6014

Department of Energy

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

JUL 7 2005

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

DOE-0282-05

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

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF THE FINAL CERTIFICATION DESIGN LETTER AND REVISED PROJECT SPECIFIC PLAN FOR AREA 5 EAST PARKING LOT CERTIFICATION SAMPLING

References:
1) Letter, J. Saric to J. Reising, "Area 5 CDL and PSP," dated April 25, 2005
2) Letter, T. Schneider to W. Taylor, "PSP and CDL for A5 EPL," dated June 15, 2005

Enclosed for your information are the final Certification Design Letter and revised Project Specific Plan for Area 5 East Parking Lot Certification Sampling. As noted in the references above, both the U.S. Environmental Protection Agency and Ohio Environmental Protection Agency have approved these documents.

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

Sincerely,

Johnny Reising

for William J. Taylor
Director

FCP:Reising

Enclosure

cc w/enclosures:
D. Pfister, OH/FCP
J. Reising, OH/FCP
T. Schneider, OEPA-Dayton (three copies of enclosures)
G. Jablonowski, USEPA-V, SR-6J
F. Bell, ATSDR
M. Cullerton, Tetra Tech
M. Shupe, HSI GeoTrans
R. Vandegrift, ODH
AR Coordinator, Fluor Fernald, Inc./MS78

cc w/o enclosures:
K. Alkema, Fluor Fernald, Inc./MS01
J. Chiou, Fluor Fernald, Inc./MS64
F. Johnston, Fluor Fernald, Inc./MS52-5
C. Murphy, Fluor Fernald, Inc./MS77
ECDC, Fluor Fernald, Inc./MS52-7

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CERTIFICATION DESIGN LETTER FOR AREA 5 EAST PARKING LOT

FERNALD CLOSURE PROJECT
FERNALD, OHIO

JULY 2005

U.S. DEPARTMENT OF ENERGY

20810-RP-0005
REVISION 0
FINAL

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LIST OF ACRONYMS AND ABBREVIATIONS

A2PII	Area 2, Phase II
ASCOC	area-specific constituent of concern
ASL	analytical support level
CDL	Certification Design Letter
COC	constituent of concern
CRDL	contract required detection limit
CU	certification unit
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
EPL	East Parking Lot
FCP	Fernald Closure Project
FRL	final remediation level
HPGe	high-purity germanium (detector)
MDC	Main Drainage Corridors
mg/kg	milligrams per kilogram
OEPA	Ohio Environmental Protection Agency
OU	Operable Unit
pCi/g	picoCuries per gram
PSP	Project Specific Plan
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
UCL	Upper Confidence Limit
VSL	validation support level
WAC	waste acceptance criteria

EXECUTIVE SUMMARY

This Certification Design Letter (CDL) describes the certification approach for Area 5 East Parking Lot (EPL). The following information is included:

- The boundary of Area 5 (Figure 1-1) and a description of the area 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 5;
- A presentation of the certification unit 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 the Area 5 EPL, as shown on Figure 1-1. Remediation was complete in Area 5 in 2005, thus initiating the certification process described in this CDL. Field sampling in Area 5 EPL is scheduled to begin immediately following approval of the Area 5 EPL CDL and Project Specific Plan for Area 5 East Parking Lot Certification Sampling (DOE 2005a).

The certification design presented in this CDL follows the general approach outlined in Section 3.4 of the Sitewide Excavation Plan (DOE 1998). The selection of Area 5 EPL 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. Four CUs have been defined for this CDL. Total uranium, thorium-228, thorium-232, radium-226, radium-228 (the sitewide primary radiological COCs), arsenic, and aroclor-1254 (the secondary COCs), are the ASCOCs.

1.0 INTRODUCTION

This Certification Design Letter (CDL) describes the certification approach for demonstrating that soil in Area 5 East Parking Lot (EPL) 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 1998). 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 5 EPL

3.0 Area-Specific Constituents of Concern - Discussion of selection criteria and ASCOCs for Area 5 EPL

4.0 Certification Approach - Presentation of design, sampling and analytical methodologies for Area 5 EPL

5.0 Schedule

References

1.1 OBJECTIVES

The primary objectives of this document are to:

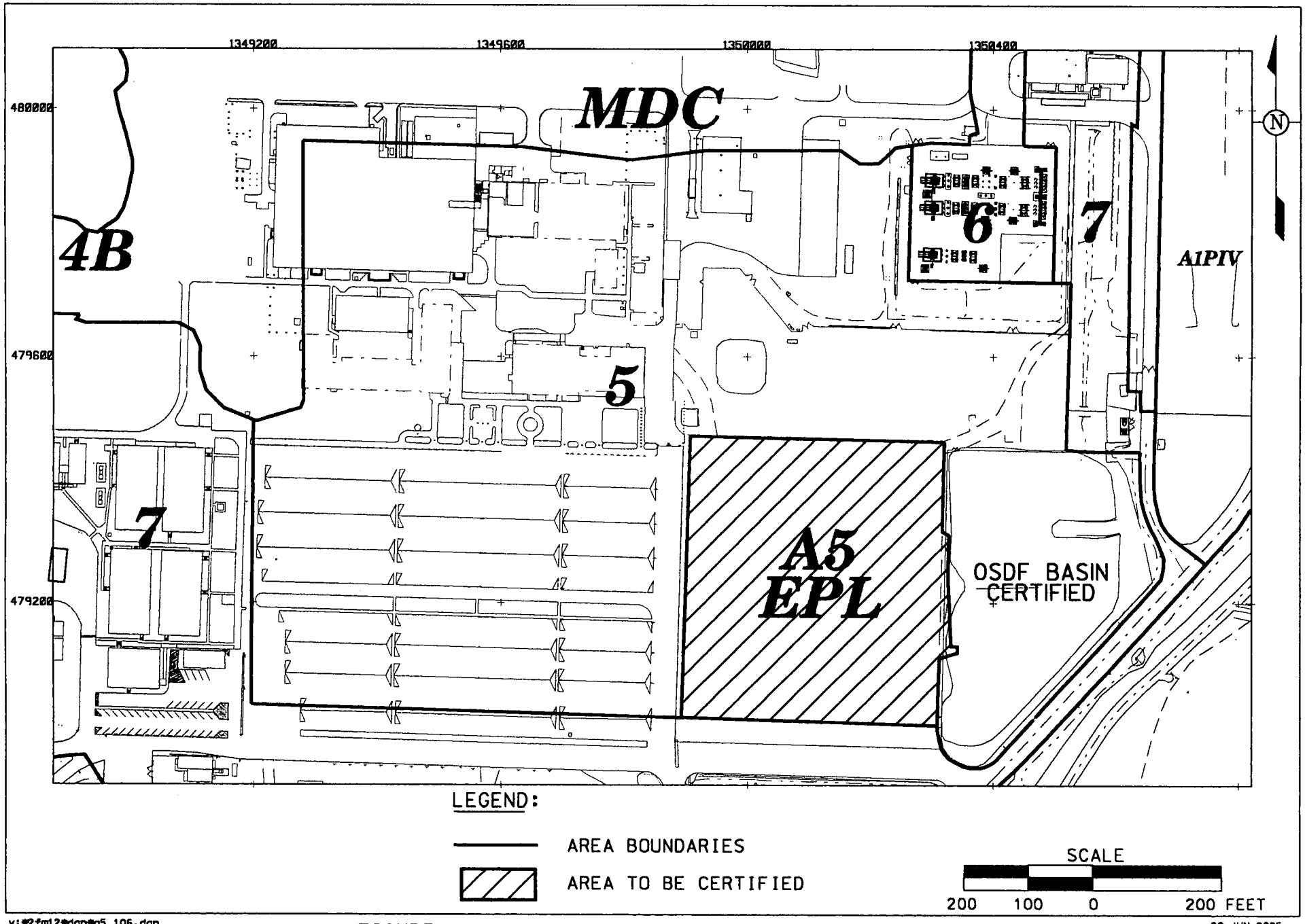
- Define the boundaries of the areas to be certified under the guidance of this CDL;
- Present maps for newly acquired real-time data;
- Define the ASCOC selection process and list the selected Area 5 EPL ASCOCs;
- Present the certification unit (CU) boundaries and proposed certification sampling strategy;
- 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 Area 5 EPL. Figure 1-1 depicts the layout of Area 5 and the portion of Area 5 (Area 5 EPL) that is to be certified under this CDL.

Remediation Area 5 lies in the southern portion of the Former Production Area and northern Administration Area. The area is bound by the Main Drainage Corridor (MDC) to the north, MDC and

Area 7 to the west, Area 7 to the south, and Areas 6 and 7 to the east. Area 5 EPL is delineated by the physical boundaries of the eastern section of the Main Parking Lot. Also, there were two drain lines that were just outside the eastern boundary of Area 5 EPL in Area 5 East Field that were excavated and removed during remediation of Area 5 EPL. The resulting trench is included in this certification effort. During the remediation of Area 5 East Field, these drain lines were active and therefore were not removed.



v:\#2fm12\dgn\a5_106.dgn
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 1-1. AREA 5 EAST PARKING LOT LOCATION MAP

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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 Project Specific Plan (PSP) for Predesign Investigation in Area 5 (DOE 2002), 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 5. 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 5 EPL certification areas were pulled from the Sitewide Environmental Database (SED). The data for Area 5 EPL is summarized in Section 2.1. Based on the results of sampling and scanning activities summarized in Section 2.1, it has been determined no above-waste acceptance criteria (WAC) areas or above-FRL areas exist.

The concrete sidewalks, asphalt, and base material covering Area 5 EPL were scraped and all utilities were removed with the exception of the main trunk line, which extends from Sediment Basin 2 to the Storm Sewer Outfall Ditch.

2.1 AREA 5 East Parking Lot

2.1.1 Area 5 Historical, Predesign and Excavation Control

All historical data for Area 5 EPL are presented in the Implementation Plan for 3B/4B/5 (DOE 2004). This includes data collected during the RI/FS and Area 5 Predesign Investigation PSP. No above-FRL areas and no above-WAC areas have been identified in Area 5 EPL.

2.1.2 Area 5 Precertification Data

According to guidelines established in Section 3.3.3 of the SEP, precertification activities were conducted to evaluate residual radiological contamination patterns as specified in the PSP Guidelines for General Characterization for Sitewide Soil Remediation (DOE 2005b). Precertification results are provided in Appendix A.

3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN

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

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

3.1 SELECTION CRITERIA

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

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

Using the above process, the ASCOCs were refined to the sitewide primary COCs. The list of ASCOCs is presented in Table 3-1 with their respective FRLs.

3.1.1 Area 5 ASCOC Selection

Each COC on the Remediation Area 5 ASCOC list (Table 3-1) was evaluated for its relevance to Area 5 EPL. Material from Area 2, Phase II (A2PII) Subarea 3 Subcontractor Laydown Area that was contaminated with aroclor-1254 and arsenic was staged and/or spread over the former parking lot area. Therefore, aroclor-1254 and arsenic will be retained as secondary ASCOCs in the southern CUs in addition to the five primary radiological ASCOCs.

TABLE 3-1
ASCOC LIST FOR REMEDIATION AREA 5

ASCOC	FRL	Retained as ASCOC?	Justification	Where retained
Total Uranium	82 mg/kg	Yes	Primary Radionuclide	All CUs
Radium-226	1.7 pCi/g	Yes	Primary Radionuclide	All CUs
Radium-228	1.8 pCi/g	Yes	Primary Radionuclide	All CUs
Thorium-228	1.7 pCi/g	Yes	Primary Radionuclide	All CUs
Thorium-232	1.5 pCi/g	Yes	Primary Radionuclide	All CUs
Aroclor-1254	0.13 mg/kg	Yes	Staged A2PII material	All CUs
Aroclor-1260	0.13 mg/kg	No	Not detected at concentrations above the FRL	None
Dieldrin	0.015 mg/kg	No	Not detected at concentrations above the FRL	None
Arsenic	12.0 mg/kg	Yes	Staged A2PII material	All CUs
Beryllium	1.5 mg/kg	No	Not detected at concentrations above the FRL	None

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

4.0 CERTIFICATION APPROACH

4.1 CERTIFICATION DESIGN

The certification design for Area 5 EPL follows the general approach outlined in Section 3.4 of the SEP. The design for Area 5 EPL is depicted on Figure 4-1 and the sample locations are depicted in Figures 4-2 and 4-3. As discussed in Section 3.0 of this document, the five primary ASCOCs (total uranium, radium-226, radium-228, thorium-228, and thorium-232) as well as aroclor-1254 and arsenic will be retained as ASCOCs.

The certification area boundary encompasses the Area 5 EPL. Because this section of Area 5 was used as a staging/lime treatment area, Area 5 EPL will be comprised of Group 1 CUs to allow for more concentrated sampling and ensure excavation activities had no effect on the soil.

4.1.1 Area 5 EPL Certification Unit Design

Area 5 EPL will consist of four Group 1 CUs. The Area 5 EPL certification area, as shown on Figure 4-1, consists of CUs 1 through 4, which are Group 1 CUs in the general area of Area 5 EPL.

4.1.2 Sample Location Design for Area 5 EPL

The selection of certification sampling locations was conducted according to Section 3.4.2 of the SEP. Each CU was first divided into 16 approximately equal sub-CUs. Sample locations were then generated by randomly selecting an easting and northing coordinate within the boundaries of each sub-CU, then testing those locations against the minimum distance criteria for the CU. If the minimum distance criteria were not met, an alternative random location was selected for that sub-CU, and all the locations were re-tested. This process continued, until all 16 random locations met the minimum distance criteria. One biased sample location (A5-EPL-C03-6) was placed in the trench that was created during the removal of the drain line that was located on the far eastern side of CU 3 in the Area 5 East Field.

All Area 5 EPL sub-CUs and planned certification sampling locations are shown on Figures 4-2 and 4-3. All 16 sub CUs will be sampled and analyzed. Therefore, archive samples will not be collect for Area 5 EPL. One sample location in the CU is designated with a "D," indicating a field duplicate sample collection location.

