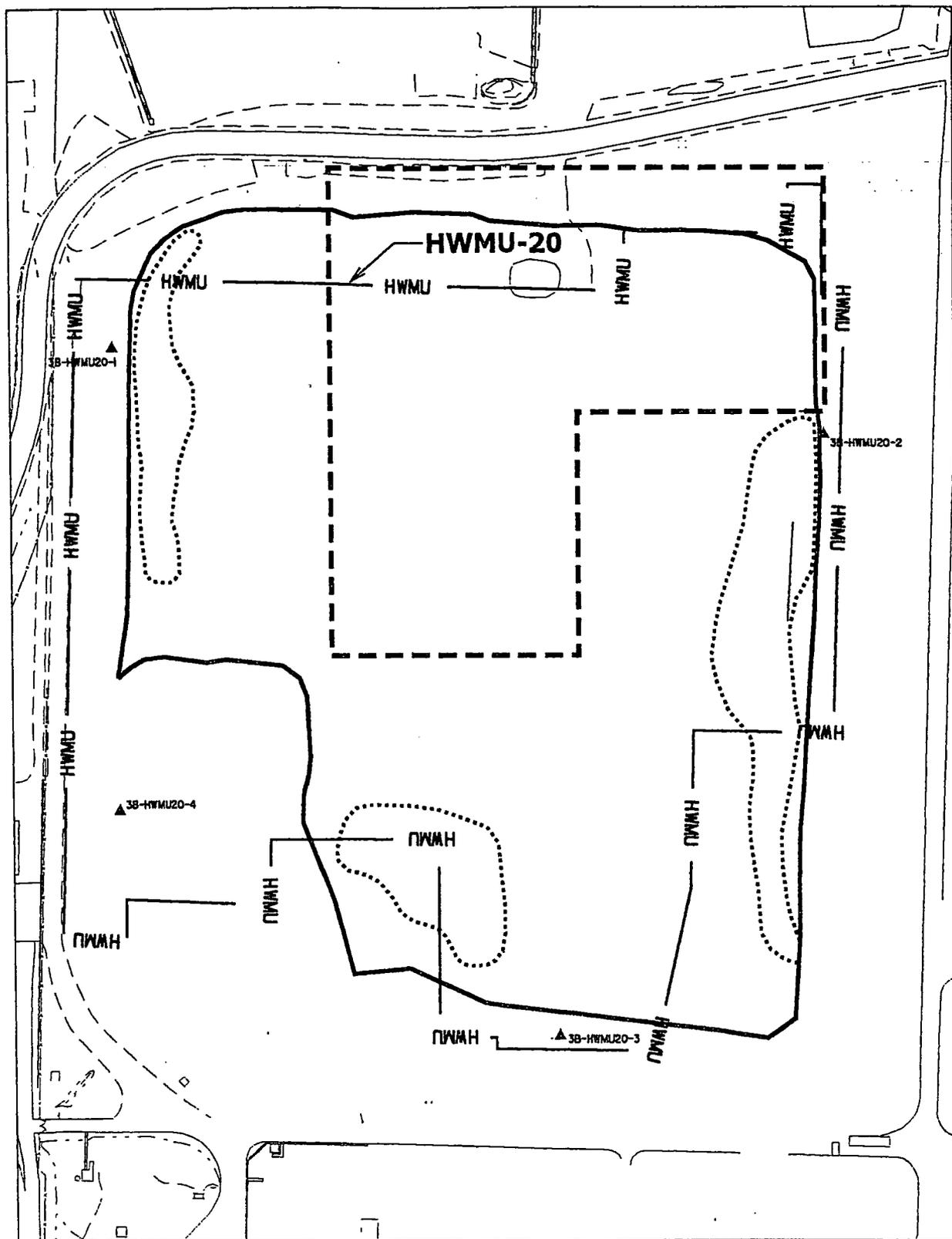
FIGURE 4-6. AREA 3B CU BOUNDARY MAP

000039

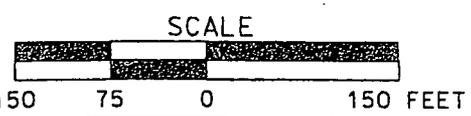
VI-207112-2-2004-313.dgn

STATE PLANNED COORDINATE SYSTEM 1983

28-JUN-2004



- LEGEND:**
- ▲ HWMU SAMPLE LOCATION
 - AREA 3B BOUNDARY
 - - - - - HWMU - HWMU-20 BOUNDARY
 - HIGH LEACHATE ZONE



DRAFT

FIGURE 4-8. AREA 3B ADDITIONAL HWMU CLOSURE SAMPLES OUTSIDE CERTIFICATION AREA BOUNDARY

000041

REFERENCES

- 1
2
3 U.S. Department of Energy, 1995a "Remedial Investigation Report Operable Unit 3" Final, Fernald Area
4 Office, DOE, Fernald Area Office, Cincinnati, Ohio.
5
6 U.S. Department of Energy, 1995b "Remedial Investigation Report Operable Unit 5" Final, Fernald Area
7 Office, DOE, Fernald Area Office, Cincinnati, Ohio.
8
9 U.S. Department of Energy, 1995c "Feasibility Study Report Operable Unit 3" Final, Fernald Area Office,
10 DOE, Fernald Area Office, Cincinnati, Ohio.
11
12 U.S. Department of Energy, 1995d "Feasibility Study Report Operable Unit 5" Final, Fernald Area Office,
13 DOE, Fernald Area Office, Cincinnati, Ohio.
14
15 U.S. Department of Energy, 1996, "Record of Decision for Remedial Action at Operable Unit 5," Final,
16 Fernald Area Office, DOE, Fernald Area Office, Cincinnati, Ohio.
17
18 U.S. Department of Energy, 1997, "Project Specific Plan for Pre-Design Investigation Sampling in the
19 Northeast Corner of Area 3," Revision 2, Fernald Area Office, DOE, Fernald Area Office, Cincinnati, Ohio.
20
21 U.S. Department of Energy, 1998a, "Sitewide Excavation Plan," Final, Fernald Area Office, DOE,
22 Fernald Area Office, Cincinnati, Ohio.
23
24 U.S. Department of Energy, 1998b, "Project Specific Plan for the Area 3 Predesign Investigation of
25 Plant 9," Revision 1, Fernald Area Office, DOE, Fernald Area Office, Cincinnati, Ohio.
26
27 U.S. Department of Energy, 1998c, "Project Specific Plan for Area 3 Pre-Design Investigation of Potentially
28 Characteristic Areas," Revision 0, Fernald Area Office, DOE, Fernald Area Office, Cincinnati, Ohio.
29
30 U.S. Department of Energy, 1999a, "Project Specific Plan for Area 3A/4A Surface Predesign
31 Investigation," Revision 0, Fernald Area Office, DOE, Fernald Area Office, Cincinnati, Ohio.
32
33 U.S. Department of Energy, 1999b, "Project Specific Plan for Area 3A/4A Subsurface Predesign
34 Investigation," Revision 0, Fernald Area Office, DOE, Fernald Area Office, Cincinnati, Ohio.
35
36 U.S. Department of Energy, 2001, "Implementation Plan for Area 3A/4A," Final, Fernald Area Office,
37 DOE, Fernald Area Office, Cincinnati, Ohio
38
39 U.S. Department of Energy, 2002a, "Project Specific Plan for Area 3A/4A Excavation Characterization
40 and Precertification," Revision 0, Fernald Area Office, DOE, Fernald Area Office, Cincinnati, Ohio.
41
42 U.S. Department of Energy, 2002b, "Project Specific Plan for Delineating Known WAC Exceedances in
43 Areas 3B/4B/5," Revision 1, Fernald Area Office, DOE, Fernald Area Office, Cincinnati, Ohio.
44
45 U.S. Department of Energy, 2004a, "Project Specific Plan for Excavation Control of Areas 3B, 4B and 5
46 (Supplement to 20300-PSP-0011)," Revision 1, Fernald Area Office, DOE, Fernald Area Office,
47 Cincinnati, Ohio.
48
49 U.S. Department of Energy, 2004b, "Implementation Plan for Area 3B/4B/5," Final, Fernald Area Office,
50 DOE, Fernald Area Office, Cincinnati, Ohio

000043

APPENDIX A

PRECERTIFICATION REAL-TIME SCAN DATA FOR AREA 3A

Table A-1
AREA 3A
PHASE I - HPGe RESULTS
DETECTOR HEIGHT 100 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3A-HPG-HL-P1-1096	24Jun04	481106	1350246	100	1.22	0.74	19.6
A3A-HPG-HL-P1-1099	24Jun04	481136	1350264	100	1.3	0.767	18.7
A3A-HPG-HL-P1-1101	24Jun04	481106	1350282	100	1.29	0.907	19.6
A3A-HPG-HL-P1-1102	24Jun04	481075	1350264	100	1.24	0.796	21.2
A3A-HPG-HL-P1-1103	24Jun04	481044	1350246	100	1.13	0.693	16.4
A3A-HPG-HL-P1-1104	24Jun04	481044	1350282	100	1.03	0.89	37.2
A3A-HPG-HL-P1-1105	24Jun04	481135	1350058	100	1.32	0.73	0
A3A-HPG-HL-P1-1105-D	24Jun04	481135	1350058	100	1.2	0.784	0.117
A3A-HPG-HL-P1-1106	24Jun04	481105	1350067	100	1.18	0.765	0.0523
A3A-HPG-HL-P1-1107	24Jun04	481074	1350058	100	1.22	0.685	0
A3A-HPG-HL-P1-1108	24Jun04	481043	1350066	100	1.08	0.641	0
A3A-HPG-HL-P1-1053	08Jun04	481728	1349677	100	1.156	0.675	8
A3A-HPG-HL-P1-1009	07Jun04	481108	1349936	100	1.36	0.697	19
A3A-HPG-HL-P1-931	02Jun04	480856	1350149	100	0.936	0.652	12.7
A3A-HPG-HL-P1-846	22May04	481663	1349750	100	1.061	0.75	12.7
A3A-HPG-HL-P1-1111-D	25Jun04	481817	1349945	100	1.269	0.879	15.9
A3A-HPG-HL-P1-1050	08Jun04	481791	1349895	100	1.281	0.871	22.1
A3A-HPG-HL-P1-840	22May04	481662	1349964	100	1.07	0.756	14.4
A3A-HPG-HL-P1-850	22May04	481692	1349874	100	0.987	0.659	16.9
A3A-HPG-HL-P1-1111	25Jun04	481817	1349945	100	1.154	0.852	0
A3A-HPG-HL-P1-843	22May04	481662	1349857	100	0.987	0.692	9.47
A3A-HPG-HL-P1-1058	08Jun04	481664	1349711	100	1.079	0.831	14.6
A3A-HPG-HL-P1-1075	09Jun04	481660	1350019	100	1.135	0.767	11.6
A3A-HPG-HL-P1-1044	08Jun04	481755	1350092	100	1.091	0.603	14.6
A3A-HPG-HL-P1-1049	08Jun04	481791	1349929	100	1.351	0.751	17.8
A3A-HPG-HL-P1-830	22May04	481632	1349802	100	1.09	0.888	23.4
A3A-HPG-HL-P1-831	22May04	481632	1349838	100	1.03	0.798	0.0633
A3A-HPG-HL-P1-832	22May04	481632	1349874	100	0.99	0.717	14.4
A3A-HPG-HL-P1-829	22May04	481601	1349785	100	1.02	0.741	16.9
A3A-HPG-HL-P1-828	22May04	481600	1349820	100	1.06	0.674	0
A3A-HPG-HL-P1-845	22May04	481662	1349784	100	0.972	0.813	0.0636
A3A-HPG-HL-P1-1038	08Jun04	481692	1350127	100	1.161	0.675	0.0792
A3A-HPG-HL-P1-848	22May04	481694	1349767	100	1.103	0.773	17.1
A3A-HPG-HL-P1-1052	08Jun04	481761	1349876	100	1.183	0.761	20.1
A3A-HPG-HL-P1-841	22May04	481662	1349928	100	0.984	0.772	24.5

000045

5536

Table A-1
AREA 3A
PHASE I - HPGe RESULTS
DETECTOR HEIGHT 100 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3A-HPG-HL-P1-842	22May04	481662	1349893	100	0.927	0.681	17.3
A3A-HPG-HL-P1-1093	23Jun04	481728	1349749	100	0.917	0.717	0.117
A3A-HPG-HL-P1-834	22May04	481631	1349945	100	0.864	0.845	13.4
A3A-HPG-HL-P1-835	22May04	481631	1349981	100	0.903	0.725	15.2
A3A-HPG-HL-P1-836	22May04	481630	1350019	100	0.888	0.946	20.1
A3A-HPG-HL-P1-838	22May04	481630	1350127	100	1.036	0.946	7.6
A3A-HPG-HL-P1-844	22May04	481663	1349820	100	0.977	0.72	0.0822
A3A-HPG-HL-P1-1063	08Jun04	481727	1349713	100	1.164	0.722	13.5
A3A-HPG-HL-P1-1063-D	08Jun04	481727	1349713	100	1.21	0.746	19.2
A3A-HPG-HL-P1-827	22May04	481600	1349856	100	0.908	0.778	12
A3A-HPG-HL-P1-833	22May04	481631	1349910	100	0.877	0.647	10.2
A3A-HPG-HL-P1-839	22May04	481662	1350036	100	0.929	0.747	12.5
A3A-HPG-HL-P1-849	22May04	481694	1349803	100	1.092	0.806	18.9
A3A-HPG-HL-P1-1045	08Jun04	481755	1350127	100	1.169	0.797	7.85
A3A-HPG-HL-P1-1047	08Jun04	481786	1350111	100	0.969	0.535	0.077
A3A-HPG-HL-P1-1097	23Jun04	481727	1349894	100	0.99	0.787	16.7
A3A-HPG-HL-P1-1097-D	23Jun04	481727	1349894	100	1.053	0.631	18.4
A3A-HPG-HL-P1-851	22May04	481693	1349911	100	0.98	0.659	12.6
A3A-HPG-HL-P1-1048	08Jun04	481787	1350076	100	1.049	0.633	15.6
A3A-HPG-HL-P1-1051	08Jun04	481761	1349840	100	1.295	0.787	22.5
A3A-HPG-HL-P1-837	22May04	481631	1350054	100	1.115	0.856	0.0797
A3A-HPG-HL-P1-852	22May04	481693	1349947	100	1.084	0.932	13
A3A-HPG-HL-P1-854	22May04	481692	1350019	100	0.925	0.566	7.93
A3A-HPG-HL-P1-847	22May04	481693	1349732	100	1.021	0.696	13.3
A3A-HPG-HL-P1-1039	08Jun04	481761	1349911	100	1.301	0.733	21.7
A3A-HPG-HL-P1-1043	08Jun04	481756	1350056	100	1.213	0.649	12.6
A3A-HPG-HL-P1-1073	09Jun04	481661	1349983	100	1.21	0.925	9.72
A3A-HPG-HL-P1-826	22May04	481601	1349891	100	1.08	0.767	12.2
A3A-HPG-HL-P1-826-D	22May04	481601	1349891	100	1.14	0.746	17
A3A-HPG-HL-P1-904	02Jun04	480851	1349998	100	0.941	0.627	0.07
A3A-HPG-HL-P1-1037	08Jun04	481694	1350092	100	1.235	0.655	0
A3A-HPG-HL-P1-1042	08Jun04	481758	1350020	100	1.179	0.68	0
A3A-HPG-HL-P1-1090	23Jun04	481693	1349839	100	1.077	0.907	0.107
A3A-HPG-HL-P1-822	22May04	481600	1350071	100	0.914	0.775	15.7
A3A-HPG-HL-P1-822-D	22May04	481600	1350071	100	0.851	0.779	10.5

