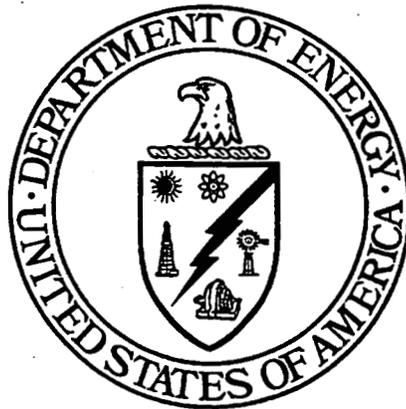


**CERTIFICATION DESIGN LETTER
FOR AREA 1, PHASE II,
CERTIFIED FOR REUSE AREAS,
TRAP RANGE, SECTOR 2C, AND SECTOR 3**

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO**



FEBRUARY 2000

**U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE**

**20710-RP-0014
REVISION 0
FINAL**

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LIST OF ACRONYMS AND ABBREVIATIONS = 2802

A1PI	Area 1, Phase I
A1PII	Area 1, Phase II
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
CG&E	Cincinnati Gas and Electric Company
COC	constituent of concern
CRDL	Contract Required Detection Limit
CU	certification unit
DOE	U.S. Department of Energy
EIS	East Impacted Stockpile
EPA	U.S. Environmental Protection Agency
FEMP	Fernald Environmental Management Project
FRL	final remediation level
HPGe	high-purity germanium detector
HWMU	Hazardous Waste Management Unit
mg/kg	milligram per kilogram
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
OU5	Operable Unit 5
PCE	Perchloroethylene
pCi/g	picoCuries per gram
PSP	Project Specific Plan
RA14	Removal Action 14
ROD	Record of Decision
RSS	Radiation Scanning System
RTRAK	Radiation Tracking System
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SCQ	Sitewide CERCLA Quality Assurance Project Plan
STP	Sewage Treatment Plant
UCL	Upper Confidence Limit
µg/kg	micrograms per kilogram
WAC	waste acceptance criteria
V/FCN	Variance/Field Change Notice

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EXECUTIVE SUMMARY

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This Certification Design Letter (CDL) describes the certification approach for Area 1, Phase II (A1PII) Certified Areas for Reuse, Trap Range, Sector 2C, and Sector 3, and includes the following information:

- A definition of the boundaries of the area to be certified under this CDL
- A discussion of the area-specific constituents of concern (ASCOC) selection process and list of ASCOCs
- A presentation of the certification unit (CU) boundaries and proposed sampling strategy
- The analytical requirements and the statistical methodology that will be employed
- The proposed schedule for certification activities.

The scope of this CDL is limited to the certification of the remaining areas in A1PII. These areas include the Trap Range, the certified for reuse areas, remaining areas in Sector 2, and the entire Sector 3 area which includes the former Sewage Treatment Plant (STP) and surrounding areas. 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 subject areas are well characterized through several predesign investigation and precertification sampling programs. The selection process for the ASCOCs was accomplished using constituent of concern (COC) lists in the Operable Unit 5 (OU5) Record of Decision (ROD, DOE 1996), predesign investigation data, and process knowledge. A total of 63 CUs were established, 14 in Sector 1, 21 in Sector 2, and 28 in Sector 3.

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1.0 INTRODUCTION

This CDL describes the certification approach for demonstrating that soil in A1PII meets the final remediation levels (FRLs) for all applicable ASCOCs. The format of this CDL follows guidelines presented in the SEP.

As discussed in the A1PII Supplemental Characterization Package (DOE 1999a), submitted February 12, 1999, A1PII certification will be performed in an iterative manner, with sectors being certified in phases. The A1PII boundary and sector locations are shown in Figure 1-1. Certification progress at this time is summarized in Table 1-1 with a listing of the multiple CDLs submitted to the Regulatory Agencies. A brief summary of the previous CDLs submitted are described below.

The first CDL covered Sector 1, Sector 2A, and the Conveyance Ditch and addressed a total of 22 CUs as shown in Figure 1-2. The purpose of this CDL was two-fold. The first was to certify areas necessary to commence On-Site Disposal Facility (OSDF) borrow activities for cell construction constituting 17 CUs located in Sector 1. The second purpose was to certify areas necessary to install surface water control features during site preparations for STP excavation. This consisted of CUs that were certified for reuse, including three CUs in Sector 1: A1PII-S1-01, A1PII-S1-03, and A1PII-S1-19, which represented the Outfall Area, A1PII Sedimentation Basin, and Trap Range Ditches, respectively. This CDL also addressed certification for reuse of CU A1PII-S3-CD, which represented the conveyance ditch in Sector 3. Additionally, two CUs included in this CDL were located in Sector 2 and were labeled A1PII-S2a-01 and A1PII-S2a-02. A1PII-S2a-01 was necessary to support Cell 3 construction, while A1PII-S2a-02 was necessary to extend certified area to support OSDF Borrow Area Haul Road operations.

The second CDL covered A1PII Sector 2B, which consisted of 4 CUs in Sector 2 as shown in Figure 1-3. CU A1PII-S2B-EIS covered the footprint of the East Impacted Stockpile, and the three remaining CUs covered the old North Access Road and a portion of the surrounding ditches.

The third CDL covered the Utility Trenches for abandoned underground utilities removed during STP excavation in Sector 3. This certification effort consisted of five CUs within four utility trench excavations. Figure 1-4 depicts the CUs covered in this third CDL.

The Certification Report for A1PII Sector 1, Sector 2A and the Conveyance Ditch (DOE 1998b) was submitted and approved by U.S. Environmental Protection Agency (EPA) and Ohio Environmental Protection Agency (OEPA) on June 2, 1998 and June 19, 1998, respectively. The Certification Report for A1PII Sector 2B (DOE 1999b) was submitted and approved by EPA and OEPA on June 16, 1999 and May 20, 1999, respectively. The Certification Report for A1PII Sector 3 Utility Trenches will be submitted as part of the final report with the data from this CDL.

The focus of this CDL is to complete the certification of the remaining areas in A1PII, not covered under previous CDLs, now that remedial actions have been completed. This certification will include: the Trap Range, final certification of areas that have been characterized for reuse, the STP footprint and surrounding areas (Sector 3), and the remaining areas south of the current OSDF construction activities (Sector 2). Upon completion of this certification effort, a final certification report will be issued for the entire A1PII area.

The FEMP Controlled Certification Map (Figure 1-5), which shows the certification status for the entire FEMP is included with this CDL in order to assist the Regulatory Agencies in tracking progress.

1.1 OBJECTIVES

The primary objectives of this CDL are as follows:

- Define the boundaries of the area to be certified under this CDL
- Present maps for historical data and newly acquired real-time data
- Define the ASCOC selection process and list the selected ASCOCs for those areas
- Present the CU boundaries and proposed sampling strategy
- Summarize the analytical requirements and the statistical methodology that will be employed
- Present the proposed schedule for the certification activities.

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1.2 SCOPE

The scope of this CDL consists of certifying the remaining areas in A1PII including the Trap Range, the Certified for Reuse Areas, Sector 2C, and Sector 3, as shown in Figure 1-6. This includes a total of 63 CUs: 14 in Sector 1, 21 in Sector 2, and 28 in Sector 3. This CDL also includes CUs that surround the northern portion of the Permanent Leachate Line within Area 1, Phase I (A1PI) and the conceptual location of the CU surrounding the southern section of the Permanent Leachate Line presently under design. Additionally, a CU has been designed that surrounds the abandoned Temporary Leachate Line footprint. The CU design is shown in Figure 1-6, and a description of each CU is provided in Section 4.1.

Three areas within A1PII are excluded from this certification scope: the Dissolved Oxygen Facility, the Interim Leachate Line area, and the area north of the footprint of the West Impacted Material Stockpile. These areas are shaded in Figure 1-6 and are explained in the following paragraphs.

The first area excluded is the Dissolved Oxygen Facility which will remain in operation until final remediation activities are completed at the FEMP. This area will be certified as part of Area 10.

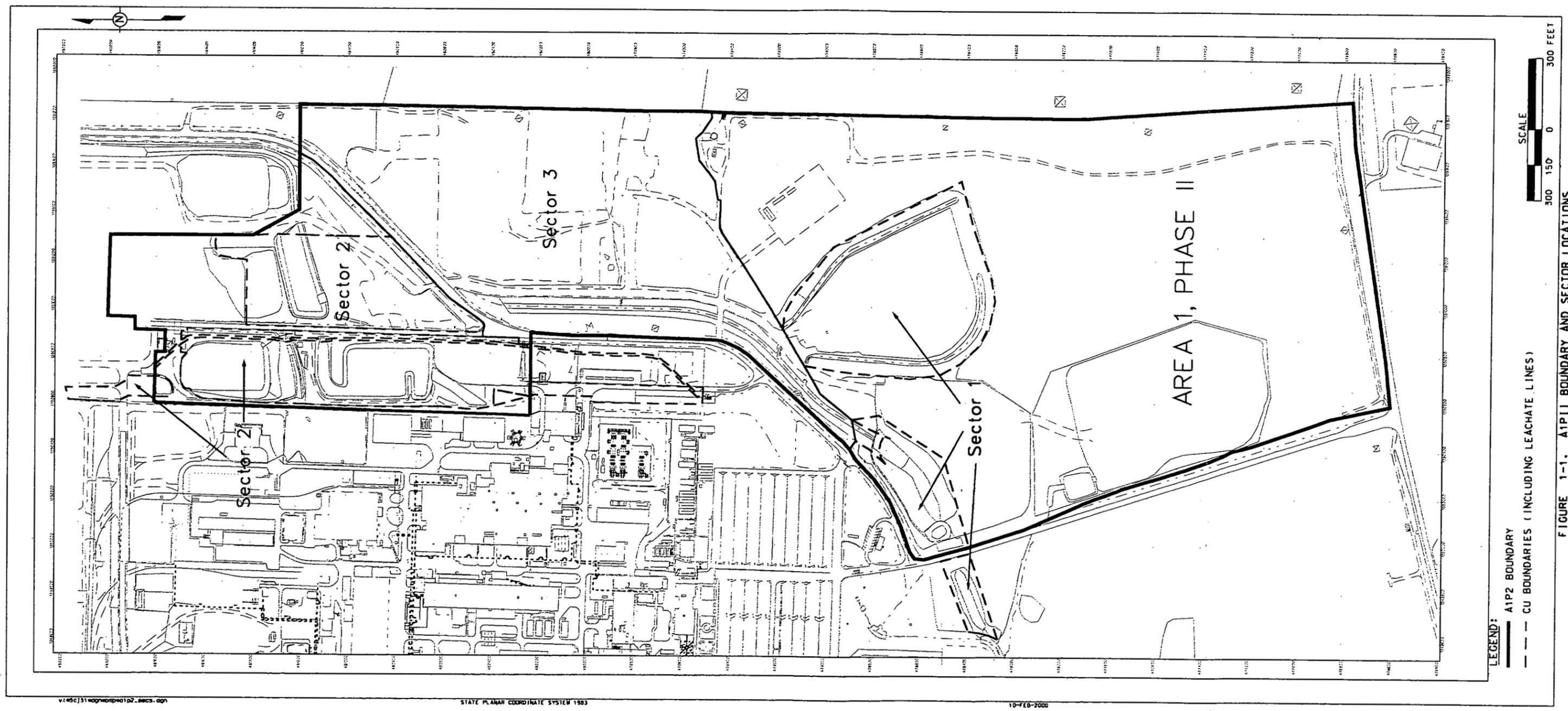
The second area excluded is the Interim Leachate Line area. This area will be certified beginning in Spring 2001 after the Permanent Leachate Line is installed and operational.

The final area excluded from this CDL is an area located north of the West Impacted Material Stockpile footprint. This area is currently being used to support OSDF placement activities, which consists of the Equipment Wash Facility, construction trailers, and the Debris Haul Road. This area will be certified in late 2000 after the Equipment Wash Facility and construction trailers are relocated. Additionally, the area directly north of and adjacent to the Equipment Wash Facility in A1PI will be recertified.

TABLE 1-1
A1PII CERTIFICATION DESIGN LETTERS

CDL Scope	CDL Submittal	Certification Report
Sector 1, Sector 2A, Conveyance Ditch	Complete	Complete
Sector 2B	Complete	Complete
Sector 3 Utility Trenches	Complete	Results to be included with Draft Final Certification Report

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LEGEND:

— A1P2 BOUNDARY

- - - CU BOUNDARIES (INCLUDING LEACHATE LINES)

FIGURE 1-1. A1P11 BOUNDARY AND SECTOR LOCATIONS



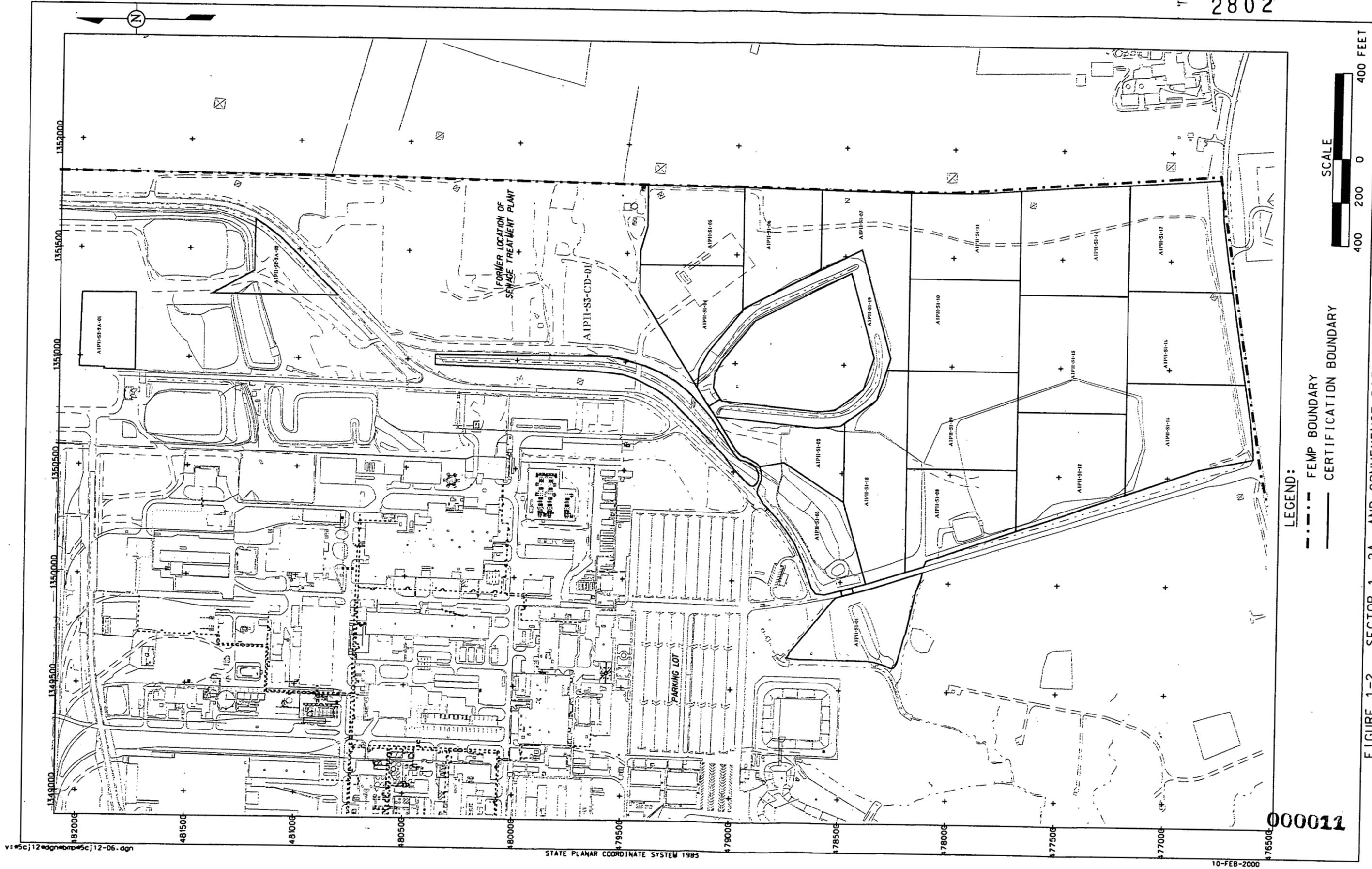


FIGURE 1-2. SECTOR 1, 2A, AND CONVEYANCE DITCH (CD) CERTIFICATION UNITS

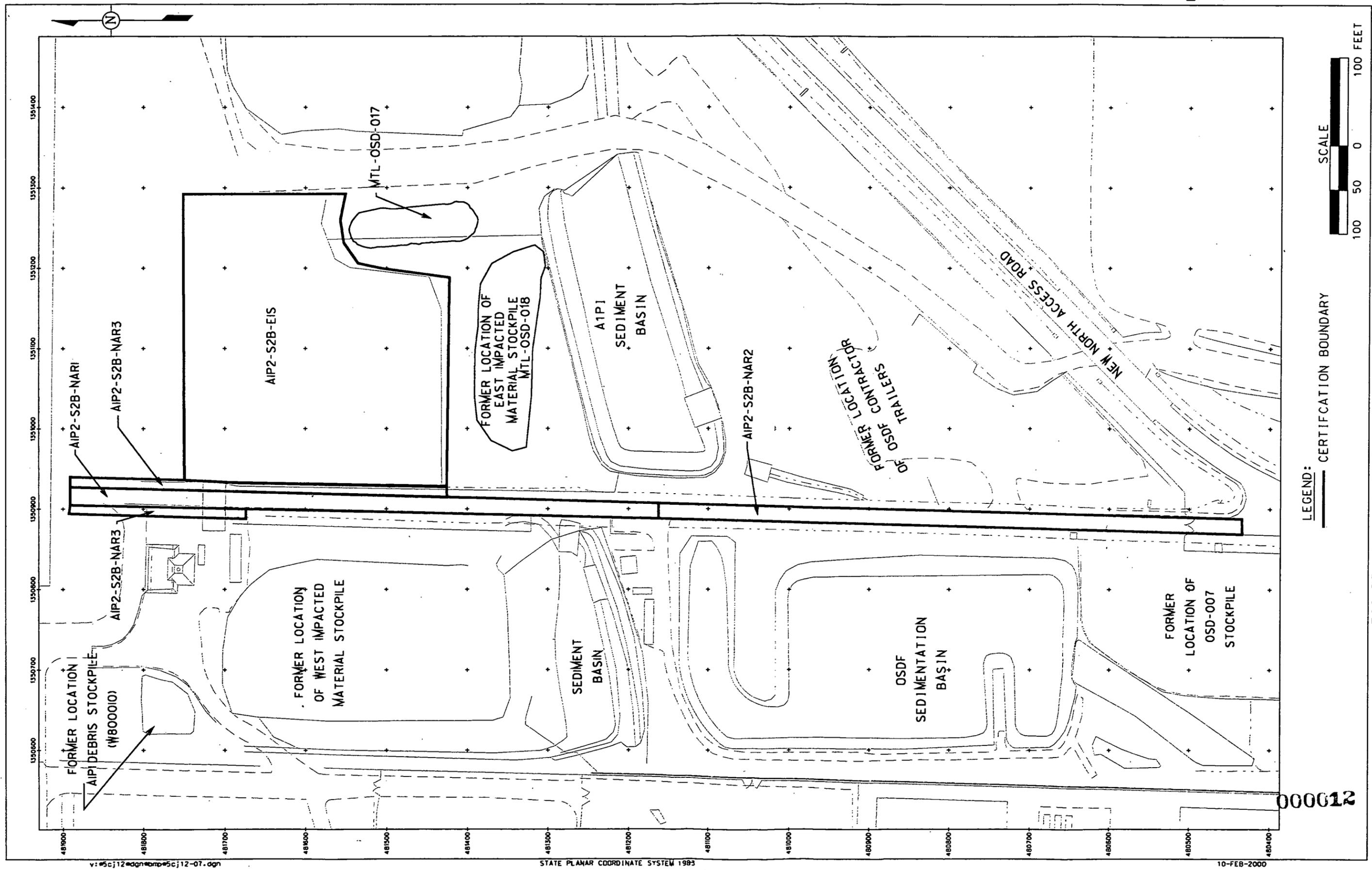
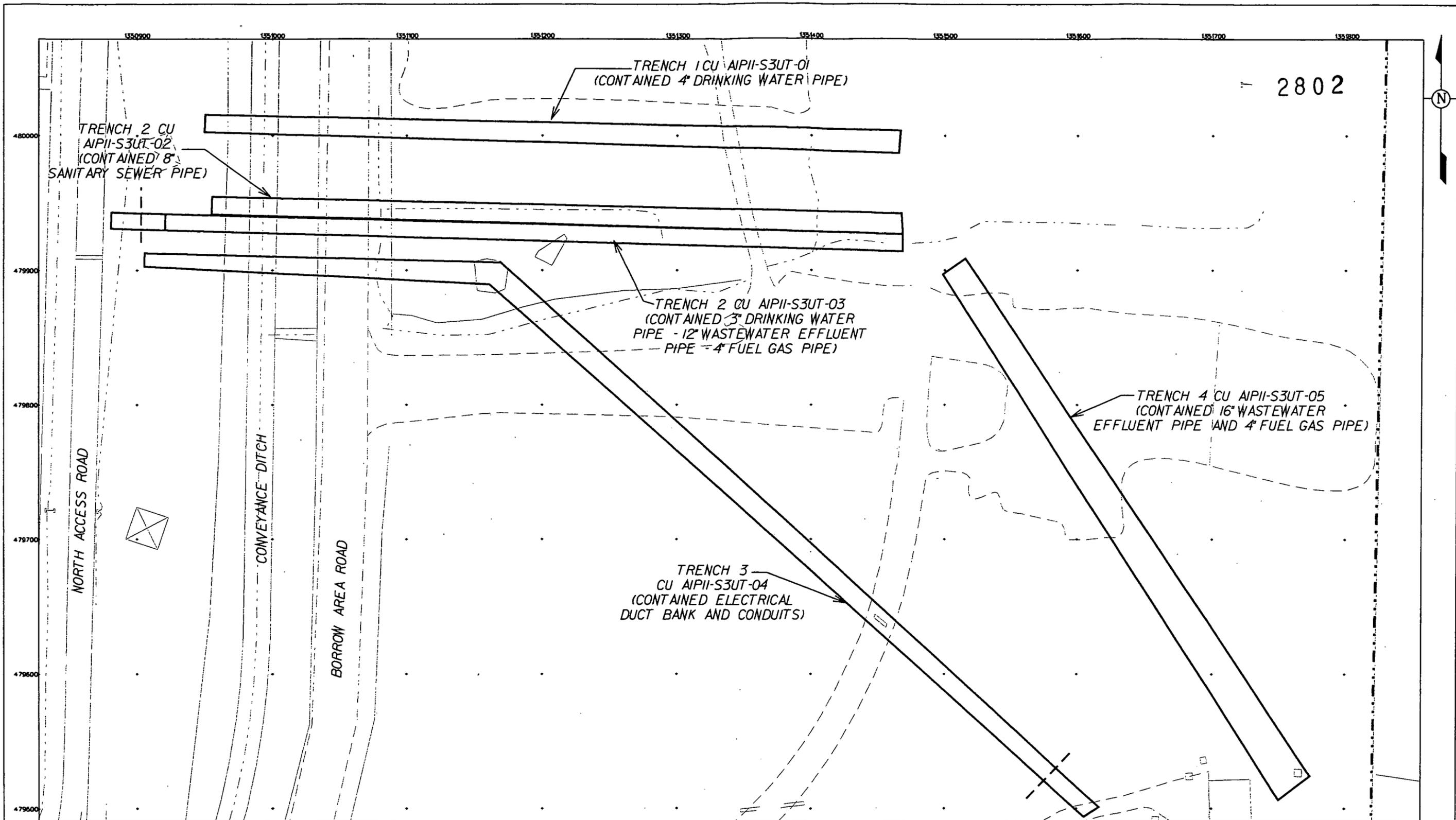