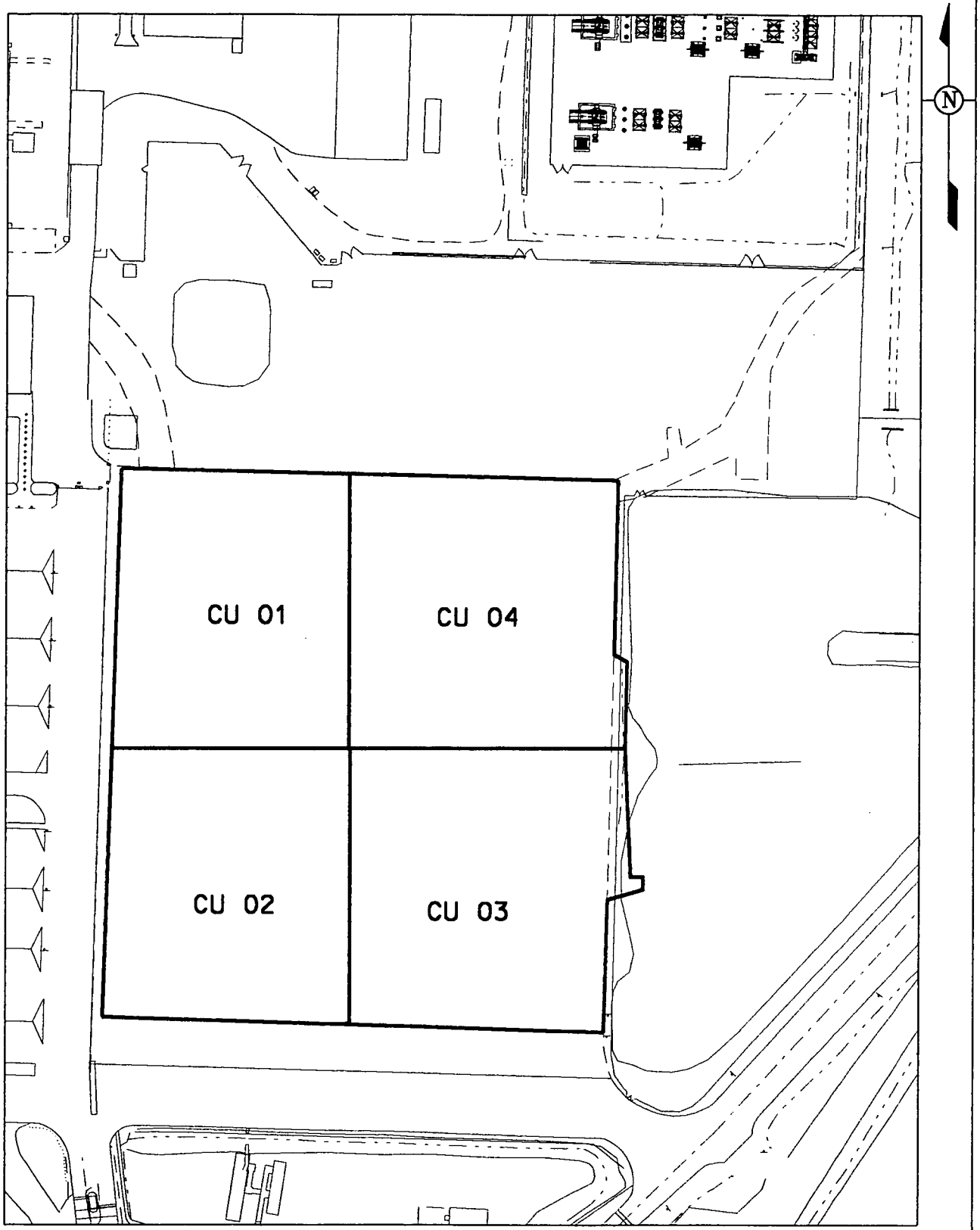
Prior to commencement of certification sampling field activities, all certification sample locations will be surveyed and field verified to ensure no surface obstacles will prevent collection at the planned location. Locations may be moved if a subsurface obstacle prevents collection. Requirements for moving a certification sample location will be discussed in the PSP for Area 5 EPL Certification Sampling. Samples will be collected for analysis from 0 to 6 inches in each CU.

4.2 ANALYTICAL METHODOLOGY AND STATISTICAL ANALYSIS

Laboratory analysis of certification samples will be conducted using an approved analytical method, as discussed in Appendix H of the SEP. Analyses will be conducted to Analytical Support Level (ASL) D or E, where all requirements for ASL E are the same as ASL D except the minimum detection level for the selected analytical method must be at least 10 percent of the FRL. A minimum of 10 percent of the laboratory data will be validated to Validation Support Level (VSL) D with the remainder validated to VSL B. Samples rejected during validation will be re-analyzed, or an archive sample will be submitted for analysis. Once data are validated, results will be entered into the SED and a statistical analysis will be performed to evaluate the pass/fail criteria for each CU. The statistical approach is discussed in Section 3.4.3 and Appendix G of the SEP, and will be the same for Area 5 EPL as for previous certification efforts.

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

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



LEGEND:

CU BOUNDARY

SCALE

120 60 0 120 FEET

FIGURE 4-1. AREA 5 EAST PARKING LOT CU BOUNDARY MAP

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STATE PLANAR COORDINATE SYSTEM 1983
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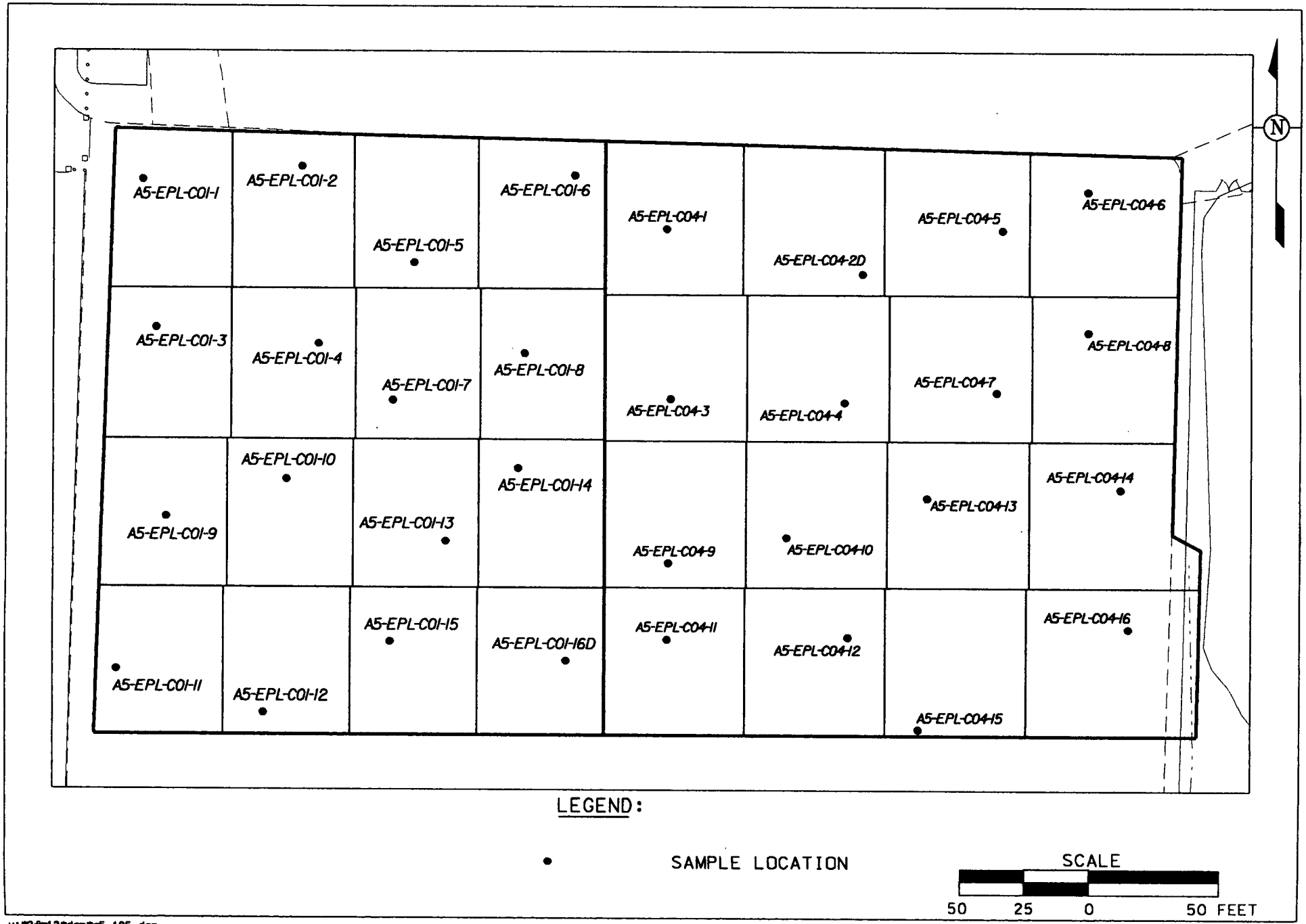

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STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 4-2. CERTIFICATION SAMPLING LOCATIONS FOR CU 01 AND CU 04

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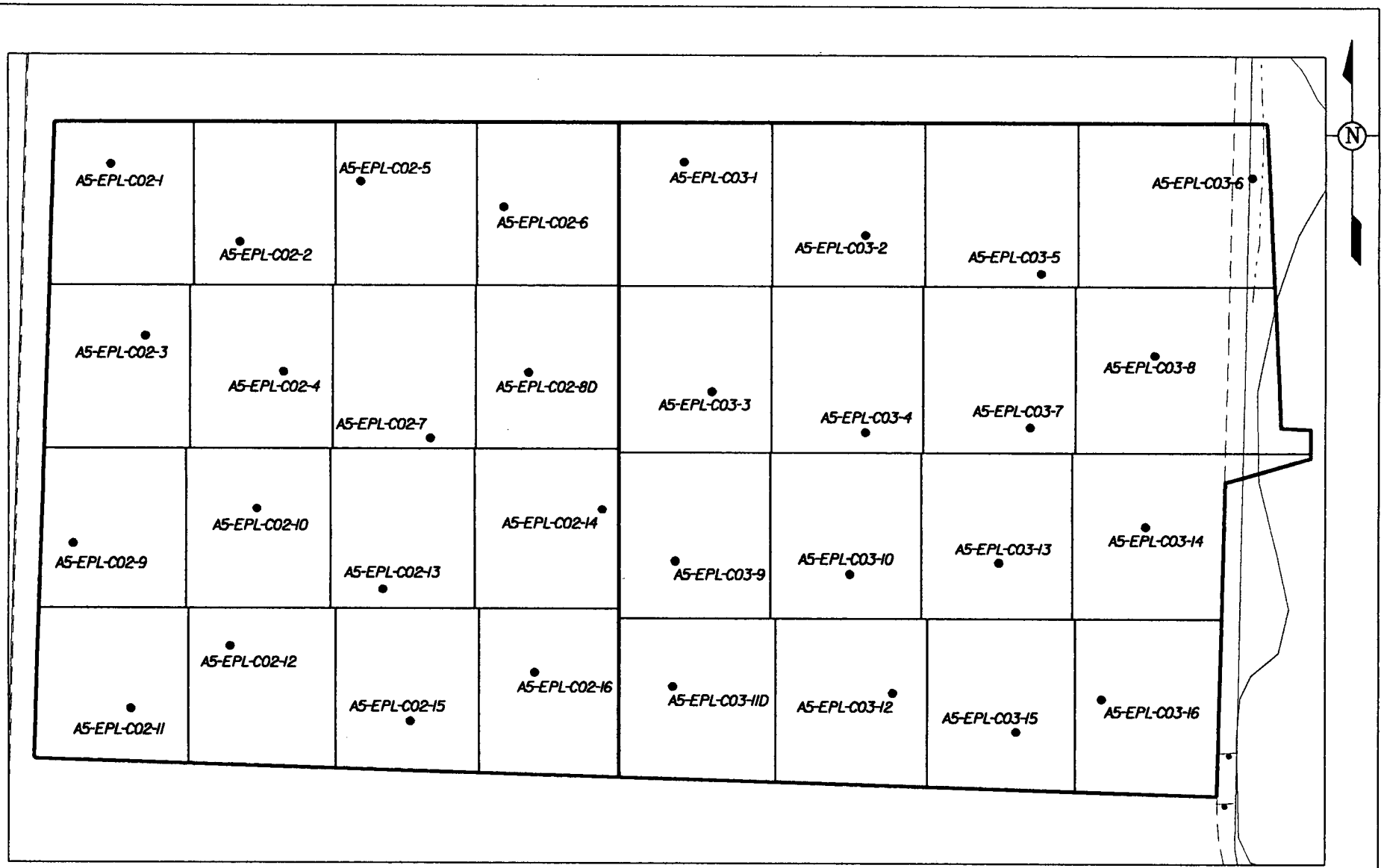

LEGEND:

• SAMPLE LOCATION

SCALE

50 25 0 50 FEET

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STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 4-3. CERTIFICATION SAMPLING LOCATIONS FOR CU 02 AND CU 03

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5.0 SCHEDULE

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

Activity	Target Date
Submittal of Certification Design Letter	March 28, 2005
Start of Certification Sampling	March 28, 2005
Complete Field Work	March 31, 2005
Complete Analytical Work	May 2, 2005
Complete Data Validation and Statistical Analysis	May 13, 2005
Submit Certification Report	August 9, 2005[a]

[a]This certification report is intended to cover the scope of multiple certification design letters. The date for submittal of the Certification Report is a commitment to EPA and OEPA. Other dates are internal target completion dates.