000046

5536

0322

Table A-1
AREA 3A
PHASE I - HPGe RESULTS
DETECTOR HEIGHT 100 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3A-HPG-HL-P1-855	22May04	481692	1350055	100	0.966	0.63	0
A3A-HPG-HL-P1-1041	08Jun04	481758	1349984	100	1.14	0.659	0
A3A-HPG-HL-P1-1040	08Jun04	481758	1349948	100	1.275	0.77	19.8
A3A-HPG-HL-P1-1041-D	08Jun04	481758	1349984	100	1.093	0.598	0.092
A3A-HPG-HL-P1-853	22May04	481694	1349983	100	0.98	0.758	0.0768
A3A-HPG-HL-P1-1094	23Jun04	481727	1349783	100	1.081	0.834	0.091
A3A-HPG-HL-P1-1091	23Jun04	481760	1349803	100	0.926	0.773	14.6
A3A-HPG-HL-P1-1074	09Jun04	481599	1350016	100	1.122	0.796	0.0805
A3A-HPG-HL-P1-1100	23Jun04	481788	1350002	100	1.142	0.79	12.9
A3A-HPG-HL-P1-1046	08Jun04	481785	1350147	100	1.102	0.538	0.0819
A3A-HPG-HL-P1-823	22May04	481600	1350037	100	0.822	0.672	0
A3A-HPG-HL-P1-1095	23Jun04	481727	1349819	100	1.008	0.788	12.6
A3A-HPG-HL-P1-1092	23Jun04	481727	1349857	100	1.069	0.757	15.1
A3A-HPG-HL-P1-1080	22Jun04	481788	1350039	100	1.096	0.672	0.0793
A3A-HPG-HL-P1-1081	22Jun04	481789	1349968	100	1.144	0.847	14.5
A3A-HPG-HL-P1-1089	23Jun04	481631	1350090	100	0.974	0.85	13.2
A3A-HPG-HL-P1-1098	23Jun04	481726	1349929	100	0.974	0.803	7.81
A3A-HPG-HL-P1-824	22May04	481603	1349964	100	1.1	0.789	15.7
A3A-HPG-HL-P1-825	22May04	481599	1349928	100	1.13	0.835	14
A3A-HPG-HL-P1-1072	09Jun04	481600	1349978	100	1.308	0.88	15.5
A3A-HPG-HL-P1-1071	09Jun04	481586	1349972	100	1.076	0.819	0.14
A3A-HPG-HL-P1-1062	08Jun04	481695	1349693	100	0.919	0.536	0.0577
A3A-HPG-HL-P1-1070	09Jun04	481552	1349972	100	1.177	0.916	13.1
A3A-HPG-HL-P1-1112	25Jun04	481727	1350110	100	1.174	0.903	0.0854
A3A-HPG-HL-P1-1059	08Jun04	481667	1349532	100	0.871	0.497	0
A3A-HPG-HL-P1-1007	07Jun04	481137	1349955	100	1.3	0.864	0.0937
A3A-HPG-HL-P1-1008	07Jun04	481137	1349919	100	1.33	0.744	13.4
A3A-HPG-HL-P1-1064	08Jun04	481665	1349676	100	0.92	0.657	0
A3A-HPG-HL-P1-1057	08Jun04	481726	1349535	100	1.238	0.67	13.2
A3A-HPG-HL-P1-1082	22Jun04	481663	1349648	100	1.1	0.549	0.073
A3A-HPG-HL-P1-1114	25Jun04	481662	1350107	100	1.194	0.851	12
A3A-HPG-HL-P1-1006	07Jun04	481137	1349992	100	1.19	0.678	8.5
A3A-HPG-HL-P1-1113	25Jun04	481660	1350144	100	1.406	0.777	0
A3A-HPG-HL-P1-1077	17Jun04	481015	1349916	100	0.714	0.54	13.1
A3A-HPG-HL-P1-923	02Jun04	480950	1350262	100	0.826	0.608	17.2

000047

2009

5536

Table A-1
AREA 3A
PHASE I - HPGe RESULTS
DETECTOR HEIGHT 100 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3A-HPG-HL-P1-1061	08Jun04	481697	1349660	100	0.879	0.593	0
A3A-HPG-HL-P1-1056	08Jun04	481726	1349569	100	1.084	0.575	13.6
A3A-HPG-HL-P1-1060	08Jun04	481698	1349551	100	1.007	0.539	0.0605
A3A-HPG-HL-P1-1054	08Jun04	481724	1349642	100	0.998	0.607	0.0688
A3A-HPG-HL-P1-913	02Jun04	480828	1350132	100	1.234	0.725	0
A3A-HPG-HL-P1-967	04Jun04	481107	1349974	100	0.923	0.634	7.97
A3A-HPG-HL-P1-1065	08Jun04	481697	1349587	100	0.88	0.521	16.6
A3A-HPG-HL-P1-1078	17Jun04	481078	1349908	100	0.832	0.679	10.4
A3A-HPG-HL-P1-1055	08Jun04	481726	1349606	100	1.193	0.734	13.9
A3A-HPG-HL-P1-1004	07Jun04	481108	1350046	100	1.29	0.647	0.0544
A3A-HPG-HL-P1-1004-D	07Jun04	481108	1350046	100	1.25	0.697	0
A3A-HPG-HL-P1-1005	07Jun04	481137	1350028	100	1.45	0.677	19.7
A3A-HPG-HL-P1-966	04Jun04	481075	1350028	100	0.956	0.683	0
A3A-HPG-HL-P1-921	02Jun04	480951	1350190	100	0.939	0.737	47.9
A3A-HPG-HL-P1-965	04Jun04	481076	1349992	100	0.961	0.677	0
A3A-HPG-HL-P1-922	02Jun04	480950	1350226	100	0.947	0.695	99.8
A3A-HPG-HL-P1-1069	09Jun04	481697	1349623	100	1.161	0.58	0
A3A-HPG-HL-P1-1079	17Jun04	481044	1350046	100	0.923	0.674	0.083
A3A-HPG-HL-P1-912	02Jun04	480825	1350096	100	0.91	0.645	0
A3A-HPG-HL-P1-929	02Jun04	480903	1350164	100	1.006	0.68	16
A3A-HPG-HL-P1-963	04Jun04	481045	1350009	100	0.924	0.672	10.1
A3A-HPG-HL-P1-928	02Jun04	480926	1350174	100	1.299	0.807	21.5
A3A-HPG-HL-P1-918	02Jun04	480980	1350245	100	0.941	0.608	24.9
A3A-HPG-HL-P1-1003	07Jun04	481108	1350010	100	1.19	0.682	0.0534
A3A-HPG-HL-P1-1084	22Jun04	481666	1349568	100	1.216	0.665	0
A3A-HPG-HL-P1-911	02Jun04	480827	1350060	100	0.999	0.604	0.0657
A3A-HPG-HL-P1-908	02Jun04	480828	1349951	100	1.013	0.666	0.0544
A3A-HPG-HL-P1-908-D	02Jun04	480828	1349951	100	0.979	0.634	0
A3A-HPG-HL-P1-964	04Jun04	481044	1349971	100	0.918	0.632	0.0552
A3A-HPG-HL-P1-909	02Jun04	480829	1349987	100	0.825	0.647	0
A3A-HPG-HL-P1-910	02Jun04	480827	1350024	100	0.973	0.697	10.7
A3A-HPG-HL-P1-1010	07Jun04	480830	1349914	100	1.076	0.558	0
A3A-HPG-HL-P1-917	02Jun04	480980	1350208	100	1.038	0.674	0.131
A3A-HPG-HL-P1-895	01Jun04	480953	1349918	100	0.913	0.593	14
A3A-HPG-HL-P1-924	02Jun04	481014	1350261	100	0.949	0.721	18.1

000048

5536

Table A-1
AREA 3A
PHASE I - HPGe RESULTS
DETECTOR HEIGHT 100 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3A-HPG-HL-P1-920	02Jun04	480951	1350153	100	1.014	0.68	13.5
A3A-HPG-HL-P1-884	01Jun04	481075	1349953	100	0.811	0.558	0.0685
A3A-HPG-HL-P1-1083	22Jun04	481678	1349605	100	1.156	0.679	18.8
A3A-HPG-HL-P1-1083-D	22Jun04	481678	1349605	100	1.17	0.635	0.0728
A3A-HPG-HL-P1-925	02Jun04	481013	1350226	100	0.96	0.622	13.5
A3A-HPG-HL-P1-888	02Jun04	481014	1350027	100	0.964	0.554	0
A3A-HPG-HL-P1-889	01Jun04	481013	1350055	100	0.765	0.579	0
A3A-HPG-HL-P1-903	02Jun04	480862	1349967	100	1.07	0.63	0
A3A-HPG-HL-P1-903-D	02Jun04	480862	1349967	100	0.986	0.596	0
A3A-HPG-HL-P1-885	01Jun04	481044	1349938	100	0.882	0.653	0.0702
A3A-HPG-HL-P1-901	02Jun04	480891	1349914	100	1.08	0.77	0
A3A-HPG-HL-P1-916	02Jun04	480981	1350172	100	1.067	0.658	14.1
A3A-HPG-HL-P1-900	01Jun04	480892	1349952	100	0.951	0.661	0.0665
A3A-HPG-HL-P1-927	02Jun04	480923	1350138	100	0.881	0.605	0.0577
A3A-HPG-HL-P1-886	01Jun04	481014	1349954	100	1.03	0.609	0
A3A-HPG-HL-P1-869	24May04	481106	1350210	100	1.02	0.619	0.0613
A3A-HPG-HL-P1-869-D	24May04	481106	1350210	100	0.89	0.65	0.0924
A3A-HPG-HL-P1-902	01Jun04	480859	1349933	100	0.929	0.546	0.0689
A3A-HPG-HL-P1-897	01Jun04	480920	1349970	100	0.865	0.546	0
A3A-HPG-HL-P1-919	02Jun04	480950	1350119	100	0.988	0.612	0
A3A-HPG-HL-P1-894	01Jun04	480952	1349954	100	0.977	0.595	0
A3A-HPG-HL-P1-896	01Jun04	480923	1349931	100	0.954	0.73	0.0714
A3A-HPG-HL-P1-960	04Jun04	481009	1350154	100	0.963	0.599	0
A3A-HPG-HL-P1-868	24May04	481105	1350174	100	0.985	0.658	0
A3A-HPG-HL-P1-926	02Jun04	481012	1350189	100	0.873	0.583	0.0859
A3A-HPG-HL-P1-893	01Jun04	480952	1349989	100	1.07	0.618	8.28
A3A-HPG-HL-P1-906	02Jun04	480856	1350077	100	0.975	0.633	10.6
A3A-HPG-HL-P1-907	02Jun04	480857	1350114	100	1.085	0.696	8.51
A3A-HPG-HL-P1-914	02Jun04	480982	1350102	100	0.894	0.586	0
A3A-HPG-HL-P1-878	24May04	481044	1350210	100	1.02	0.651	0.0753
A3A-HPG-HL-P1-892	01Jun04	480983	1350008	100	0.706	0.51	0
A3A-HPG-HL-P1-899	01Jun04	480887	1349986	100	0.976	0.617	0
A3A-HPG-HL-P1-899-D	01Jun04	480887	1349986	100	1.032	0.648	0.0713
A3A-HPG-HL-P1-890	01Jun04	480983	1349936	100	0.927	0.559	0
A3A-HPG-HL-P1-891	01Jun04	480983	1349972	100	0.836	0.562	0

00049

2232

5536

Table A-1
AREA 3A
PHASE I - HPGe RESULTS
DETECTOR HEIGHT 100 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3A-HPG-HL-P1-905	02Jun04	480858	1350041	100	0.951	0.496	11.2
A3A-HPG-HL-P1-877	24May04	481043	1350173	100	0.922	0.617	0.077
A3A-HPG-HL-P1-861	24May04	481136	1350228	100	0.966	0.668	0
A3A-HPG-HL-P1-915	02Jun04	480980	1350136	100	0.957	0.668	0.0539
A3A-HPG-HL-P1-866	24May04	481105	1350103	100	1.04	0.721	0.064
A3A-HPG-HL-P1-876	24May04	481043	1350138	100	1.04	0.739	19.2
A3A-HPG-HL-P1-862	24May04	481136	1350193	100	0.983	0.672	10.7
A3A-HPG-HL-P1-875	24May04	481043	1350102	100	1.03	0.734	0.0977
A3A-HPG-HL-P1-898	01Jun04	480919	1350006	100	0.72	0.482	6.43
A3A-HPG-HL-P1-930	02Jun04	480887	1350131	100	1.005	0.658	10.8
A3A-HPG-HL-P1-961	04Jun04	481012	1350118	100	0.948	0.649	0
A3A-HPG-HL-P1-867	24May04	481106	1350139	100	1.02	0.729	0
A3A-HPG-HL-P1-863	24May04	481137	1350156	100	0.968	0.572	0.0569
A3A-HPG-HL-P1-871	24May04	481074	1350192	100	1.07	0.737	12.6
A3A-HPG-HL-P1-870	24May04	481075	1350228	100	1.13	0.766	13.2
A3A-HPG-HL-P1-870-D	24May04	481075	1350228	100	1.06	0.727	15.6
A3A-HPG-HL-P1-864	24May04	481136	1350120	100	1.11	0.666	11.5
A3A-HPG-HL-P1-865	24May04	481135	1350084	100	1.14	0.733	0.0686
A3A-HPG-HL-P1-872	24May04	481074	1350157	100	1.04	0.669	10.1
A3A-HPG-HL-P1-873	24May04	481074	1350120	100	1.11	0.756	0.0678
A3A-HPG-HL-P1-874	24May04	481074	1350084	100	1.11	0.753	9.97
A3A-HPG-HL-P1-962	04Jun04	481013	1350083	100	0.958	0.664	12
A3A-HPG-HL-P1-887	01Jun04	481013	1349990	100	0.886	0.72	11.8
A3A-DG-P1-HL-791	28Apr04	481540	1350144	100cm	1.14	0.734	9.44
A3A-DG-P1-HL-792	28Apr04	481540	1350108	100cm	1.177	0.898	0
A3A-DG-P1-HL-793	28Apr04	481540	1350072	100cm	1.133	0.694	0
A3A-DG-P1-HL-794	28Apr04	481539	1350036	100cm	1.04	0.669	12.7
A3A-DG-P1-HL-795	28Apr04	481539	1350000	100cm	1.163	0.754	15.4
A3A-DG-P1-HL-795-D	28Apr04	481539	1350000	100cm	1.174	0.799	0.0933
A3A-DG-P1-HL-796	28Apr04	481540	1349964	100cm	1.354	0.769	17.6
A3A-DG-P1-HL-797	28Apr04	481540	1349928	100cm	1.201	0.663	0.099
A3A-DG-P1-HL-798	28Apr04	481539	1349893	100cm	1.136	0.671	10.3
A3A-DG-P1-HL-799	28Apr04	481539	1349857	100cm	1.039	0.622	9.76
A3A-DG-P1-HL-800	28Apr04	481538	1349820	100cm	1.074	0.722	0
A3A-DG-P1-HL-801	28Apr04	481536	1349781	100cm	1.005	0.61	15.2