FIGURE 1-3. SECTOR 2B CERTIFICATION UNITS

000012



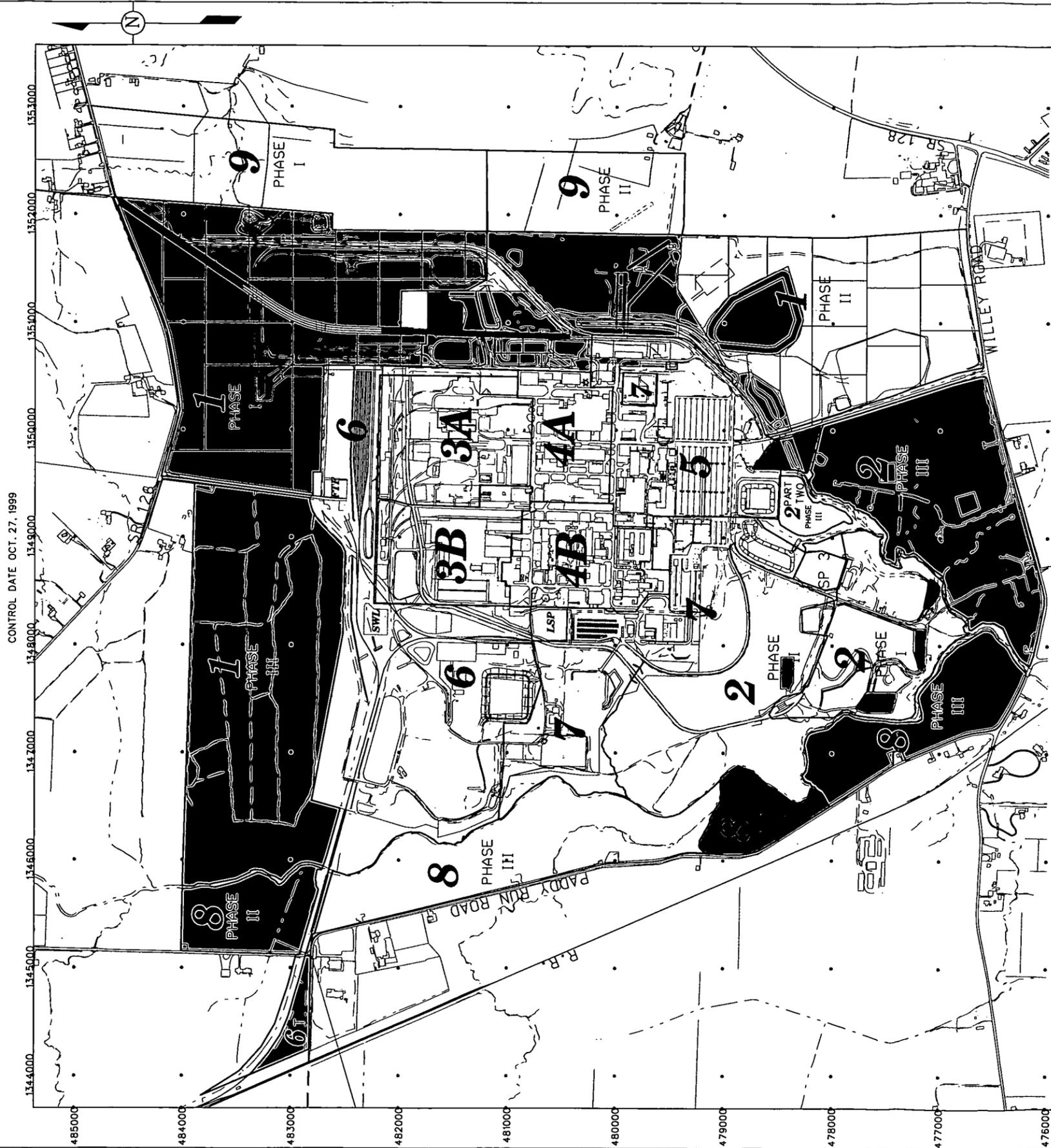
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- LEGEND:**
- ACTUAL LIMITS OF EXCAVATION
 - .-.- FEMP BOUNDARY
 - CERTIFICATION BOUNDARY



FIGURE 1-4. SECTOR 3 UTILITY TRENCHES



LEGEND:

- A1PII APPROVED CERTIFIED AREAS - 80.1 ACRES
- CHARACTERIZATION FOR REUSE AREAS - 20.2 ACRES
- A1P2-S2B APPROVED CERTIFIED AREAS 1.5 ACRES
- A1PII SECTOR 3 UTILITY TRENCHES AREAS EXCLUDED FROM A1PI
- A1PI APPROVED CERTIFIED AREAS - 120.5 ACRES
- A8PI APPROVED CERTIFIED AREAS - 12.5 ACRES
- A1PI SEDIMENT TRAPS 2 AND 3 APPROVED CERTIFIED AREAS 1.4 ACRES
- A8PII/A6TA APPROVED CERTIFIED AREA - 22.1 ACRES
- CERTIFICATION ON GOING. CERTIFICATION REPORT TO BE SUBMITTED

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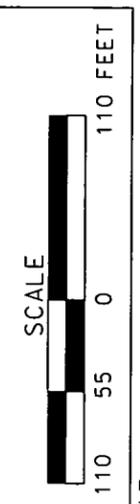
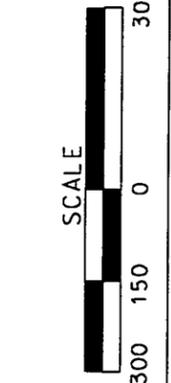
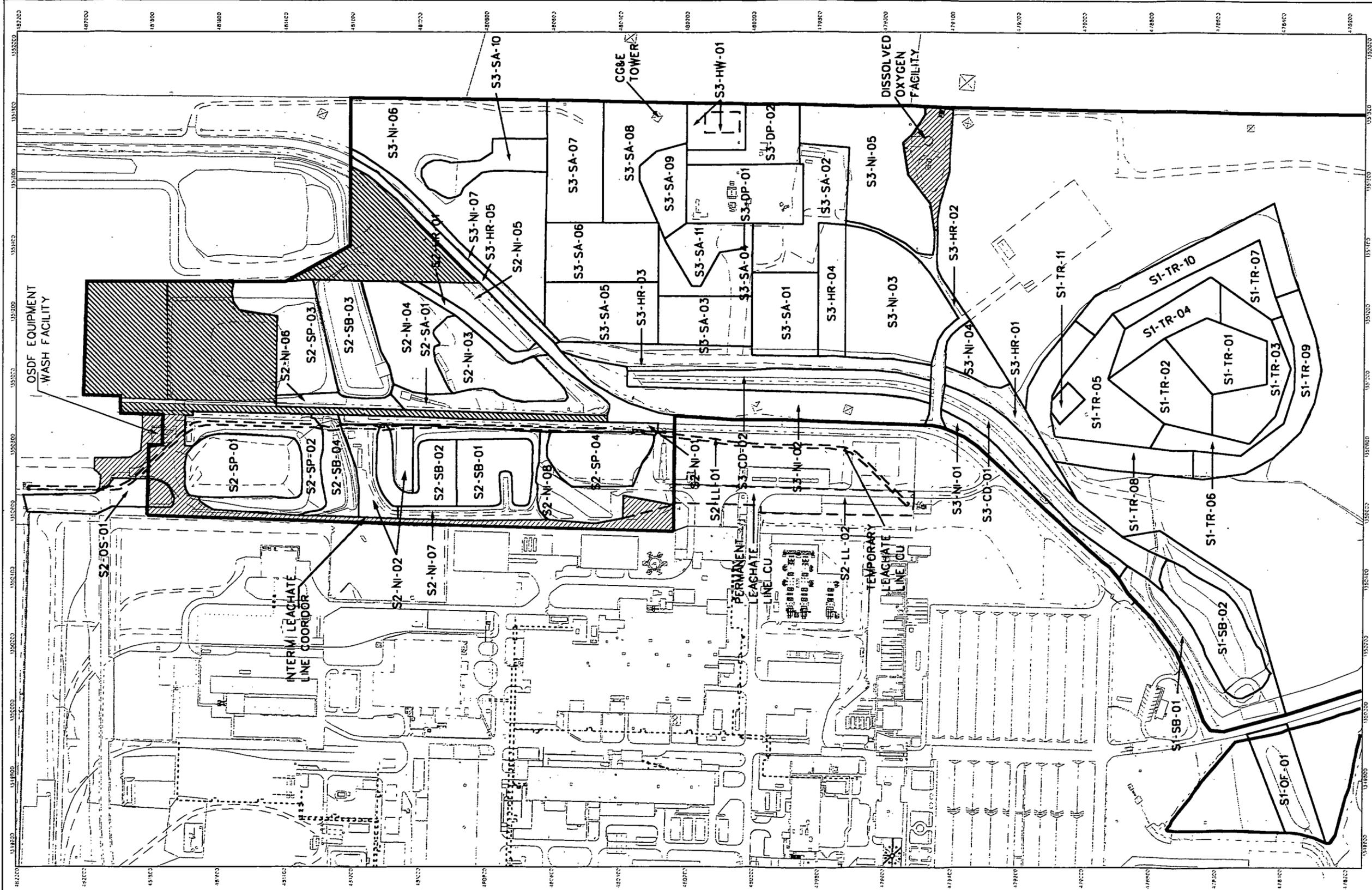
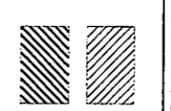


FIGURE 1-5. FEMP CONTROLLED CERTIFICATION MAP



CERTIFIED AREAS
AREAS TO BE CERTIFIED UNDER SEPARATE SCOPE



LEGEND:
A1P2 BOUNDARY
CU BOUNDARIES
LEACHATE LINE CU BOUNDARIES

FIGURE 1-6. A1P11 CERTIFICATION UNITS DESIGN

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2.0 HISTORICAL DATA

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The A1PII Supplemental Characterization Package contains all historical data used to develop the characterization strategy for excavation. Data collected during predesign and precertification is described below.

The Radiation Tracking System (RTRAK) was used to collect information about surface soil radiological contamination patterns. Supplemental Radiation Scanning System (RSS) and high-purity germanium (HPGe) detector measurements were collected using the no overlap option to assure that any areas of elevated contamination were not missed. Details on the use and capabilities of the RTRAK, the RSS, and the HPGe are provided in the User Guidelines, Measurement Strategies, and Operational Factors for Deployment of In-Situ Gamma Spectrometry at the Fernald Site (User's Manual, DOE 1998c) and Appendix H to the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ, DOE 1998d).

As discussed in the A1PII Integrated Remedial Design Plan (DOE 1998e), the A1PII excavations limits were based on predesign data. After the completion of remedial activities to the design limits, precertification scans were performed in the excavation footprints. Therefore, the total population of the data used to support the conclusion that the area is ready for certification consists of predesign data in areas that required no remedial action and precertification data of the excavation footprints. Review of these data shows some isolated results exceeding the associated FRLs, however, no potential "hot spots" were identified in these areas. The following is a discussion of the predesign and precertification data sets.

2.1 PREDESIGN DATA

Predesign data was collected in accordance with the guidelines established in Section 3.1.2 of the SEP. The specifics of the predesign data collection are included in the A1PII Pre-Design Investigation Survey Project Specific Plan (PSP, DOE 1997a). Review of this data shows that elevated readings are within all the excavation boundaries, therefore, the soil was removed during remedial activities. The only exception is a small area located south of the former STP. RTRAK scans for non-radon corrected radium-226 showed above-FRL conditions. In order to confirm these results, HPGe and physical samples were taken in the area at the locations as shown in Figure 2-1. These results confirm below

FRL conditions for radium-226. Figures 2-2 through 2-4 show predesign (pre-excavation) RTRAK data for total uranium, radium-226, and thorium-232, respectively. The post-excavation data for areas remediated are presented in the precertification data set.

2.2 PRECERTIFICATION DATA

According to guidelines established in Section 3.3.3 of the SEP, precertification activities were conducted to evaluate residual radiological contamination patterns. During precertification, a surface radiation survey was conducted over the accessible areas which were excavated or not scanned during predesign. The specific areas which were scanned are shown in Appendices A, B, C, and D and listed as follows:

- Former Stockpile Locations
 - OSD-007
 - OSD-018
 - OSD-017
 - W800010 (A1PI West Debris Pile)
 - West Impacted Material Stockpile
- Areas outside Stockpile Locations
 - Both sides of the old North Access Road
 - Area north of the old Petro gravel area to the Sediment Basin
- Area east of Petro Gravel area adjacent to the certified CU A1PII-S2-2A02
- Berm areas around the OSDF Sedimentation Basin
- Utility excavation outside the STP
- Stripping areas adjacent to the STP and two small triangular areas east of the old North Access Road
- STP Haul Road between the former STP and the Borrow Area Haul Road
- The hauling access from the STP northwest corner to North Access Road
- Under the Cincinnati Gas and Electric Company (CG&E) tower (located at the northeast corner of the former STP)
- Areas at and around monitoring wells
- Ditched areas on either side of the new North Access Road

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- Areas within the former STP
- Any unexcavated/unstripped area outside the excavation limits not previously scanned during predesign (A1PII-S2NI-01 through A1PII-S2NI-07 designated certification units)
- All other excavated areas within the excavation limits
- A1PI Sediment Basin

The specific areas which were not scanned are:

- Areas where there is predesign data and no excavation occurred
- One deep excavation in the former STP which was the excavation of the final sedimentation tanks, due to standing water
- Conveyance Channel, Trap Range ditches, and Outfall Area, due to high moisture
- Gravel area at the former Petro trailer area (CU A1P2-S2NI-03). Once the gravel is removed, precertification scanning or sampling will be conducted and before certification for this CU begins
- New Gravel road access to the former STP area
- Borrow Area Haul Road
- Location of new Interim Leachate Line (located just west of Production Area fence)
- Areas where riprap exists (in overflows, ditches).

The precertification RTRAK/RSS scans showed a few distinguishable total activity patterns but none with a range of concentrations large enough to warrant separate CU considerations. Evident in Figure A-2 are total activity concentration patterns which appear to be elevated. One area is in the central section of the map on the far west side. This elevated reading was due to a uranium staging area nearby on the day of the scan. The separate total uranium maps, radium maps, and thorium maps, in Appendices B, C, and D, show no sign of contamination in this area. Another area which shows elevated readings is due to a thorium storage building nearby. This area is east of the West Impacted Material Stockpile. This area was scanned in two sections. The first section, the northern area, was scanned before the stockpile to the west was excavated. This scan shows no contamination on any of the maps in Appendices A, B, C, and D because the West Impacted Material Stockpile provided a

barrier to the thorium building. The second section, the southern area, was scanned after the removal of the stockpile, and the total activity concentration appears to be elevated. The separate total uranium maps, radium maps, and thorium maps, in Appendices B, C, and D, show no sign of contamination in this area.

All real-time precertification results (RTRAK, RSS and HPGe) presented in this CDL have been moisture and radon corrected. The total uranium, thorium-232 and radium-226 maps can be found in Appendices B, C, and D, respectively.