REFERENCES

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

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

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

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

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

U.S. Department of Energy, 2002, "Project Specific Plan for Predesign Investigation in Area 5," Revision 0, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

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

U.S. Department of Energy, 2005a, "Project Specific Plan for Area 5 East Parking Lot Certification Sampling," Revision 0, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2005b, "Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation," Revision 2, PCN 1, Fernald Closure Project, DOE, Fernald Area Office, Cincinnati, Ohio.

APPENDIX A

PRECERTIFICATION REAL-TIME SCAN DATA FOR AREA 5

TABLE A-1
AREA 5 EPL PHASE I - HPGe RESULTS

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A5-P1-567	3/17/2005	479034	1350165	15	1.18	0.691	0.0594
A5-P1-567-D	3/17/2005	479034	1350165	15	1.24	0.68	0.1170

Figure A-1 Area 5 EPL Phase 1
Total Gross Counts per Second

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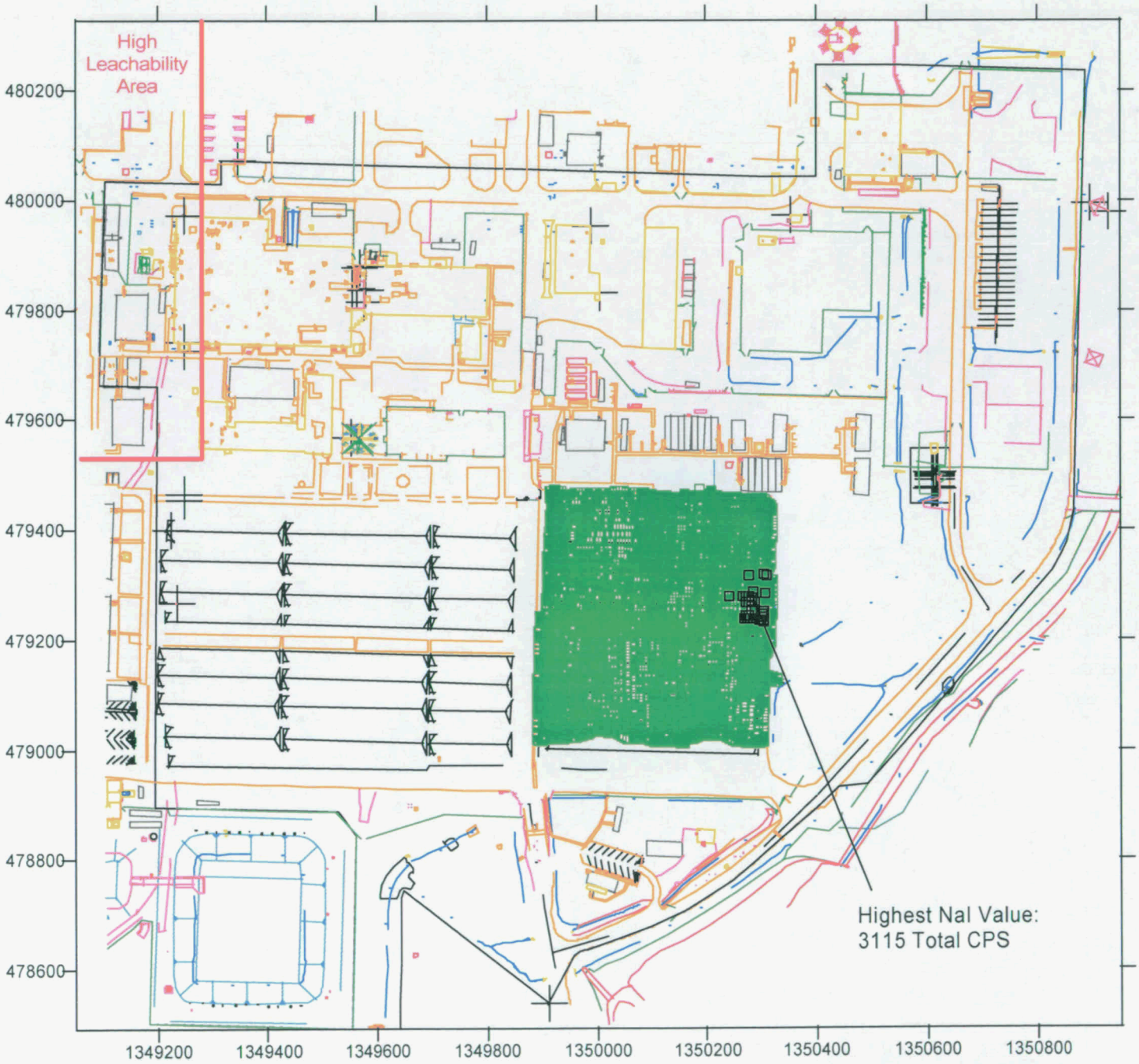
Field of View to Scale
HPGe DET#: 40743
NaI Batch#: RSS1-1699,1704,1720; RSS3-714,722,732; GATOR-438,444,447,450
Measurement Dates: 03/15/05 - 03/22/05



NaI (V3)
Total CPS

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

RTIMP DWG Title: A5_EPL_P1_TU.srf
Project Name: Gen. Char. for Site. Soil Rem.
Project#: 20300-PSP-0011
Verified By: Curt Baumann/78329
Date Verified: 03/23/05
Support Data: A5_EPL_P1_NaI_V3.xls
A5_EPL_P1_HPGe_31cm.xls

Figure A-2 Area 5 EPL Phase 1
Moisture Corrected Radium-226

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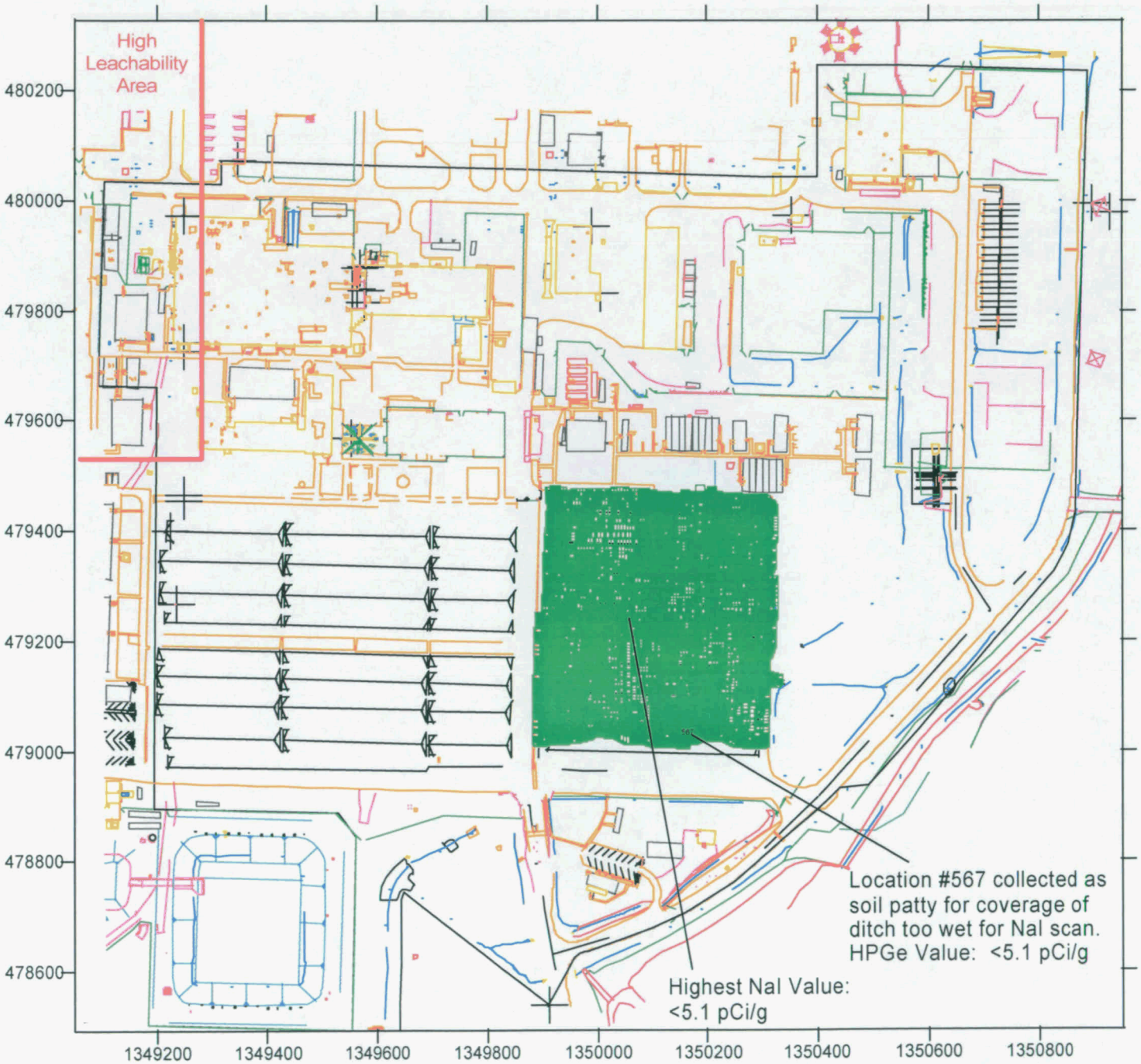
Field of View to Scale
HPGe DET#: 40743
NaI Batch#: RSS1- 1699,1704,1720; RSS3- 714,722,732; GATOR- 438,444,447,450
Measurement Dates: 03/15/05 - 03/22/05



NaI (V3) Ra-226 (pCi/g)	HPGe @ 15cm Ra-226 (pCi/g)
-9999 to 5.1	0 to 5.1
5.1 to 9999	5.1 to 9999

RTIMP DWG Title: A5_EPL_P1_TU.srf
Project Name: Gen. Char. for Site. Soil Rem.
Project#: 20300-PSP-0011
Verified By: Curt Baumann/78329
Date Verified: 03/23/05
Support Data: A5_EPL_P1_NaI_V3.xls
A5_EPL_P1_HPGe_31cm.xls

Figure A-3 Area 5 EPL Phase 1
Moisture Corrected Thorium-232

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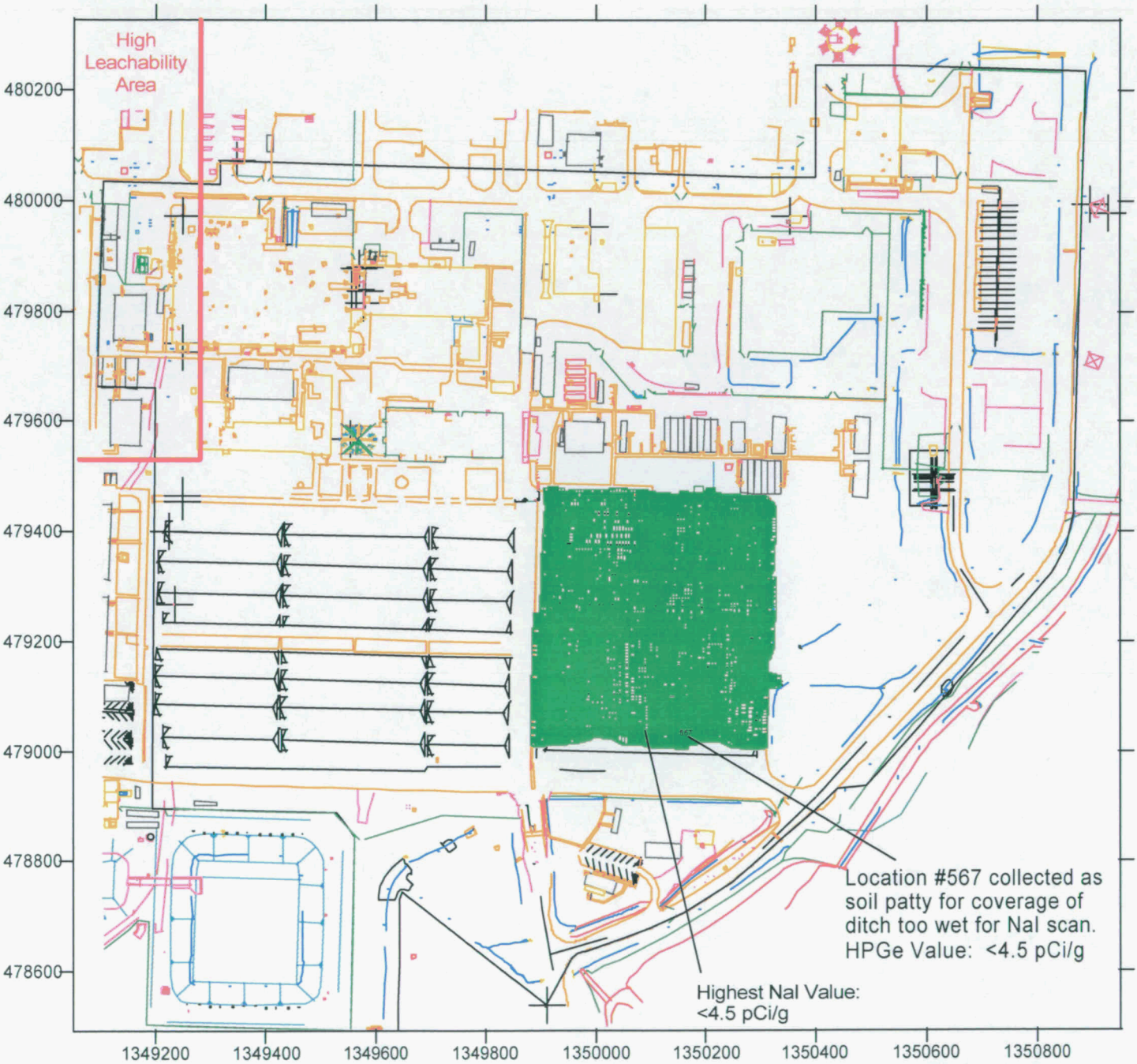
Field of View to Scale
HPGe DET#: 40743
NaI Batch#: RSS1-1699,1704,1720; RSS3-714,722,732; GATOR-438,444,447,450
Measurement Dates: 03/15/05 - 03/22/05