000050

5536

Table A-1
AREA 3A
PHASE I - HPGe RESULTS
DETECTOR HEIGHT 100 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3A-DG-P1-HL-802	28Apr04	481507	1349795	100cm	1.061	0.725	0
A3A-DG-P1-HL-803	28Apr04	481569	1349766	100cm	1.066	0.671	0.056
A3A-DG-P1-HL-804	28Apr04	481569	1349802	100cm	0.891	0.666	0.0641
A3A-DG-P1-HL-805	28Apr04	481570	1349841	100cm	1.02	0.6	0.0652
A3A-DG-P1-HL-806	28Apr04	481571	1349871	100cm	0.95	0.723	14.9
A3A-DG-P1-HL-807	28Apr04	481571	1349910	100cm	0.925	0.75	7.79
A3A-DG-P1-HL-808	28Apr04	481570	1349947	100cm	0.947	0.703	13
A3A-DG-P1-HL-809	28Apr04	481572	1350018	100cm	0.939	0.667	18
A3A-DG-P1-HL-810	28Apr04	481570	1350054	100cm	0.903	0.636	18
A3A-DG-P1-HL-811	28Apr04	481570	1350090	100cm	0.922	0.709	12.3
A3A-DG-P1-HL-812	28Apr04	481570	1350127	100cm	1.015	0.729	14.7
A3A-DG-P1-HL-813	28Apr04	481570	1350162	100cm	0.88	0.774	14.9
A3A-DG-P1-HL-813-D	28Apr04	481570	1350162	100cm	0.864	0.817	19.4
A3A-DG-P1-HL-814	28Apr04	481602	1350145	100cm	0.943	0.839	12.9
A3A-DG-P1-HL-815	28Apr04	481602	1350108	100cm	0.915	0.911	13.2
3A-HPG-BP-PC-378	13Dec02	481479.8	1349478.5	100cm	1.698	0.673	8.26
3A-HPG-BP-PC-378-D	13Dec02	481479.8	1349478.5	100cm	1.59	0.654	0
A3A-HPG-P1-1011	07Jun04	480922	1349896	100	1.29	0.578	11.5
A3A-HPG-P1-1012	07Jun04	480892	1349876	100	1.21	0.793	0.0755
A3A-HPG-P1-1013	07Jun04	480858	1349891	100	1.25	0.748	10.7
A3A-HPG-P1-1076	17Jun04	480830	1349889	100	0.765	0.63	0
A3A-HPG-P1-1076-D	17Jun04	480830	1349889	100	0.731	0.508	0

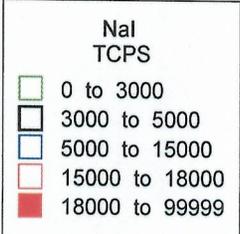
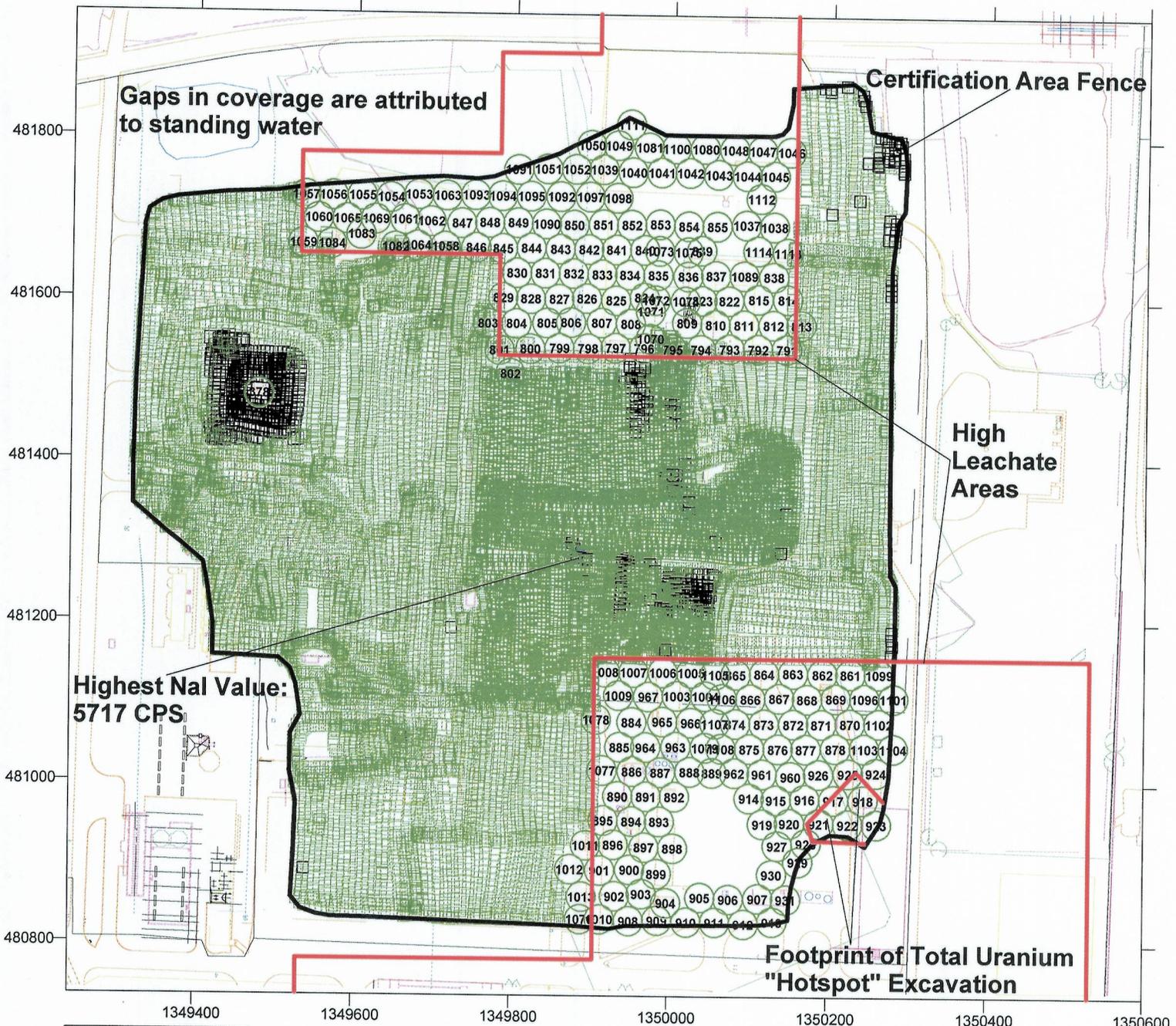
000051

5536

Figure A-1 Area 3A Phase 1 Total Gross Counts per Second

Field of View to Scale

Nal Batch #: Gator-216,225,231; RSS1-748,968,1045,1048-1049, 1052-1053,1056,1071;
RSS3-398,438,444-446,449,476,EMS-222,247,250
HPGe DET# 30687, 30699, 31204, 31265, 40227
Measurement Dates: 09/24/02 - 06/25/04



HPGe shown for coverage only

RTIMP DWG Title: A3A_P1_TC.srf
 Project Name: A3A/4A Exc. Char. and PreCert
 Project #: 20200-PSP-0009
 Verified By: Brian McDaniel/11058
 Date Verified: 06/26/04
 Support Data: A3A_BPF_P1_Nal_V1.xls;
 A3A_DG_P1_Nal_V2.xls; A3A_P1_Nal_V3.xls;
 A3A_DG_P1_HL_HPGe_100cm.xls; **000052**
 A3A_P1_HL_HPGe_100cm.xls;
 A3A_BPF_P1_HPGe_100cm.xls; A3A_P1_HPGe_100cm.xls

Figure A-2 Area 3A Phase 1 Moisture Corrected Radium-226

5536

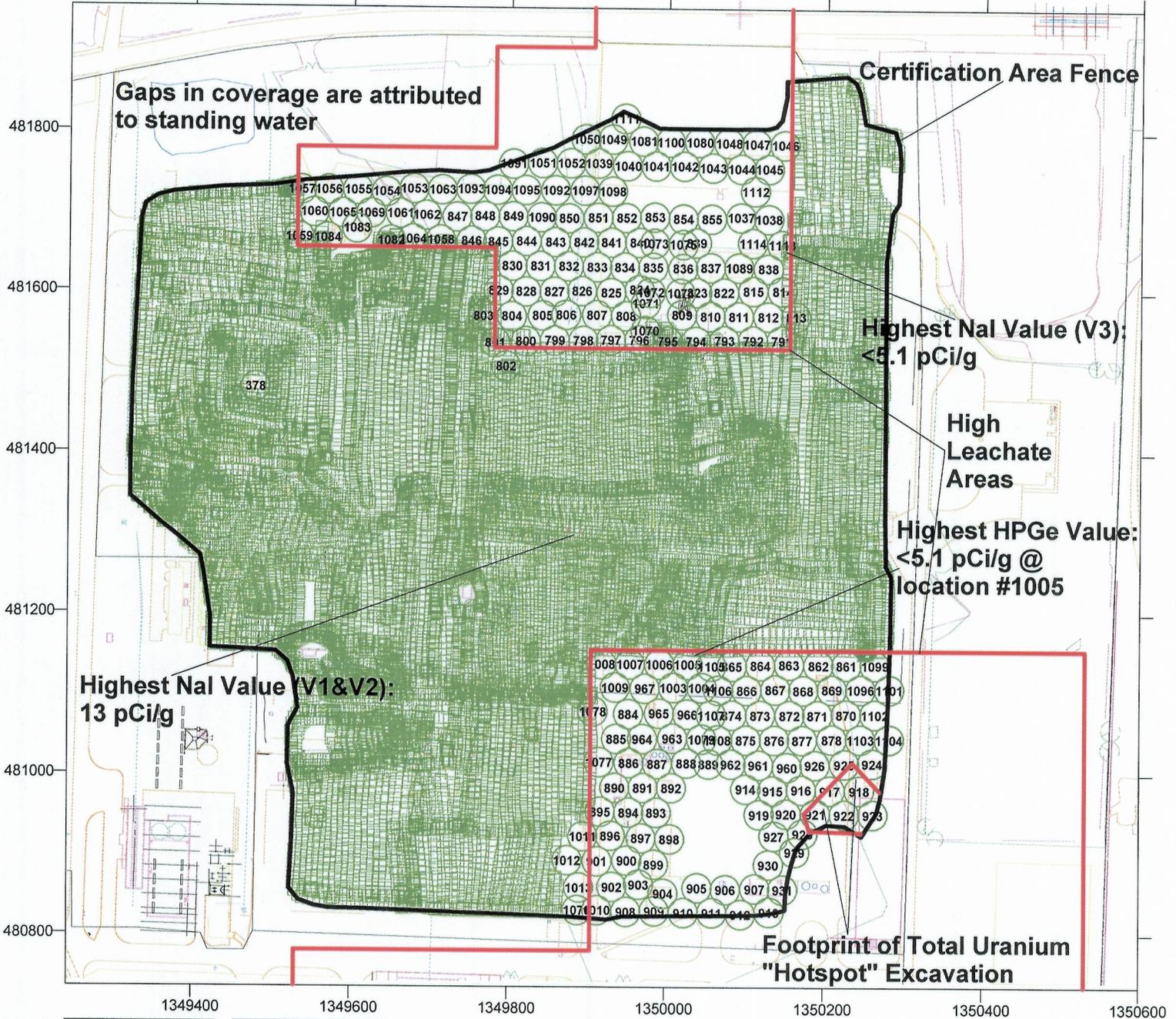


Field of View to Scale

Nal Batch #: Gator-216,225,231; RSS1-748,968,1045,1048-1049, 1052-1053,1056,1071;
RSS3-398,438,444-446,449,476,EMS-222,247,250

HPGe DET# 30687, 30699, 31204, 31265, 40227

Measurement Dates: 09/24/02 - 06/25/04



<p>Nal (V1&V2) Ra-226 (pCi/g)</p> <p>□ -5 to 12</p> <p>□ 12 to 9999</p>	<p>HPGe @ 100cm Ra-226 (pCi/g)</p> <p>○ 0 to 5.1</p> <p>○ 5.1 to 9999</p>
<p>Nal (V3) Ra-226 (pCi/g)</p> <p>□ -1 to 5.1</p> <p>□ 5.1 to 9999</p>	

RTIMP DWG Title: A3A_P1_RA.srf
 Project Name: A3A/4A Exc. Char. and PreCert
 Project #: 20200-PSP-0009
 Verified By: Brian McDaniel/11058
 Date Verified: 06/26/04
 Support Data: A3A_BPF_P1_Nal_V1.xls;
 A3A_DG_P1_Nal_V2.xls; A3A_P1_Nal_V3.xls;
 A3A_DG_P1_HL_HPGe_100cm.xls;
 A3A_P1_HL_HPGe_100cm.xls;
 A3A_BPF_P1_HPGe_100cm.xls; A3A_P1_HPGe_100cm.xls

000053

Figure A-3 Area 3A Phase 1 Moisture Corrected Thorium-232

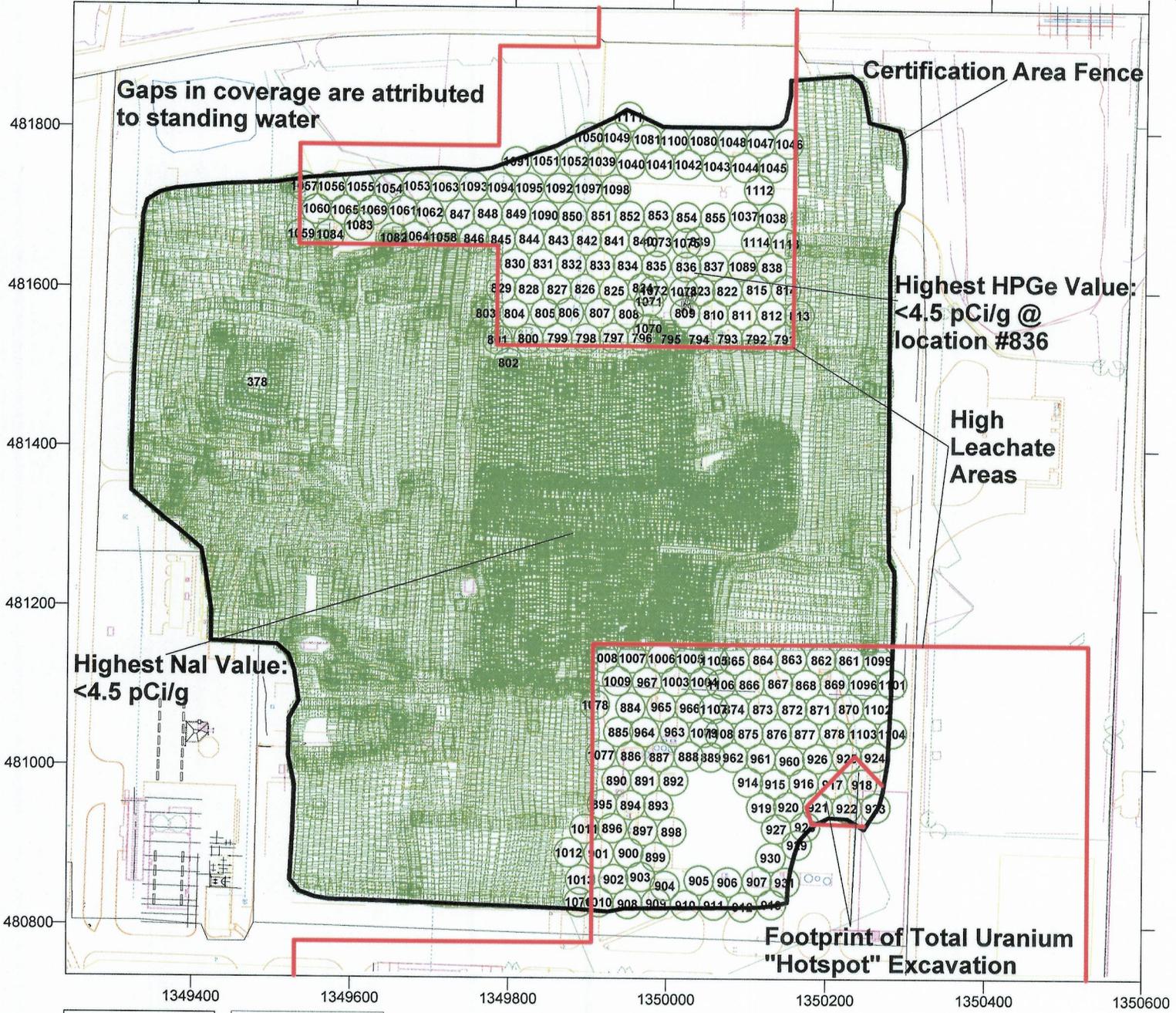
Field of View to Scale

Nal Batch #: Gator-216,225,231; RSS1-748,968,1045,1048-1049, 1052-1053,1056,1071;
RSS3-398,438,444-446,449,476,EMS-222,247,250