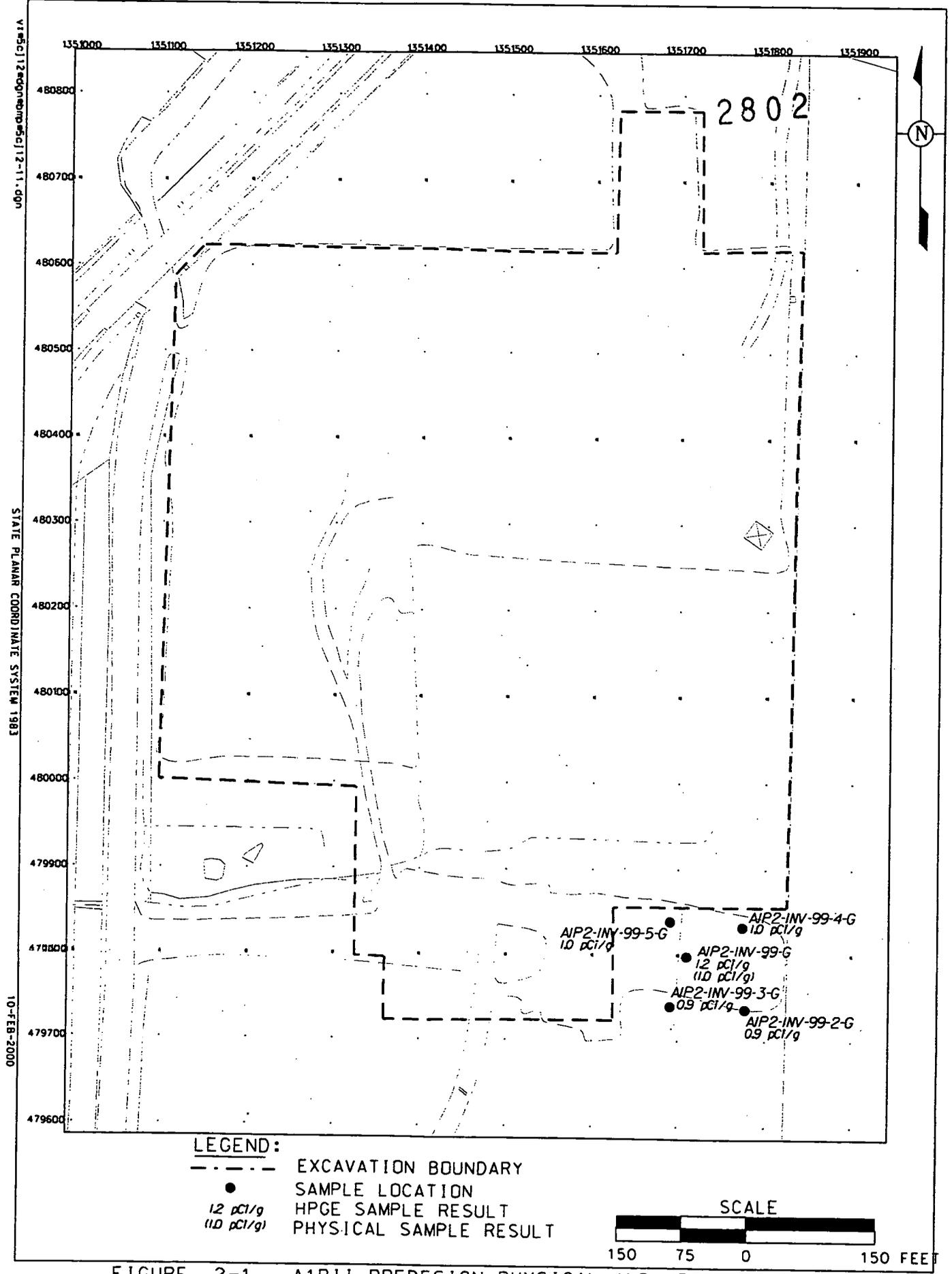
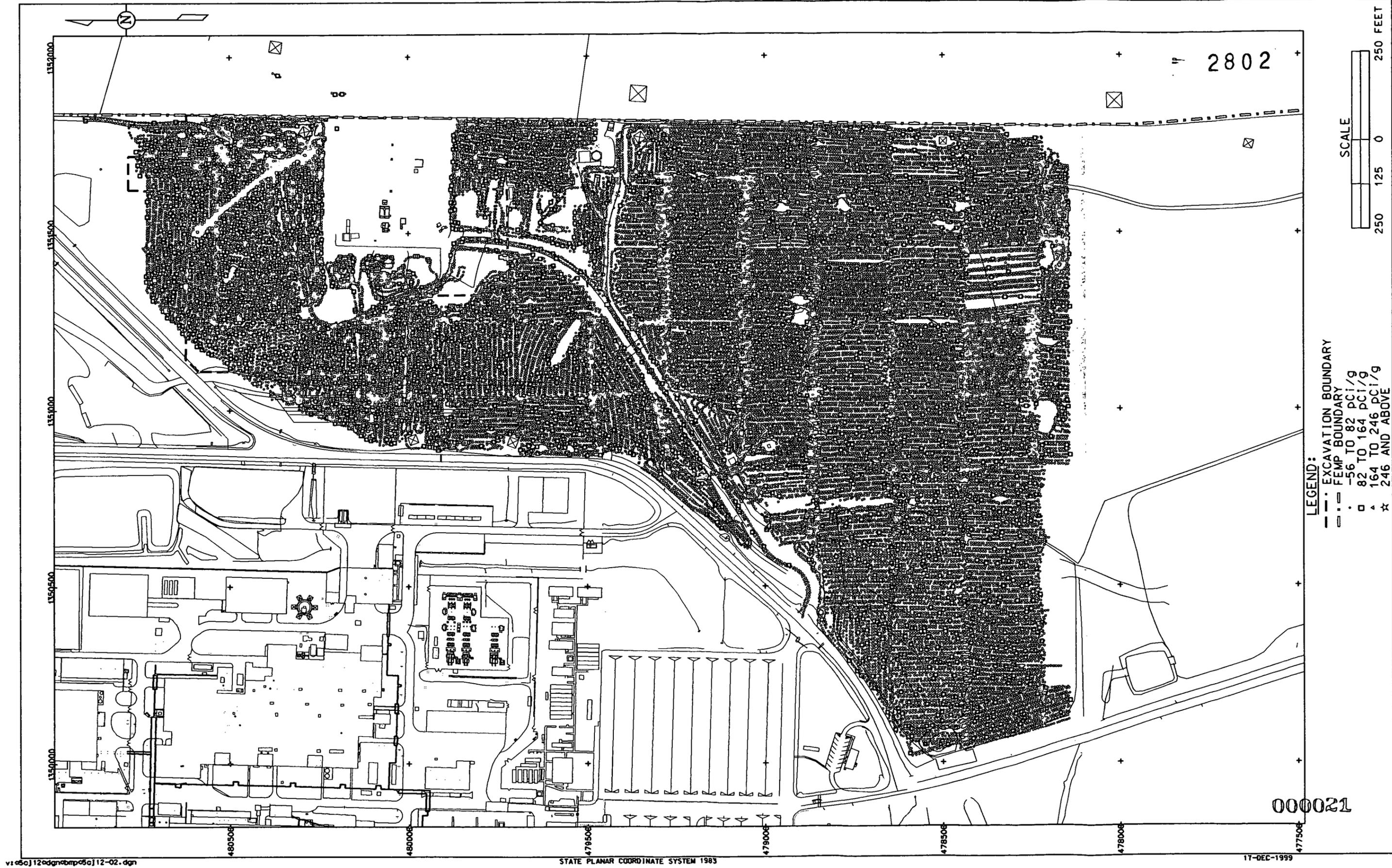


FIGURE 2-1. A1P11 PREDESIGN PHYSICAL AND HPGE LOCATIONS AND RADIUM-226 RESULTS



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LEGEND:

- - - EXCAVATION BOUNDARY
- - - FEMP BOUNDARY
- -56 TO 82 pCi/g
- 82 TO 164 pCi/g
- ▲ 164 TO 246 pCi/g
- ☆ 246 AND ABOVE

SCALE

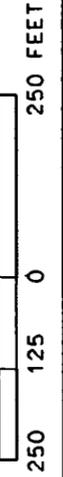


FIGURE 2-2. A1P11 PREDESIGN RTRAK TOTAL URANIUM DATA

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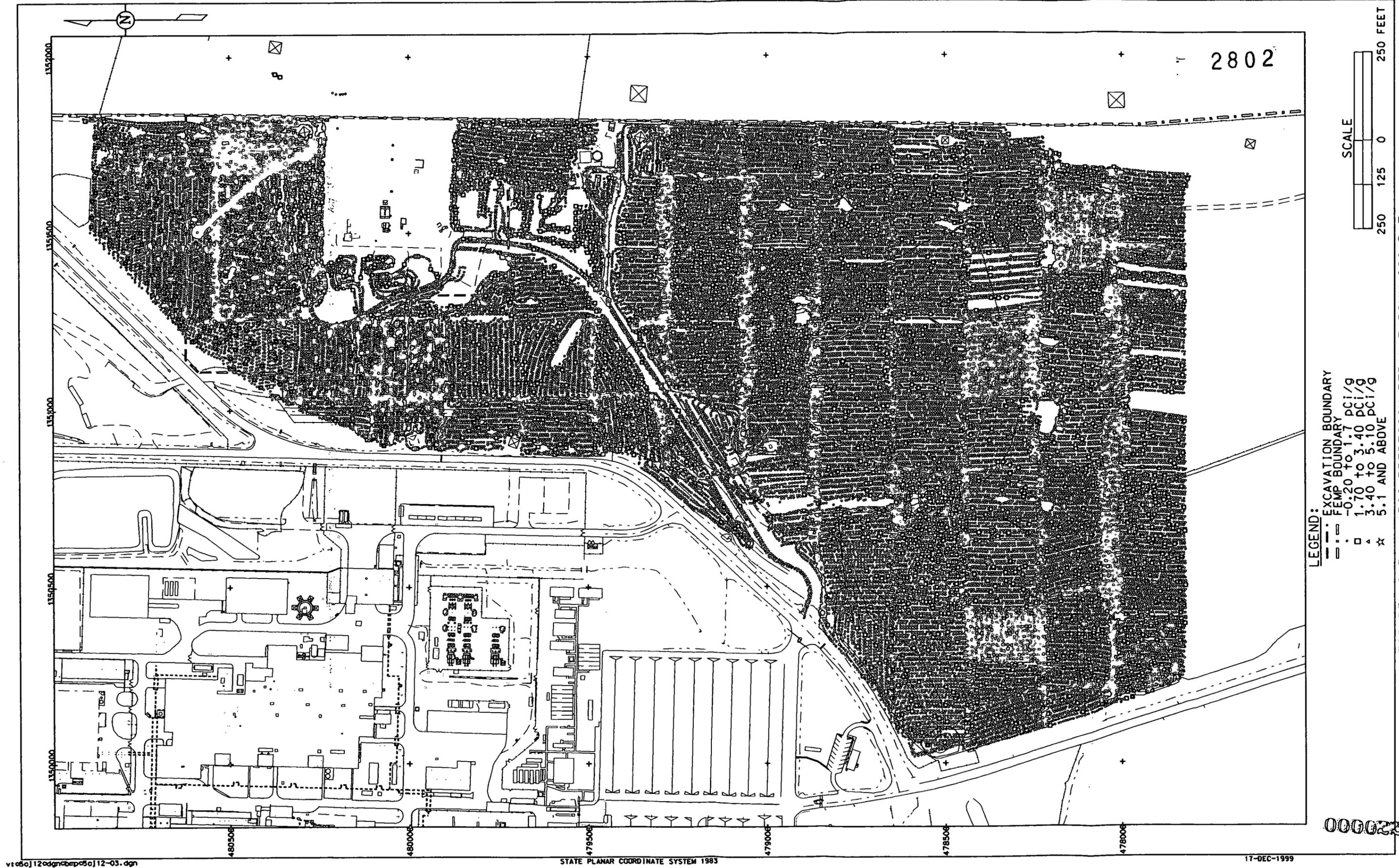
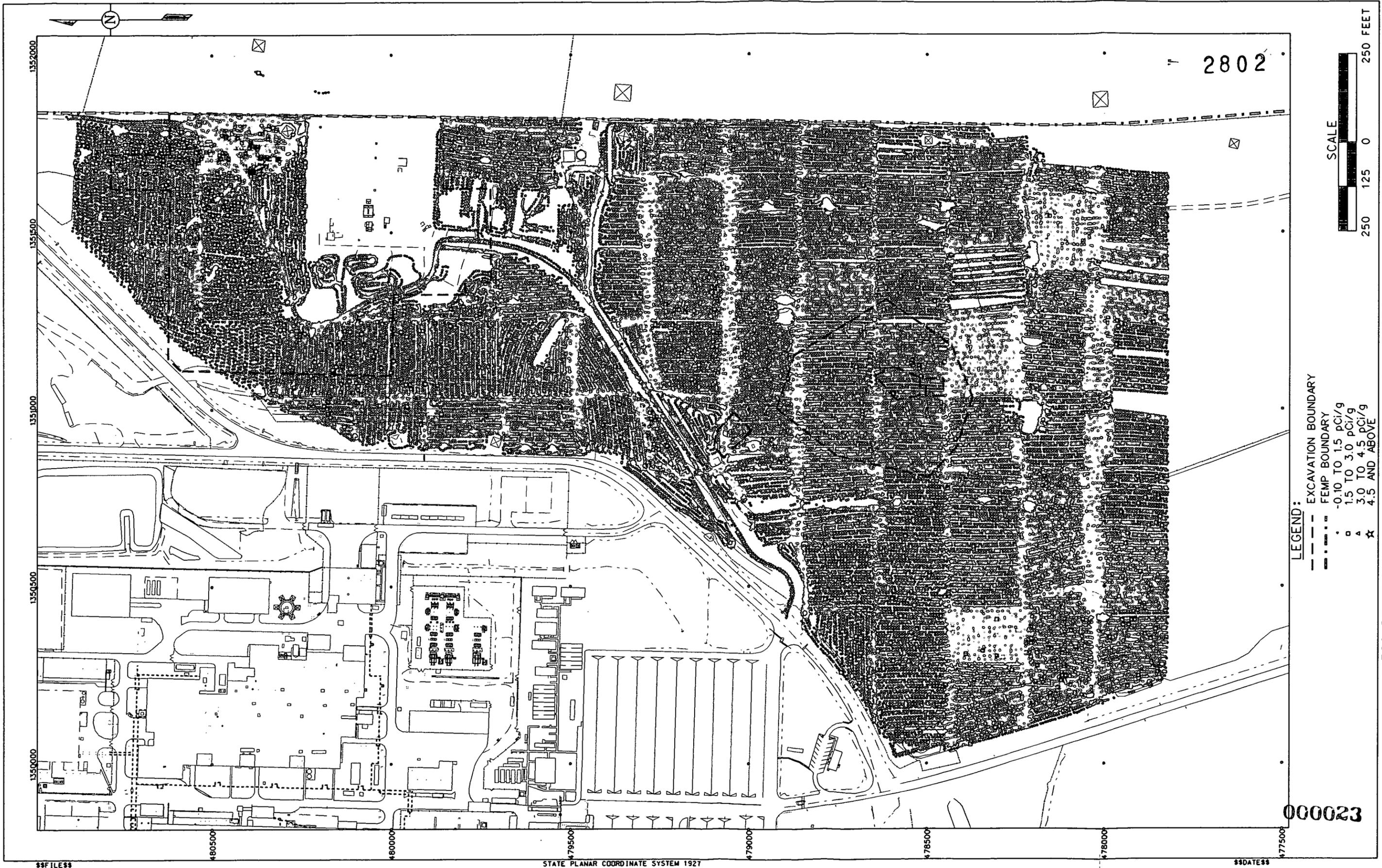


FIGURE 2-3. A1PII PREDESIGN RTRAK RADIUM-226 DATA



000023

LEGEND:
 --- EXCAVATION BOUNDARY
 - · - · FEMP BOUNDARY
 · -0.10 TO 1.5 pCi/g
 □ 1.5 TO 3.0 pCi/g
 △ 3.0 TO 4.5 pCi/g
 ☆ 4.5 AND ABOVE

FIGURE 2-4. A1PII PREDESIGN RTRAK THORIUM-232 DATA

3.0 AREA-SPECIFIC CONSTITUENTS OF CONCERN

In the OU5 ROD, there are 80 soil COCs with established FRLs which 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 the FRLs were established for these COCs in the OU5 ROD, they were initially screened against site data presented on spatial maps to establish a picture of potential remediation areas.

By reviewing existing Remedial Investigation/Feasibility Study data presented on spatial distribution maps, the sitewide list of soil COCs was reduced from 80 listed in the OU5 ROD to 30. This reduction was possible because the majority of the COCs with FRLs listed in the OU5 ROD have no detections on site 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 used in 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
- It can be traced to site use, either through process knowledge or known release of the constituent to the environment
- Analytical results indicate the contaminant is present at a concentration 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

- The contaminant is one of the sitewide primary COCs (total uranium, radium-226, radium-228, thorium-232, and thorium-228)
- Using this process, the ASCOCs for the were identified and are listed in Tables 3-1 and 3-2.

**TABLE 3-1
ASCOC LIST FOR ALL CUs**

ASCOC	FRL	Reason Retained
Total Uranium	82 mg/kg (20 mg/kg for CU A1P2-S3DP-01)	Retained as a primary ASCOC sitewide
Radium-226	1.7 pCi/g	Retained as a primary ASCOC sitewide
Radium-228	1.8 pCi/g	Retained as a primary ASCOC sitewide
Thorium-228	1.7 pCi/g	Retained as a primary ASCOC sitewide
Thorium-232	1.5 pCi/g	Retained as a primary ASCOC sitewide
Arsenic	12 mg/kg	Retained as a secondary ASCOC
Lead	400 mg/kg	Retained as a secondary and ecological ASCOC

**TABLE 3-2
ASCOC LIST FOR SPECIFIC CUs**

ASCOC	FRL	Reason Retained
Antimony	10 mg/kg (BTV value)	Retained as a ecological COC due to process knowledge
Beryllium	1.5 mg/kg	Retained as a secondary COC due to process knowledge
Technetium-99	30 pCi/g	Pre-design analytical results
Tetrachloroethene also called: Perchloroethylene (PCE)	3.6 mg/kg	Retained as a secondary ASCOC due to process knowledge
Aroclor 1254	0.13 mg/kg	Retained as a secondary ASCOC due to process knowledge near the incinerator
Aroclor 1260	0.13 mg/kg	Retained as a secondary ASCOC due to process knowledge near the incinerator
Molybdenum	10 mg/kg (BTV value)	Retained as an ecological COC

4.0 CERTIFICATION APPROACH

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4.1 CERTIFICATION DESIGN

The certification design follows the general approach outlined in Section 3.4 of the SEP. Several considerations were used in the CU design, including the following:

- Excavation Approach: The following approaches were used: Approach A, Shallow Excavation of Impacted On-Property Areas; Approach D, Excavation Following Decontamination and Dismantlement in the Former Production Area, STP, Fire Training Facility; Approach E, Off-Property and Non-Impacted On-Property Area Certification. Each CU design took into consideration the excavation approach.
- Trap Range Excavation Area: CUs within the Trap Range area were designed based on the stabilization and excavation footprint. These CUs are considered Group 1 CUs, and are no larger than 62,500 square feet.
- Certified for Reuse CUs: Previous certification efforts within A1PII included several CUs that were certified for reuse. These areas include the Conveyance Ditch (CU A1PII-S3CD-01), the Trap Range run-on and run-off ditches (A1PII-S1-19), the sedimentation basin in Sector 1 (CU A1PII-S1-03), and the outfall area in Sector 1 (CU A1PII-S1-01). These areas will be re-sampled for final certification and are considered Group 1 CUs.
- Stripping Areas: Within the A1PII area, specifically adjacent to the STP as a result of surface contamination areas were stripped 6 inches. Boundaries were often defined by these Group 1 CUs with the exception of two small triangular areas which were included in CU A1P2-S2SA-01.
- Sedimentation Basins: Several sedimentation basins exist within the certification area, and are treated as separate CUs. Berms surrounding sedimentation basins were also treated as separate CUs. These CUs are considered Group 1 CUs.
- Haul and Access Roads: Several haul and access roads exist within the certification area. Each road was treated as its own Group 1 CU.
- Deep Excavation Areas: In the former STP area several deep excavations occurred. These areas were used to determine these Group 1 CU boundaries.
- FRL Limits: The STP area has two FRLs for total uranium. The east side of the STP has a FRL of 82 $\mu\text{g}/\text{kg}$ for total uranium, the west side has a FRL of 20 $\mu\text{g}/\text{kg}$.
- Non-Impacted Areas: Several areas based on predesign and precertification data did not require any remedial actions. These areas are considered Group 2 CUs, with a maximum area of 250,000 square feet.

- Hazardous Waste Management Unit (HWMU) Areas: Within the former STP area the Sludge Drying Beds are considered an HWMU. As required by the SEP, the HWMU footprint will contain at the minimum eight samples.
- Stockpile Footprints: Several stockpiles were located in the area to be certified. The stockpile footprints were used as Group 1 CU boundaries.
- Leachate Line: Both the Interim and the Temporary Leachate Line were considered in the design the the CUs. The Interim Line was used as the western border of Sector 2, and the original Temporary Leachate Line was considered its own CU.
- Removal Action 14 (RA14): The footprint of the excavations performed during RA14 activities were considered in the design of the CUs. Two Group 1 CUs cover the affected area.

Using the considerations noted above, the resulting number of CUs is 63, 14 within Sector 1, 21 in Sector 2, and 28 in Sector 3. The CU design is shown on Figures 4-1 and 4-2 and the following is a description of each CU and the basis for its design.

4.1.1 Sector 1 - Certification Units

The primary excavation approach in Sector 1 was Approach A. The following considerations were used in CU design:

Trap Range Excavation Area: Within the trap range area there are four distinct areas which help set the CU boundaries. These areas are:

- Six-inch stabilization and excavation of the lead area which occurred at two locations within the trap range area. A small area in the northern section, and a much larger area in southern portion.
- Twelve-inch stabilization and excavation area including adjacent 6-inch stripping areas and spread soil excavation during site preparation designated for stabilization, which is a small area in the southern portion which is the 6-inch stabilization area.
- Area within the trap range but out of the stabilization and excavation area.
- The run-off and run-on control ditches that surround the Trap Range. This area was certified for reuse under the A1PII Sector 1, Sector 2a, and Conveyance Ditch certification effort as CU A1PII-S1-19.

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Sedimentation Basin and Outfall Area: During the certification of A1PII Sector 1, Sector 2a, and the Conveyance Ditch several areas were certified for reuse. Three of these areas are within Sector 1, the trap range run-on and run-off ditches (CUA1PII-S1-19), sedimentation basin (A1PII-S1-03) and the outfall (A1PII-S1-01) area.