NaI (V3) Th-232 (pCi/g)	HPGe @ 15cm Th-232 (pCi/g)
-9999 to 4.5	0 to 4.5
4.5 to 9999	4.5 to 9999

RTIMP DWG Title: A5_EPL_P1_TU.srf
Project Name: Gen. Char. for Site. Soil Rem.
Project#: 20300-PSP-0011
Verified By: Curt Baumann/78329
Date Verified: 03/23/05
Support Data: A5_EPL_P1_NaI_V3.xls
A5_EPL_P1_HPGe_31cm.xls

Figure A-4 Area 5 EPL Phase 1
Moisture Corrected Total Uranium

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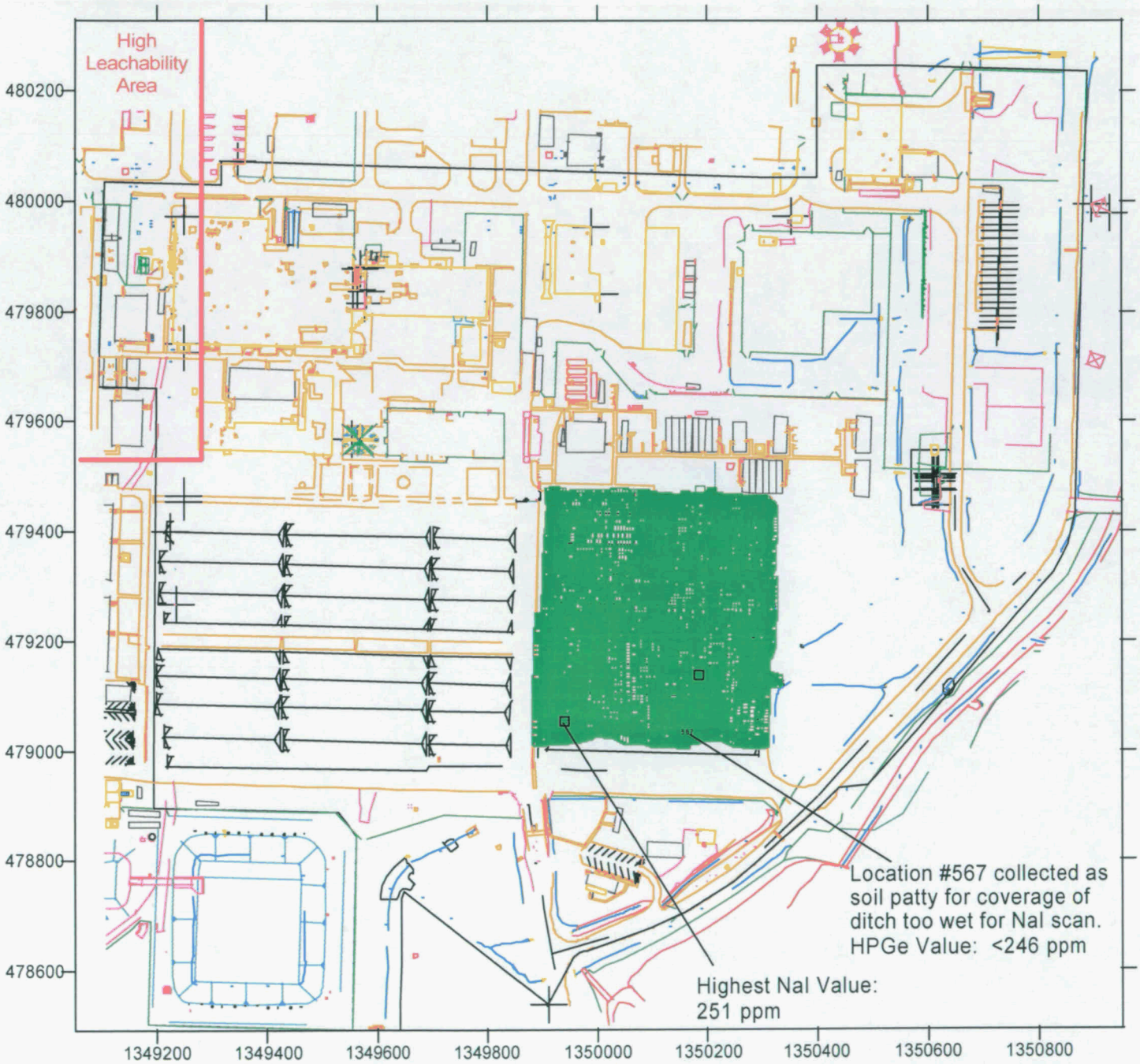
Field of View to Scale
HPGe DET#: 40743
NaI Batch#: RSS1-1699,1704,1720; RSS3-714,722,732; GATOR-438,444,447,450
Measurement Dates: 03/15/05 - 03/22/05



NaI (V3) Total U (ppm)	HPGe @ 15cm Total U (ppm)
-9999 to 246	0 to 246
246 to 875	246 to 875
875 to 9999	875 to 9999

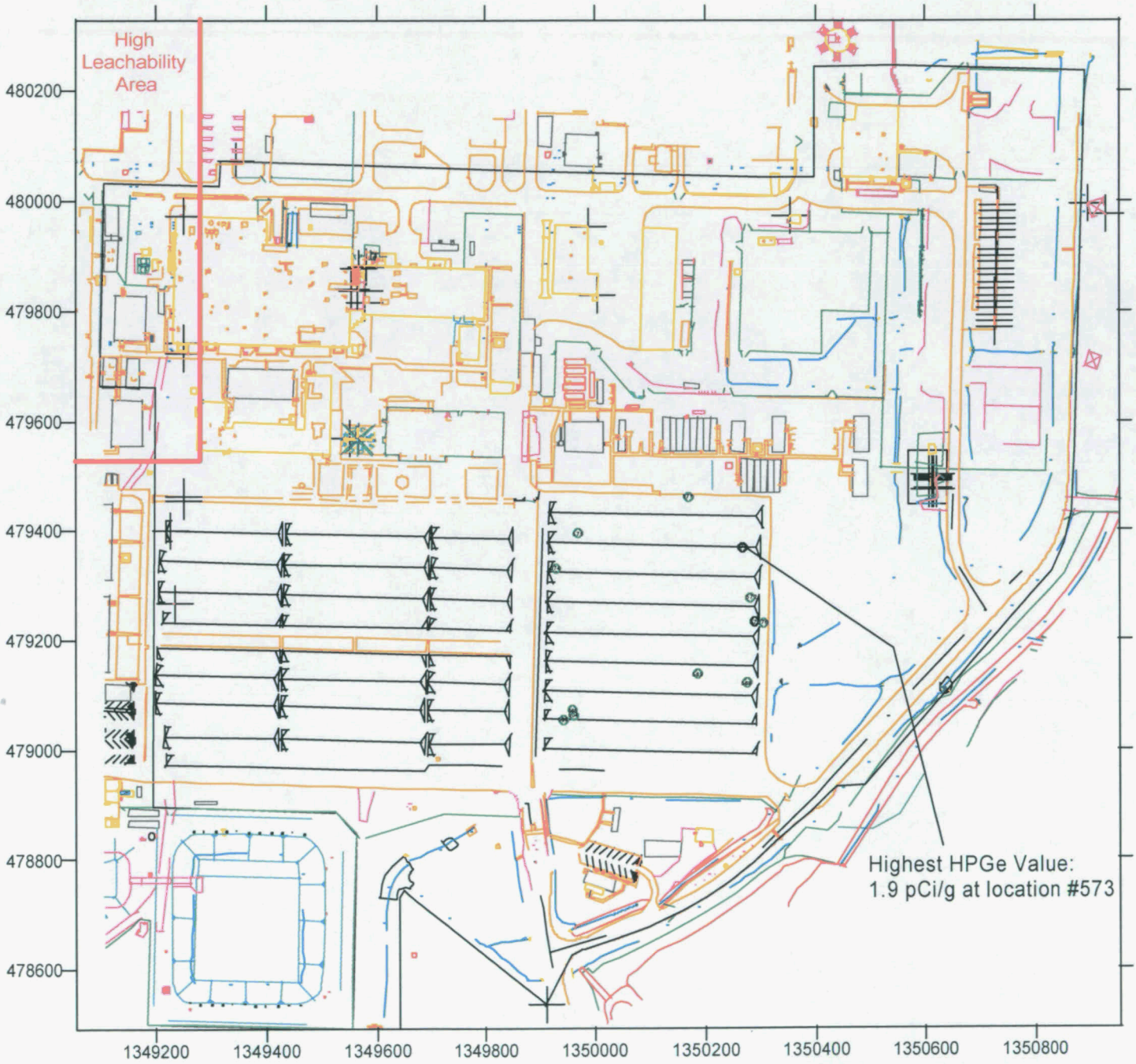
RTIMP DWG Title: A5_EPL_P1_TU.srf
Project Name: Gen. Char. for Site. Soil Rem.
Project#: 20300-PSP-0011
Verified By: Curt Bumann/78329
Date Verified: 03/23/05
Support Data: A5_EPL_P1_NaI_V3.xls
A5_EPL_P1_HPGe_31cm.xls

TABLE A-2
AREA 5 EPL PHASE 2 - HPGe RESULTS

Location ID	Measurement Date	Northing	Easting	Detector Height (cm)	Ra-226 (pCi/g)	Th-232 (pCi/g)	Total U (ppm)
A5-P2-564	3/15/2005	479063	1349961	31	1.163	0.937	0.0000
A5-P2-565	3/15/2005	479072	1349960	31	1.255	0.889	0.0000
A5-P2-565-D	3/15/2005	479072	1349960	31	1.273	0.892	0.0881
A5-P2-566	3/15/2005	479054	1349942	31	1.137	0.807	10.6000
A5-P2-568	3/17/2005	479120	1350276	31	1.260	0.954	0.0709
A5-P2-569	3/17/2005	479137	1350186	31	1.110	0.769	12.5000
A5-P2-570	3/17/2005	479232	1350291	31	1.800	0.948	0.0807
A5-P2-571	3/18/2005	479461	1350170	31	1.574	1.000	0.0548
A5-P2-571-D	3/18/2005	479461	1350170	31	1.608	0.949	0.0597
A5-P2-573	3/18/2005	479369	1350268	31	1.895	1.100	11.9000
A5-P2-572	3/18/2005	479277	1350283	31	1.591	0.856	14.5000
A5-P2-574	3/22/2005	479330	1349929	31	1.115	0.826	0.0000
A5-P2-575	3/22/2005	479394	1349969	31	1.202	0.721	0.0000
A5-P2-575-D	3/22/2005	479394	1349969	31	1.296	0.718	9.7200
A5-P2-576	3/22/2005	479230	1350306	31	1.570	0.869	0.0950

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

Field of View to Scale
HPGe DET#: 31265, 40293, 40743
Measurement Dates: 03/15/05 - 03/22/05



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

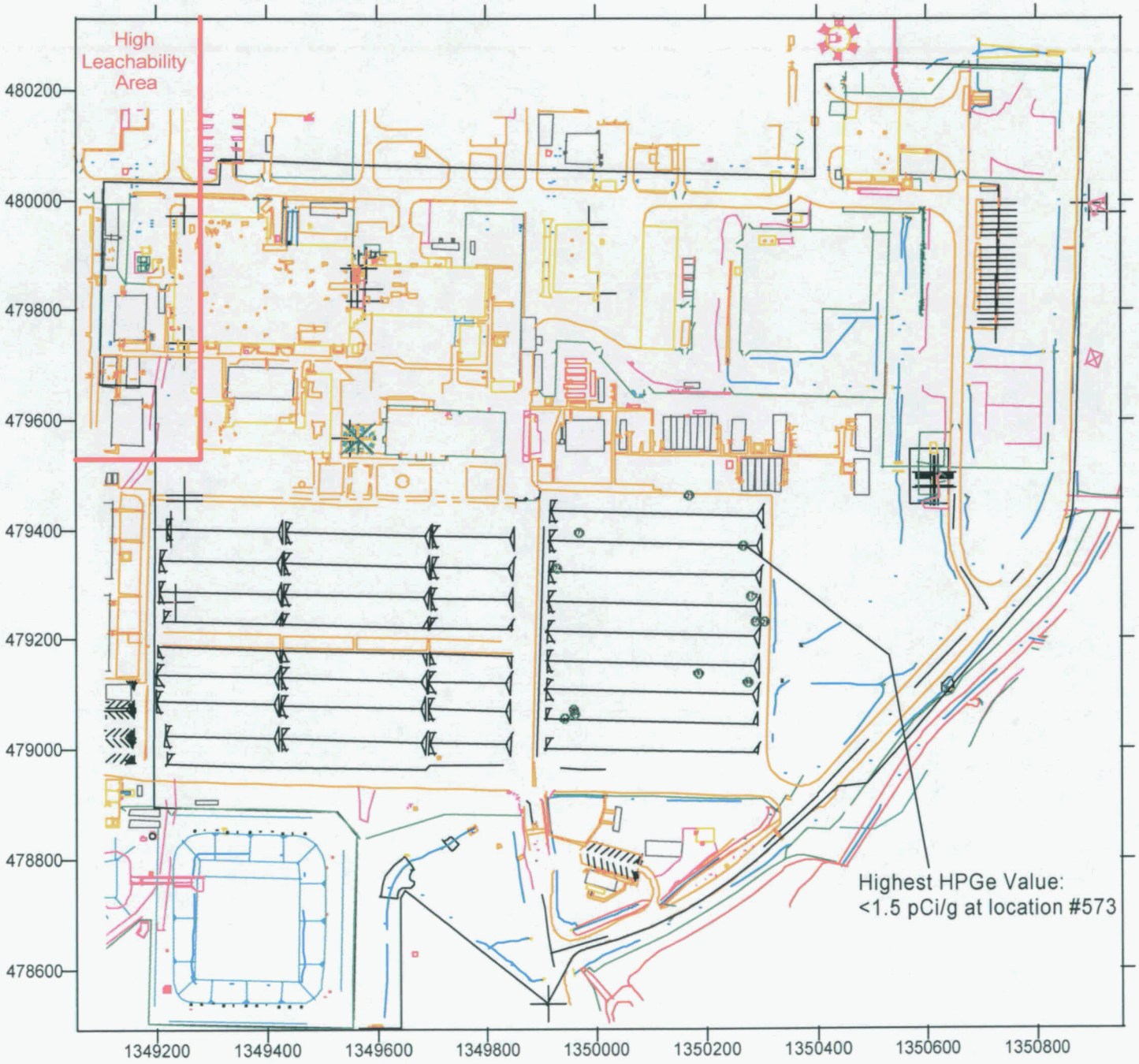
- 0 to 1.7
- 1.7 to 3.4
- 3.4 to 5.1
- 5.1 to 9999