HPGe DET# 30687, 30699, 31204, 31265, 40227

Measurement Dates: 09/24/02 - 06/25/04

5536



NaI Th-232 (pCi/g)		HPGe @ 100cm Th-232 (pCi/g)	
	-1 to 4.5		0 to 4.5
	4.5 to 9999		4.5 to 9999

RTIMP DWG Title: A3A_P1_TH.srf
 Project Name: A3A/4A Exc. Char. and PreCert
 Project #: 20200-PSP-0009
 Verified By: Brian McDaniel/11058 000054
 Date Verified: 06/26/04
 Support Data: A3A_BPF_P1_NaI_V1.xls;
 A3A_DG_P1_NaI_V2.xls; A3A_P1_NaI_V3.xls;
 A3A_DG_P1_HL_HPGe_100cm.xls;
 A3A_P1_HL_HPGe_100cm.xls;
 A3A_BPF_P1_HPGe_100cm.xls; A3A_P1_HPGe_100cm.xls

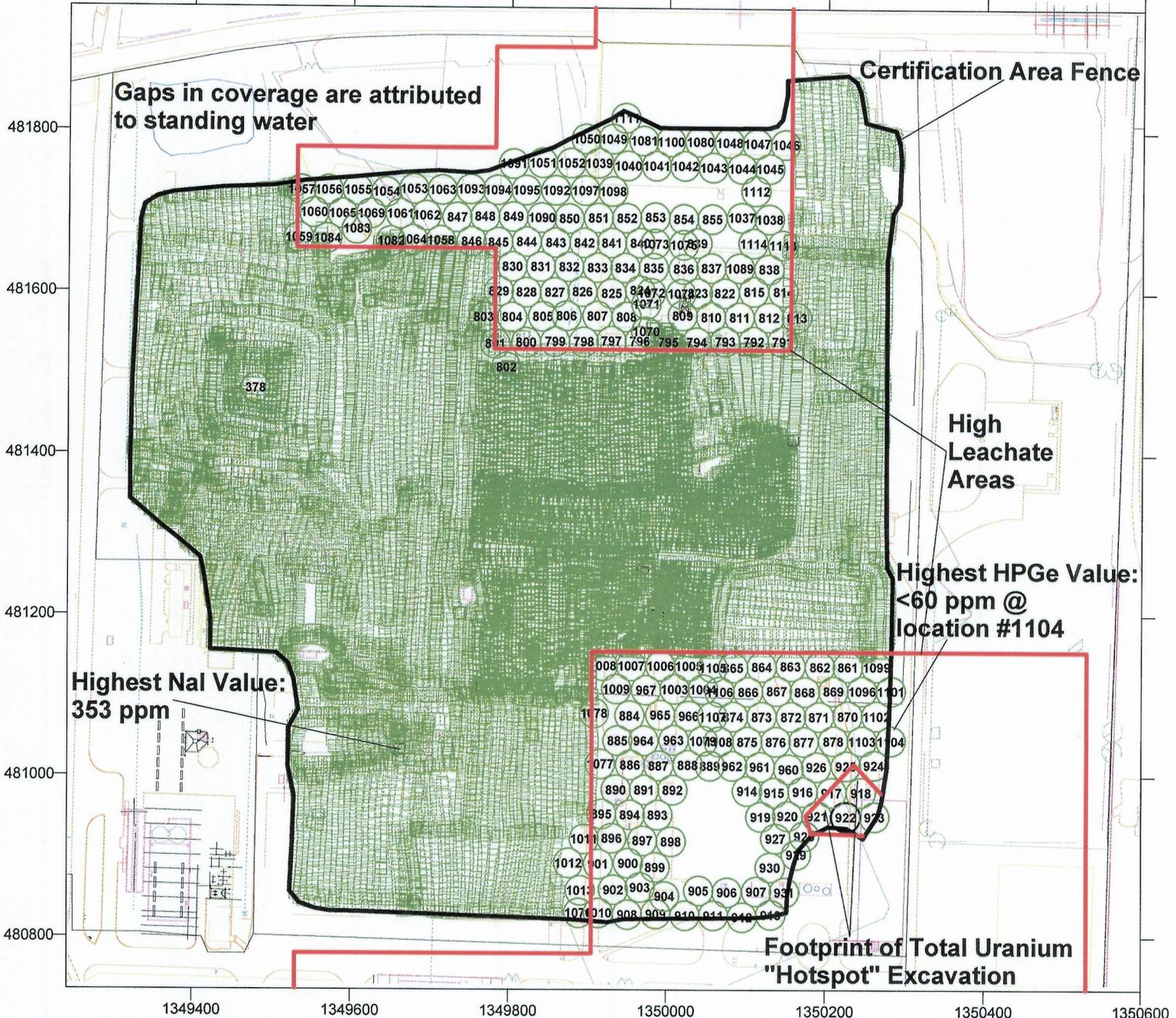
Figure A-4 Area 3A Phase 1 Moisture Corrected Total Uranium

Field of View to Scale

Nal Batch #: Gator-216,225,231; RSS1-748,968,1045,1048-1049, 1052-1053,1056,1071;
RSS3-398,438,444-446,449,476,EMS-222,247,250

HPGe DET# 30687, 30699, 31204, 31265, 40227

Measurement Dates: 09/24/02 - 06/25/04



<p>Nal (V1&V2) Total U (ppm)</p> <ul style="list-style-type: none"> -253 to 246 246 to 721 721 to 9999 	<p>HPGe @ 100cm Total U (ppm) FRL= 20 ppm</p> <ul style="list-style-type: none"> 0 to 60 60 to 400 400 to 9999
<p>Nal (V3) Total U (ppm)</p> <ul style="list-style-type: none"> -174 to 246 246 to 875 875 to 9999 	<p>HPGe @ 100cm Total U (ppm) FRL= 82 ppm</p> <ul style="list-style-type: none"> 0 to 246 246 to 400 400 to 9999

RTIMP DWG Title: A3A_P1_TU.srf
 Project Name: A3A/4A Exc. Char. and PreCert
 Project #: 20200-PSP-0009
 Verified By: Brian McDaniel/11058 000055
 Date Verified: 06/26/04
 Support Data: A3A_BPF_P1_Nal_V1.xls;
 A3A_DG_P1_Nal_V2.xls; A3A_P1_Nal_V3.xls;
 A3A_DG_P1_HL_HPGe_100cm.xls;
 A3A_P1_HL_HPGe_100cm.xls;
 A3A_BPF_P1_HPGe_100cm.xls; A3A_P1_HPGe_100cm.xls

Table A-2
 AREA 3A
 PHASE 2 - HPGe RESULTS
 DETECTOR HEIGHT 31 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
						0.919	13.5
					0.806		0
					0.818	1.03	0.0951
A3A-HPG-P2-856	22May04	481527	1349946	31	0.853	0.764	10.8
A3A-HPG-P2-857	22May04	481476	1350125	31	0.941	1.16	0
A3A-HPG-P2-858	22May04	481419	1350158	31	0.886	0.734	6.2
A3A-HPG-P2-859	22May04	481609	1350273	31	0.869	0.666	10.7
A3A-HPG-P2-879	01Jun04	481202	1349601	31	0.898	0.702	0
A3A-HPG-P2-880	01Jun04	481274	1349578	31	0.997	0.675	0
A3A-HPG-P2-881	01Jun04	480907	1349842	31	1.195	1.03	10.3
A3A-HPG-P2-880	01Jun04	481165	1350194	31	1.04	1	27.9
A3A-HPG-P2-860	22May04	481578	1349703	31	1.056	0.602	28
A3A-HPG-P2-860	01Jun04	481578	1349703	31	0.957	0.639	10.4
A3A-HPG-P2-883	01Jun04	481578	1349703	31	1.357	0.895	13.2
A3A-HPG-P2-883-D	01Jun04	480892	1349539	31	1.165	0.799	13.2
A3A-HPG-P2-932	03Jun04	480892	1349539	31	1.181	0.87	11.8
A3A-HPG-P2-932	03Jun04	480892	1350279	31	1.182	0.786	0
A3A-HPG-P2-932-D	03Jun04	481692	1350279	31	1.154	0.649	43.4
A3A-HPG-P2-1067	09Jun04	481360	1350028	31	1.344	0.911	0.112
A3A-HPG-P2-1068	09Jun04	481360	1350028	31	1.32	0.889	0.0516
A3A-HPG-P2-1068-D	09Jun04	481360	1349673	31	1.047	0.556	0
A3A-HPG-P2-1085	22Jun04	481601	1349673	31	0.992	0.544	0.0425
A3A-HPG-P2-1085-D	22Jun04	481601	1349673	31	1.09	0.575	17.7
A3A-HPG-P2-1086	22Jun04	481650	1349724	31	1.095	0.795	17.9
A3A-HPG-P2-1086	22Jun04	481725	1349525	31	1.023	0.797	21.8
A3A-HPG-P2-1088	22Jun04	481427	1349368	31	1.13	2.03	11.1
A3A-HPG-P2-1087	22Jun04	481054	1349661	31	1.303	0.814	17.2
A3A-HPG-P2-1087	24Jun04	481032	1349662	31	1.471	1.79	0.0766
A3A-HPG-P2-1109	24Jun04	481032	1349662	31	1.22	0.757	0.0554
A3A-HPG-P2-1110	24Jun04	481161	1350278	31	0.964	0.668	8.09
A3A-HPG-P2-1110	25Jun04	481161	1350278	31	1.082	0.601	14
A3A-HPG-P2-1115	25Jun04	481161	1350278	31	1.057	0.96	19.8
A3A-HPG-P2-1115-D	25Jun04	481272	1349944	31	1.065	1.15	23.6
A3A-HPG-DG-773	08Apr04	481254	1349970	31	1.094	1.49	0.0896
A3A-HPG-DG-772	08Apr04	481254	1349970	31	1.11	0.804	0
A3A-HPG-DG-772	08Apr04	481281	1349884	31	1.12	0.693	0
A3A-HPG-DG-774	08Apr04	481298	1349876	31	1.12	0.676	0
A3A-HPG-DG-775	08Apr04	481298	1349876	31	0.908	0.7	7.16
A3A-HPG-DG-775	08Apr04	481111	1349766	31			
A3A-HPG-DG-771	09Apr04	481111	1349766	31			
A3A-HPG-DG-771-D	09Apr04	481111	1349766	31			
A3A-HPG-DG-776	09Apr04	481288	1350140	31			
A3A-HPG-DG-776	09Apr04	481475	1349969	31			
A3A-HPG-DG-778	09Apr04	481450	1349959	31			
A3A-HPG-DG-777	09Apr04	481549.8	1349455	31			
A3A-HPG-PC-325	24Sep02	481472.6	1349405	31			
A3A-HPG-PC-326	24Sep02	481472.6	1349405	31			
A3A-HPG-PC-326-D	24Sep02	481472.6	1349405	31			
A3A-HPG-P2-HL-882	01Jun04	481062	1349905	31			

000056

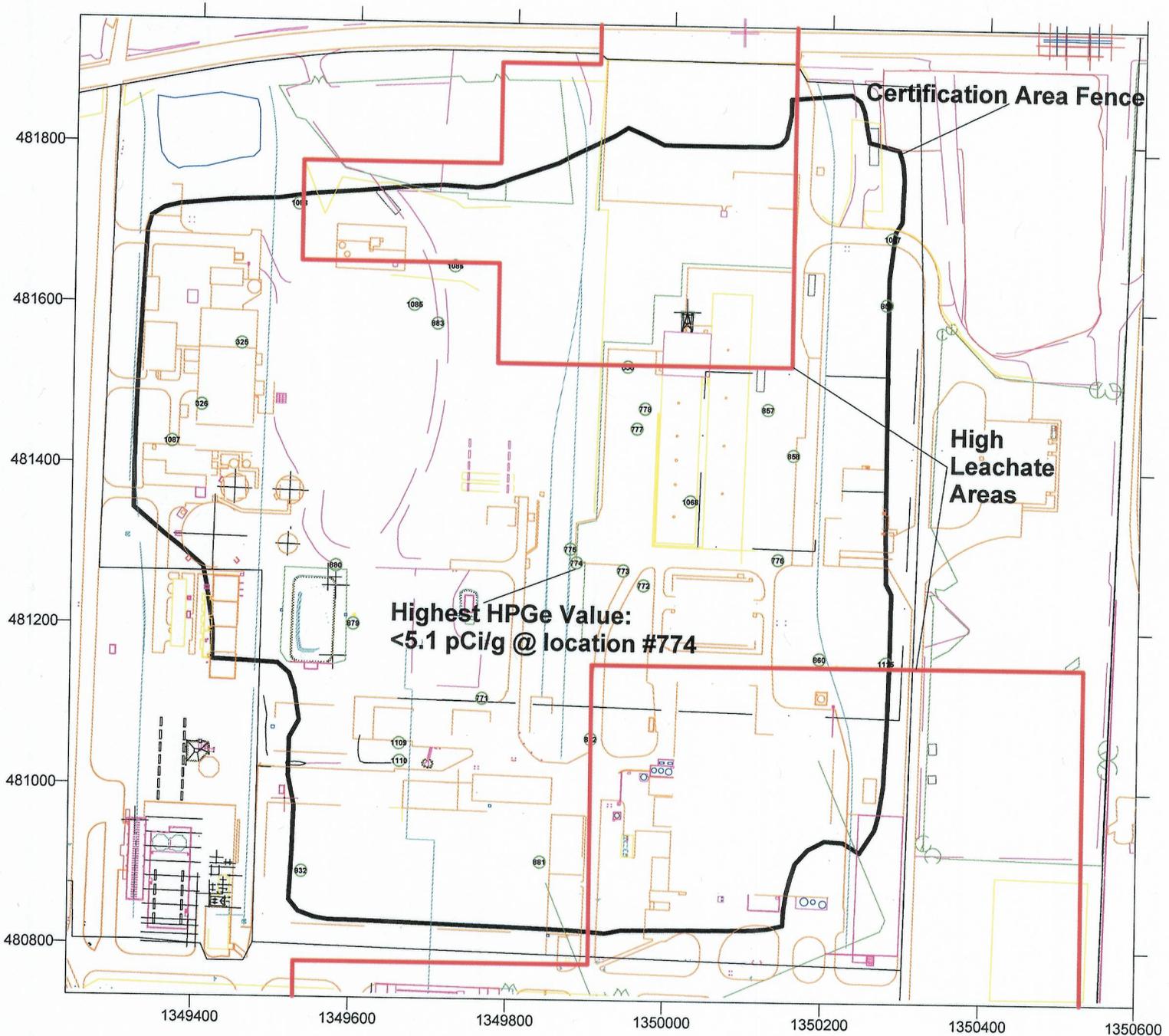
5536 5536

Figure A-5 Area 3A Phase 2 Moisture Corrected Radium-226

5536



Field of View to Scale
HPGe DET#: 30687, 30699, 31204, 31265, 40227
Measurement Date: 09/24/02 - 06/25/04



HPGe @ 31cm
Ra-226 (pCi/g)