As shown on Figure 4-1, the following CUs are located in Sector 1:

- A1P2-S1TR-01 - Represents the location of the stabilization of Trap Range soils at 10 and 12-inch depths prior to excavation
- A1P2-S1TR-02 - Represents the remaining stabilized soils at a 6-inch depth, a portion is along its northwest boundary was stripped of soil in which stabilization was not necessary but broken sheet clay pigeons were found
- A1P2-S1TR-03 - Represents the remaining stabilized soils at a 6-inch depth
- A1P2-S1TR-04 - Represents the remaining stabilized soils at a 6-inch depth
- A1P2-S1TR-05 - Portion of the non-stabilized, non-excavated portion of the Trap Range
- A1P2-S1TR-06 - Portion of the non-stabilized, non-excavated portion of the Trap Range
- A1P2-S1TR-07 - Portion of the non-stabilized, non-excavated portion of the Trap Range
- A1P2-S1TR-08 - Portion of the Trap Range run-on and run-off control ditches. Part of the final certification of CU A1PII-S1-19 that was certified for reuse
- A1P2-S1TR-11 - Footprint of lead stabilization and excavation area in north part of Trap Range
- A1P2-S1TR-09 - Portion of the Trap Range run-on and run-off control ditches. Part of the final certification of CU A1PII-S1-19 that was certified for reuse
- A1P2-S1TR-10 - Portion of the Trap Range run-on and run-off control ditches. Part of the final certification of CU A1PII-S1-19 that was certified for reuse
- A1P2-S1SB-01 - Portion of CU A1PII-S1-03 that was certified for reuse prior to the construction of the sedimentation basin. This portion of the CU is the area that is above the maximum designed high water limit in the sedimentation basin

- A1P2-S1SB-02 - Portion of CU A1PII-S1-03 that was certified for reuse prior to the construction of the sedimentation basin. This portion of the CU is the area that is below the maximum designed high water limit in the sedimentation basin
- A1P2-S1OF-01 - This CU is the final certification of a portion of the certified for reuse CU A1PII-S1-01. The area of this CU is smaller than the original A1PII-S1-01 CU. The area of the current CU is the location of the water flow from the A1PII sedimentation basin, which is the area most likely to exceed FRL. Once the A1PII-S1OF-01 is certified, the entire certified for reuse area A1PII-S1-01 will be determined to be certified.

Note: Even though the original certified for reuse A1PII-S1-19 was considered a Group 2 CU, the final certification of this CU will be done in three CUs since the area is now considered a Group 1 CU

4.1.2 Sector 2 - Certification Units

The primary excavation approach with in Sector 2 was Approach A, and the following considerations were used in CU design:

Sedimentation Basins: Several sedimentation basins exist within the Sector 2 area, and each were treated as Group 1 CUs. These sedimentation basins include the West Impacted Material Stockpile Basin, the OSDF Sediment Basin, and the abandoned clean sedimentation basin the northeast portion of Sector 2.

Stockpile Footprints: Several stockpiles were located in Sector 2 including OSD-007 - A1PI Debris Stockpile, the West Impacted Material Stockpile, the East Impacted Soil and Debris Stockpile, and the West Debris Stockpile. These stockpile footprints were used to determine Group 1 CU boundaries.

Leachate Line: Both the Interim and the Temporary Leachate Line were considered in the design the CUs. The Interim Line was used as the western border of Sector 2, and the original Temporary Leachate Line was considered its own CU.

As shown on Figure 4-2, the following CUs are located in Sector 2:

- A1P2-S2NI-01 - Non-impacted area between certified former North Access Road and other structures including OSD-007 footprint, and the Sedimentation Basin

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- A1P2-S2NI-02 - Non-impacted area bordering the Former Production Area fenceline and the sedimentation basin
- A1P2-S2NI-03 - Non-impacted area which contains footprint of former OSDF contractor support area
- A1P2-S2NI-04 - Non-impacted area north of former contractor support area and south of A1PI Sedimentation Basin
- A1P2-S2NI-05 - Non-impacted south of Borrow Area Haul Road and north of relocated North Access Road
- A1P2-S2NI-06 - Non-impacted area bordering East Impacted Stockpile footprint and former North Access Road
- A1P2-S2NI-07 - Non-impacted area bordering the Former Production Area fenceline and the Sedimentation Basin
- A1P2-S2NI-08 - Non-impacted area adjacent to OSD-007 footprint and west side of the A1P2 boundary
- A1P2-S2SP-01 - Excavated footprint of West Impacted Material Stockpile
- A1P2-S2SP-02 - Area around the excavated footprint of West Impacted Material Stockpile
- A1P2-S2SP-03 - Excavated footprint of remaining East Impacted Stockpile and Debris Pile
- A1P2-S2SP-04 - Excavated footprint of OSD-007 Stockpile
- A1P2-S2SA-01 - Area east former North Access Road which includes two small triangle stripping areas
- A1P2-S2SB-01 - Footprint of "S" shaped Sedimentation Basin
- A1P2-S2SB-02 - Footprint of non-certified abandoned sedimentation basin
- A1P2-S2SB-03 - A1PI Sedimentation Basin
- A1P2-S2SB-04 - Sediment Basin south of former location of West Impacted Material Stockpile
- A1P2-S2HR-01 - Portion of the Borrow Area Haul Road in the non-certified area
- A1P2-S2LL-01 - The abandoned Temporary Leachate Line footprint
- A1P2-S2LL-02 - The southern section of the Permanent Leachate Line to be installed.

- A1P2-S2OS-01 - Excavated footprint of the A1PI West Debris Stockpile and surrounding area. This CU is being certified for reuse. Within this CU, a Permanent Leachate Line from Cell 3 will be extended including installation of a permanent manhole. Because adjacent areas will continue to be used by OSDF this CU will require recertification.

4.1.3 Sector 3 - Certification Units

The excavation approaches within Sector 3 include Approach A, D and E, and the following considerations were used in CU design:

Stripping Areas: Adjacent to the STP approximately 40 acres were stripped 6 inches. Boundaries were often defined by these Group 1 CUs.

Haul and Access Roads: Several Haul and Access Roads exist within Sector 3. These roads include the STP Access Road, the STP Haul Road, and the Borrow Area Haul Road. Each road was treated as its own Group 1 CU.

Deep Excavation Areas: In the former STP area several deep excavations occurred. These areas were used to determine these Group 1 CU boundaries.

FRL Limits: The STP area has two FRLs for total uranium. The east side of the STP has a FRL of 82 $\mu\text{g}/\text{kg}$ for total uranium, the west side has a FRL of 20 $\mu\text{g}/\text{kg}$.

Non-Impacted Areas: Several areas based on predesign and precertification data did not require any remedial actions. These areas are considered Group 2 CUs, with a maximum area of 250,000 square feet. In Sector 3 these areas are located south of the former STP plant, and adjacent to the Access Road.

Hazardous Waste Management Unit Areas: Within the former STP area the Sludge Drying Beds are considered a HWMU. As required by the SEP, the HWMU footprint will contain at the minimum eight samples.

Stockpile Footprints: Stockpile NAR-007 footprint is located in Sector 3. The footprint and adjacent stripping area was used to form a Group 1 CU.

Removal Action 14: The footprint of the excavations performed during RA14 activities were considered in the design of the CUs. Two Group 1 CUs cover the affected area.

As shown on Figure 4-2, the following CUs are located in Sector 3:

- A1P2-S3CD-01 - Southern portion of the Conveyance Ditch which includes riprap where the water flowed through into the Sediment Basin. This CU was previously certified. Therefore, the CU is greater than 250 feet x 250 feet but less than 500 feet x 500 feet

- A1P2-S3CD-02 - Northern portion of the Conveyance Ditch
- A1P2-S3NI-01 - Southern non-impacted area between North Access Road and Conveyance Ditch
- A1P2-S3NI-02 - Non-impacted area between North Access Road and Conveyance Ditch
- A1P2-S3NI-03 - Non-impacted area south of the stripping area
- A1P2-S3NI-04 - Non-impacted area
- A1P2-S3NI-05 - Non-impacted area south of STP
- A1P2-S3NI-06 - Non-impacted area north of stripping area and south and North Access Road
- A1P2-S3NI-07 - Ditch line along relocated North Access Road
- A1P2-S3HR-01 - Southern area of Borrow Area Haul Road
- A1P2-S3HR-02 - Current STP and Contractor Support Area Access road
- A1P2-S3HR-03 - Northern portion of Borrow Area Haul Road
- A1P2-S3HR-04 - STP Haul Road
- A1P2-S3HR-05 - Portion of non-certified relocated North Access Road
- A1P2-S3SA-01 - Southwest portion of stripping area disturbed by trenches
- A1P2-S3SA-02 - Portion of stripping area bordering southwest corner of STP
- A1P2-S3SA-03 - Western portion of stripping area bordering Borrow Area Haul Road
- A1P2-S3SA-04 - Portion of stripping area bordering west STP boundary
- A1P2-S3SA-05 - Northwest portion of stripping area
- A1P2-S3SA-06 - Northern portion of stripping area
- A1P2-S3SA-07 - Northeastern portion of stripping area
- A1P2-S3SA-08 - Northeastern portion of stripping area
- A1P2-S3SA-09 - Portion of stripping area north of STP border, contains RA14 excavation footprint

- A1P2-S3SA-10 - Most northern portion of the stripping area contains removed stockpile NAR-007 footprint
- A1P2-S3SA-11 - Portion of stripping area north of STP border, contains RA14 excavation footprint
- A1P2-S3DP-01 - Western portion of the deep excavation footprint within the STP area, also a 20 $\mu\text{g}/\text{kg}$ total uranium FRL area
- A1P2-S3DP-02 - Eastern portion of the deep excavation footprint within the STP area, excluding the Sludge Drying Beds. This area is an 82 $\mu\text{g}/\text{kg}$ total uranium FRL area
- A1P2-S3HW-01 - Includes footprint of HWMU Sludge Drying Beds and adjacent areas.

4.2 SAMPLING

As discussed in the PSP for Certification Sampling of A1PII Certification of Certified for Reuse Areas, Trap Range, Sector 2C, and Sector 3 (DOE 1999c), sample locations were generated by dividing each CU into 16 approximately equal sub-CUs, then randomly selecting northing and easting coordinates within each sub-CU boundary. All 16 locations will be sampled for CUs A1P2-S2LL-01 and A1P2-S3HW-01. For the remaining CUs, certification samples will be collected at 12 of the randomly selected locations and the remaining four locations will be used as alternates in the event that surface or subsurface obstacles prevent sample collection at any of the original locations. All samples will be collected 0 to 6 inches in native soil.

Sample point locations are shown on Figures 4-1 and 4-2.

Exceptions to the process above include:

- CU A1P2-S2LL-01 - Samples will be collected at depth beneath the leachate line bedding in the top 6 inches of undisturbed, native soil. This area beneath the Temporary Leachate Line is suspect because leaking may have occurred from the line. Samples collected and analyzed during the leak investigations revealed no results exceeding the FRLs. However, 16 samples will be collected and analyzed for this CU. The fill area and the leachate line will be excavated. This area will be sampled for WAC concerns separate from the certification sampling and will be done with a Variance/Field Change Notice (V/FCN) to the A1PII for Field Sampling of Miscellaneous Areas (DOE 1997b). The top 6 inches will be collected and analyzed for WAC and a 6-inch archive sample will be collected at the bottom of the fill material.

- CU A1P2-S3HW-01 - This CU encompasses the footprint of the sludge drying beds, HWMU 41. A total of 16 samples will be collected and analyzed in this CU with eight sample points located within the footprint of the HWMU area.
- CUs A1P2-S3SA-08 - A CG&E tower is located in this CU in the 6-inch stripping area. The area under the tower was not accessible for stripping. As agreed verbally with OEPA, two additional samples will be collected there to ensure that the area meets FRL. These results will not be used to determine if the CU passes the statistical criteria for CU pass/fail conditions. If either of the two samples collected under the CG&E tower exceed FRL limits, the area will be excavated and resampled. A HPGe detector shot was taken under the tower during precertification activities. The results for total uranium and thorium-232 were below the FRL limits, however, the result for radium-226 was 1.9 pCi/g, just above the 1.7 pCi/g FRL.
- CUs A1P2-S2HR-01, A1P2-S3HR-01, A1P2-S3HR-02, and A1P2-S3HR-03 - These CUs contain sections of various haul or access roadways. Samples will be collected in the top 6 inches of undisturbed, native soil beneath the roads and any subgrade materials or disturbed support materials.
- CUs A1P2-S3SA-09 and A1P2-S3SA-11 - During RA14, spot excavations were performed in locations within these CUs which removed between 6 and 18 inches of soil. The RA14 Contaminated Soils Adjacent to the STP Incinerator Final Report (DOE 1994) notes that the off-property excavations were backfilled, however, the on-property excavation areas were not backfilled. Additionally, another 6 inches of soil was removed from these areas during STP remediation activities. Precertification realtime scanning, as well as additional analyses of physical samples, show no areas which exceed the FRL. Samples will be collected and analyzed at two intervals (0 to 6-inch and 6 to 12-inch) in all 16 locations for these CUs. Statistical analyses of the analytical data will be performed for each depth interval separately. If results from either set of data fails; a plan for removal of the impacted material and resampling will be developed and implemented upon approval of the Regulatory Agencies.
- CU A1P2-S3HR-05 - This CU contains a section of the north access roadway. Prior to onset of roadway construction, samples were collected from the top 6-inch interval of undisturbed soil. This 6-inch interval was stripped and the excavated soil was placed in stockpile NAR-007. Analytical results of the excavated soil were below-FRL as reported in the Area 1 Stockpile Inventory and Waste Acceptance Criteria (WAC) Attainment Report (DOE 1998f). The roadway base was constructed using cut and fill excavation and no foreign fill material was required. Certification samples will be collected in the top 6-inch interval of soil directly beneath the pavement and gravel sub-base.

4.3 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 either Analytical Support Level (ASL) D or E. 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 FRL. All results will be validated to ASL B and a minimum of ten percent (seven of the 63 CUs) of the results will be validated to ASL D. The CUs to be validated to ASL D were randomly selected, and all analytes will have 10 percent validated. Samples rejected during this validation will be re-analyzed, or an alternate sample may be collected and substituted if there is insufficient material available from the initial sample. If any sample fails this validation, all data from the laboratory with the rejected result will then be validated to determine the integrity of all data from that laboratory. Once data are validated, results will be entered into the Sitewide Environmental Database (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.

Two criteria must be met for the CU to pass certification. If the data distribution is normal or lognormal, the first criterion compares the 95 percent Upper Confidence Limit (UCL) on the mean of each primary COC to its FRL. 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 its size (see Figure 3-11 of the SEP for further details). When the given UCL on the mean for each COC is less than its FRL, and the two times FRL 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.

This CDL will result in two certification reports. The first report will consist of the CUs west of the old North Access Road which are time critical for OSDF work to install the Permanent Leachate Line in the Calendar Year 2000, which includes the following CUs:

- A1P2-S2SP-01
- A1P2-S2SP-02
- A1P2-S2SP-04
- A1P2-S2SB-01
- A1P2-S2SB-02
- A1P2-S2SB-04
- A1P2-S2NI-01
- A1P2-S2NI-02
- A1P2-S2NI-07
- A1P2-S2NI-08
- A1P2-S2LL-01
- A1P2-S2LL-02
- A1P2-S2OS-01

Therefore, it is within these CUs that the sampling and analysis will focus once field activities commence.

The second report will include all the remaining CUs shown in this CDL, which are east of the North Access Road and including the certification from the Utility Trench CDL (DOE 1999d). The certification reports will be submitted to the Regulatory Agencies to receive acknowledgment that the pertinent operable unit 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 reports.

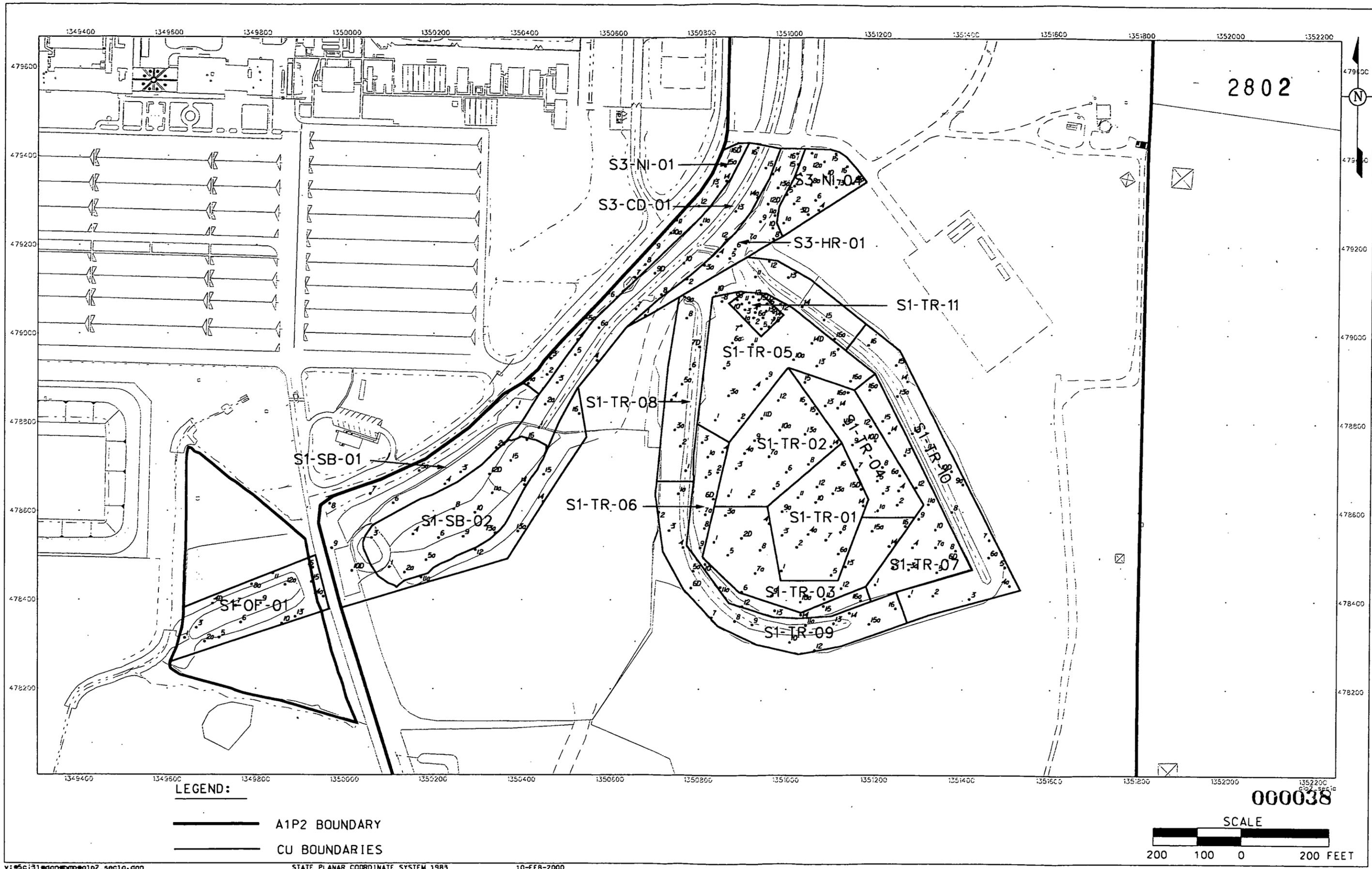


FIGURE 4-1. A1P11 SECTOR 1 CU BOUNDARIES AND SAMPLE LOCATIONS

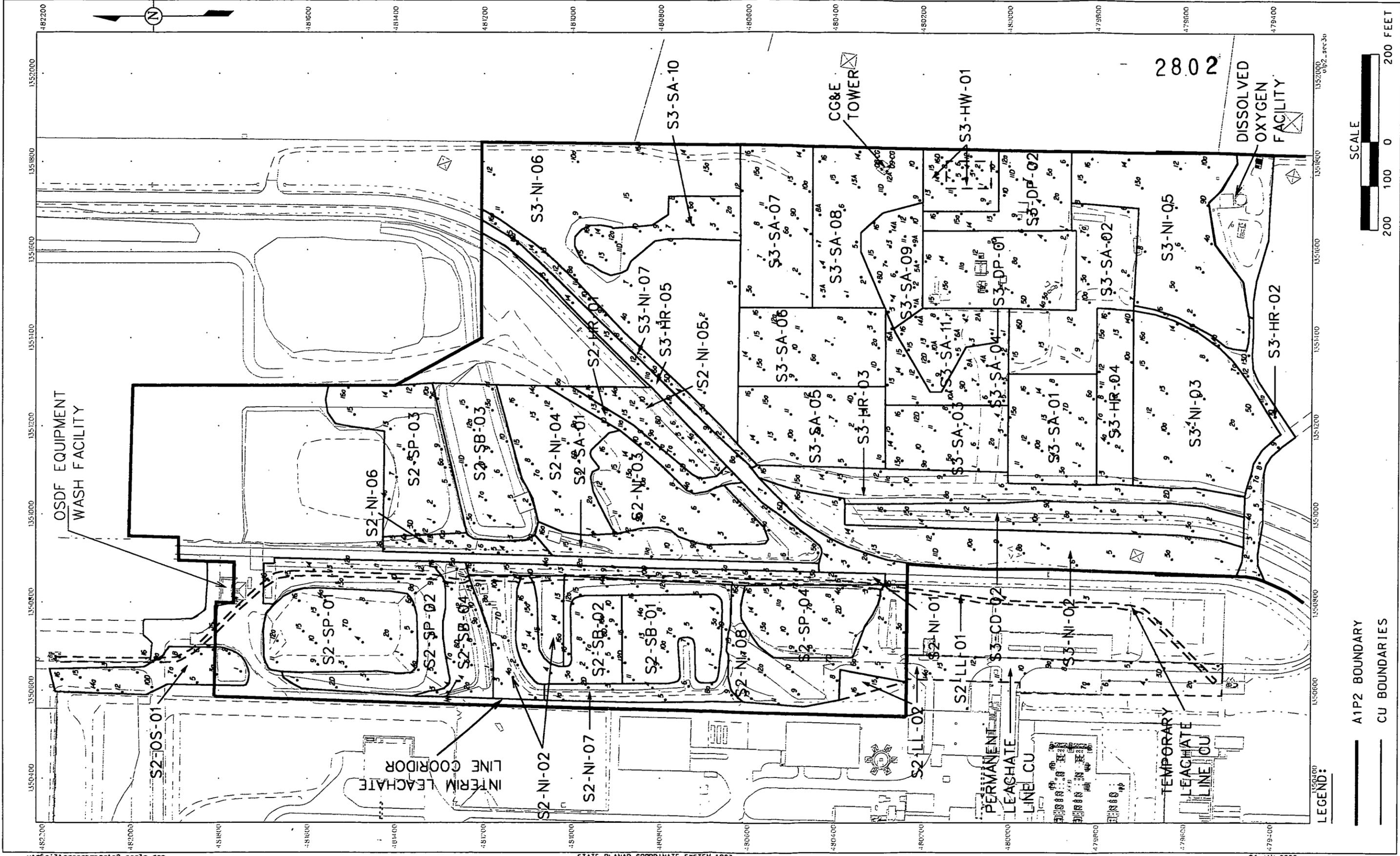


FIGURE 4-2. A1P1 SECTORS 2 & 3 BOUNDARIES AND SAMPLE LOCATIONS

5.0 SCHEDULE

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

<u>ACTIVITY</u>	<u>TARGET DATE</u>
Submittal of Certification Design Letter	October 31, 1999
Start of Field Work	November 15, 1999
Submittal of Final A1P2-S2LL-02 Design (southern section of Permanent Leachate Line)	November 19, 1999
Complete Field Work	February 29, 2000
Complete Analytical Work	March 31, 2000
Complete Data Validation and Statistical Analysis	April 30, 2000
Submit Certification Report* (CUs west of North Access Road)	February 1, 2000*
Submit Certification Report* (CUs east of North Access Road)	May 31, 2000*

- * Only the dates for submittal of the CDL and Certification Report are commitments to the EPA and OEPA. Other dates are internal target completion dates. The Certification Report for CUs west of the old North Access Road are necessary to begin OSDF Permanent Leachate Line installation.