RTIMP DWG Title: A5_EPL_P2_RA.srf
Project Name: Gen. Char. for Site. Soil Rem.
Project #: 20300-PSP-0011
Verified By: Curt Baumann/78329
Date Verified: 03/23/05
Support Data: A5_EPL_P2_HPGe_31cm.xls

Figure A-6 Area 5 EPL Phase 2
Moisture Corrected Thorium-232

6014

Field of View to Scale
HPGe DET#: 31265, 40293, 40743
Measurement Dates: 03/15/05 - 03/22/05



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

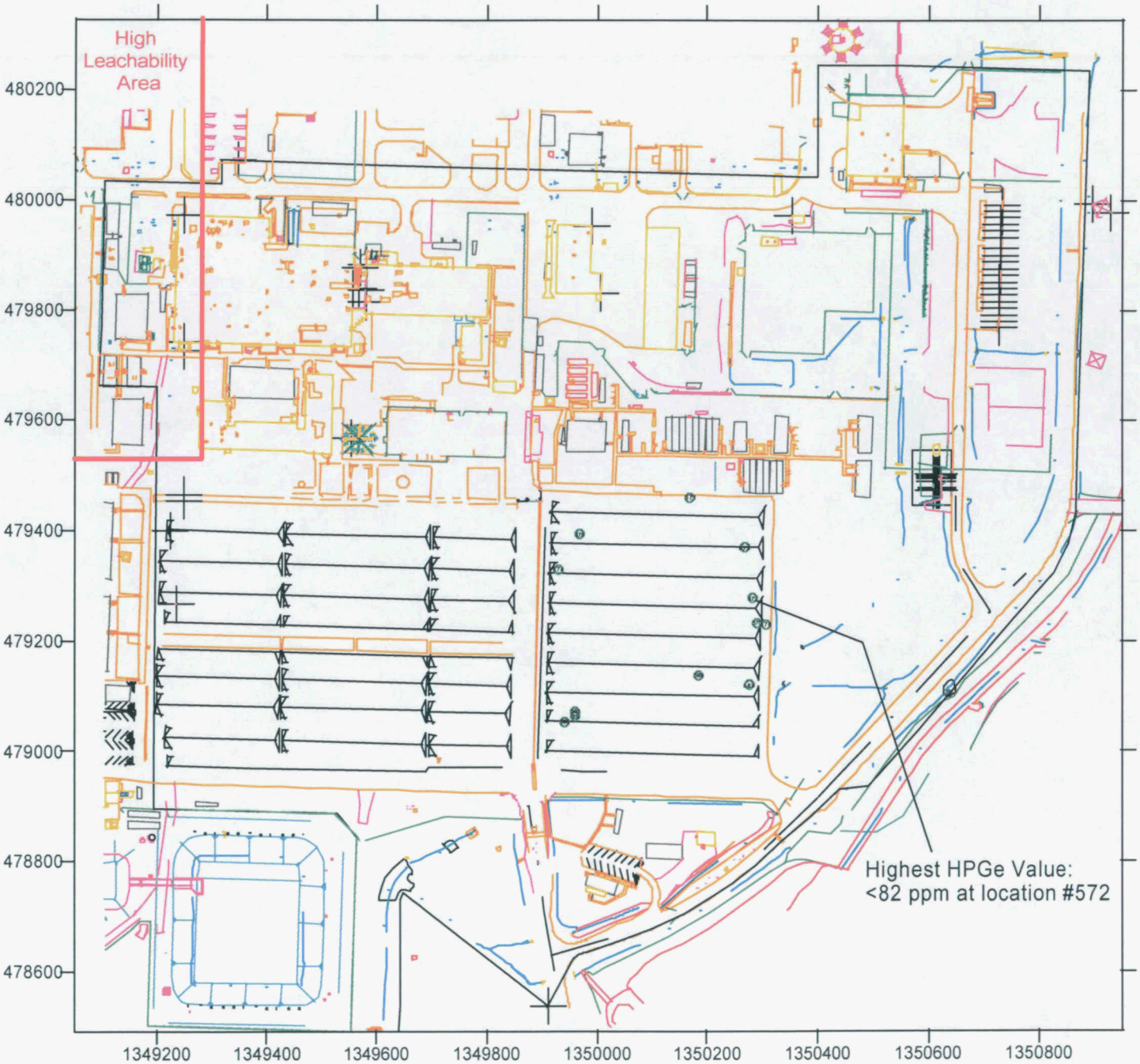
- 0 to 1.5
- 1.5 to 3
- 3 to 4.5
- 4.5 to 9999

RTIMP DWG Title: A5_EPL_P2_TH.srf
Project Name: Gen. Char. for Site. Soil Rem.
Project #: 20300-PSP-0011
Verified By: Curt Baumann/78329
Date Verified: 03/23/05
Support Data: A5_EPL_P2_HPGe_31cm.xls

Figure A-7 Area 5 EPL Phase 2
Moisture Corrected Total Uranium

6014

Field of View to Scale
HPGe DET#: 31265, 40293, 40743
Measurement Dates: 03/15/05 - 03/22/05



HPGe @ 31cm
Total U (ppm)

- 0 to 82
- 82 to 164
- 164 to 246
- 246 to 875
- 875 to 9999

RTIMP DWG Title: A5_EPL_P2_TU.srf
Project Name: Gen. Char. for Site. Soil Rem.
Project #: 20300-PSP-0011
Verified By: Curt Baumann/78329
Date Verified: 03/23/05
Support Data: A5_EPL_P2_HPGe_31cm.xls

5014

PROJECT SPECIFIC PLAN FOR AREA 5 EAST PARKING LOT CERTIFICATION SAMPLING

FERNALD CLOSURE PROJECT
FERNALD, OHIO

JULY 2005

U.S. DEPARTMENT OF ENERGY

20810-PSP-0007
REVISION 0

6014

PROJECT SPECIFIC PLAN FOR AREA 5 EAST PARKING LOT CERTIFICATION SAMPLING

Document Number 20810-PSP-0007
Revision 0

July 2005

APPROVAL:

7/5/05

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

7/5/05

Frank Miller, Characterization Manager — Date
Environmental Closure Project

7/6/05

Tom Buhrlage, Sampling Manager — Date
Environmental Closure Project

7/5/05

Reinhard Friske, Quality Assurance/Quality Control — Date
Safety, Health and Quality

FERNALD CLOSURE PROJECT

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

TABL

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LIST OF ACRONYMS AND ABBREVIATIONS

ASCOC	area specific constituent of concern
ASL	analytical support level
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	constituent of concern
CU	certification unit
DOE	U.S. Department of Energy
DQO	Data Quality Objectives
EPL	East Parking Lot
FACTS	Fernald Analytical Computerized Tracking System
FAL	Field Activity Log
FCP	Fernald Closure Project
FRL	final remediation level
GC	gas chromatography
GPC	gas proportional counter
ICP-AES	inductively coupled plasma-atomic emission spectrometry
ICP/MS	inductively coupled plasma/mass spectrometry
LSC	liquid scintillation counting
MDC	Main Drainage Corridor
µg/kg	micrograms per kilogram
MDL	minimum detection level
mg/kg	milligrams per kilogram
mg/L	milligrams per Liter
NAD83	North American Datum of 1983
PCBs	polychlorinated biphenyls
pCi/g	picoCuries per gram
pCi/L	picoCuries per Liter
PSP	Project Specific Plan
QC	Quality Control
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
TAL	Target Analyte List
V/FCN	Variance/Field Change Notice
VSL	validation support level
WAC	waste acceptance criteria
WAO	Waste Acceptance Organization

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

This Project Specific Plan (PSP) describes the certification sampling and analysis necessary to certify the Area 5 East Parking Lot (EPL).

Certification demonstrates that risk-based, area-specific constituents of concern (ASCOCs) meet final remediation levels (FRLs). As shown on Figure 1-1, Area 5 lies in the southern portion of the Former Production Area and northern Administration Area. The area is bound by the Main Drainage Corridor (MDC) to the north, MDC and Area 7 to the west, Area 7 to the south, and Areas 6 and 7 to the east. Figure 1-1 depicts the portion of Area 5 (Area 5 EPL) that is to be certified. There are a total of four certification units (CUs) for Area 5 EPL.

1.2 SCOPE

The scope of this PSP includes details of certification sampling, analysis and validation that will take place in Area 5 EPL. Field activities will be consistent with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) and Section 3.4 of the SEP. The certification sampling program, as discussed in Section 2.0 of this PSP, will be consistent with Data Quality Objective (DQO) SL-052, Revision 3, which is included as Appendix A of this PSP.

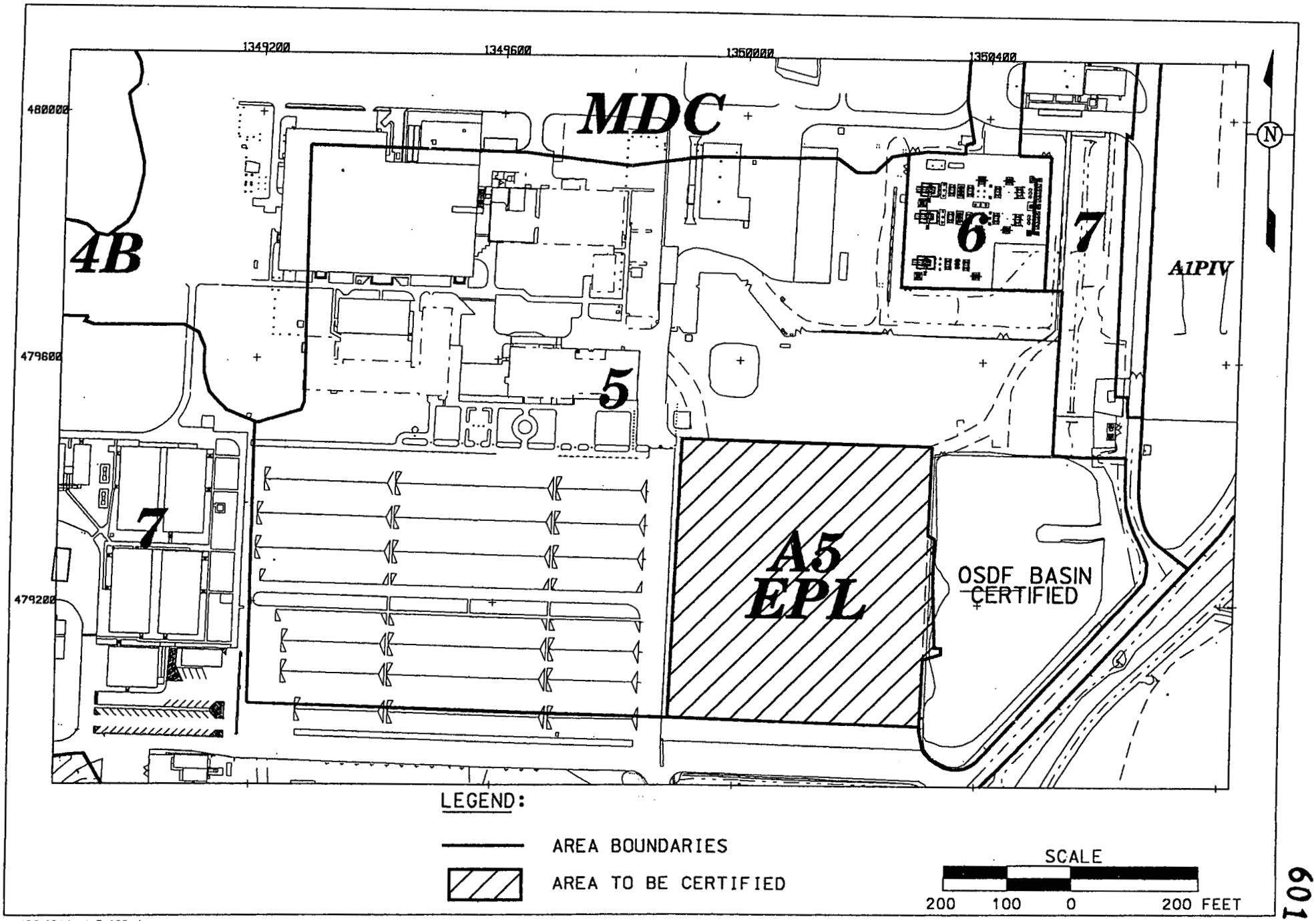
1.3 KEY PROJECT PERSONNEL

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

TABLE 1-1
KEY PROJECT PERSONNEL

Title	Primary	Alternate
DOE Contact	Johnny Reising	TBD
Project Manager	Jyh-Dong Chiou	Frank Miller
Characterization Manager	Frank Miller	Greg Lupton
Field Sampling Manager	Tom Buhrlage	Jim Hey
Surveying Manager	Jim Schwing	Andy Clinton
WAO Contact	Christa Walls	Linda Barlow
Laboratory Contact	Heather Medley	Amy Meyer
Area 5 Data Management Contact	Greg Lupton	Krista Flaugh
Data Validation Contact	James Chambers	Baohe Chen
Field Data Validation Contact	Dee Dee Edwards	James Chambers
FACTS/SED Database Contact	Kym Lockard	Susan Marsh
Quality Control Contact	Reinhard Friske	Darren Wessel
Safety and Health Contact	Gregg Johnson	Pete Bolig/Jeff Middaugh

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



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STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 1-1. AREA 5 EAST PARKING LOT LOCATION MAP

20-JUN-2005

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2.0 CERTIFICATION SAMPLING PROGRAM

2.1 CERTIFICATION DESIGN

Details and logic of the certification design are described in the Certification Design Letter (CDL) for Area 5 East Parking Lot. Four Group 1 CUs have been established within Area 5 EPL. Each CU is divided into 16 sub-CUs. Within each sub-CU, one random certification sample location has been identified. The sample locations in each CU were tested against the minimum distance criterion as defined in the Sitewide Excavation Plan (SEP). The sample locations, field duplicate samples, and archive samples are identified in Appendix B.