- 0 to 5.1
- 5.1 to 9999

RTIMP DWG Title: A3A_P2_RA.srf
Project Name: A3A/4A Exc. Char. and PreCert
Project #: 20200-PSP-0009
Verified By: Brian McDaniel/11058
Date Verified: 06/26/04
Support Data: A3A_P2_HPGe_31cm.xls;
A3A_P2_HL_HPGe_31cm.xls;
A3A_DG_P2_HPGe_31cm.xls;
A3A_BPF_P2_HPGe_31cm.xls

000057

Figure A-6 Area 3A Phase 2 Moisture Corrected Thorium-232

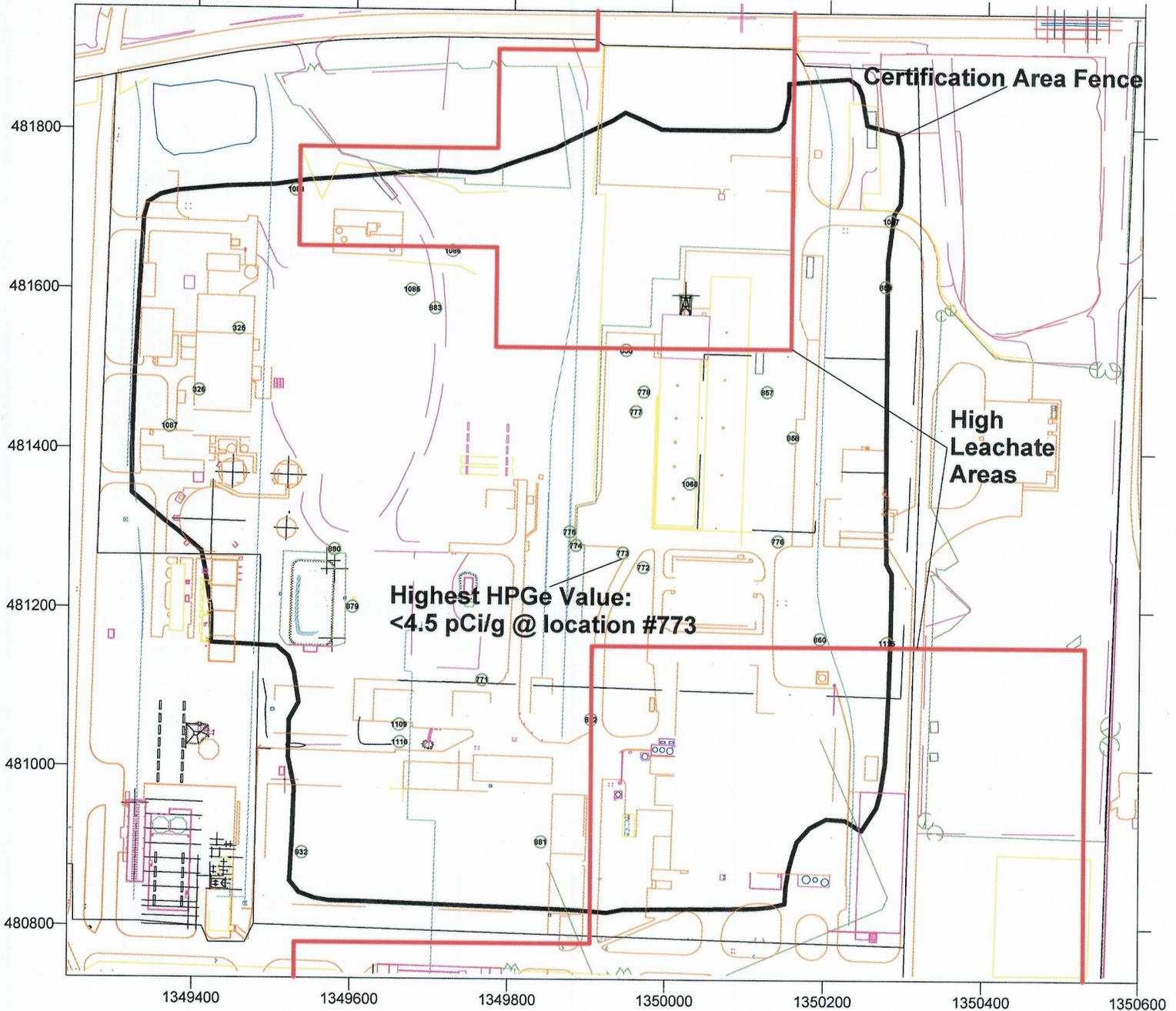
5536



Field of View to Scale

HPGe DET#: 30687, 30699, 31204, 31265, 40227

Measurement Date: 09/24/02 - 06/25/04



HPGe @ 31cm
Th-232 (pCi/g)

- 0 to 4.5
- 4.5 to 9999

RTIMP DWG Title: A3A_P2_TH.srf
 Project Name: A3A/4A Exc. Char. and PreCert
 Project #: 20200-PSP-0009
 Verified By: Brian McDaniel/11058
 Date Verified: 06/26/04
 Support Data: A3A_P2_HPGe_31cm.xls;
 A3A_P2_HL_HPGe_31cm.xls;
 A3A_DG_P2_HPGe_31cm.xls;
 A3A_BPF_P2_HPGe_31cm.xls

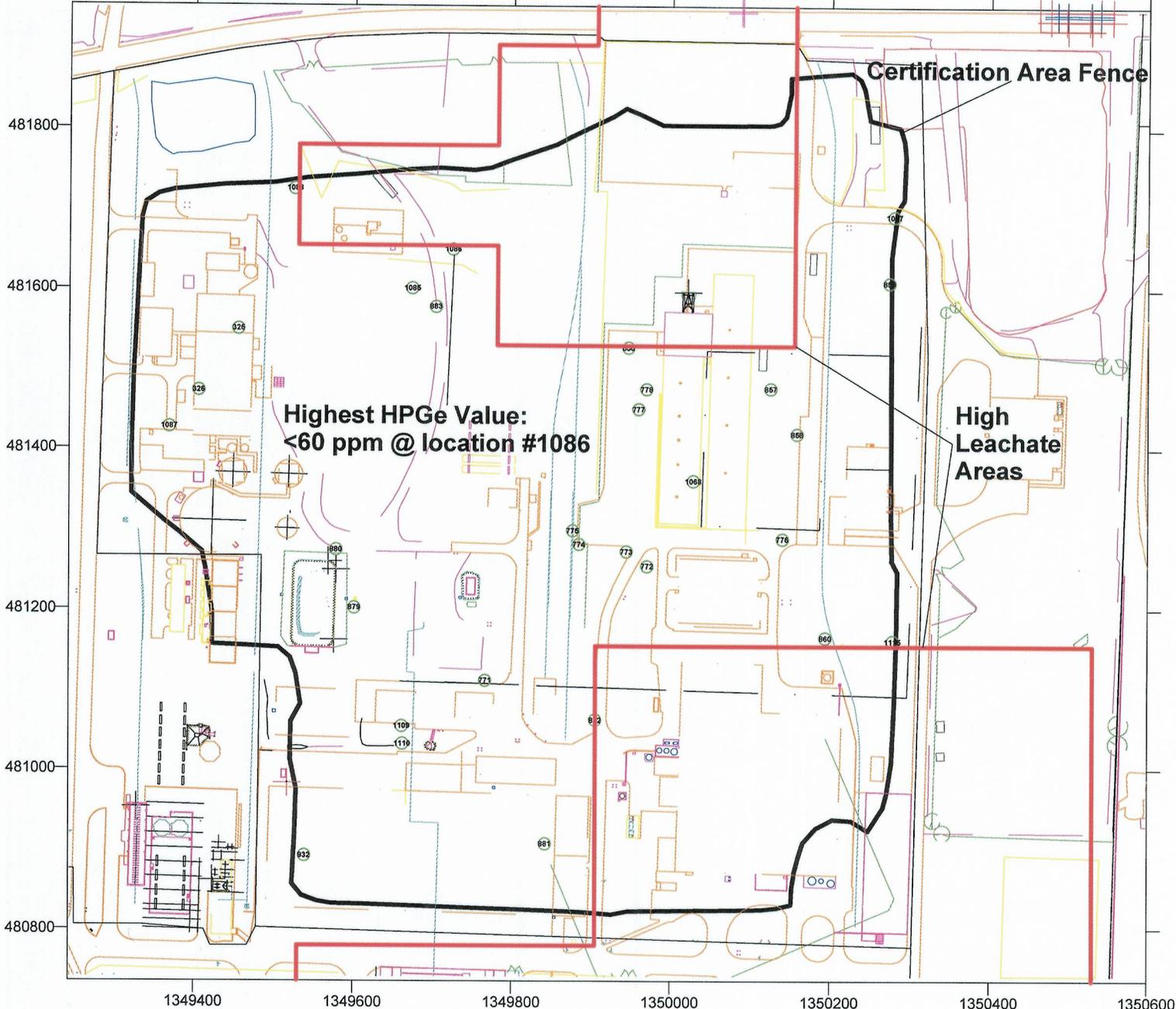
000058

Figure A-7 Area 3A Phase 2 Moisture Corrected Total Uranium

Field of View to Scale

HPGe DET#: 30687, 30699, 31204, 31265, 40227

Measurement Date: 09/24/02 - 06/25/04



HPGe @ 31cm Total U (ppm) FRL= 20 ppm	
○	0 to 60
○	60 to 928
●	928 to 9999

HPGe @ 31cm Total U (ppm) FRL= 82 ppm	
○	0 to 246
○	246 to 928
●	928 to 9999

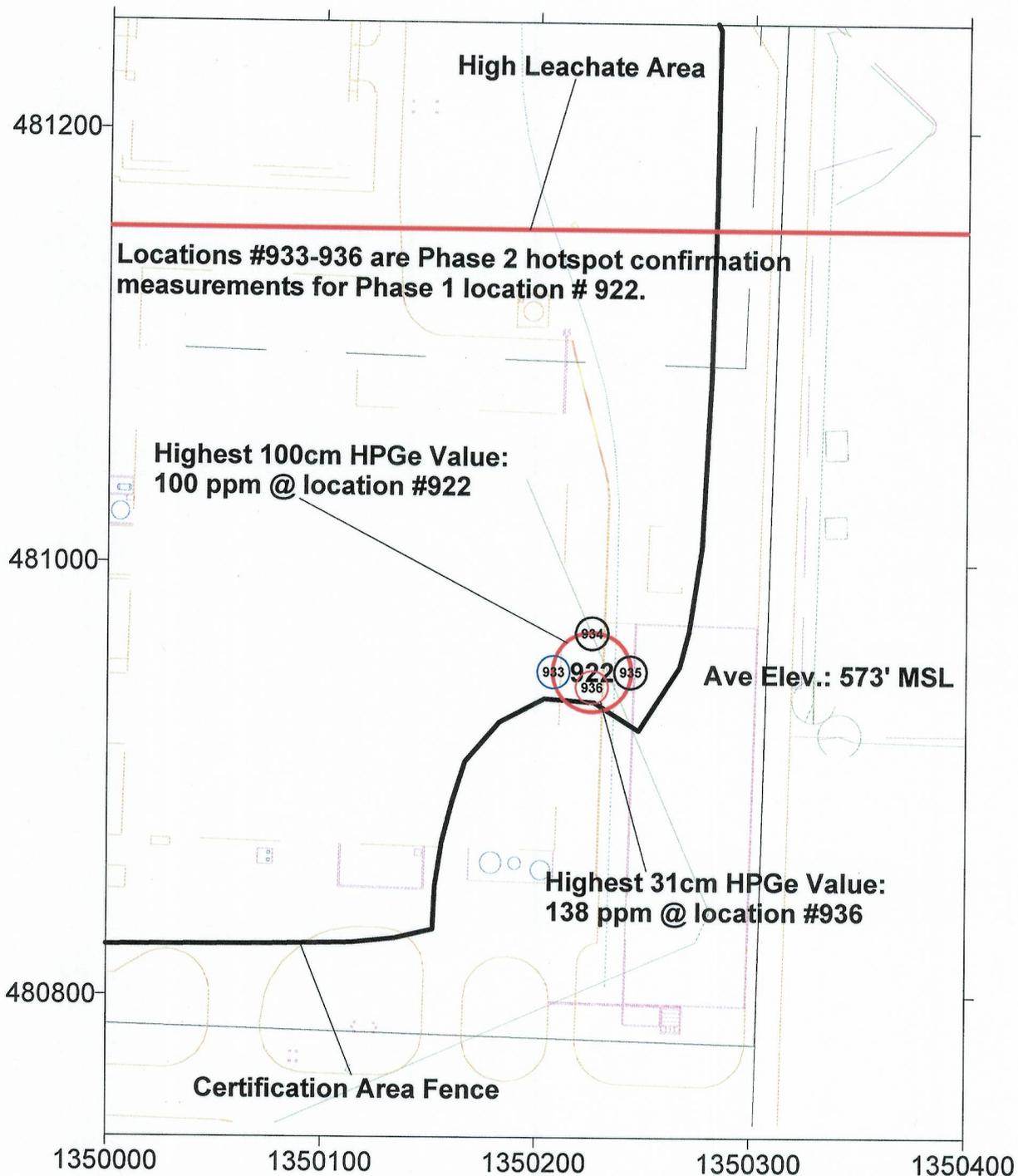
RTIMP DWG Title: A3A_P2_TU.srf
 Project Name: A3A/4A Exc. Char. and PreCert
 Project #: 20200-PSP-0009
 Verified By: Brian McDaniel/11058
 Date Verified: 06/26/04
 Support Data: A3A_P2_HPGe_31cm.xls;
 A3A_P2_HL_HPGe_31cm.xls;
 A3A_DG_P2_HPGe_31cm.xls;
 A3A_BPF_P2_HPGe_31cm.xls

Figure A-8 Initial Hot Spot Delineation

5536



Moisture Corrected Total Uranium
 Field of View to Scale
 HPGe DET#: 40227
 Measurement Dates: 06/02/04 - 06/03/04



HPGe @ 31cm Total U (ppm) FRL= 20 ppm	HPGe @ 100cm Total U (ppm) FRL= 20ppm
○ 0 to 20	○ 0 to 20
○ 20 to 40	○ 20 to 40
○ 40 to 60	○ 40 to 60
○ 60 to 928	○ 60 to 400
● 928 to 9999	● 400 to 9999

RTIMP DWG Title: A3A_P2HS_TU_06-03-2004_ZOOM.srf
 Project Name: A3A/4A Exc. Char. and PreCert
 Project #: 20200-PSP-0009
 Verified By: Brian McDaniel/11058
 Date Verified: 06/28/04
 Support Data: A3A_HPG_HL_P1_922.xls;
 A3A_P2HS_HPGe_31cm_06-03-2004.xls