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REFERENCES

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APPENDIX A

**PRECERTIFICATION REAL-TIME
TOTAL ACTIVITY CONCENTRATION MAPS**

The circles represent HPGe measurements taken in these areas. These measurements represent only coverage on these figures and have no total counts per second data associated with them. All data for HPGe measurements can be found in Appendices B, C, and D.

A1P2 Trap Range

Figure A-1

Total Counts per Second (cps)

RSS batch#393-395, & 483
RTRAK batch#724, 725, & 730
Measurements Dates between:9/23/99 and 10/13/99
Field of View to scale

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Total cps	
	0.00 to 2500.00
	2500.00 to 3500.00
	3500.00 to 4500.00
	4500.00 to 10000.00

RTIMP DWG Title: A1P2TR-PC-TC-1PT-MC
Project #: 20710-PSP-0007
Project Name: A1PII Excav. Mon. & Precert.
Prepared By: David Allen
File:A1P2TR_PC_TC_1PT_MC.srf
Date Prepared: 10/22/99

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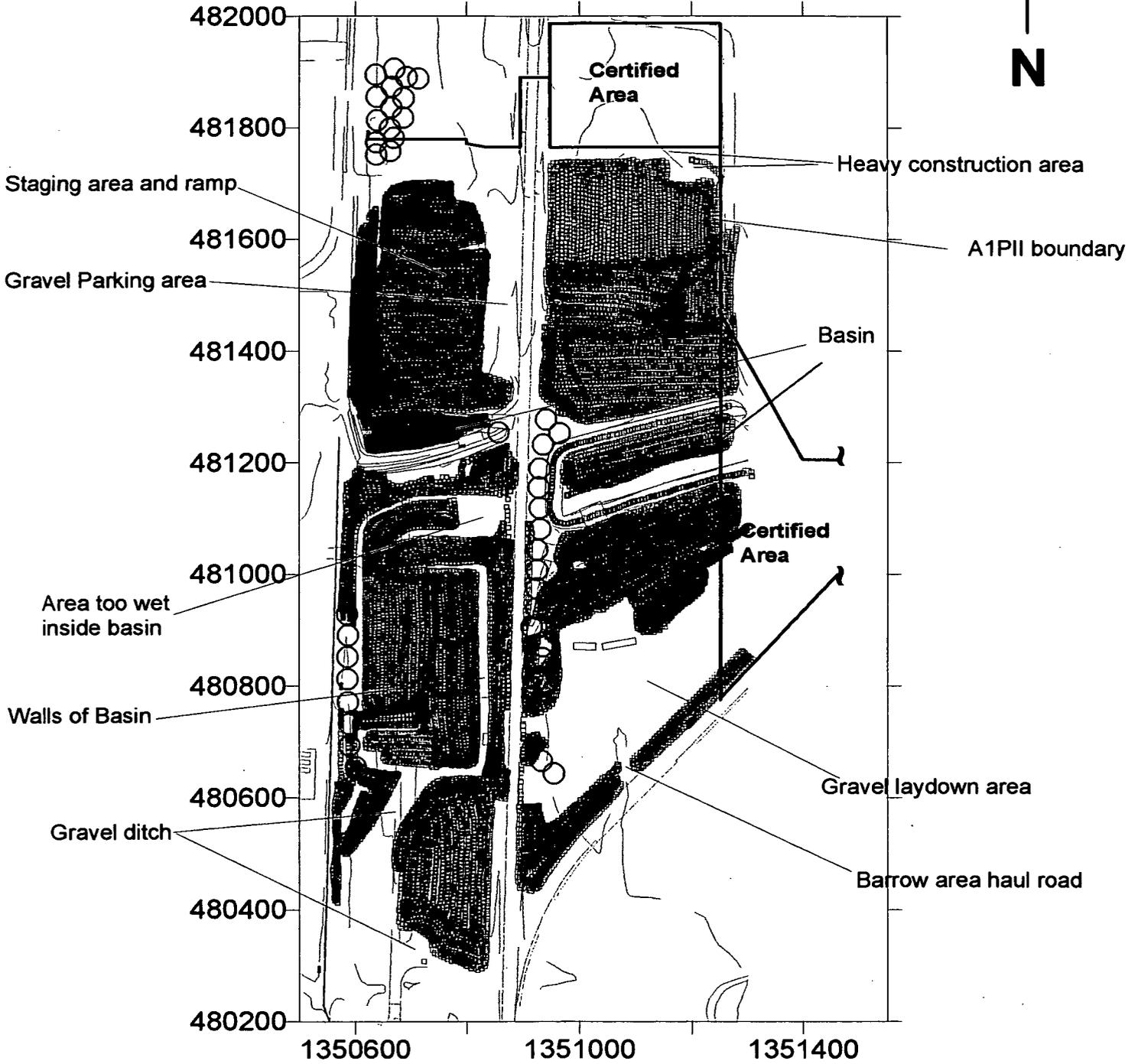
A1P2 SECTOR 2

Figure A-2

Total Counts per Second (cps)

RTRAK batch #628,629, 689, 721, 735-737
 RSS batch#488-492, 511
 HPGE det. #40743, 31265, 30904, & 31144
 Measurement dates between: 2/22/99 and 11/12/99
 Field of View to scale

2802



Total cps	
	0.00 to 3500.00
	3500.00 to 4000.00
	4000.00 to 5000.00
	5000.00 to 10000.00
	10000.00 to 40000.00

RTIMP DWG Title: A1P2-PC-NORTH-TC-1PT-MC
 Project #: 20710-PSP-0003 V/FCN 9
 Project Name: A1PII Pre-Design Invest.
 Prepared By: David Allen
 File:A1P2_PC_NORTH_TC_1PT_MC.srf
 Date Prepared: 11/12/99

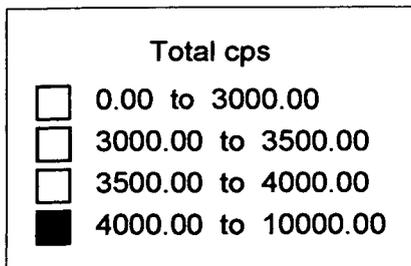
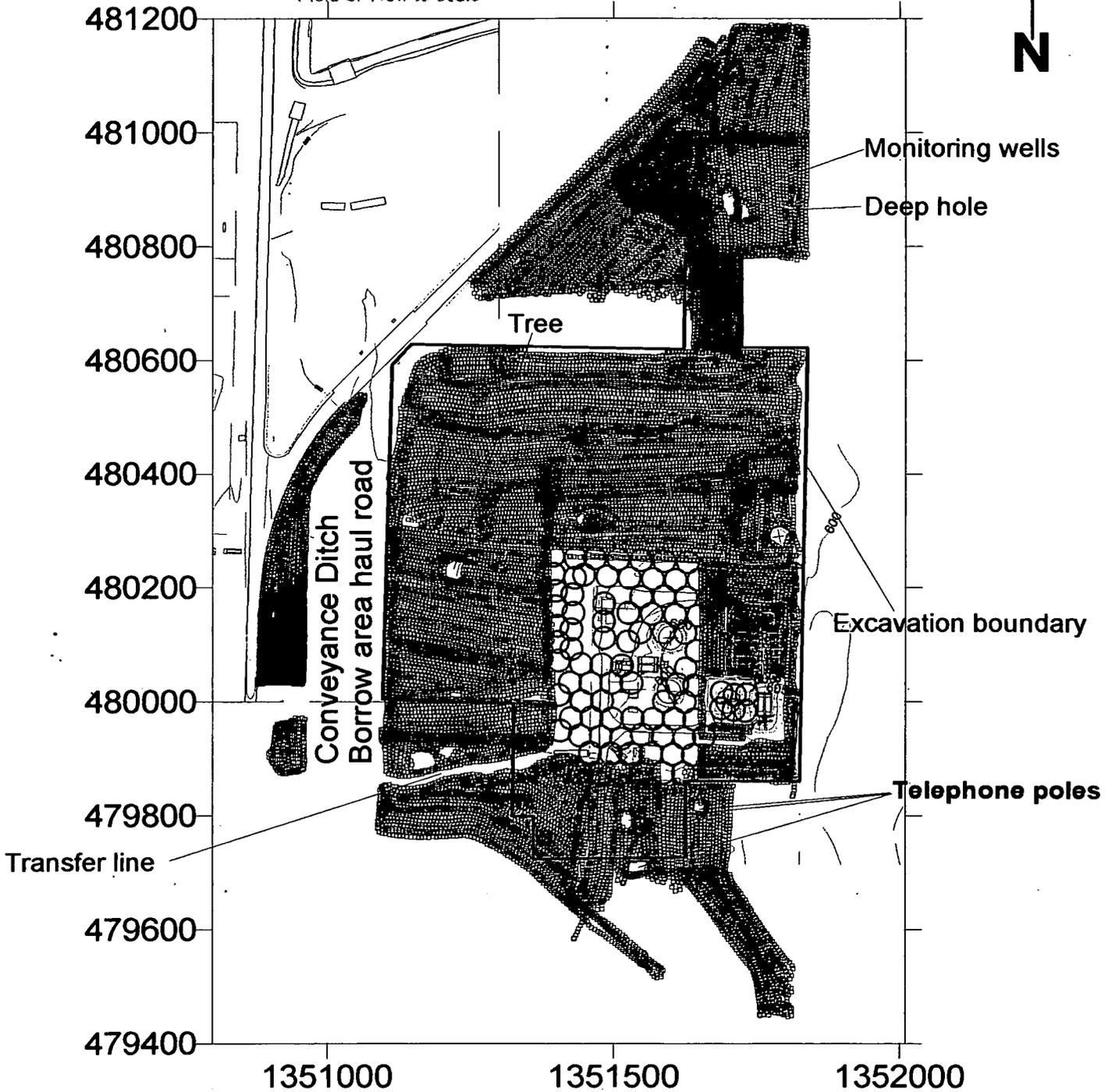
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A1P2 Sector 3

Total Counts per Second (cps)

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Data outside STP is from
 RTRAK batch #679,681-684,686-688,738, & 740-744
 RSS batch #308,315,485, & 493-495
 One spectra no averaging
 Field of View to scale



RTIMP DWG Title: A1P2-PC-NORTH-TC-1PT-MC
 Project #: 20710-PSP-0007
 Project Name: A1PII Excav. Mon. & Precert.
 Prepared By: David Allen
 File:A1P2_PC_NORTH_TC_1PT_MC.srf
 Date Prepared: 10/21/99

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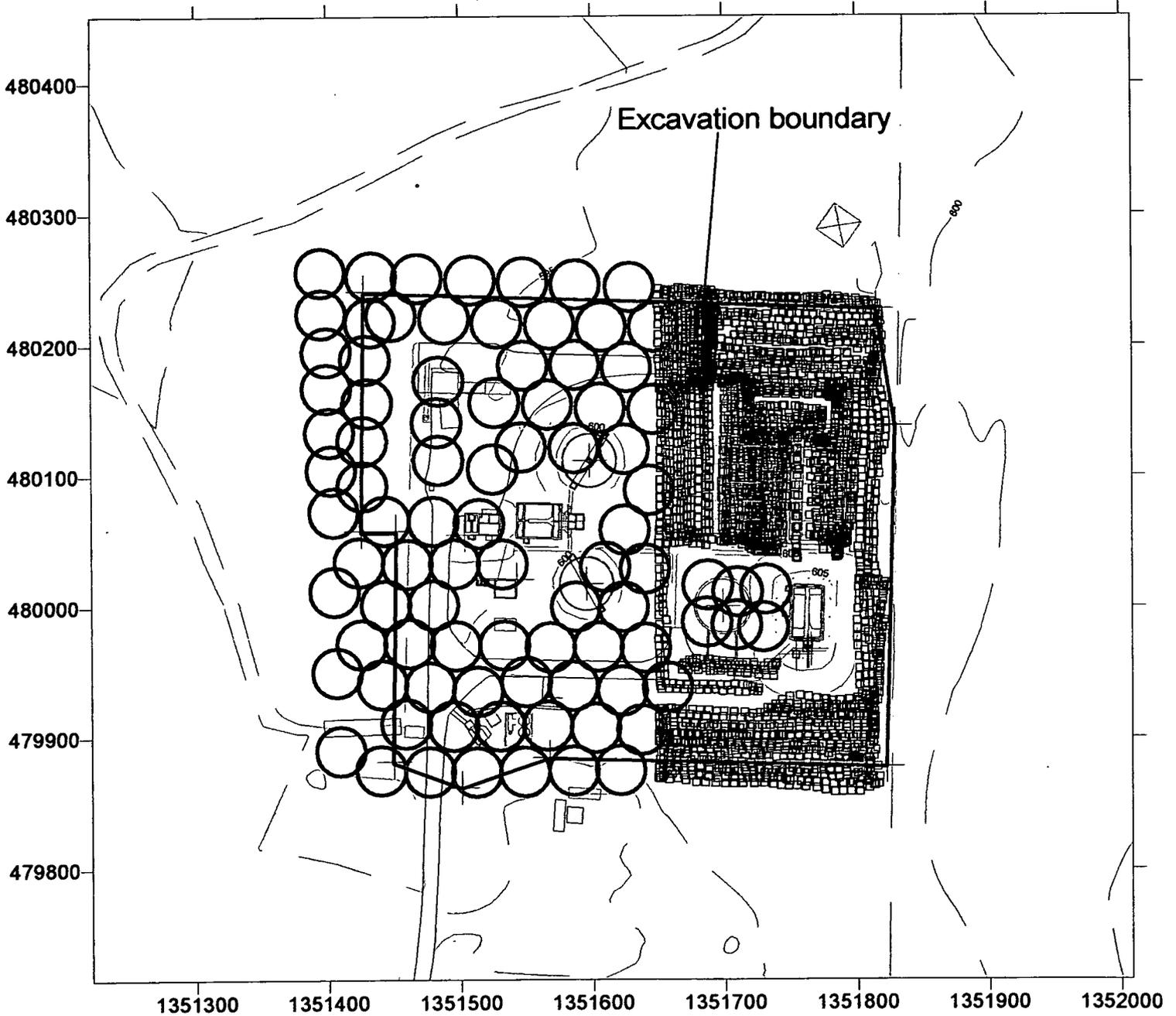
A1P2 STP

Figure A-4

Total Counts per Second (cps)

HPGE measurements from 9/26/99 to 10/8/99
RSS batch#396-398, & 484 between 9/26/99 and 10/13/99
Field of View to scale

2802



Total cps	
□	0.00 to 3000.00
□	3000.00 to 3500.00
□	3500.00 to 4000.00
■	4000.00 to 10000.00

RTIMP DWG Title: A1P2STP-PC-TC-1PT-MC
Project #: 20710-PSP-0007
Project Name: A1PII Excav. Mon. & Precert.
Prepared By: David Allen
File:A1P2STP_PC_TC_1PT_MC.srf
Date Prepared: 10/22/99

000047

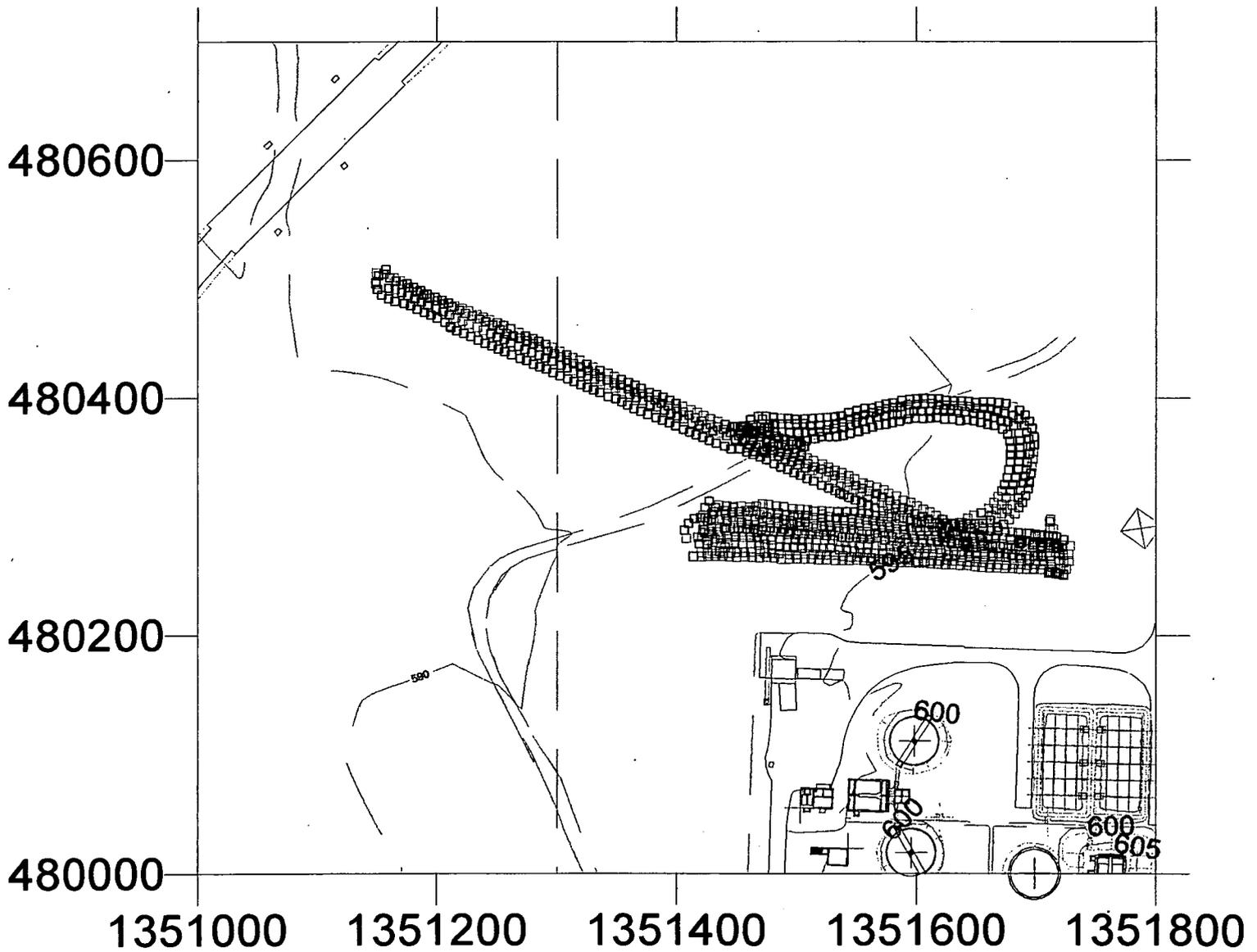
STP HAULING ROAD

Figure A-5

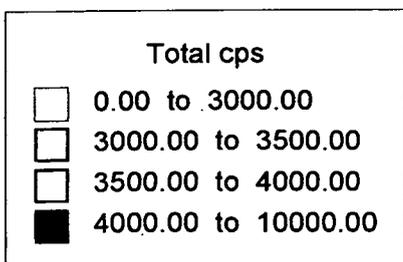
Total Counts per Second (cps)