2.2 SURVEYING

Before certification sampling activities begin, the North American Datum of 1983 (NAD83) State Planar coordinates for each selected sampling location will be surveyed and identified in the field with a flag. All locations will be field verified to ensure no surface obstacles will prevent collection at the planned location. The Area 5 EPL CU boundaries are shown on Figure 2-1, and the certification sampling locations are shown on Figures 2-2 and 2-3. All sample locations meet the minimum distance criterion.

2.3 PHYSICAL SOIL SAMPLE COLLECTION

2.3.1 Sample Collection

Soil samples will be collected in accordance with procedure SMPL-01, Solids Sampling. Surface samples will be collected using 3-inch diameter, 6-inch long, plastic liners, or an alternate method as identified in SMPL-01, as long as sufficient volume is collected to perform the prescribed analyses. The method of sample collection will be left to the discretion of the Field Sampling Lead. Upon completion of sample collection, the boreholes will be collapsed and no additional abandonment is necessary.

Quality control requirements include a duplicate field sample and a rinsate (if necessary), which will be collected per procedure SMPL-21, Collection of Field Quality Control Samples. For each duplicate field sample, twice the soil volume (a second core) will be collected at one location in each CU, and will not be homogenized with the original sample. The location that requires the collection of a duplicate sample is identified in Appendix B. All samples will be assigned unique sample identification numbers.

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

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

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

Anytime a location is moved, the appropriate figure should be used to determine the best direction to move the point to adhere to the above guidelines. The Characterization Manager or designee should be contacted when a sample location is moved. All final sampling locations will be documented in the Area 5 East Parking Lot Certification Report.

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

When possible, soil samples from the CU with like analyses (including the field duplicate) will be batched and submitted to the Sample Processing Laboratory under one set of Chain of Custody/Request for Analysis forms which will represent one analytical release. The rinsate will be listed on a separate Chain of Custody/Request for Analysis form.

2.3.2 Equipment Decontamination

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

2.3.3 Physical Sample Identification

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

A5-EPL = Sample collected from Remediation Area 5, East Parking Lot

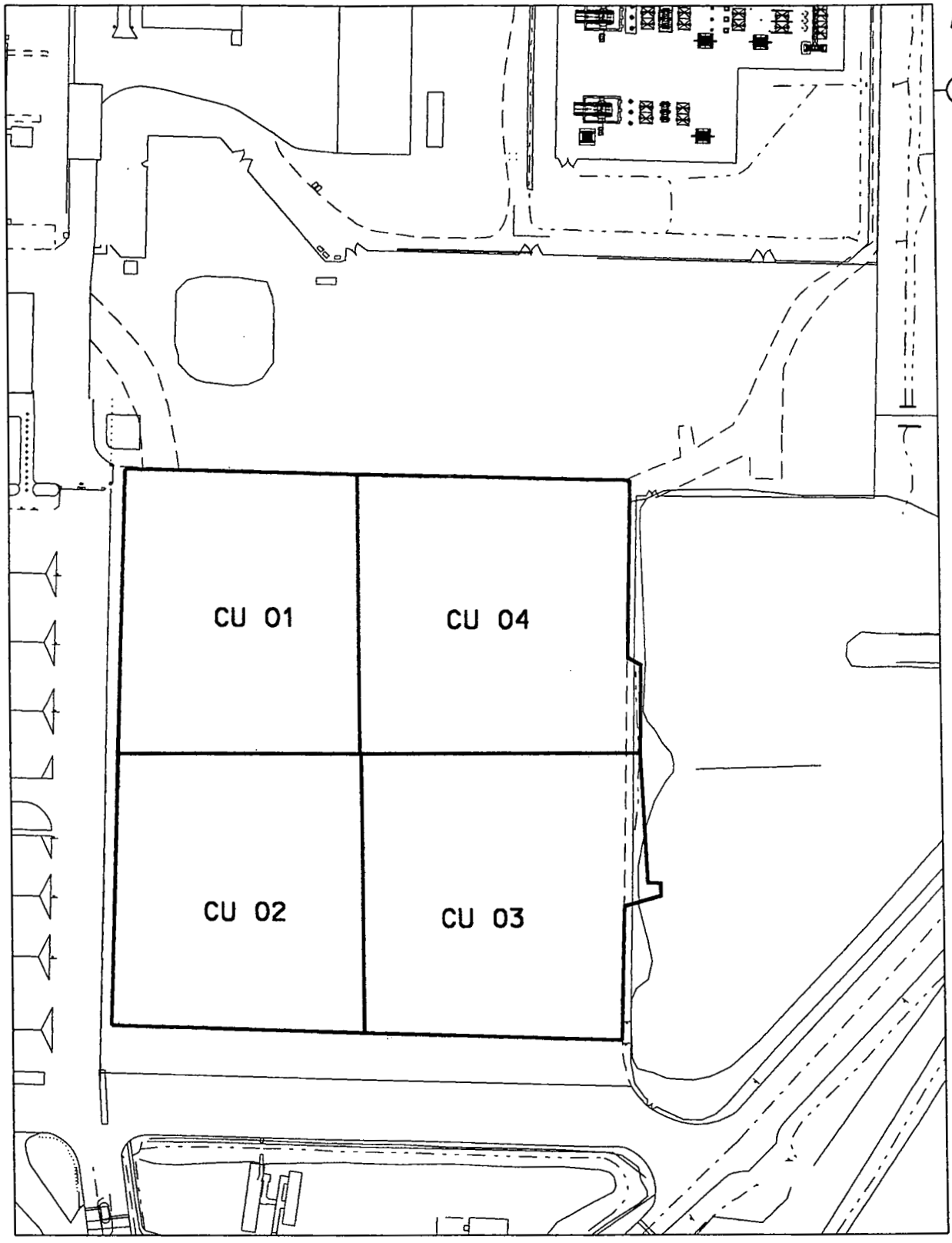
C# = Certification unit from which sample was collected

Location = Sample location number within the CU (1 through 16)

Analysis = "R" indicates radiological analysis

QC = Quality control sample, if applicable. A "D" indicates a field duplicate sample; and "X" indicates a rinsate.

For example, a field duplicate sample taken from the 8th sample location from Area 5 EPL CU 01 for radiological analyses would be identified as A5-EPL-C01-8^R-D. The first rinsate will be identified as A5-EPLC-R-X1 and A5-EPLC-M-X1.



LEGEND:

CU BOUNDARY

SCALE

120 60 0 120 FEET

FIGURE 2-1. AREA 5 EAST PARKING LOT CU BOUNDARY MAP

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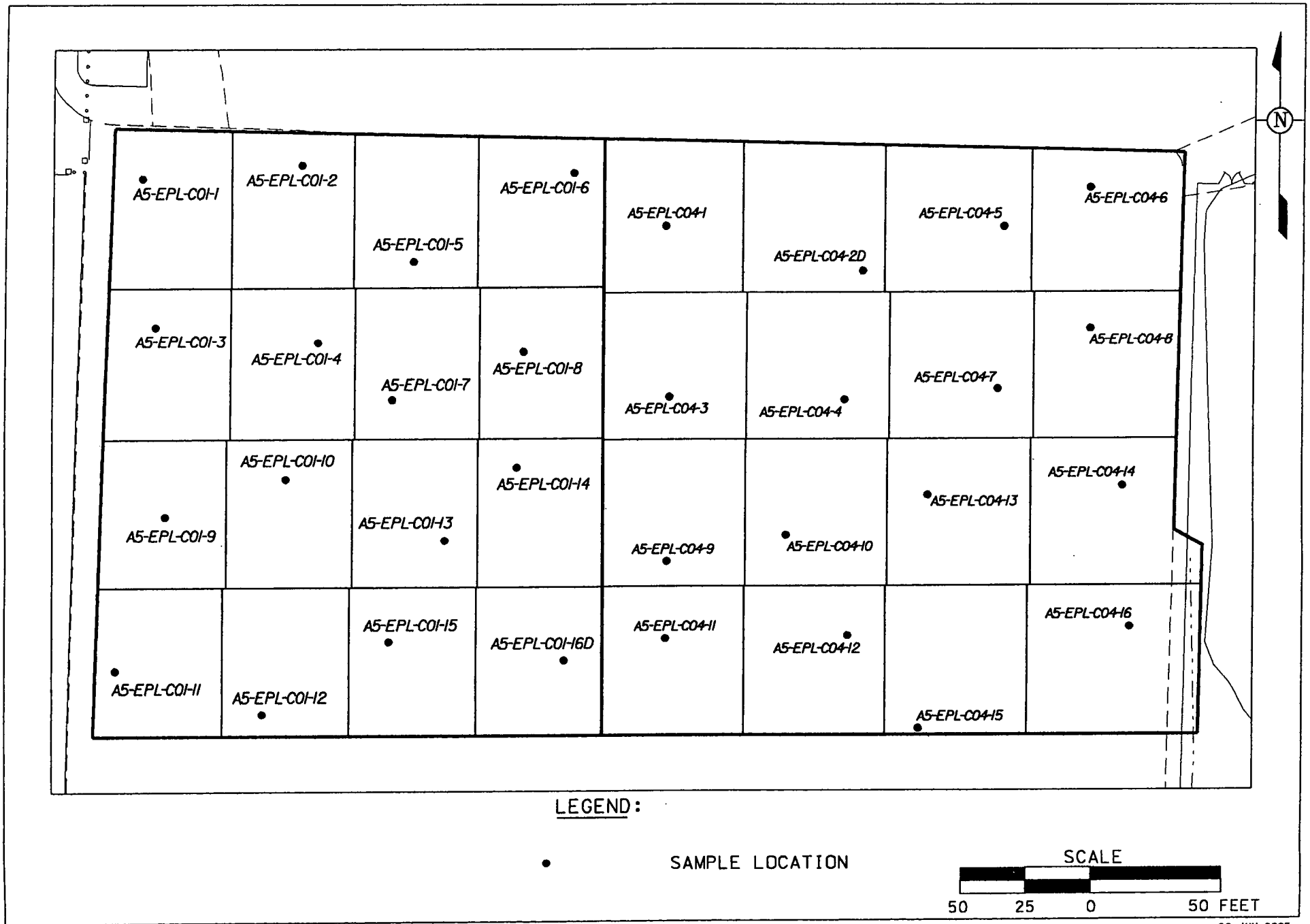
STATE PLANAR COORDINATE SYSTEM 1983
20-JUN-2005



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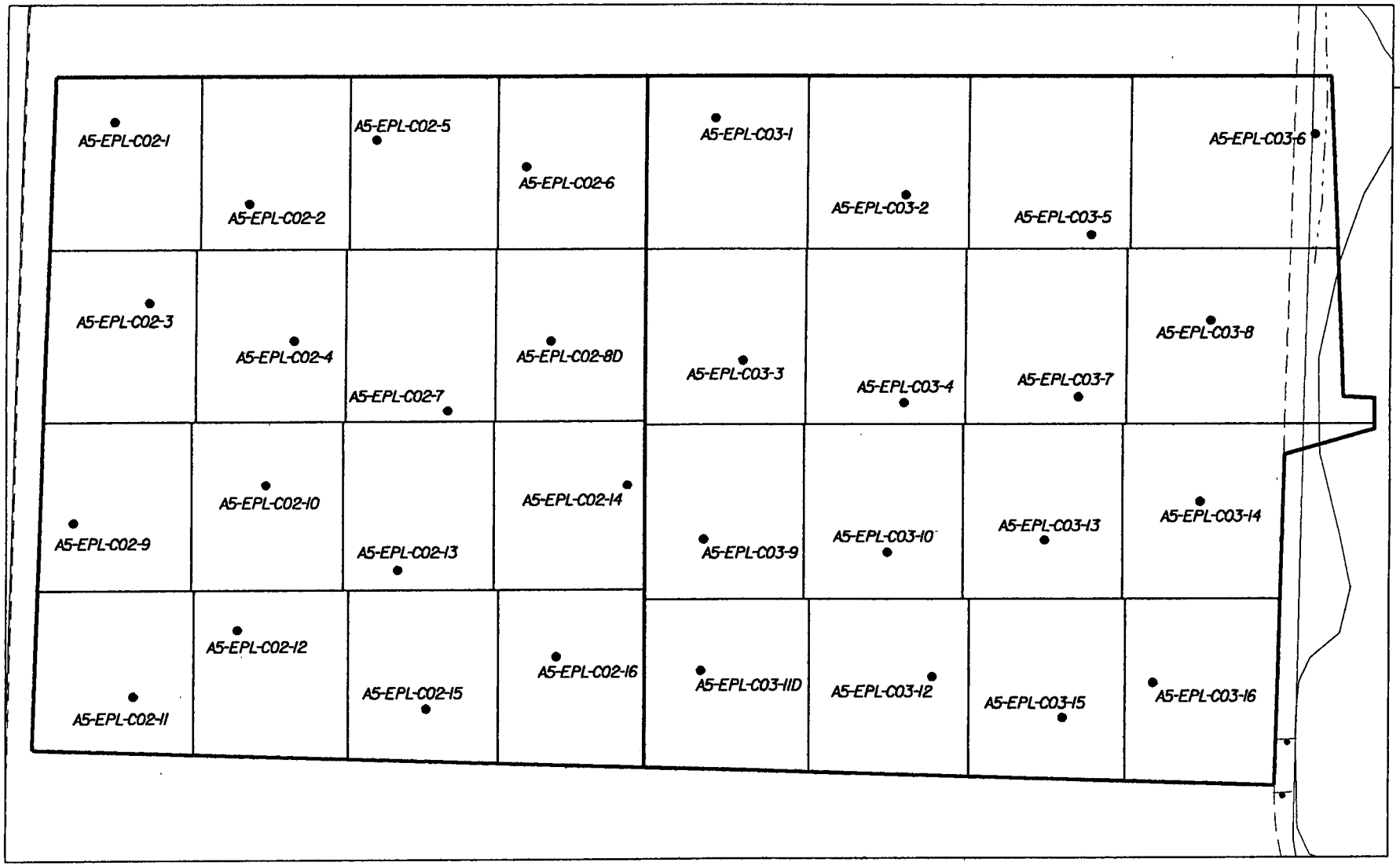
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 2-2. CERTIFICATION SAMPLING LOCATIONS FOR CU 01 AND CU 04

20-JUN-2005



LEGEND:

• SAMPLE LOCATION

SCALE

50 25 0 50 FEET

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STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 2-3. CERTIFICATION SAMPLING LOCATIONS FOR CU 02 AND CU 03

20-JUN-2005

3.0 CERTIFICATION SAMPLE ANALYSIS

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

All samples will be prepared for shipment to off-site laboratories per procedure 9501, Shipping Samples to Off-site Laboratories. Samples will only be shipped to off-site laboratories that are listed on the Fluor Fernald Approved Laboratories List. Historical data from each area will be used to ship the samples off site. The highest historical total uranium result in Area 5 EPL is 75 micrograms per kilogram (µg/kg) from boring P27-SP3.