000060

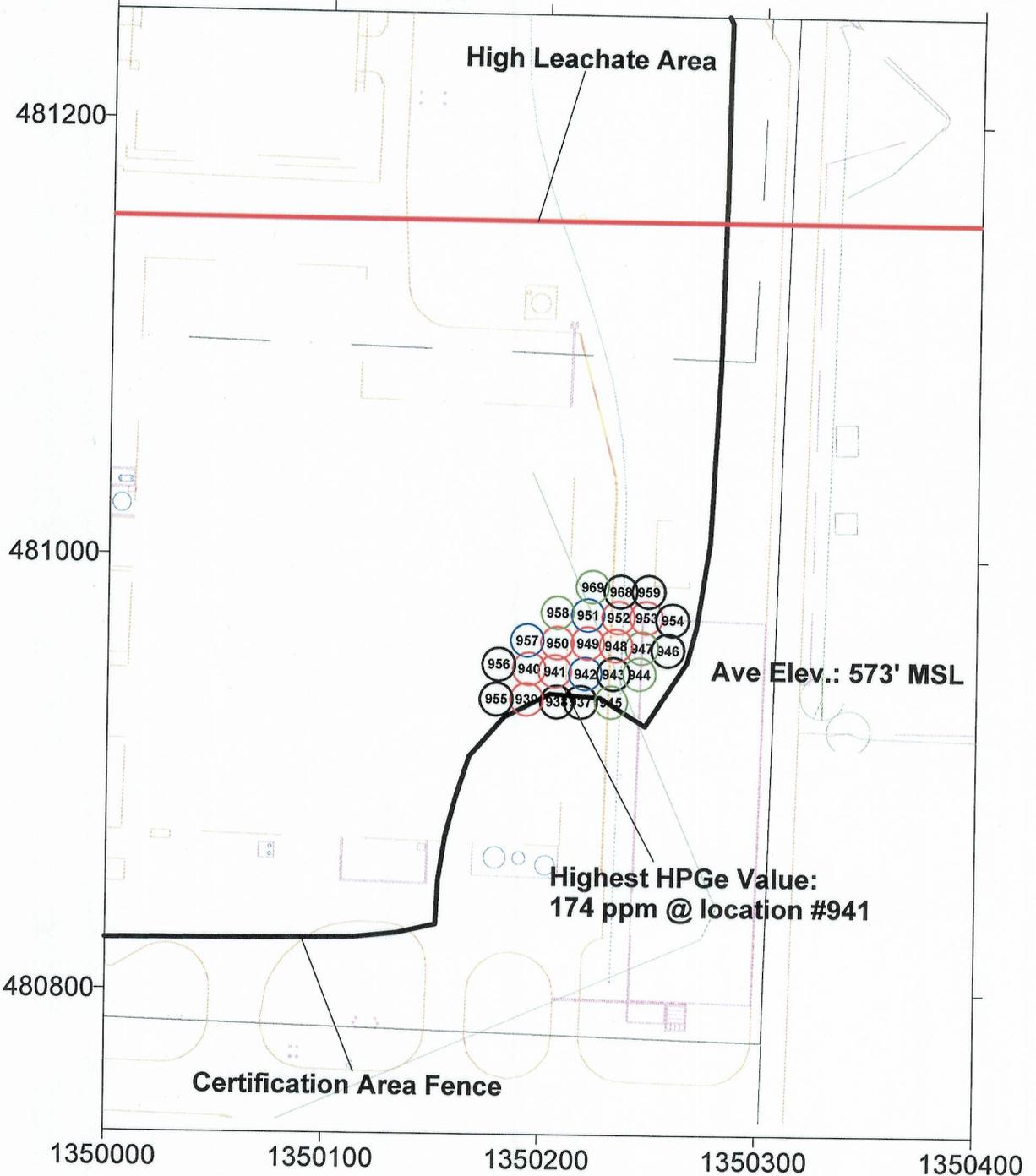
Figure A-9 Post Excavation Hot Spot Delineation (1)

Moisture Corrected Total Uranium

Field of View to Scale

HPGe DET#: 30699, 31265

Measurement Date: 06/04/04

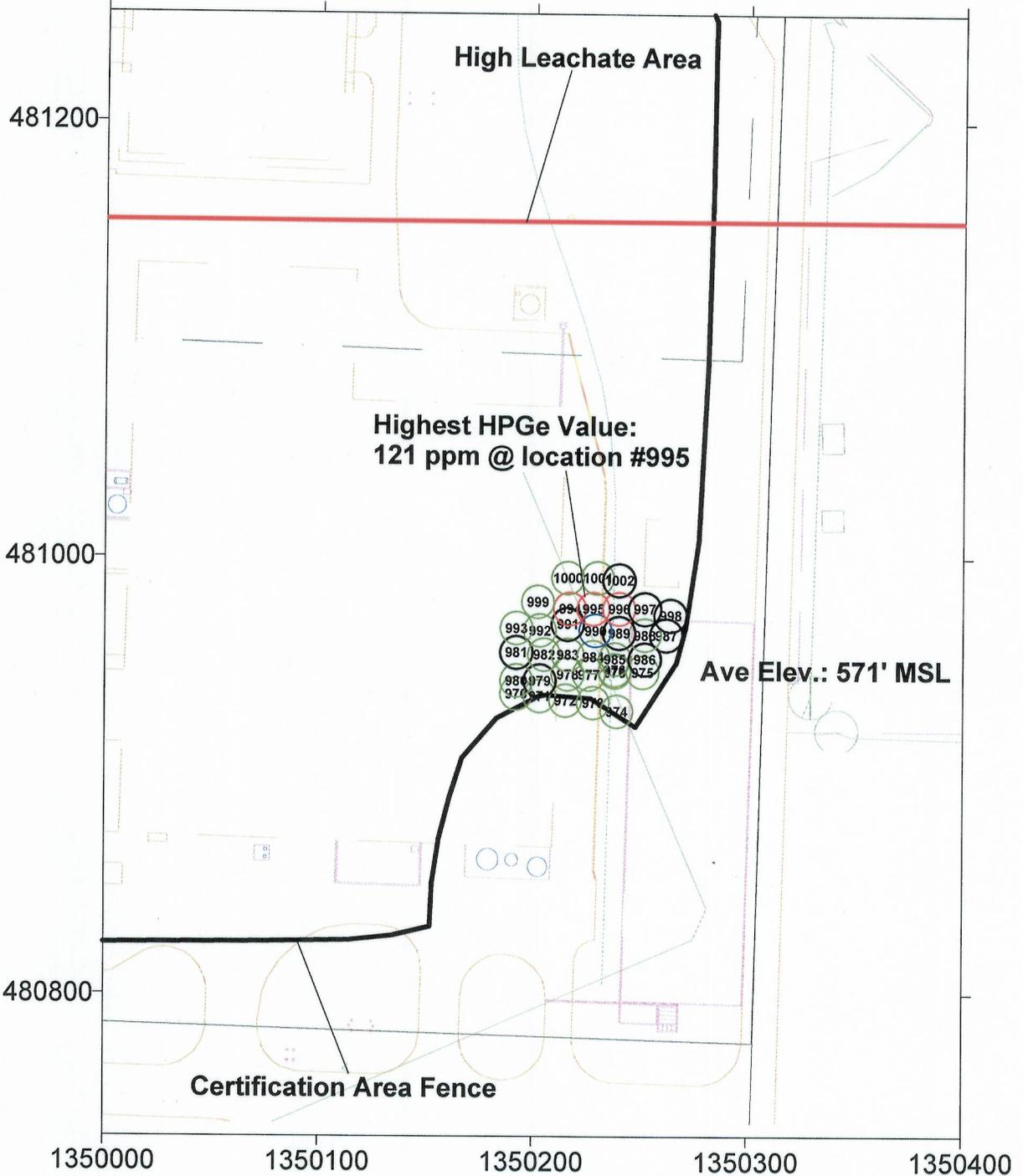


HPGe @ 31cm Total U (ppm) FRL= 20 ppm	
○	0 to 20
○	20 to 40
○	40 to 60
○	60 to 928
●	928 to 9999

RTIMP DWG Title: A3A_P3_TU_06-04-2004_ZOOM.srf
 Project Name: A3A/4A Exc. Char. and PreCert
 Project #: 20200-PSP-0009
 Verified By: Brian McDaniel/11058
 Date Verified: 06/28/04
 Support Data: A3A_P3_HPGe_31cm_06-04-2004.xls

Figure A-10 Post Excavation Hot Spot Delineation (2)

Moisture Corrected Total Uranium
Field of View to Scale
HPGe DET#: 30699, 31204
Measurement Date: 06/05/04



HPGe @ 31cm
Total U (ppm)
FRL= 20 ppm

- 0 to 20
- 20 to 40
- 40 to 60
- 60 to 928
- 928 to 9999

RTIMP DWG Title: A3A_P3_TU_06-05-2004_ZOOM.srf
 Project Name: A3A/4A Exc. Char. and PreCert
 Project #: 20200-PSP-0009
 Verified By: Brian McDaniel/11058
 Date Verified: 06/28/04
 Support Data: A3A_P3_HPGe_31cm_06-05-2004.xls

Figure A-11 Post Excavation Confirmation of Hot Spot Removal

Moisture Corrected Total Uranium

Field of View to Scale

HPGe DET#: 31204, 40227

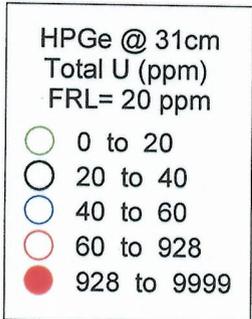
Measurement Date: 06/07/04



Highest HPGe Value:
44 ppm @ location #1034

Ave Elev.: 569' MSL

Certification Area Fence



RTIMP DWG Title: A3A_P3_TU_06-07-2004_ZOOM.srf
 Project Name: A3A/4A Exc. Char. and PreCert
 Project #: 20200-PSP-0009
 Verified By: Brian McDaniel/11058
 Date Verified: 06/28/04
 Support Data: A3A_P3_HPGe_31cm_06-07-2004.xls

APPENDIX B

PRECERTIFICATION REAL-TIME SCAN DATA FOR AREA 3B

Table B-1
AREA 3B
PHASE 1 - HPGe RESULTS
DETECTOR HEIGHT 100 cm

2232

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3B-P1-381	14Jun04	481271	1348884	100	1.394	1.24	0.111
A3B-P1-381-D	14Jun04	481271	1348884	100	1.41	1.09	15.2
A3B-P1-401	15Jun04	481524	1349009	100	1.024	0.6	0.0613
A3B-P1-413	15Jun04	481523	1348947	100	1.046	0.574	0
A3B-P1-414	15Jun04	481526	1349072	100	0.957	0.528	0
A3B-P1-425	15Jun04	481526	1349133	100	1.067	0.624	0
A3B-P1-448	21Jun04	481328	1348526	100	1.21	0.939	16
A3B-P1-449	21Jun04	481306	1348512	100	1.198	0.85	0
A3B-P1-450	21Jun04	481293	1348531	100	1.265	0.903	0.0888
A3B-P1-HL-273	04Jun04	481361	1348727	100	1.02	0.791	14.7
A3B-P1-HL-387	15Jun04	481650	1348913	100	1.099	0.514	0.094
A3B-P1-HL-387-D	15Jun04	481650	1348913	100	1.061	0.622	0
A3B-P1-HL-286	04Jun04	481379	1348759	100	1.07	0.699	7.63
A3B-P1-HL-391	15Jun04	481559	1348947	100	1.134	0.729	0.0926
A3B-P1-HL-356	14Jun04	481578	1348854	100	1.221	1.12	0.0775
A3B-P1-HL-429	15Jun04	481668	1349135	100	1.032	0.644	0.106
A3B-P1-HL-289	14Jun04	481290	1348791	100	1.066	0.88	17.4
A3B-P1-HL-261	04Jun04	481506	1348666	100	1.32	0.903	19.9
A3B-P1-HL-262	04Jun04	481541	1348665	100	1.38	0.81	0.102
A3B-P1-HL-260	04Jun04	481470	1348665	100	1.41	0.843	22
A3B-P1-HL-259	04Jun04	481433	1348665	100	1.34	0.876	15
A3B-P1-HL-263	11Jun04	481559	1348697	100	1.535	0.824	43.3
A3B-P1-HL-279	04Jun04	481578	1348728	100	1.08	0.647	17.5
A3B-P1-HL-288	04Jun04	481307	1348759	100	1.11	0.813	18.8
A3B-P1-HL-290	11Jun04	481325	1348791	100	0.855	0.814	14.5
A3B-P1-HL-255	04Jun04	481289	1348664	100	1.32	0.849	13.5
A3B-P1-HL-292	11Jun04	481397	1348790	100	0.935	0.711	0.101
A3B-P1-HL-256	04Jun04	481325	1348665	100	1.27	0.777	15.3
A3B-P1-HL-294	11Jun04	481469	1348790	100	1.033	0.686	0.0771
A3B-P1-HL-278	04Jun04	481541	1348728	100	1.08	0.755	16.6
A3B-P1-HL-291	11Jun04	481361	1348791	100	1.067	0.702	24.8
A3B-P1-HL-347	14Jun04	481308	1348822	100	1.166	0.727	0
A3B-P1-HL-274	04Jun04	481397	1348727	100	1.09	0.759	18.4
A3B-P1-HL-257-D	04Jun04	481361	1348664	100	1.17	0.847	15.4
A3B-P1-HL-257	04Jun04	481361	1348664	100	1.15	0.783	0.102
A3B-P1-HL-364	14Jun04	481290	1348854	100	1.148	0.74	0
A3B-P1-HL-277	04Jun04	481505	1348728	100	1.12	0.794	15.3
A3B-P1-HL-275	04Jun04	481434	1348728	100	1.02	0.708	23.2
A3B-P1-HL-281	11Jun04	481560	1348759	100	1.126	0.874	0

00065

5536

Table B-1
AREA 3B
PHASE 1 - HPGe RESULTS
DETECTOR HEIGHT 100 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3B-P1-HL-377	14Jun04	481718	1348852	100	1.04	0.588	9.76
A3B-P1-HL-276	04Jun04	481469	1348728	100	1.05	0.734	18.2
A3B-P1-HL-280	04Jun04	481595	1348758	100	0.992	0.681	17.6
A3B-P1-HL-281	04Jun04	481559	1348759	100	1.15	0.873	16.6
A3B-P1-HL-285	04Jun04	481416	1348759	100	1.12	0.721	13.8
A3B-P1-HL-287	04Jun04	481343	1348759	100	1.14	0.684	19.3
A3B-P1-HL-282	04Jun04	481523	1348759	100	1.02	0.838	13.9
A3B-P1-HL-283	04Jun04	481487	1348759	100	0.977	0.689	13.2
A3B-P1-HL-284	04Jun04	481451	1348759	100	1.06	0.715	15.9
A3B-P1-HL-297	04Jun04	481578	1348791	100	1.19	0.876	15.4
A3B-P1-HL-348	14Jun04	481344	1348822	100	1.023	0.688	12.4
A3B-P1-HL-351	14Jun04	481451	1348822	100	0.956	0.704	0
A3B-P1-HL-390	15Jun04	481542	1348916	100	1.379	0.875	0
A3B-P1-HL-396	15Jun04	481686	1348978	100	1.082	0.639	0
A3B-P1-HL-379	14Jun04	481647	1348852	100	0.836	0.58	7.83
A3B-P1-HL-295	11Jun04	481506	1348790	100	1.126	0.775	0.0604
A3B-P1-HL-295-D	11Jun04	481506	1348790	100	1.083	0.766	0.0976
A3B-P1-HL-354	14Jun04	481560	1348822	100	1.068	0.879	0.0633
A3B-P1-HL-355	14Jun04	481595	1348822	100	1.061	0.84	14.8
A3B-P1-HL-392	15Jun04	481596	1348946	100	1.092	0.617	16
A3B-P1-HL-394	15Jun04	481667	1348946	100	1.091	0.625	0
A3B-P1-HL-395	15Jun04	481703	1348945	100	1.416	0.653	11.6
A3B-P1-HL-457	24Jun04	481717	1348666	100	0.965	0.587	13.6
A3B-P1-HL-296-D	04Jun04	481542	1348790	100	1.08	0.833	0.105
A3B-P1-HL-350-D	14Jun04	481416	1348822	100	0.947	0.67	8.46
A3B-P1-HL-350	14Jun04	481416	1348822	100	0.992	0.605	8.43
A3B-P1-HL-352	14Jun04	481488	1348821	100	1.018	0.771	0
A3B-P1-HL-353	14Jun04	481524	1348821	100	1.199	0.713	0.0763
A3B-P1-HL-363	14Jun04	481326	1348853	100	1.409	0.89	12.7
A3B-P1-HL-385-D	15Jun04	481718	1348913	100	1.256	0.678	0
A3B-P1-HL-385	15Jun04	481718	1348913	100	1.168	0.713	0
A3B-P1-HL-386	15Jun04	481684	1348915	100	1.27	0.733	0
A3B-P1-HL-296	04Jun04	481542	1348790	100	1.06	0.85	15.9
A3B-P1-HL-397	15Jun04	481649	1348978	100	1.234	0.678	0
A3B-P1-HL-293	11Jun04	481432	1348790	100	0.917	0.702	13.7
A3B-P1-HL-371	14Jun04	481523	1348884	100	1.236	0.972	17.4
A3B-P1-HL-372	14Jun04	481558	1348884	100	1.271	1.04	12.5
A3B-P1-HL-388	15Jun04	481614	1348915	100	0.96	0.577	12.8
A3B-P1-HL-393	15Jun04	481632	1348946	100	1.155	0.625	0.0605