RTRAK batch #741
Measurement date: 10/16/99
One spectrum, no averaging
Field of View to scale

2802'



.8



RTIMP DWG Title: A1P2-PC-ROAD-TC-1PT-MC
Project #: 20710-PSP-0007
Project Name: A1PII Excavation Monitoring
Prepared By: David Allen
File:A1P2_PC_ROAD_TC_1PT_MC.srf
Date Prepared: 10/22/99

000048

APPENDIX B

**PRECERTIFICATION REAL-TIME
TOTAL URANIUM CONCENTRATION MAPS**

A1P2 Trap Range

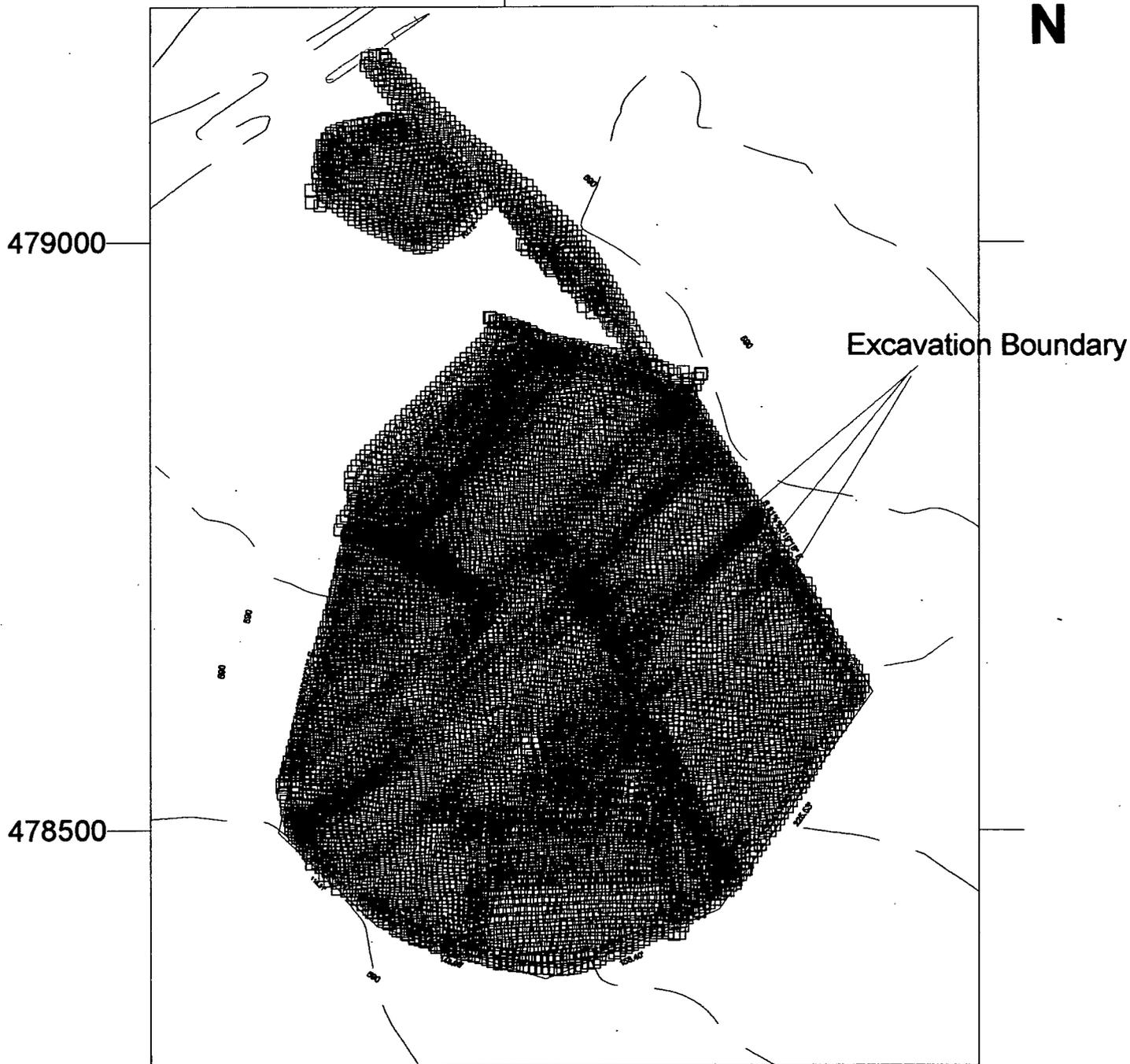
Figure B-1

Moisture Corrected Total Uranium

RSS batch#393-395, & 483
RTRAK batch#724, 725, & 730
Measurements Dates between:9/23/99 and 10/13/99
Field of View to scale

2802

N



ppm Total Uranium	
□	-55.00 to 82.00
□	82.00 to 164.00
□	164.00 to 246.00
■	246.00 to 10000.00

RTIMP DWG Title: A1P2TR-PC-TU-2PT-MC
Project #: 20710-PSP-0007
Project Name: A1PII Excav. Mon. & Precert.
Prepared By: David Allen
File:A1P2TR_PC_TU_2PT_MC.srf
Date Prepared: 10/22/99 000050

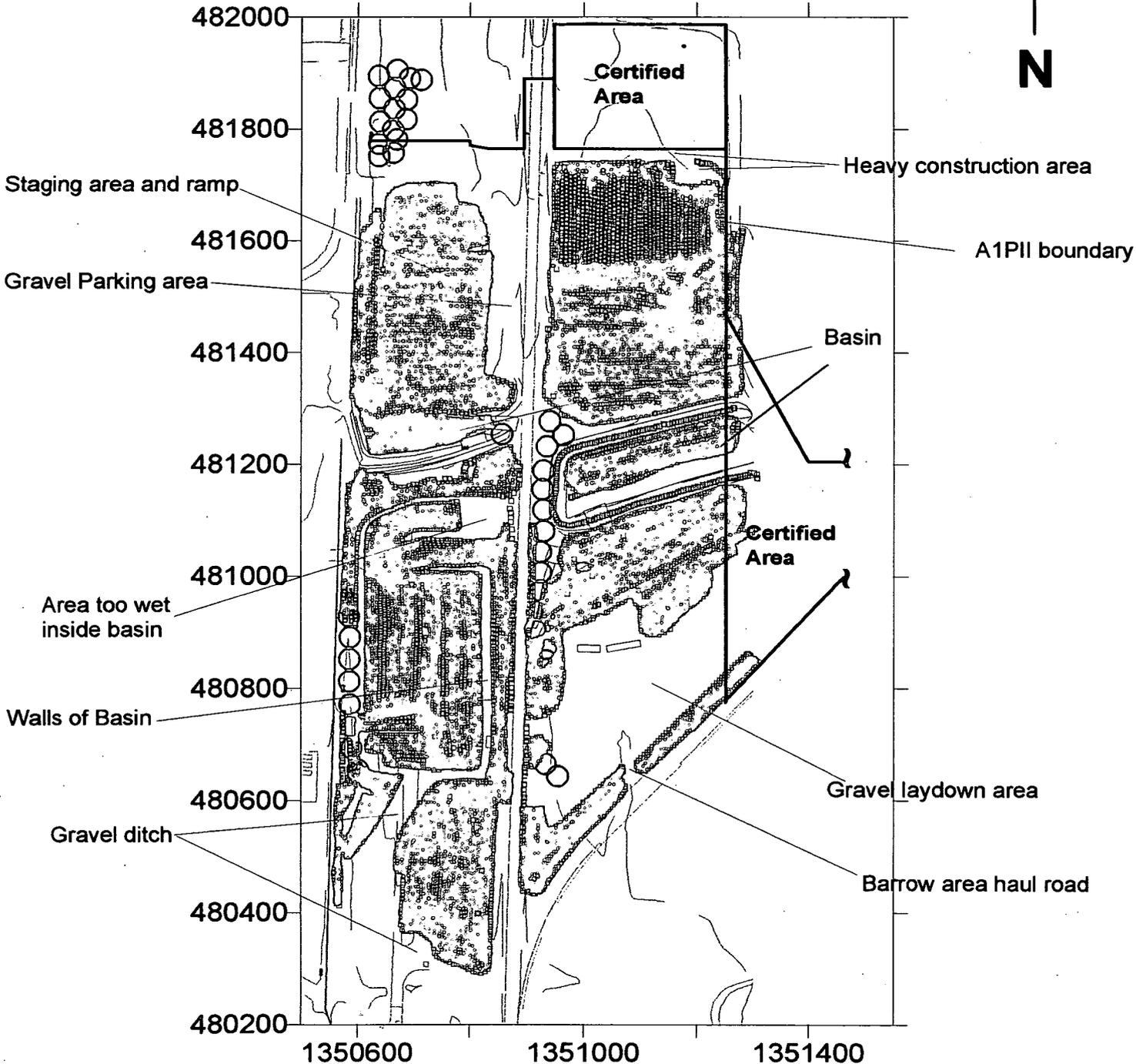
A1P2 SECTOR 2

Figure B-2

Moisture Corrected Total Uranium

RTRAK batch #628,629, 689, 721, 735-737
 RSS batch#488-492,511
 HPGE det. #40743, 31265, 30904, & 31144
 Measurement dates between: 2/22/99 and 11/12/99
 Field of View to scale

2802

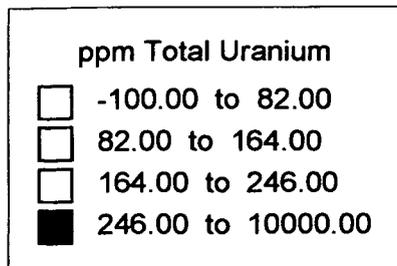
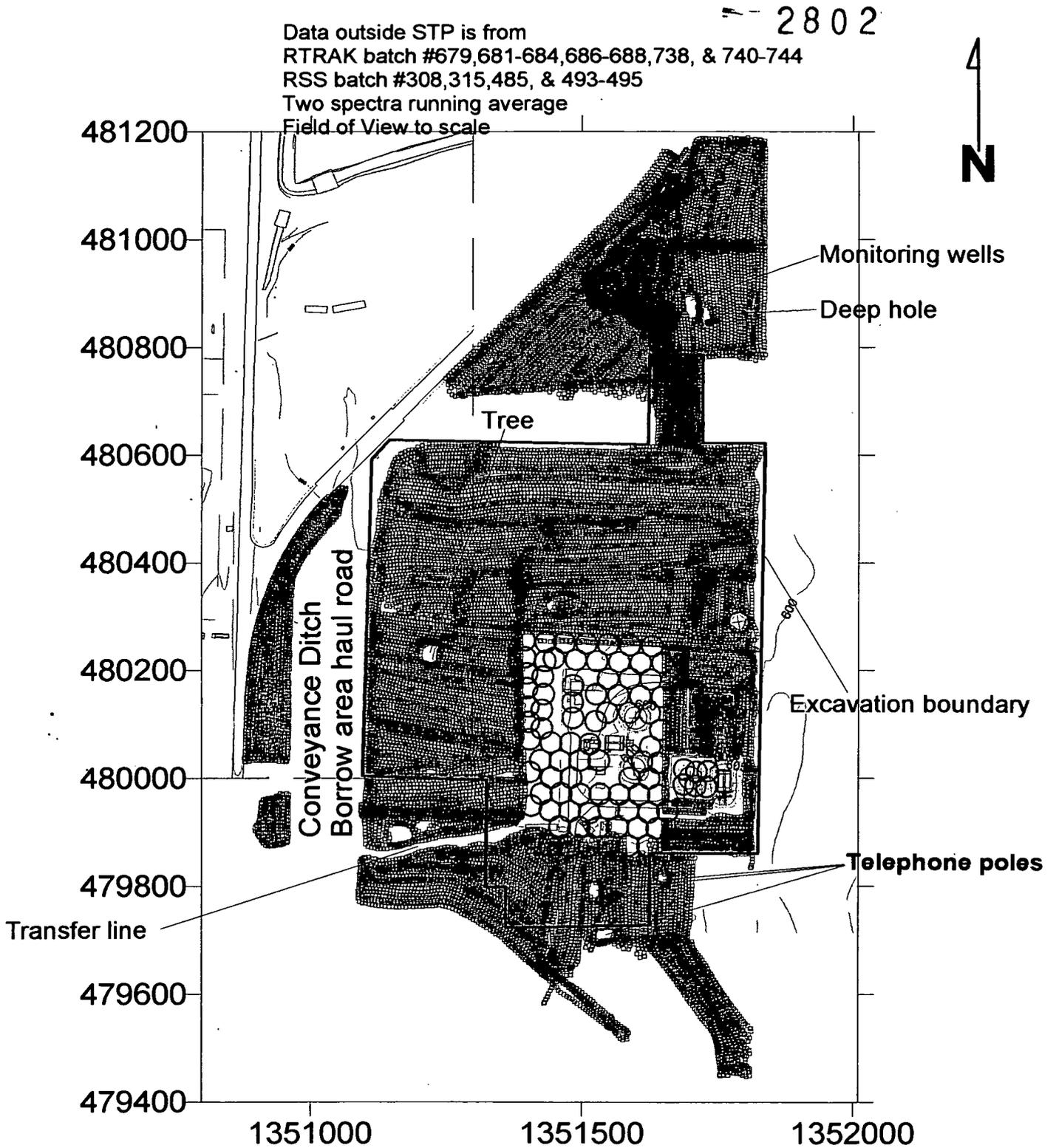


ppm Total Uranium	
	-95.00 to 82.00
	82.00 to 164.00
	164.00 to 246.00
	246.00 to 10000.00

RTIMP DWG Title: A1P2-PC-NORTH-TU-2PT-MC
 Project #: 20710-PSP-0003 V/FCN 9
 Project Name: A1PII Pre-Design Invest.
 Prepared By: David Allen
 File:A1P2_PC_NORTH_TU_2PT_MC.srf
 Date Prepared: 11/12/99

000051

Moisture Corrected Total Uranium



RTIMP DWG Title: A1P2-PC-NORTH-TU-2PT-MC
Project #: 20710-PSP-0007
Project Name: A1PII Excav. Mon. & Precert.
Prepared By: David Allen
File:A1P2_PC_NORTH_TU_2PT_MC.srf
Date Prepared: 10/21/99

000052

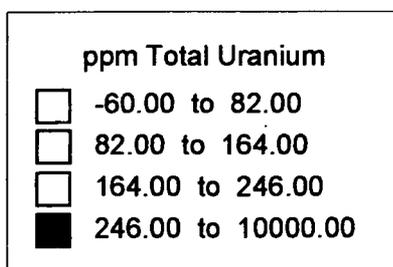
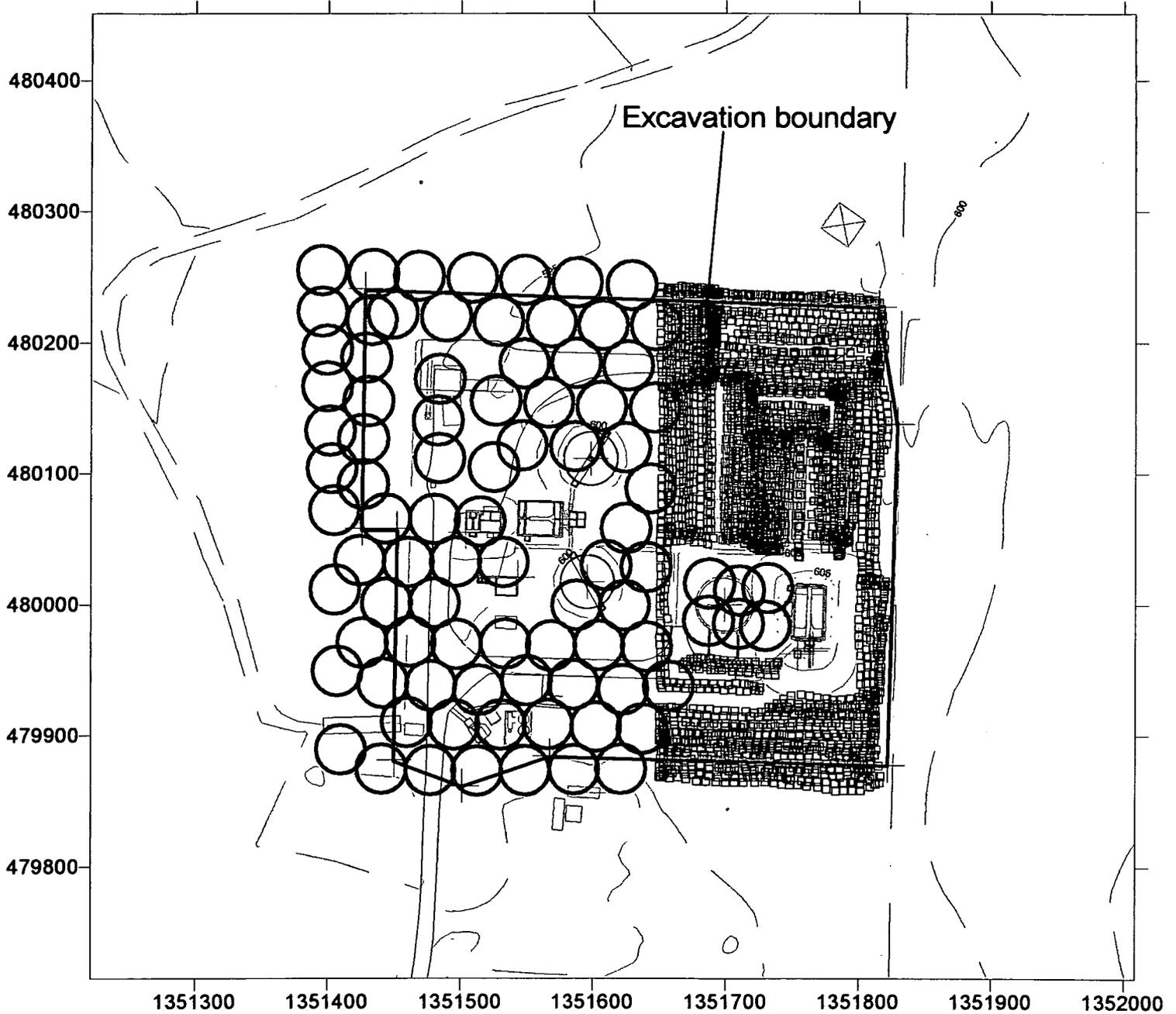
A1P2 STP

Figure B-4

Moisture Corrected Total Uranium

HPGE measurements from 9/26/99 to 10/8/99
RSS batch#396-398, & 484 between 9/26/99 and 10/13/99
Field of View to scale

2802



RTIMP DWG Title: A1P2STP-PC-TU-2PT-MC
Project #: 20710-PSP-0007
Project Name: A1PII Excav. Mon. & Precert.
Prepared By: David Allen
File:A1P2STP_PC_TU_2PT_MC.srf
Date Prepared: 10/22/99