As soon as the samples arrive at the laboratory where the analysis will take place they should be sealed to begin the in-growth period for radium analysis. A 30-day turnaround time will be required for sample analysis.

The sampling and analytical requirements are listed in Table 3-1 and the Target Analyte Lists (TAL) are shown in Table 3-2.

TABLE 3-1
SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Method	Sample Matrix	ASL	Preserve	Hold Time	Container [b]	Minimum Mass/Volume
Radiological (TAL A)	Gamma Spec, Alpha Spec, Liquid Scintillation or GPC	Solid	D/E[a]	Cool, 4° C	12 months	Glass with Teflon-lined lid	500 g (1500 g)[c]
Metals (TAL B)	ICP-AES or ICP/MS				6 months		
PCBs (TAL C)	GC				14 days		
Radiological	Gamma Spec and LSC	Liquid (rinsate)	D/E[a]	HNO_3 pH<2	6 months	Polyethylene	4 liters
Metals	ICP or ICP/MS	Liquid (rinsate)	D/E[a]	HNO_3 pH<2	6 months	Polyethylene	500 mls

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

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

[c] At the direction of the Field Sampling Lead, triple the specified volume must be collected for all samples at one location in the CU in order for the contract laboratory to perform the required QC analysis. The samples shall be identified on the Chain of Custody/Request for Analysis forms as "designated for laboratory QC".

GC - gas chromatography
GPC - gas proportional counter
ICP-AES - inductively coupled plasma-atomic emission spectrometry
ICP/MS - inductively coupled plasma/mass spectrometry
LSC - liquid scintillation counting
PCBs - polychlorinated biphenyls

TABLE 3-2
TARGET ANALYTE LISTS

20803-PSP-0002-A
Area 5 EPL

Analyte	On-Property FRL/*WAC*	Soil MDL	Water MDL
Total Uranium	82 mg/kg	8.2 mg/kg	3.00 mg/L
Radium-226	1.7 pCi/g	0.17 pCi/g	2,550 pCi/L
Radium-228	1.8 pCi/g	0.18 pCi/g	2,700 pCi/L
Thorium-228	1.7 pCi/g	0.17 pCi/g	2,550 pCi/L
Thorium-232	1.5 pCi/g	0.15 pCi/g	2,550 pCi/L

20803-PSP-0002-B
Area 5 EPL

Analyte	On-Property FRL/*WAC*	Soil MDL	Water MDL
Arsenic	12 mg/kg	1.2 mg/kg	1.440 mg/L

20803-PSP-0002-C
Area 5 EPL

Analyte	On-Property FRL/*WAC*	Soil MDL
Aroclor-1254	0.13 mg/kg	0.013 mg/kg

mg/kg - milligrams per kilogram
mg/L - milligrams per Liter
pCi/g - picoCuries per gram
pCi/L - picoCuries per Liter
WAC - waste acceptance criteria

4.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

4.1 FIELD QUALITY CONTROL SAMPLES, ANALYTICAL REQUIREMENTS AND DATA VALIDATION

Per requirements of the SEP and DQO SL-052, Revision 3, the field quality control, analytical and data validation requirements are as follows:

- Field QC requirements include one field duplicate for the CU, as noted in Section 2.3 and identified in Appendix B. The field duplicate sample will be analyzed for the same constituents of concern (COCs) as the other samples in the CU from which the field duplicate has been collected.

  One rinsate will be collected for metals and radionuclides at a minimum frequency of one per 20 pieces of equipment reused in the field.

- All analyses will be performed at ASL D or E, where E meets the MDL of 10 percent of the FRL and is above the SCQ ASL D detection level, but the analyses meet all other SCQ ASL D criteria. An ASL D data package will be provided for all of the data.

- All field data will be validated. A minimum of 10 percent of the laboratory data will be validated to Validation Support Level (VSL) D with the remainder validated to VSL B. If any result is rejected during validation, the sample will be re-analyzed or an archive location will be sampled and analyzed in its place. If necessary, this change will be documented in a V/FCN.

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

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

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

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

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

4.2 PROJECT SPECIFIC PROCEDURES, MANUALS AND DOCUMENTS

Programs supporting this work are responsible for ensuring team members work to and are trained to applicable documents. Additionally, programs supporting this work are responsible for ensuring team members in their organizations are qualified and maintain qualification for site access requirements. The

Project Manager will be responsible for ensuring any project-specific training required to perform work per this PSP is conducted.

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

- 20100-HS-0002, Soil and Disposal Facility Project Integrated Health and Safety Plan
- Sitewide Excavation Plan (SEP)
- Sitewide CERCLA Quality Assurance Project Plan (SCQ)
- Certification Design Letter for Area 5 East Parking Lot
- SH-1006, Event Investigation and Reporting
- ADM-02, Field Project Prerequisites
- EQT-06, Geoprobe® Model 5400 and Model 6600
- SMPL-01, Solids Sampling
- SMPL-21, Collection of Field Quality Control Samples
- 9501, Shipping Samples to Off-site Laboratories
- Trimble Pathfinder Pro-XL GPS Operation Manual

4.3 INDEPENDENT ASSESSMENT

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

4.4 IMPLEMENTATION OF CHANGES

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

5.0 HEALTH AND SAFETY

Technicians will schedule a project walkdown with Health and Safety (Radiological Control, Industrial Hygiene, and Safety) and any other groups that may be working in the same or an adjacent area before the start of the project. Any hazards identified during the project walkdown must be corrected/controlled prior to the start of work. Weekly walkdowns will be conducted throughout the course of the project in accordance with SPR 1-10, Safety Walk-Throughs. All work on this project will be performed according to applicable Environmental Monitoring procedures, the documents identified in Section 3.4, Fluor Fernald work permit, Radiological Work Permit, and other applicable permits as determined by project management. Concurrence with applicable safety permits is required by each technician in the performance of their assigned duties.

A job/safety briefing will be conducted before field activities begin each day. The project lead or designee will document the briefing on form FS-F-2955. Personnel will also be briefed on any health and safety documents (such as Travelers) that may apply to the project work scope. During the course of this project, no operating heavy-duty equipment within a 50-foot buffer zone will be permitted. Additional safety information can be found in 20100-HS-0002, Soil and Disposal Facility Project Integrated Health and Safety Plan. All personnel have stop-work authority for imminent safety hazards or other hazards resulting from noncompliance with the applicable safety and health practices.

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

6.0 DISPOSITION OF WASTE

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

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

7.0 DATA MANAGEMENT

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

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

Samples will be assigned a unique sample number as explained in Section 2.3 and listed in Appendix B. This unique sample identifier will appear on the Sample Collection Log and Chain of Custody/Request for Analysis form and will be used to identify the samples during analysis, data entry, and data management.

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

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

To ensure that correct coordinates and survey information are tied to the final sample locations in the database, the following process will take place. Upon surveying all locations identified in the PSP, the Surveying Manager will provide the Data Management Lead (i.e., Characterization) with an electronic file of all surveyed coordinates and surface elevations. The Sampling Manager will provide the Data Management Lead with a list of any locations that must be moved during penetration permitting or sample collection, and the Data Management Lead will update the electronic file with this information.

After sample collection is complete, the Data Management Lead will provide this electronic file to the Database Contact for uploading to SED.

APPENDIX A

DATA QUALITY OBJECTIVES SL-052, REV. 3

6014

Control Number _____

Fernald Environmental Management Project

Data Quality Objectives

Title: Sitewide Certification Sampling and Analysis

Number: SL-052

Revision: 3

Effective Date: March 13, 2000

Contact Name: Mike Rolfes

Approval: _____ Date: 3/13/00
James Chambers
DQO Coordinator

Approval: _____ Date: 3/13/00
J.D. Chiou
SCEP Project Director

Rev. #	0	1	2	3			
Effective Date:	4/28/99	6/10/99	2/3/00	3/13/00			

DATA QUALITY OBJECTIVES
Sitewide Certification Sampling and Analysis

Members of Data Quality Objectives (DQO) Scoping Team
The members of the scoping team included individuals with expertise in QA, analytical methods, field sampling, statistics, laboratory analytical methods and data management.

Conceptual Model of the Site
Soil sampling was conducted at the Fernald Environmental Management Project (FEMP) during the Operable Unit 5 (OU5) Remedial Investigation/Feasibility Study (RI/FS). Final Remediation Levels (FRLs) for constituents of concern (COCs), along with the extent of soil contaminated above the FRLs, were identified in the OU5 Record of Decision (ROD). Actual soil remediation activities now fall under the guidance of the final Sitewide Excavation Plan (SEP).

As outlined in the SEP, the FEMP has been divided into individual Remediation Areas (or phased areas within a Remediation Area) to sequentially carry out soil remedial activities. Under the strategy identified in the SEP, pre-design investigations are first conducted to better define the limits of soil excavation requirements. Following any necessary excavation, pre-certification real-time scanning activities are conducted to evaluate residual patterns of soil contamination. Pre-certification scan data should provide a level of assurance that the FRLs will be achieved. When pre-certification data indicate that remediation goals are likely to be met, they are used to define certification units (CUs) within the Remediation Area of interest. Table 2-9 of the final SEP identifies a list of area-specific COCs (ASCOCs) for each Remediation Area at the FEMP. Based on existing data and production knowledge, a subset of these ASCOCs are conservatively identified within each CU as potentially present in the CU. This suite of CU-specific COCs is the subset of the ASCOCs to be evaluated against the FRLs within that CU. At a minimum, the five primary radiological COCs (total uranium, radium-226, radium-228, thorium-228, thorium-232) will be retained as CU-specific COCs for certification of each CU.

Delineation and justification for the final CU boundaries, along with each corresponding suite of CU-specific ASCOCs is documented in a Certification Design Letter. Upon approval of the Certification Design Letter by the EPA, certification activities can begin. Section 3.4 of the final SEP presents the general certification strategy.

1.0 Statement of Problem

FEMP soil and potentially impacted adjacent off-property soil must be certified on a CU by CU basis for compliance with the FRLs of all CU-specific ASCOCs. The appropriate sampling, analytical and information management criteria must be developed to provide the required qualified data necessary to demonstrate attainment of certification statistical criteria. For every area undergoing certification, a sampling plan must be in place that will direct soil samples to be collected which are representative of the CU-specific COC concentrations within the framework of the certification approach identified in the final SEP. The appropriate analytical methodologies must be selected to provide the required data.

Exposure to Soil

The cleanup standards, or FRLs, were developed for a final site land use as an undeveloped park. Under this exposure scenario, receptors could be directly exposed to contaminated soil through dermal contact, external radiation, incidental ingestion, and/or inhalation of fugitive dust while visiting the park. Exposure to contaminated soil by the modeled receptor is expected to occur at random locations within the boundaries of the FEMP and would not be limited to any single area. Some soil FRLs were developed based on the modeled cross-media impact potential of soil contamination to the underlying aquifer. In these instances, potential exposure to contaminants would be indirect through the groundwater pathway, and not directly linked to soil exposure. Off-site soil FRLs were established at more conservative levels than the on-property soil FRLs, based on an agricultural receptor. Benchmark Toxicity Values (BTVs) are also being considered in the cleanup process by assessing habitat impact of individual BTVs under post-remedial conditions.

Available Resources

Time: Certification sampling will be accomplished by the field sampling team prior to interim or final regrading or release of soil for construction activities. The certification sampling schedule must allow sufficient time, in the event additional remediation is required, to demonstrate certification of FRLs prior to permanent construction or regrading. Certification sampling will have to be completed and analytical results validated and statistical analysis completed prior to submission of a Certification Report to the regulatory agencies.

Project Constraints: Certification sampling and analytical testing must be performed with existing manpower, materials and equipment to support the certification effort. Remediation areas are prioritized for certification sampling and analysis according to the date required for initiation of sequential construction activities in those areas. Fluor Daniel Fernald (FDF) and DOE must demonstrate post-remedial compliance with the CU-specific COC FRLs to release the designated Remediation Area for

planned interim grading, eventual restoration under the Natural Resources Restoration Plan (NRRP), and other final land use activities.