99000

5536

Table B-1
AREA 3B
PHASE 1 - HPGe RESULTS
DETECTOR HEIGHT 100 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3B-P1-HL-466	24Jun04	481723	1348696	100	0.991	0.605	8.64
A3B-P1-HL-271	04Jun04	481289	1348727	100	1.1	0.832	9.44
A3B-P1-HL-272	04Jun04	481325	1348727	100	1.15	0.813	16.9
A3B-P1-HL-383	15Jun04	481667	1348883	100	0.95	0.624	0
A3B-P1-HL-398	15Jun04	481614	1348977	100	1.154	0.556	0.0879
A3B-P1-HL-424	15Jun04	481544	1349104	100	1.008	0.572	0
A3B-P1-HL-258	04Jun04	481397	1348665	100	1.2	0.782	6.38
A3B-P1-HL-423	15Jun04	481579	1349102	100	1.232	0.608	0
A3B-P1-HL-264	11Jun04	481523	1348697	100	1.196	0.836	44.6
A3B-P1-HL-264-D	11Jun04	481523	1348697	100	1.109	0.848	42
A3B-P1-HL-389	15Jun04	481577	1348915	100	1.054	0.626	0.102
A3B-P1-HL-405	15Jun04	481669	1349009	100	1.147	0.694	0
A3B-P1-HL-362-D	14Jun04	481360	1348854	100	1.22	0.874	9.15
A3B-P1-HL-362	14Jun04	481360	1348854	100	1.216	0.812	12.1
A3B-P1-HL-400	15Jun04	481542	1348978	100	1.153	0.627	9.7
A3B-P1-HL-407	15Jun04	481712	1349040	100	1.137	0.581	0
A3B-P1-HL-384	15Jun04	481702	1348885	100	1.199	0.661	0.0633
A3B-P1-HL-358	14Jun04	481505	1348852	100	1.339	0.905	0.0698
A3B-P1-HL-265	11Jun04	481488	1348696	100	1.129	0.884	13.3
A3B-P1-HL-361	14Jun04	481396	1348854	100	1.031	0.774	0.0665
A3B-P1-HL-370	14Jun04	481486	1348884	100	1.315	0.978	0
A3B-P1-HL-359	14Jun04	481470	1348854	100	1.029	0.772	0
A3B-P1-HL-360	14Jun04	481433	1348853	100	1.11	0.839	11.5
A3B-P1-HL-465	24Jun04	481700	1348697	100	0.98	0.596	17.3
A3B-P1-HL-409	15Jun04	481650	1349040	100	1.205	0.639	0.0825
A3B-P1-HL-406	15Jun04	481705	1349008	100	1.186	0.698	0
A3B-P1-HL-410	15Jun04	481614	1349041	100	1.088	0.593	0.0655
A3B-P1-HL-411	15Jun04	481579	1349040	100	1.052	0.561	13.8
A3B-P1-HL-416	15Jun04	481596	1349072	100	0.983	0.552	0
A3B-P1-HL-369	14Jun04	481450	1348883	100	1.185	0.952	0.068
A3B-P1-HL-376	14Jun04	481703	1348822	100	0.965	0.664	0.0814
A3B-P1-HL-408	15Jun04	481686	1349040	100	1.14	0.585	0
A3B-P1-HL-422	15Jun04	481613	1349104	100	1.138	0.616	12
A3B-P1-HL-266	11Jun04	481452	1348697	100	1.234	0.949	15.9
A3B-P1-HL-373	14Jun04	481596	1348884	100	1.068	0.791	15.5
A3B-P1-HL-267	11Jun04	481416	1348697	100	1.214	0.828	15.5
A3B-P1-HL-415	15Jun04	481561	1349072	100	1.014	0.483	11.1
A3B-P1-HL-268	11Jun04	481380	1348696	100	1.189	0.888	21.2
A3B-P1-HL-375	14Jun04	481667	1348822	100	0.783	0.497	0.0672

000067

5536

Table B-1
AREA 3B
PHASE 1 - HPGe RESULTS
DETECTOR HEIGHT 100 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3B-P1-HL-269	11Jun04	481345	1348696	100	1.144	0.88	19.3
A3B-P1-HL-426	15Jun04	481561	1349134	100	1.099	0.656	0
A3B-P1-HL-428	15Jun04	481632	1349135	100	1.122	0.579	0.0707
A3B-P1-HL-378	14Jun04	481686	1348853	100	0.828	0.593	9.93
A3B-P1-HL-462	24Jun04	481593	1348695	100	1.129	0.683	0
A3B-P1-HL-374	14Jun04	481631	1348822	100	1.05	0.694	21.6
A3B-P1-HL-380	14Jun04	481614	1348853	100	0.925	0.686	18.6
A3B-P1-HL-427	15Jun04	481597	1349135	100	0.888	0.525	16.2
A3B-P1-HL-474	24Jun04	481607	1348792	100	1.066	0.726	0
A3B-P1-HL-368	14Jun04	481416	1348885	100	1.429	1.08	0
A3B-P1-HL-461	24Jun04	481577	1348664	100	1.005	0.775	0
A3B-P1-HL-270	11Jun04	481308	1348696	100	1.194	0.803	0.109
A3B-P1-HL-367	14Jun04	481379	1348885	100	1.279	1.19	0
A3B-P1-HL-458	24Jun04	481682	1348666	100	1.03	0.686	26.6
A3B-P1-HL-458-D	24Jun04	481682	1348666	100	0.978	0.702	14
A3B-P1-HL-463	24Jun04	481629	1348695	100	0.957	0.65	9.99
A3B-P1-HL-404	15Jun04	481632	1349010	100	1.239	0.634	0
A3B-P1-HL-366	14Jun04	481344	1348885	100	1.344	1.06	17.6
A3B-P1-HL-365	14Jun04	481308	1348885	100	1.313	1.09	0.0777
A3B-P1-HL-459	24Jun04	481647	1348665	100	1.072	0.637	13.2
A3B-P1-HL-460	24Jun04	481610	1348665	100	1.113	0.623	0
A3B-P1-HL-471	24Jun04	481626	1348758	100	1.029	0.566	0
A3B-P1-HL-468	24Jun04	481682	1348728	100	1.033	0.635	0.0986
A3B-P1-HL-470	24Jun04	481609	1348728	100	1.1	0.731	0.115
A3B-P1-HL-467	24Jun04	481716	1348729	100	1.053	0.639	0.0766
A3B-P1-HL-472	24Jun04	481663	1348759	100	1.022	0.584	0
A3B-P1-HL-473	24Jun04	481699	1348751	100	1.062	0.615	0.0868
A3B-P1-HL-469	24Jun04	481646	1348729	100	1.079	0.684	13.2
A3B-P1-HL-464	24Jun04	481665	1348696	100	0.964	0.599	0
A3B-P1-HL-349	21Jun04	481379	1348822	100	1.154	0.772	0.0639
A3B-P1-HL-357	21Jun04	481542	1348853	100	1.158	0.94	10.4
A3B-P1-HL-382	21Jun04	481632	1348884	100	1.057	0.681	9.87
A3B-P1-HL-399	21Jun04	481578	1348978	100	0.915	0.61	11.7
A3B-P1-HL-402	21Jun04	481561	1349010	100	1.109	0.666	0
A3B-P1-HL-403	21Jun04	481596	1349009	100	0.966	0.547	0
A3B-P1-HL-412	21Jun04	481543	1349041	100	1.056	0.575	0
A3B-P1-HL-412-D	21Jun04	481543	1349041	100	0.901	0.513	0.0622
A3B-P1-HL-417	21Jun04	481633	1349071	100	1.03	0.505	0
A3B-P1-HL-418	21Jun04	481668	1349072	100	1.021	0.536	15.2

890000

5536

1005

Table B-1
AREA 3B
PHASE 1 - HPGe RESULTS
DETECTOR HEIGHT 100 cm

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3B-P1-HL-419	21Jun04	481705	1349071	100	1.085	0.56	7.34
A3B-P1-HL-420	21Jun04	481687	1349102	100	0.942	0.517	0
A3B-P1-HL-421	21Jun04	481651	1349102	100	0.929	0.613	22.4

690000

5536

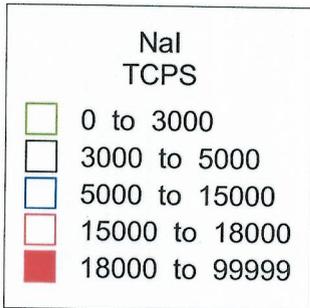
Figure B-1 Area 3B Phase 1 Total Gross Counts per Second

Field of View to Scale

HPGe DET#: 30687, 30699, 31204, 31265, 40227, 40293

Nal Batch#: Gator- 228.234,237,240; RSS1-1101; RSS3-455; EMS-0253

Measurement Dates: 06/03/04 - 06/25/04



HPGe shown for coverage only

RTIMP DWG Title: A3B_P1_TC.srf
 Project Name: Gen. Char. for Site. Soil Rem.
 Project #: 20300-PSP-0011
 Verified By: Brian McDaniel/11058
 Date Verified: 06/26/04
 Support Data: A3B_DG_NaI_V3.xls:
 A3B_P1_NaI_V3.xls
 A3B_P1_HL_HPGe_100cm.xls
 A3B_P1_HPGe_100cm.xls

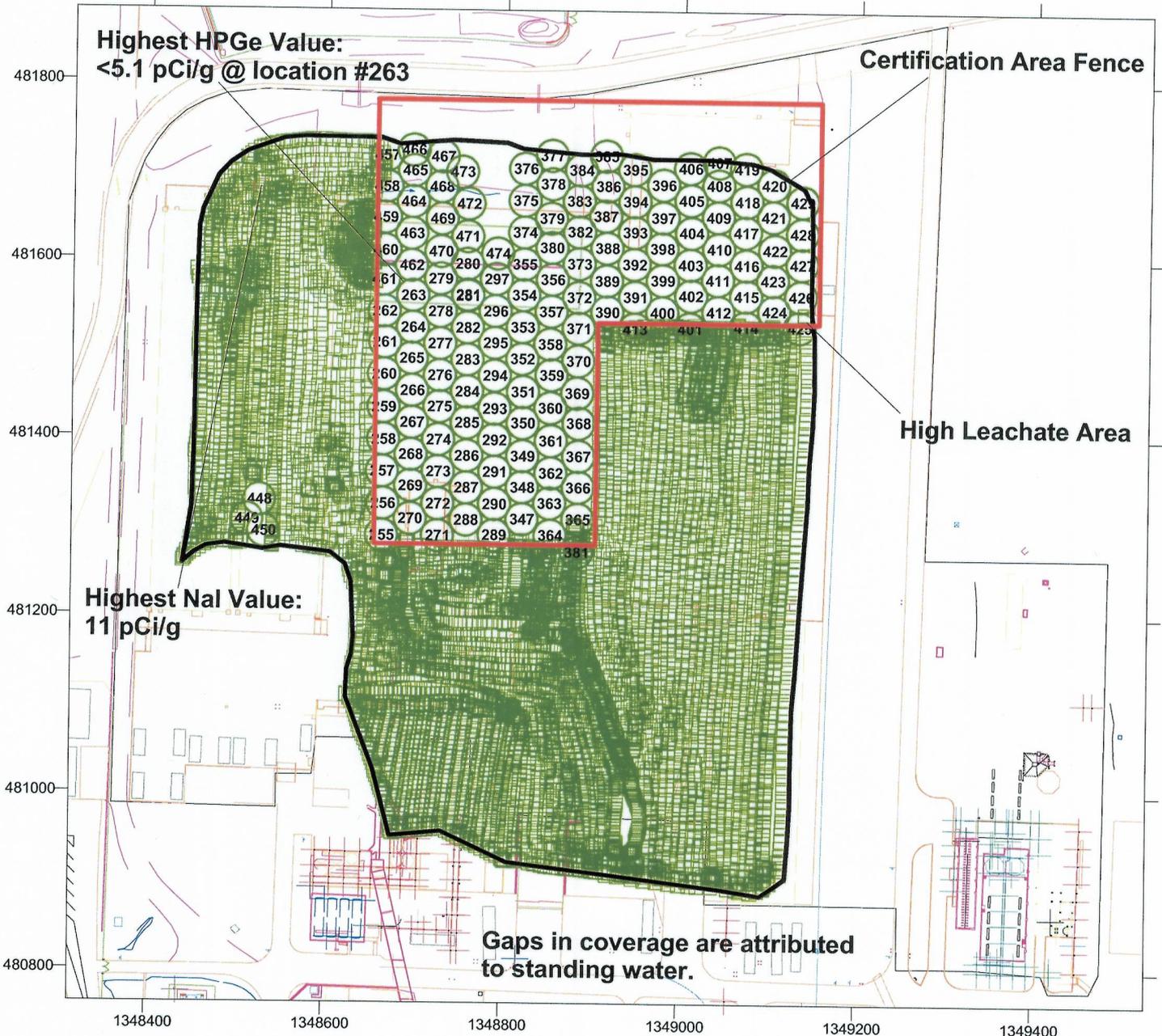
Figure B-2 Area 3B Phase 1 Moisture Corrected Radium-226

Field of View to Scale

HPGe DET#: 30687, 30699, 31204, 31265, 40227, 40293

Nal Batch#: Gator- 228.234,237,240; RSS1-1101; RSS3-455; EMS-0253

Measurement Dates: 06/03/04 - 06/25/04



Nal Ra-226 (pCi/g)		HPGe @ 100cm Ra-226 (pCi/g)	
	-1 to 5.1		0 to 5.1
	5.1 to 9999		5.1 to 9999

RTIMP DWG Title: A3B_P1_RA.srf
 Project Name: Gen. Char. for Site. Soil Rem.
 Project #: 20300-PSP-0011
 Verified By: Brian McDaniel/11058
 Date Verified: 06/26/04
 Support Data: A3B_DG_Nal_V3.xls;
 A3B_P1_Nal_V3.xls
 A3B_P1_HL_HPGe_100cm.xls
 A3B_P1_HPGe_100cm.xls

Figure B-3 Area 3B Phase 1 Moisture Corrected Thorium-232

Field of View to Scale

HPGe DET#: 30687, 30699, 31204, 31265, 40227, 40293

Nal Batch#: Gator- 228.234,237,240; RSS1-1101; RSS3-455; EMS-0253

Measurement Dates: 06/03/04 - 06/25/04



Nal Th-232 (pCi/g)	HPGe @ 100cm Th-232 (pCi/g)
 0 to 4.5	 0 to 4.5
 4.5 to 9999	 4.5 to 9999

RTIMP DWG Title: A3B_P1_TH.srf
 Project Name: Gen. Char. for Site. Soil Rem.
 Project #: 20300-PSP-0011
 Verified By: Brian McDaniel/11058
 Date Verified: 06/26/04
 Support Data: A3B_DG_Nal_V3.xls:
 A3B_P1_Nal_V3.xls
 A3B_P1_HL_HPGe_100cm.xls
 A3B_P1_HPGe_100cm.xls