000053

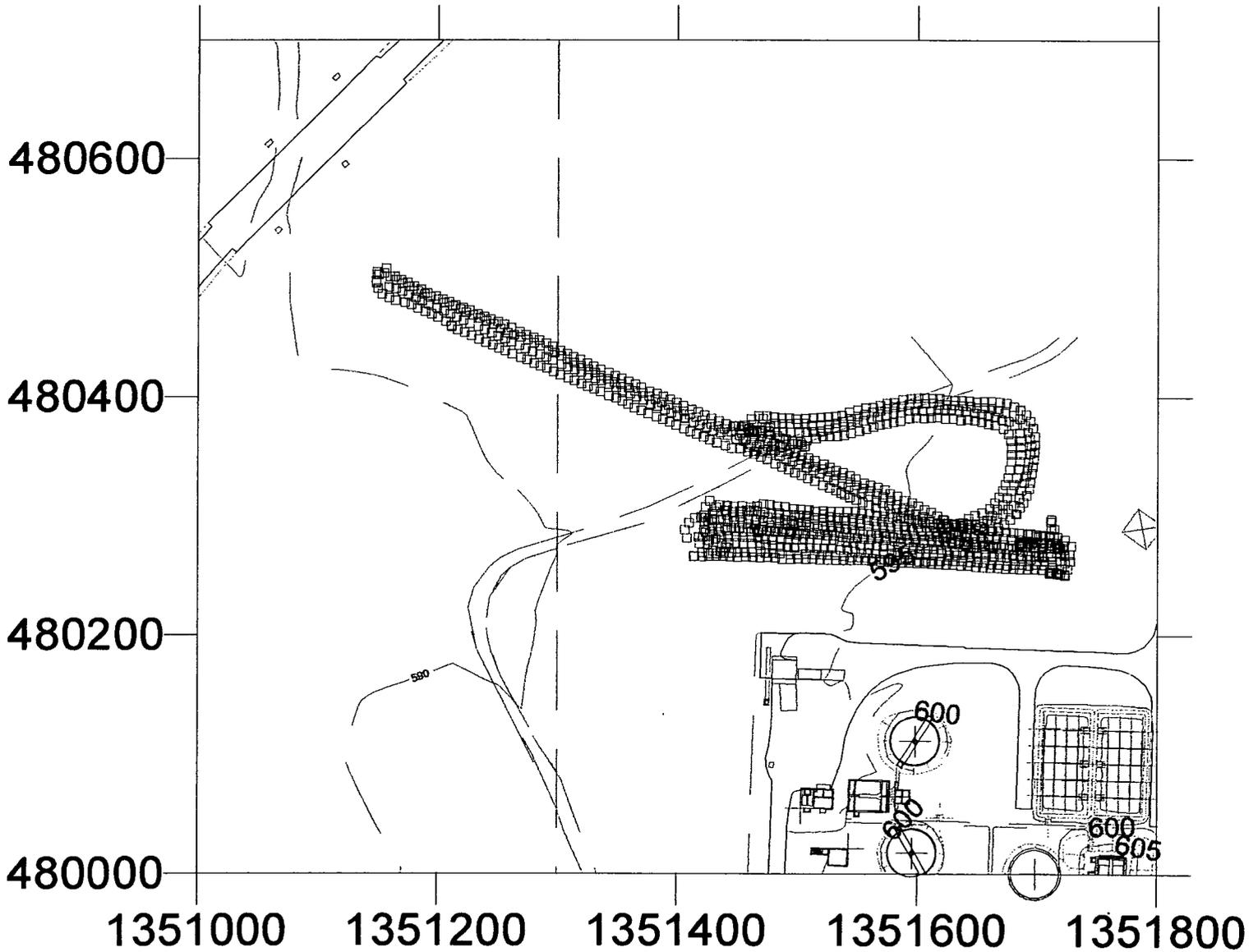
STP HAULING ROAD

Figure B-5

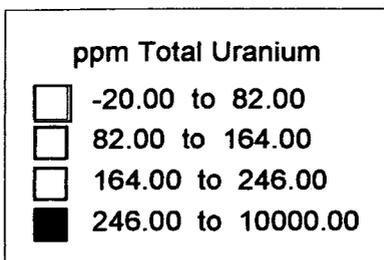
Moisture Corrected Total Uranium

RTRAK batch #741
Measurement date: 10/16/99
Two spectra running average
Field of View to scale

2802



.8



RTIMP DWG Title: A1P2-PC-ROAD-TU-2PT-MC
Project #: 20710-PSP-0007
Project Name: A1PII Excavation Monitoring
Prepared By: David Allen
File:A1P2_PC_ROAD_TU_2PT_MC.srf
Date Prepared: 10/22/99

000054

APPENDIX C

**PRECERTIFICATION REAL-TIME
THORIUM-232 CONCENTRATION MAPS**

A1P2 Trap Range

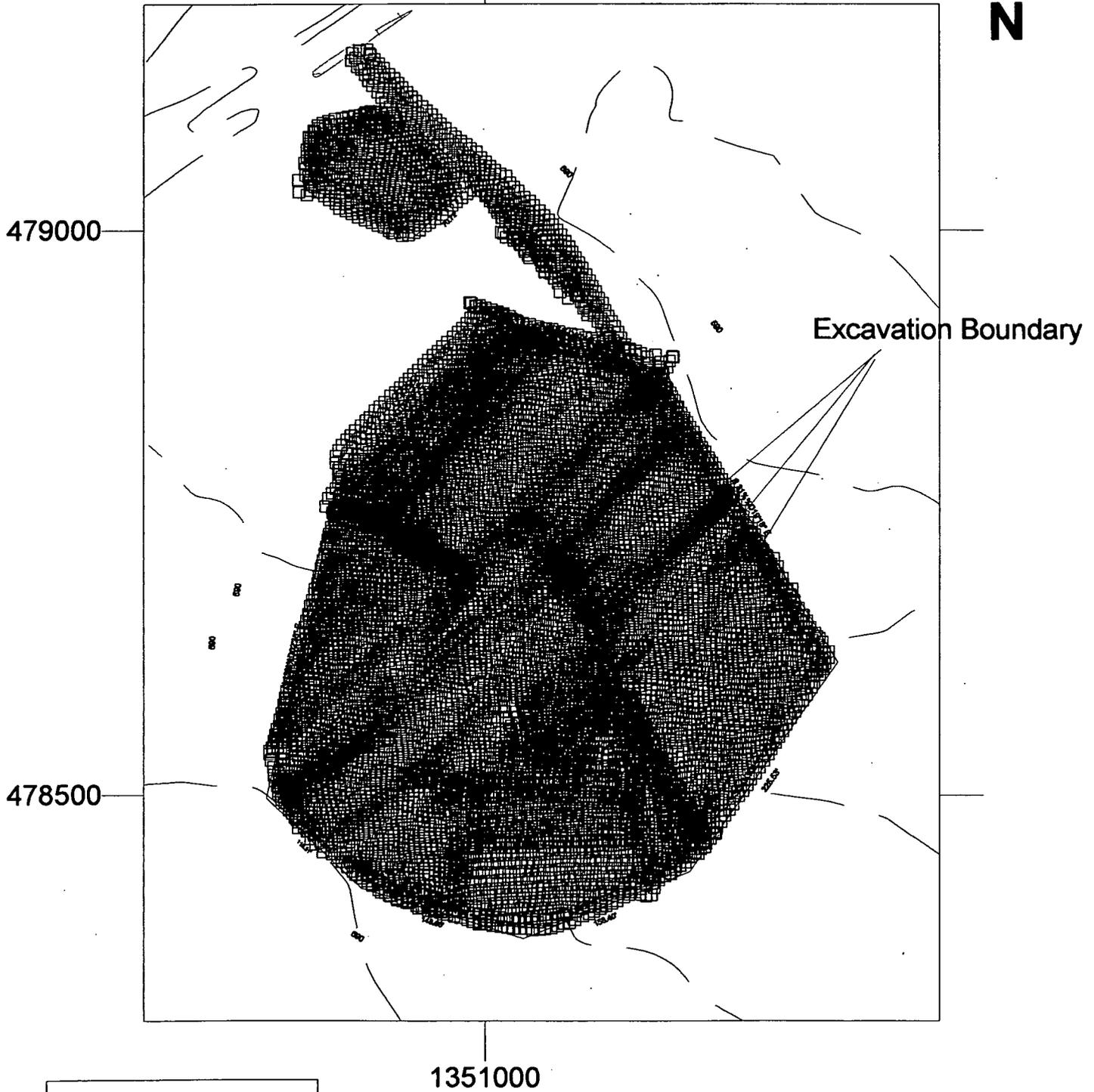
Figure C-1

Moisture Corrected Thorium 232

RSS batch#393-395, & 483
RTRAK batch#724, 725, & 730
Measurements Dates between:9/23/99 and 10/13/99
Field of View to scale

2802

N



pCi/gm Th-232	
□	-0.10 to 1.50
□	1.50 to 3.00
□	3.00 to 4.50
■	4.50 to 10000.00

RTIMP DWG Title: A1P2TR-PC-TH-2PT-MC
Project #: 20710-PSP-0007
Project Name: A1PII Excav. Mon. & Precert.
Prepared By: David Allen
File:A1P2TR_PC_TH_2PT_MC.srf
Date Prepared: 10/22/99

000056

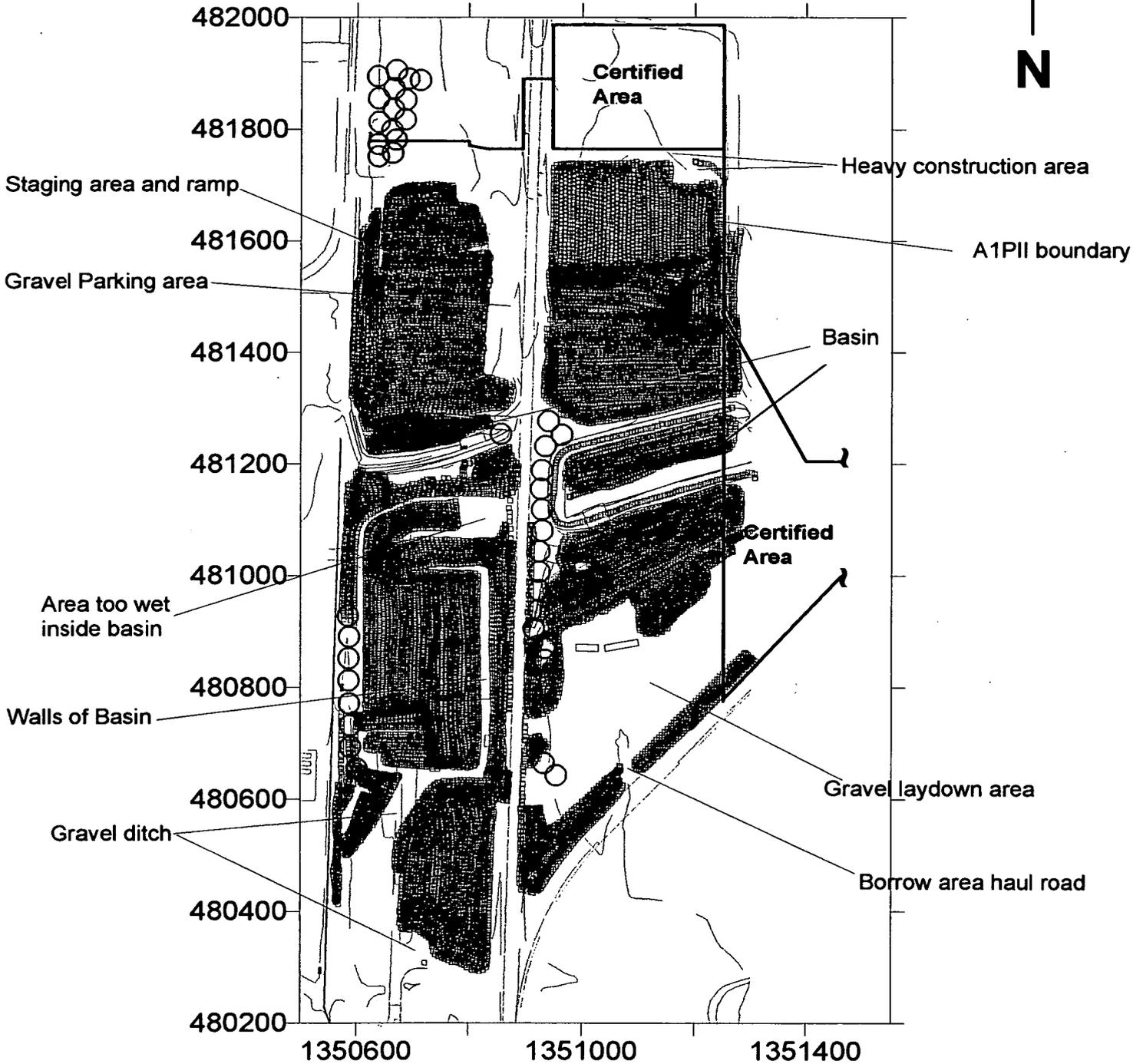
A1P2 SECTOR 2

Figure C-2

Moisture Corrected Thorium 232

RTRAK batch #628,629, 689, 721, 735-737
 RSS batch#488-492, 511
 HPGE det. #40743, 31265, 30904, & 31144
 Measurement dates between: 2/22/99 and 11/12/99
 Field of View to scale

2802
 N



pCi/gm Th-232	
	-0.20 to 1.50
	1.50 to 3.00
	3.00 to 4.50
	4.50 to 10000.00

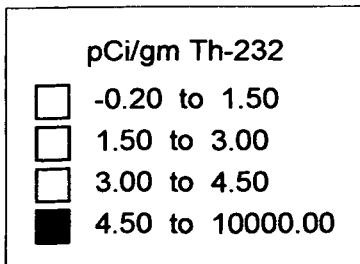
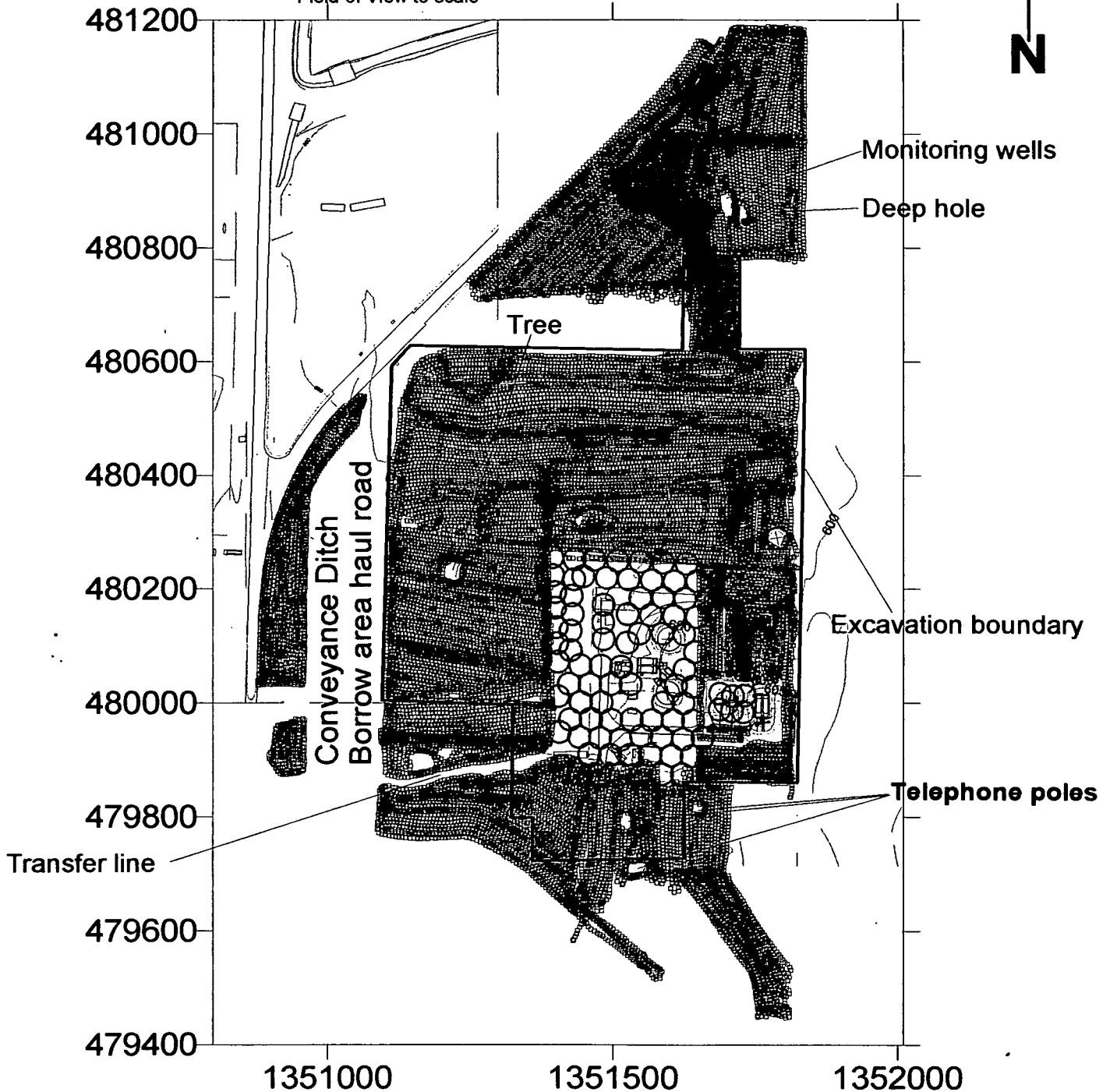
RTIMP DWG Title: A1P2-PC-NORTH-TH-2PT-MC
 Project #: 20710-PSP-0003 V/FCN 9
 Project Name: A1PII Pre-Design Invest.
 Prepared By: David Allen
 File:A1P2_PC_NORTH_TH_2PT_MC.srf
 Date Prepared: 11/12/99

000057

Moisture Corrected Thorium 232

Data outside STP is from
 RTRAK batch #679,681-684,686-688,738, & 740-744
 RSS batch #308,315,485, & 493-495
 Two spectra running average
 Field of View to scale

2802



RTIMP DWG Title: A1P2-PC-NORTH-TH-2PT-MC
 Project #: 20710-PSP-0007
 Project Name: A1P2 Excav. Mon. & Precert.
 Prepared By: David Allen
 File:A1P2_PC_NORTH_TH_2PT_MC.srf
 Date Prepared: 10/21/99

000058

A1P2 STP

Figure C-4

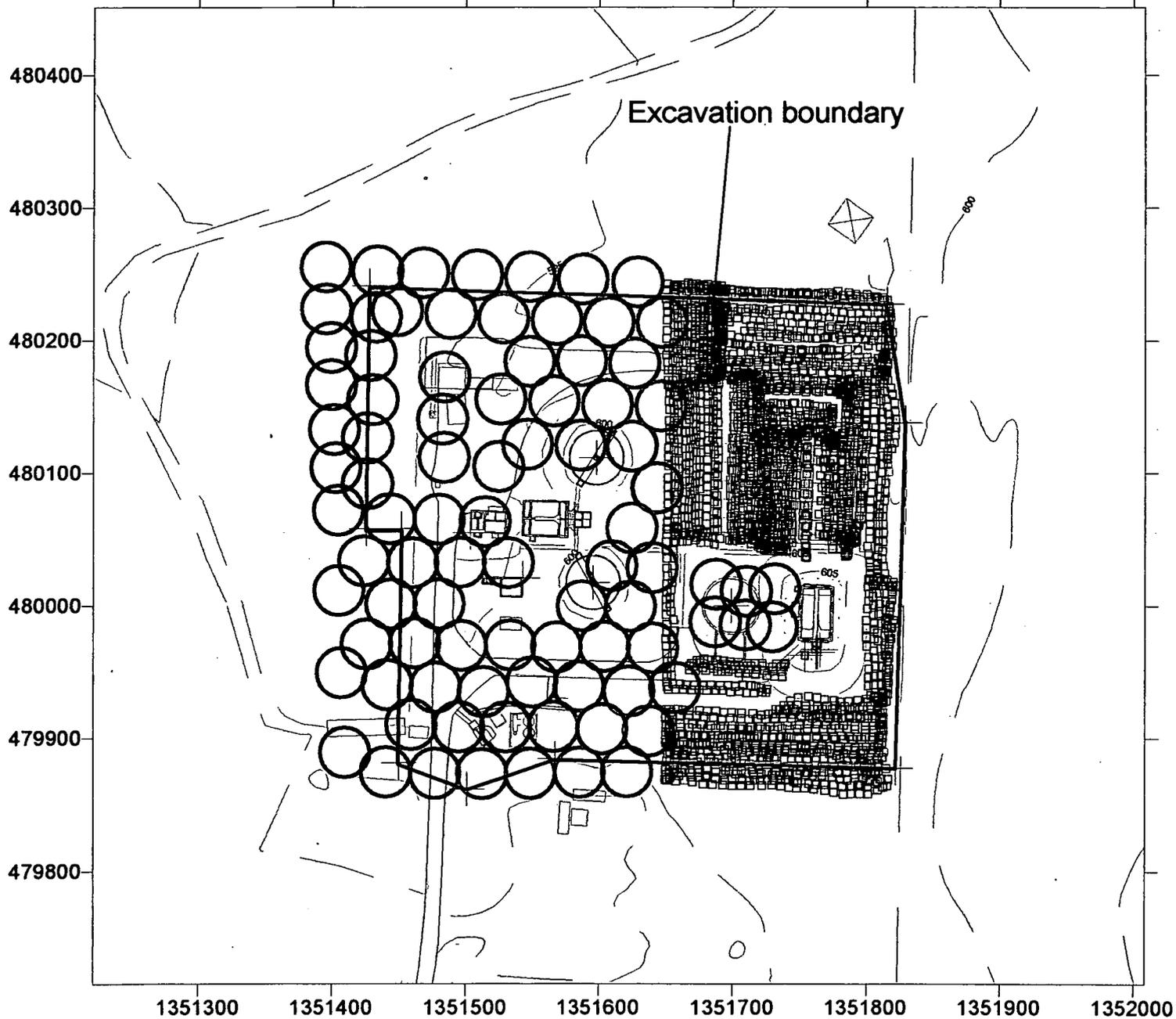
Moisture Corrected Thorium 232

HPGE measurements from 9/26/99 to 10/8/99

RSS batch#396-398, & 484 between 9/26/99 and 10/13/99

Field of View to scale

2802



pCi/gm Th-232	
	0.00 to 1.50
	1.50 to 3.00
	3.00 to 4.50
	4.50 to 10000.00

RTIMP DWG Title: A1P2STP-PC-TH-2PT-MC
Project #: 20710-PSP-0007
Project Name: A1P1I Excav. Mon. & Precert.
Prepared By: David Allen
File:A1P2STP_PC_TH_2PT_MC.srf
Date Prepared: 10/22/99