2.0 Identify the Decision

Decision

Demonstrate within each CU if all CU-specific COCs pass the certification criteria. These criteria are as follows: 1) The average concentration of each CU-specific COC is below the FRL and within the agreed upon confidence limits (95% for primary ASCOCs and 90% for secondary ASCOCs); and 2) the hot-spot criteria, that no result for any CU-specific COC is more than two times the associated soil FRL. The certification criteria are discussed in greater detail in Section 3.4.4 of the final SEP.

Possible Results

1. The average concentration of each CU-specific COC is demonstrated to be below the FRLs within the confidence level, with no single result for any CU-specific COC greater than two times the associated FRL. The CU can then be certified as attaining remediation goals.

2. The average concentration of at least one CU-specific COC is demonstrated to be above the FRL at the given confidence level. The CU will fail certification and require additional remedial action, per Section 3.4.5 of the final SEP.

3. If a result(s) of one or more CU-specific COC is demonstrated to be at or above two times the FRL, the CU will fail certification. The CU will fail certification and require additional remedial action per Section 3.4.5 of the final SEP. A combination of results 2 and 3 also constitutes certification failure.

3.0 Inputs That Affect the Decision

Required Information

Certification data will be obtained through physical soil sampling. Based on the certification analytical results, the average concentrations of each CU-specific COC with specified confidence levels will be calculated using the statistical methods identified in Appendix G of the final SEP.

Source of Information

Per the SEP, analysis of certification samples for each CU-specific COC will be conducted at analytical support level (ASL) D in accordance with methods and QA/QC standards in the FEMP Sitewide CERCLA Quality Assurance Project Plan [SCQ].

Contaminant-Specific Action Levels
The cleanup levels are the soil FRLs published in the OU5 and OU2 RODs. BTVs being considered in the remediation process are discussed for consideration during certification in Appendix C of the NRRP.

Methods of Sampling and Analysis
Physical soil samples will be collected in accordance with the applicable site sampling procedures. Per the SEP, laboratory analysis will be conducted at ASL D using QA/QC protocols specified in the SCQ. Full raw data deliverables will be required from the laboratory to allow for appropriate data validation. For FEMP-approved on- and off-site laboratories, the analytical method used will meet the required precision, accuracy and detection capabilities necessary to achieve FRL analyte ranges.

4.0 The Boundaries of the Situation

Spatial Boundaries
Domain of the Decision: The boundaries of this certification DQO extend to all surface, stockpile and fill soil in areas that are undergoing certification as part of FEMP remediation.

Population of Soil: Soil includes all excavated surfaces, undisturbed relatively unimpacted native soil, and sub-surface intervals (stockpile or fill areas only) in areas undergoing certification sampling and analysis.

Scale of Decision Making
Based on considerations of the final certification units and the COC evaluation process, the CU-specific COCs are determined. The area undergoing certification will be evaluated on a CU basis, based on physical sample results, as to whether it has passed or failed the criteria for attainment of certification (final SEP Section 3.4.4).

Temporal Boundaries
Time frame: Certification sampling must be performed in time to sequentially release certified areas for scheduled interim grading, restoration, and other final land use activities. Certification sampling data received from the laboratory will be validated and statistically evaluated. Certification results and findings will be documented in Certification Reports, which must be submitted to and approved by the regulatory agencies prior to release of the areas for scheduled interim grading, restoration, and other final land use activities.

Practical Considerations: Some areas undergoing remediation will not be accessible for certification sampling until decontamination/demolition and remedial excavation activities are complete. Other areas, such as wood lots, that are relatively uncontaminated and not planned for excavation, may require preparation, such as cutting of grass or removal of undergrowth prior to certification sampling, thus requiring coordination with FEMP Maintenance personnel.

5.0 Decision Rule

Successful certification of soil within the boundaries of a certification unit (CU) demonstrates that the certified soil (surface or subsurface) has concentrations of CU-specific COC(s) that meet the established criteria for attainment of Certification.

Parameters of Interest
The parameters of interest are the individual and average surface soil concentrations of CU-specific COCs and confidence limits on the calculated average within a CU. OU2 and OU5 ROD identify all applicable soil FRLs. The SEP identifies the ASCOCs, a subset of which will be used to establish CU-specific COCs within each Remediation Area undergoing certification sampling and analysis.

Action Levels
The applicable action levels are the on- and off-property soil FRLs published in the OU5 or OU2 ROD for each ASCOC.

Decision Rules
If the average concentration for each CU-specific COC is demonstrated to be below the FRLs within the agreed upon confidence level (95% for primary COCs; 90% for secondary COCs), and no analytical result exceeds two times the soil FRL, then the CU can be certified as complying with the cleanup criteria. If a CU does not meet the FRLs within the agreed upon confidence level for one or more CU-specific COCs, or one or more analytical results for one or more CU-specific COCs is greater than two times the associated soil FRL, then the CU fails certification and requires further assessment as per the SEP.

6.0 Limits on Decision Errors

Types of Decision Errors and Consequences

Definition

Decision Error 1: This decision error occurs when the decision maker decides that a CU has met the certification criteria, when in reality, the certification criteria have not been met. This situation could result in an increased risk to human health and the environment. In addition, this type of error could result in regulatory fees and penalties.

Decision Error 2: This decision error occurs when the decision maker decides a CU does not met the certification criteria, when actually, the certification criteria have been met. This error would result in unnecessary added costs due to the excavation of soil containing COC concentrations below their FRLs, and an increased volume of soil assigned to the OSDF. In addition, unnecessary delays in the remediation schedule may result.

True State of Nature for the Decision Errors

The true state of nature for Decision Error 1 is that the certification criteria are not met (average CU-specific COC concentrations not below the FRL within the specified confidence limits; or a single sample result above two times the FRL). The true state of nature for Decision Error 2 is that certification criteria are met (average CU-specific COC concentrations are below the FRL within the specified confidence limits, and no result is above two times the FRL). Decision Error 1 is the more severe error due to the potential threat this poses to human health and the environment.

Null Hypothesis

H_0: The average concentration of at least one CU-specific COC within a CU is equal to or greater than the associated FRL.

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

False Positive and False Negative Errors

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

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

7.0 Design for Obtaining Quality Data

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

Soil Sample Locations

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

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

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

Physical Samples

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

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

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

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

8.0 Use of Data to Test Null Hypothesis

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

Data Quality Objectives
Sitewide Certification Sampling and Analysis

1A. Task Description:

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

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

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

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

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

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

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

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

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

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5. Site Information (Description):

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

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

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

* As identified in the area certification PSP

6.B. Equipment Selection and SCQ Reference:

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

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

Biased☐ Composite☐ Grab☒ Environmental☐ Grid☐
Intrusive☒ Non-Intrusive☐ Phased☐ Source☐ Random☒*
*Systematic random samples, selected one per cell and meeting the minimum distance criterion

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

Background samples: OU5 RI

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

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

8A. Field Quality Control Samples:

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

Other (specify) _____

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

8B. Laboratory Quality Control Samples:

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

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

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

APPENDIX B

AREA 5 EAST PARKING LOT SAMPLE LOCATIONS AND IDENTIFIERS

APPENDIX B
AREA 5 EAST PARKING LOT CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	East-83	North-83
1	1-1	0"-6"	A5-EPL-C01-1^RMP	ABC	1349917.99	479451.4
	1-2	0"-6"	A5-EPL-C01-2^RMP	ABC	1349979.54	479456.42
	1-3	0"-6"	A5-EPL-C01-3^RMP	ABC	1349923.3	479394.8
	1-4	0"-6"	A5-EPL-C01-4^RMP	ABC	1349986.09	479388.55
	1-5	0"-6"	A5-EPL-C01-5^RMP	ABC	1350022.89	479419.7
	1-6	0"-6"	A5-EPL-C01-6^RMP	ABC	1350084.99	479453.19
	1-7	0"-6"	A5-EPL-C01-7^RMP	ABC	1350014.87	479366.65
	1-8	0"-6"	A5-EPL-C01-8^RMP	ABC	1350065.69	479384.82
	1-9	0"-6"	A5-EPL-C01-9^RMP	ABC	1349927.43	479321.68
	1-10	0"-6"	A5-EPL-C01-10^RMP	ABC	1349973.85	479336.1
	1-11	0"-6"	A5-EPL-C01-11^RMP	ABC	1349908.16	479262.03
	1-12	0"-6"	A5-EPL-C01-12^RMP	ABC	1349964.99	479245.34
	1-13	0"-6"	A5-EPL-C01-13^RMP	ABC	1350035.36	479312.25
	1-14	0"-6"	A5-EPL-C01-14^RMP	ABC	1350063.28	479340.47
	1-15	0"-6"	A5-EPL-C01-15^RMP	ABC	1350013.99	479272.93
	1-16D	0"-6"	A5-EPL-C01-16^RMP A5-EPL-C01-16^RMP-D	ABC	1350081.97	479265.64
2	2-1	0"-6"	A5-EPL-C02-1^RMP	ABC	1349919.32	479222.01
	2-2	0"-6"	A5-EPL-C02-2^RMP	ABC	1349964.54	479194.57
	2-3	0"-6"	A5-EPL-C02-3^RMP	ABC	1349931.32	479161.75
	2-4	0"-6"	A5-EPL-C02-4^RMP	ABC	1349979.88	479149.21
	2-5	0"-6"	A5-EPL-C02-5^RMP	ABC	1350007.01	479215.92
	2-6	0"-6"	A5-EPL-C02-6^RMP	ABC	1350057.21	479206.95
	2-7	0"-6"	A5-EPL-C02-7^RMP	ABC	1350031.43	479125.98
	2-8D	0"-6"	A5-EPL-C02-8^RMP A5-EPL-C02-8^RMP-D	ABC	1350065.9	479149.03
	2-9	0"-6"	A5-EPL-C02-9^RMP	ABC	1349905.98	479088.52
	2-10	0"-6"	A5-EPL-C02-10^RMP	ABC	1349970.48	479100.96
	2-11	0"-6"	A5-EPL-C02-11^RMP	ABC	1349926.26	479030.62
	2-12	0"-6"	A5-EPL-C02-12^RMP	ABC	1349961.11	479052.5
	2-13	0"-6"	A5-EPL-C02-13^RMP	ABC	1350014.74	479072.44
	2-14	0"-6"	A5-EPL-C02-14^RMP	ABC	1350091.78	479100.7
	2-15	0"-6"	A5-EPL-C02-15^RMP	ABC	1350024.43	479026.24
	2-16	0"-6"	A5-EPL-C02-16^RMP	ABC	1350068	479043.42

APPENDIX B
AREA 5 EAST PARKING LOT CERTIFICATION SAMPLE LOCATIONS AND IDENTIFIERS

CU	Location	Depth	Sample ID	TAL	East-83	North-83
3	3-1	0"-6"	A5-EPL-C03-1^RMP	ABC	1350120.55	479223
	3-2	0"-6"	A5-EPL-C03-2^RMP	ABC	1350184.49	479197.26
	3-3	0"-6"	A5-EPL-C03-3^RMP	ABC	1350130.34	479142.44
	3-4	0"-6"	A5-EPL-C03-4^RMP	ABC	1350184.41	479128.19
	3-5	0"-6"	A5-EPL-C03-5^RMP	ABC	1350246.54	479183.84
	3-6	0"-6"	A5-EPL-C03-6^RMP	ABC	1350320.8	479217.64
	3-7	0"-6"	A5-EPL-C03-7^RMP	ABC	1350242.67	479130.06
	3-8	0"-6"	A5-EPL-C03-8^RMP	ABC	1350286.51	479155.31
	3-9	0"-6"	A5-EPL-C03-9^RMP	ABC	1350117.37	479082.53
	3-10	0"-6"	A5-EPL-C03-10^RMP	ABC	1350178.89	479078.02
	3-11D	0"-6"	A5-EPL-C03-11^RMP A5-EPL-C03-11^RMP-D	ABC	1350116.48	479038.6
	3-12	0"-6"	A5-EPL-C03-12^RMP	ABC	1350194.08	479036.42
	3-13	0"-6"	A5-EPL-C03-13^RMP	ABC	1350231.58	479082.03
	3-14	0"-6"	A5-EPL-C03-14^RMP	ABC	1350283.34	479094.88
	3-15	0"-6"	A5-EPL-C03-15^RMP	ABC	1350237.65	479022.94
	3-16	0"-6"	A5-EPL-C03-16^RMP	ABC	1350267.81	479034.39
4	4-1	0"-6"	A5-EPL-C04-1^RMP	ABC	1350120.63	479432.82
	4-2D	0"-6"	A5-EPL-C04-2^RMP A5-EPL-C04-2^RMP-D	ABC	1350196.83	479415.65
	4-3	0"-6"	A5-EPL-C04-3^RMP	ABC	1350122.28	1349949.49
	4-4	0"-6"	A5-EPL-C04-4^RMP	ABC	1350189.97	479366.03
	4-5	0"-6"	A5-EPL-C04-5^RMP	ABC	1350250.96	479432.42
	4-6	0"-6"	A5-EPL-C04-6^RMP	ABC	1350283.8	479447.32
	4-7	0"-6"	A5-EPL-C04-7^RMP	ABC	1350248.87	479370
	4-8	0"-6"	A5-EPL-C04-8^RMP	ABC	1350284.17	479393.42
	4-9	0"-6"	A5-EPL-C04-9^RMP	ABC	1350121.5	479303.78
	4-10	0"-6"	A5-EPL-C04-10^RMP	ABC	1350167.53	479313.86
	4-11	0"-6"	A5-EPL-C04-11^RMP	ABC	1350121.05	479273.89
	4-12	0"-6"	A5-EPL-C04-12^RMP	ABC	1350191.41	479274.86
	4-13	0"-6"	A5-EPL-C04-13^RMP	ABC	1350222.09	479329.26
	4-14	0"-6"	A5-EPL-C04-14^RMP	ABC	1350296.65	479332.78
	4-15	0"-6"	A5-EPL-C04-15^RMP	ABC	1350218.85	479239.36
	4-16	0"-6"	A5-EPL-C04-16^RMP	ABC	1350299.69	479278.19