Figure B-4 Area 3B Phase 1 Moisture Corrected Total Uranium

Field of View to Scale

HPGe DET#: 30687, 30699, 31204, 31265, 40227, 40293

Nal Batch#: Gator-228.234,237,240; RSS1-1101; RSS3-455; EMS-0253

Measurement Dates: 06/03/04 - 06/25/04



Nal Total U (ppm)	
	-209 to 246
	246 to 875
	875 to 9999

HPGe @ 100cm Total U (ppm) FRL = 20 ppm	
	0 to 60
	60 to 400
	400 to 9999

HPGe @ 100cm Total U (ppm) FRL = 82 ppm	
	0 to 246
	246 to 400
	400 to 9999

RTIMP DWG Title: A3B_P1_TU.srf
 Project Name: Gen. Char. for Site. Soil Rem.
 Project #: 20300-PSP-0011
 Verified By: Brian McDaniel/11058
 Date Verified: 06/26/04
 Support Data: A3B_DG_Nal_V3.xls:
 A3B_P1_Nal_V3.xls
 A3B_P1_HL_HPGe_100cm.xls
 A3B_P1_HPGe_100cm.xls

Table B-2
AREA 3B
PHASE 2 - HPGe RESULTS
DETECTOR HEIGHT 31 cm

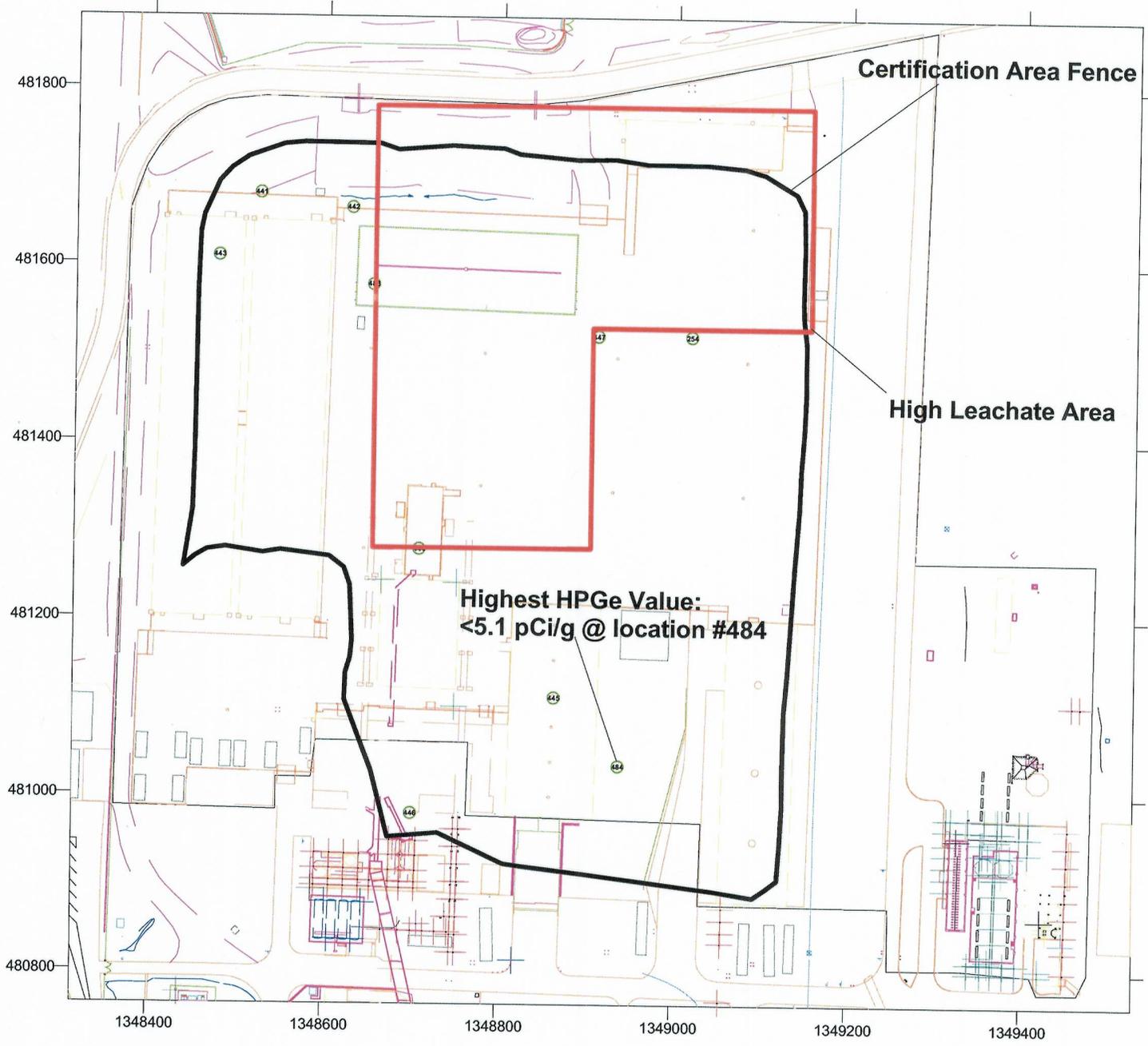
Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A3B-P2-254	03Jun04	481520	1349019	31	1.21	0.802	0.0708
A3B-P2-254-D	03Jun04	481520	1349019	31	1.19	0.795	0
A3B-P2-441	19Jun04	481680	1348524	31	1.03	0.631	16.6
A3B-P2-443	19Jun04	481609	1348477	31	0.905	0.864	23.7
A3B-P2-443-D	19Jun04	481609	1348477	31	1.083	0.87	23.8
A3B-P2-442	19Jun04	481664	1348629	31	1.107	0.908	22.5
A3B-P2-444	19Jun04	481278	1348709	31	1.186	0.906	0
A3B-P2-446	21Jun04	480979	1348702	31	1.622	1.03	14.6
A3B-P2-446-D	21Jun04	480979	1348702	31	1.57	1.05	17.3
A3B-P2-445	21Jun04	481111	1348865	31	1.378	1.2	0.0784
A3B-P2-447	21Jun04	481520	1348912	31	1.484	0.956	11.5
A3B-P2-483	25Jun04	481577	1348654	31	1.126	0.827	7.74
A3B-P2-483-D	25Jun04	481577	1348654	31	1.235	0.812	0.0747
A3B-P2-484	25Jun04	481034	1348939	31	1.851	1.38	24.7

00074

5536

Figure B-5 Area 3B Phase 2 Moisture Corrected Radium-226

Field of View to Scale
HPGe DET#: 30687, 30699, 40227
Measurement Dates: 06/03/04 - 06/25/04



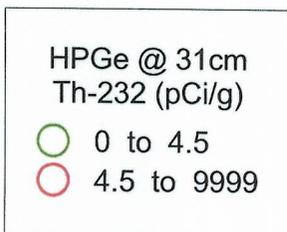
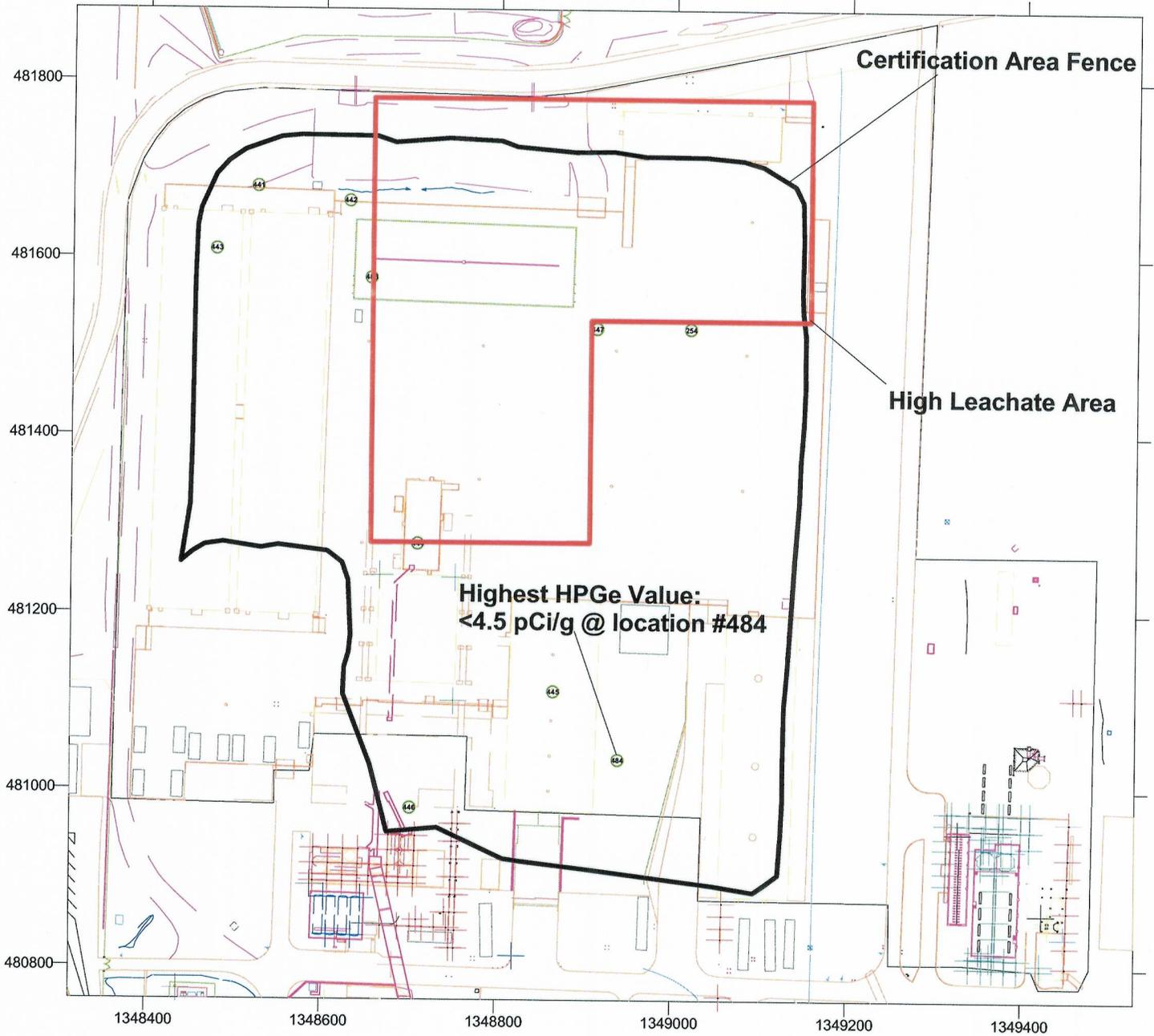
HPGe @ 31cm
Ra-226 (pCi/g)

- 0 to 5.1
- 5.1 to 9999

RTIMP DWG Title: A3B_P2_RA.srf
 Project Name: Gen. Char. for Site. Soil. Rem.
 Project #: 20300-PSP-0011
 Verified By: Brian McDaniel/11058
 Date Verified: 06/26/04
 Support Data: A3B_P2_HPGe_31cm_V3.xls

Figure B-6 Area 3B Phase 2 Moisture Corrected Thorium-232

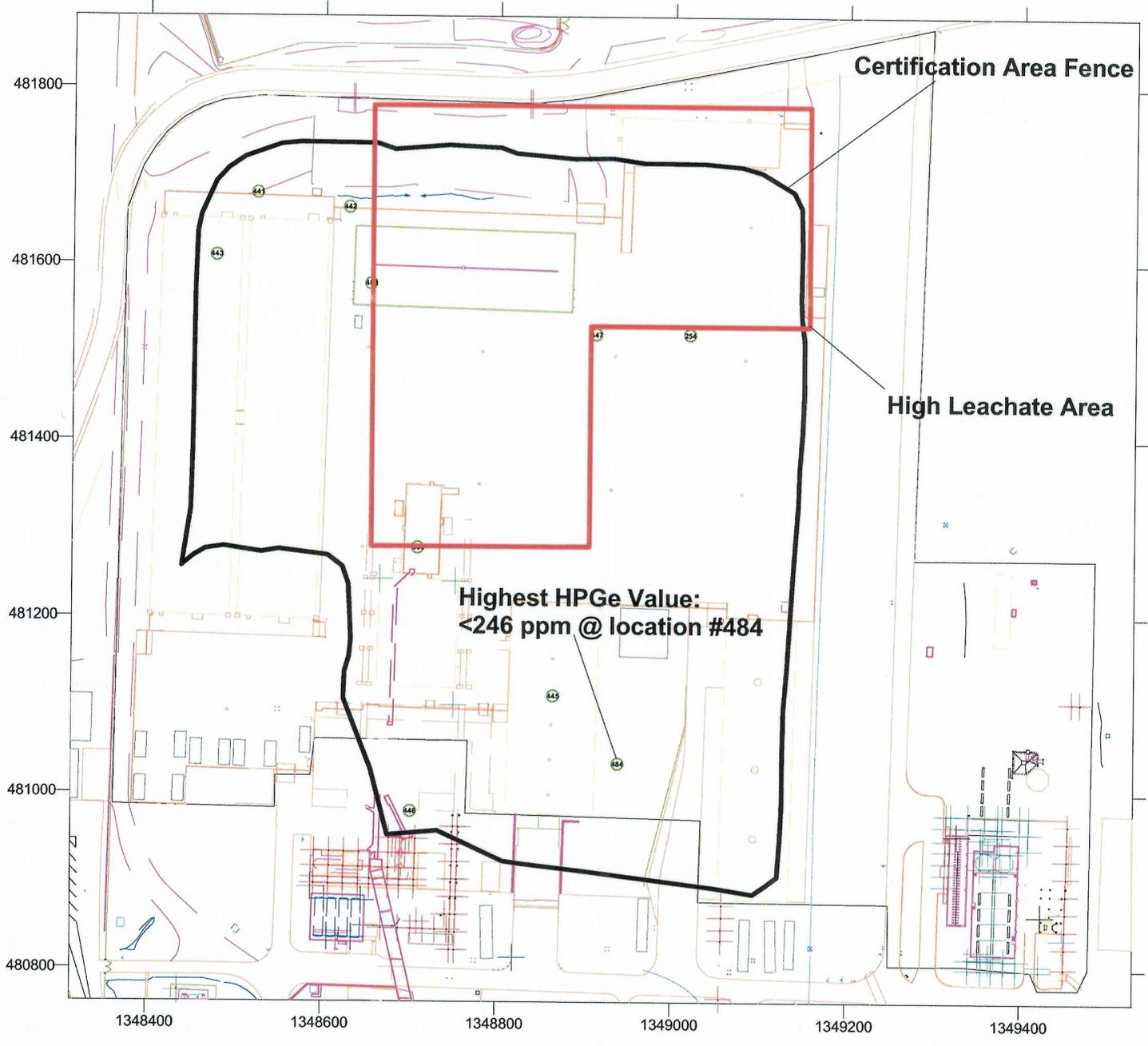
Field of View to Scale
HPGe DET#: 30687, 30699, 40227
Measurement Dates: 06/03/04 - 06/25/04



RTIMP DWG Title: A3B_P2_TH.srf
 Project Name: Gen. Char. for Site. Soil. Rem.
 Project #: 20300-PSP-0011
 Verified By: Brian McDaniel/11058
 Date Verified: 06/26/04
 Support Data: A3B_P2_HPGe_31cm_V3.xls

Figure B-7 Area 3B Phase 2 Moisture Corrected Total Uranium

Field of View to Scale
HPGe DET#: 30687, 30699, 40227
Measurement Dates: 06/03/04 - 06/25/04



RTIMP DWG Title: A3B_P2_TU.srf
 Project Name: Gen. Char. for Site. Soil. Rem.
 Project #: 20300-PSP-0011
 Verified By: Brian McDaniel/11058
 Date Verified: 06/26/04
 Support Data: A3B_P2_HPGe_31cm_V3.xls