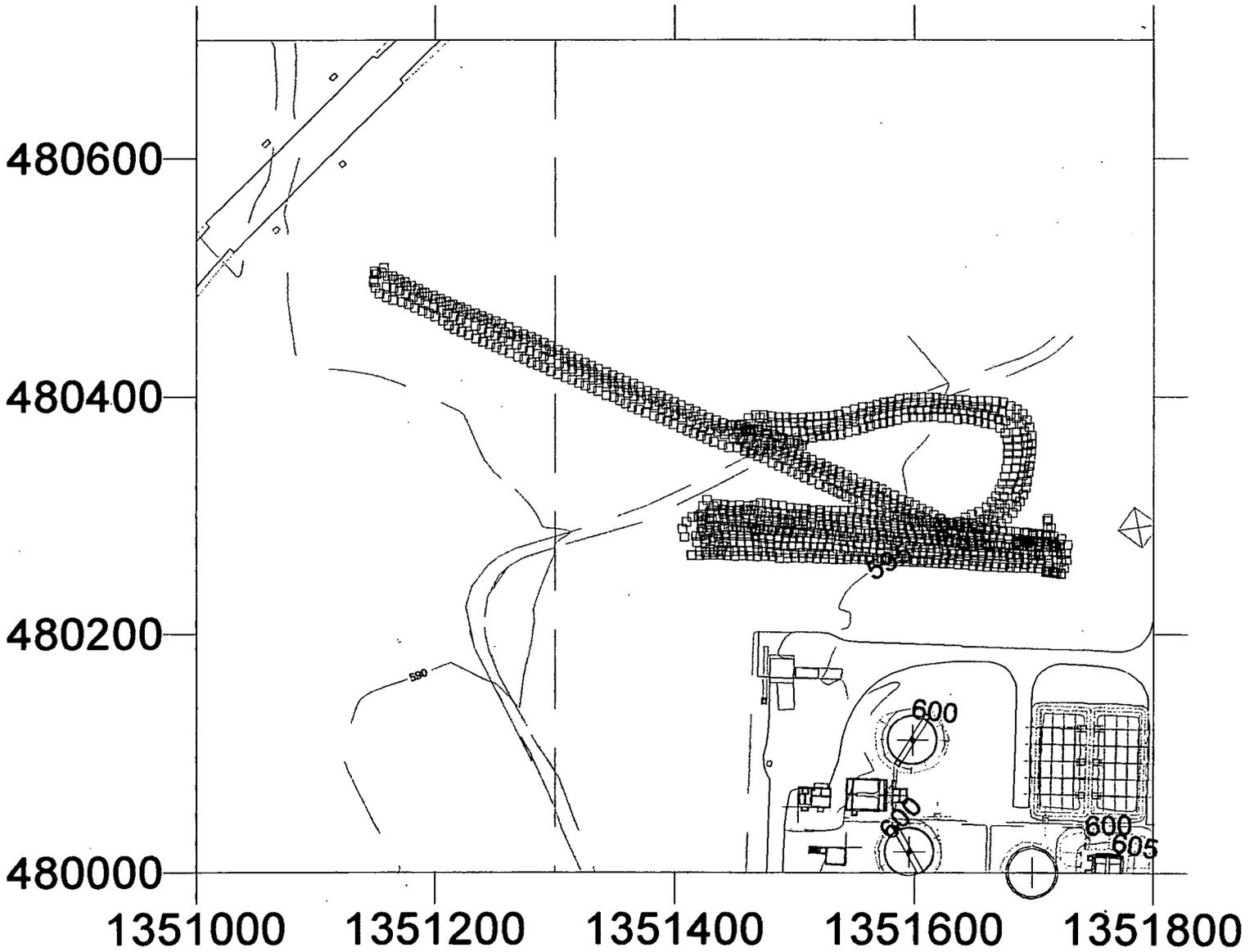
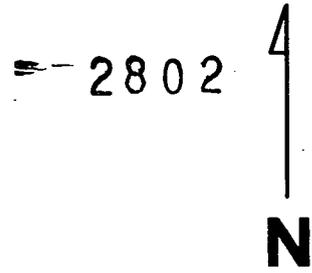
000059

STP HAULING ROAD

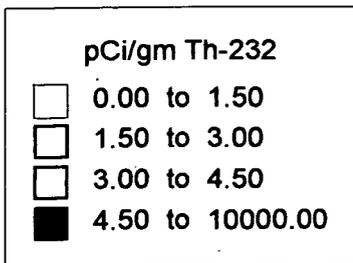
Figure C-5

Moisture Corrected Thorium 232

RTRAK batch #741
Measurement date: 10/16/99
Two spectra running average
Field of View to scale



.8



RTIMP DWG Title: A1P2-PC-ROAD-TH-2PT-MC
Project #: 20710-PSP-0007
Project Name: A1PII Excavation Monitoring
Prepared By: David Allen
File:A1P2_PC_ROAD_TH_2PT_MC.srf
Date Prepared: 10/22/99

000060

APPENDIX D

**PRECERTIFICATION REAL-TIME
RADIUM-226 CONCENTRATION MAPS**

A1P2 Trap Range

Figure D-1

Moisture and Radon Corrected Radium 226

RSS batch#393-395, & 483
RTRAK batch#724, 725, & 730
Measurements Dates between: 9/23/99 and 10/13/99
Field of View to scale

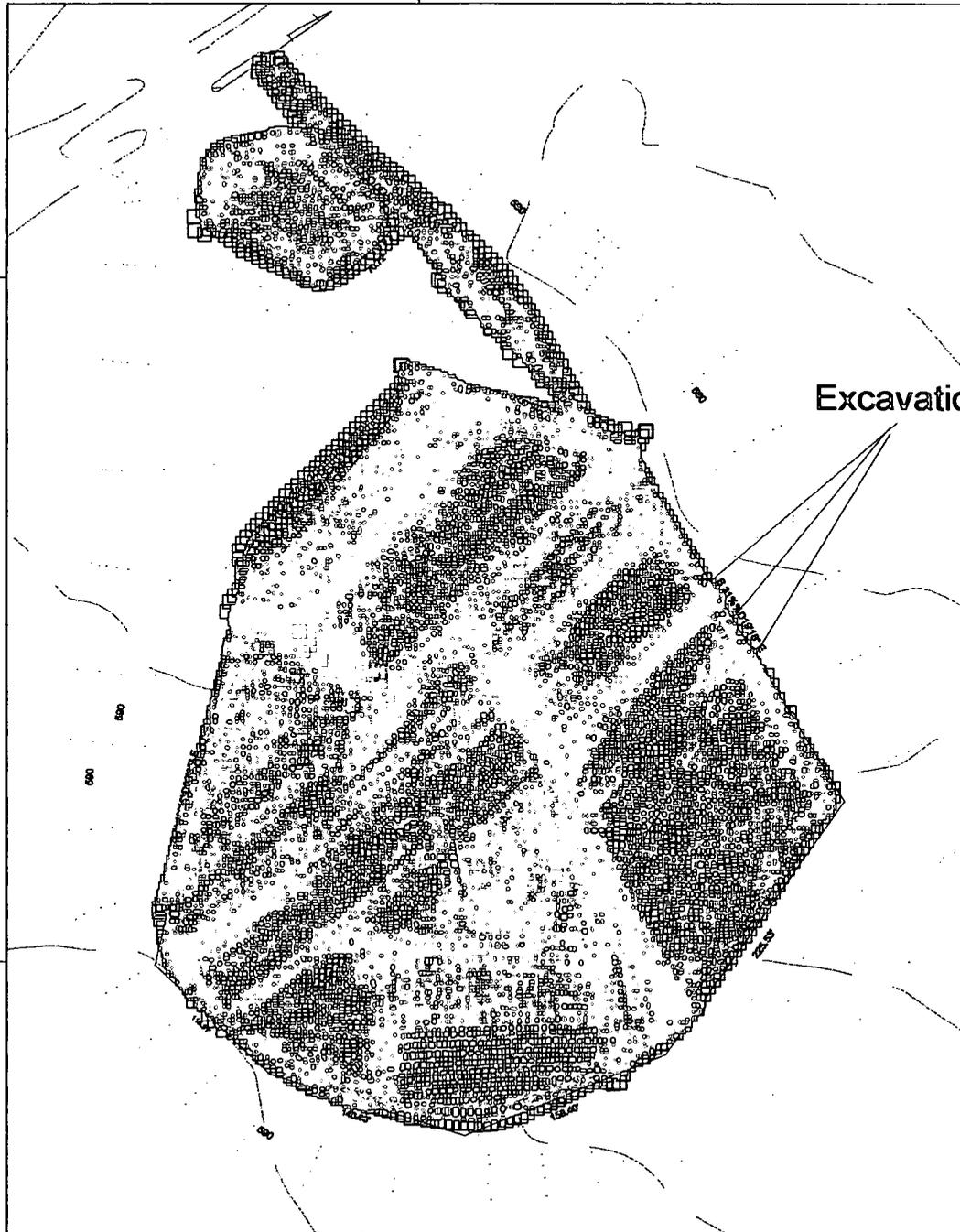
2802



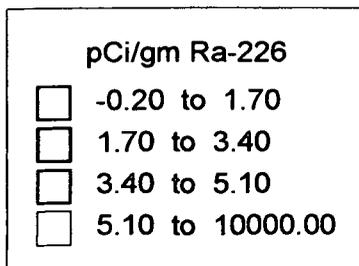
479000

478500

Excavation Boundary



1351000



RTIMP DWG Title: A1P2TR-PC-RA-2PT-MC
Project #: 20710-PSP-0007
Project Name: A1PII Excav. Mon. & Precert.
Prepared By: David Allen
File: A1P2TR_PC_RA_2PT_MC.srf
Date Prepared: 10/22/99

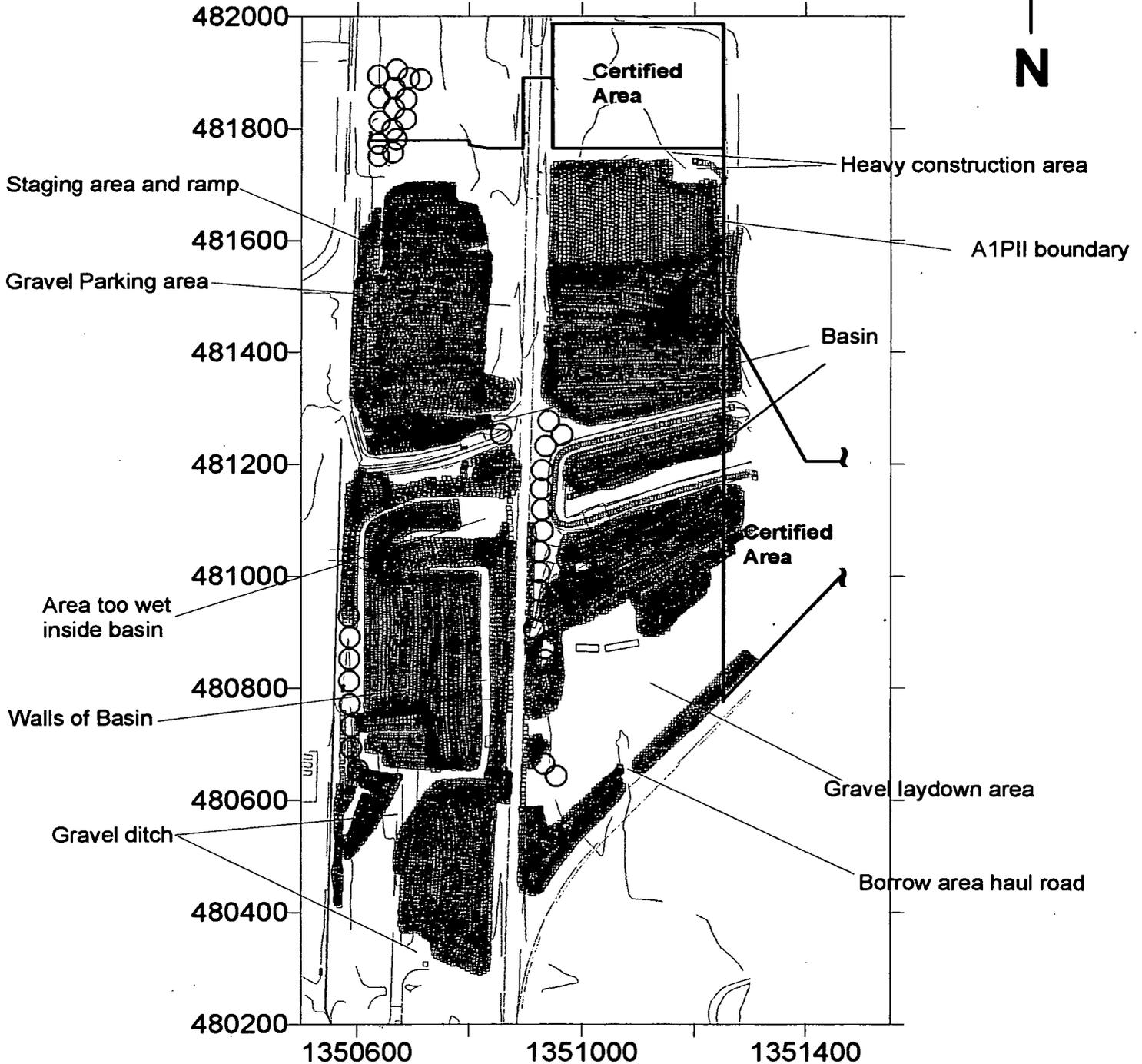
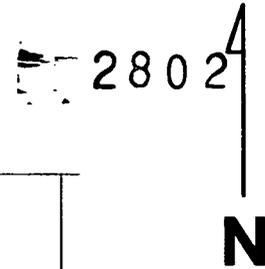
000062

A1P2 SECTOR 2

Figure D-2

Moisture and Radon Corrected Radium 226

RTRAK batch #628,629, 689, 721, 735-737
 RSS batch#488-492, 511
 HPGE det. #40743, 31265, 30904, & 31144
 Measurement dates between: 2/22/99 and 11/12/99
 Field of View to scale



pCi/gm Ra-226	
	-0.30 to 1.70
	1.70 to 3.40
	3.40 to 5.10
	5.10 to 10000.00

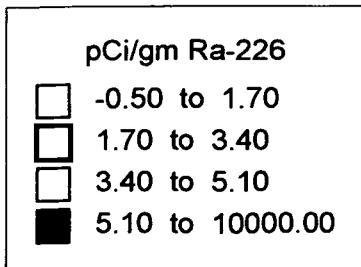
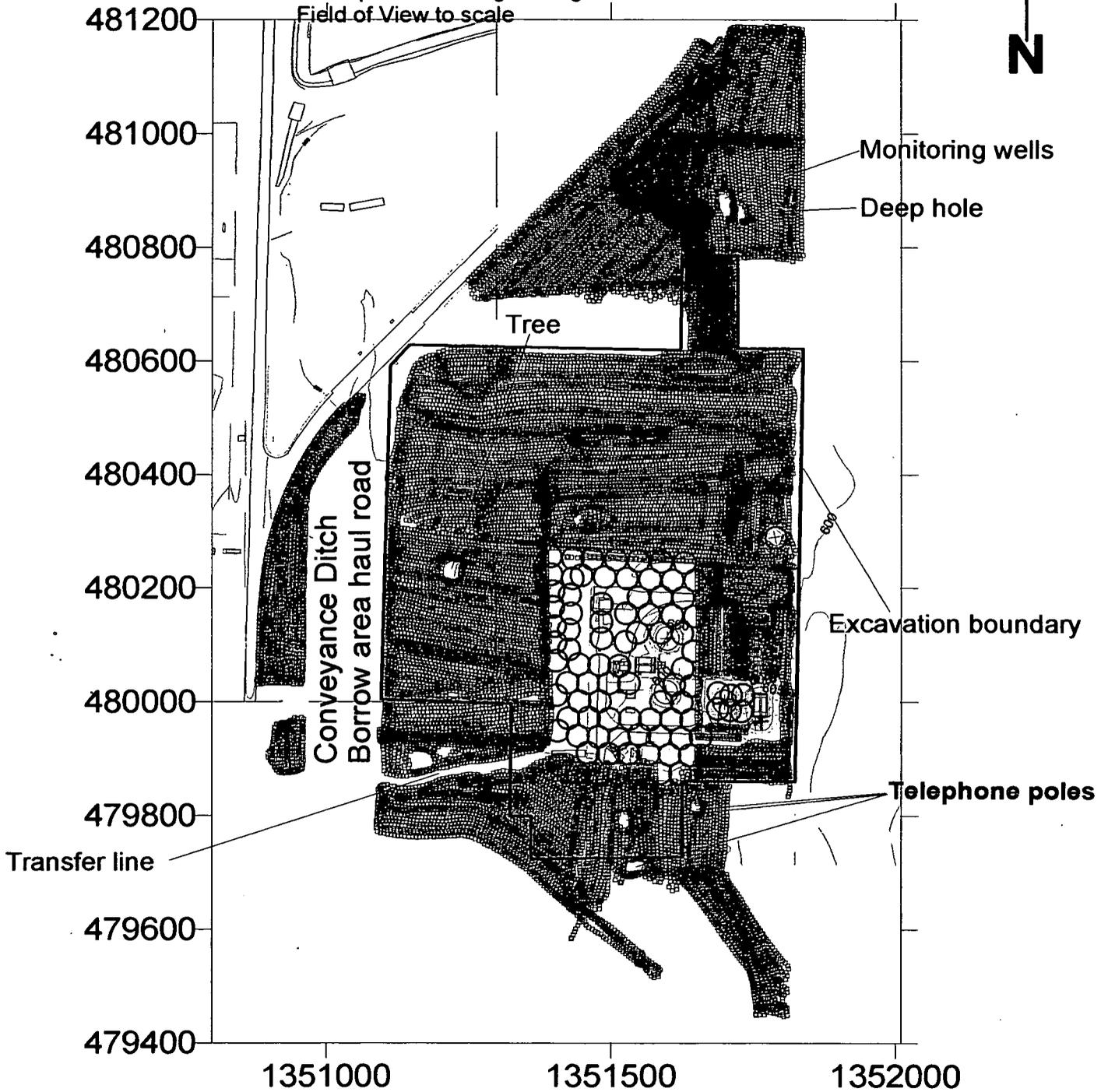
RTIMP DWG Title: A1P2-PC-NORTH-RA-2PT-MC
 Project #: 20710-PSP-0003 V/FCN 9
 Project Name: A1P2 Pre-Design Invest.
 Prepared By: David Allen
 File:A1P2_PC_NORTH_RA_2PT_MC.srf
 Date Prepared: 11/12/99

000063

Moisture and Radon Corrected Radium 226

Data outside STP is from
 RTRAK batch #679,681-684,686-688,738, & 740-744
 RSS batch #308,315,485, & 493-495
 Two spectra running average
 Field of View to scale

2802
 4
 N



RTIMP DWG Title: A1P2-PC-NORTH-RA-2PT-MC
 Project #: 20710-PSP-0007
 Project Name: A1P2 Excav. Mon. & Precert.
 Prepared By: David Allen
 File:A1P2_PC_NORTH_RA_2PT_MC.srf
 Date Prepared: 10/21/99

000064

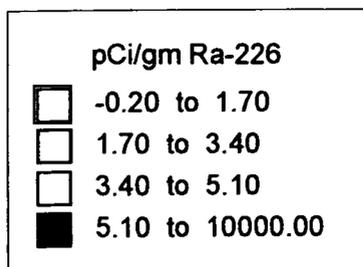
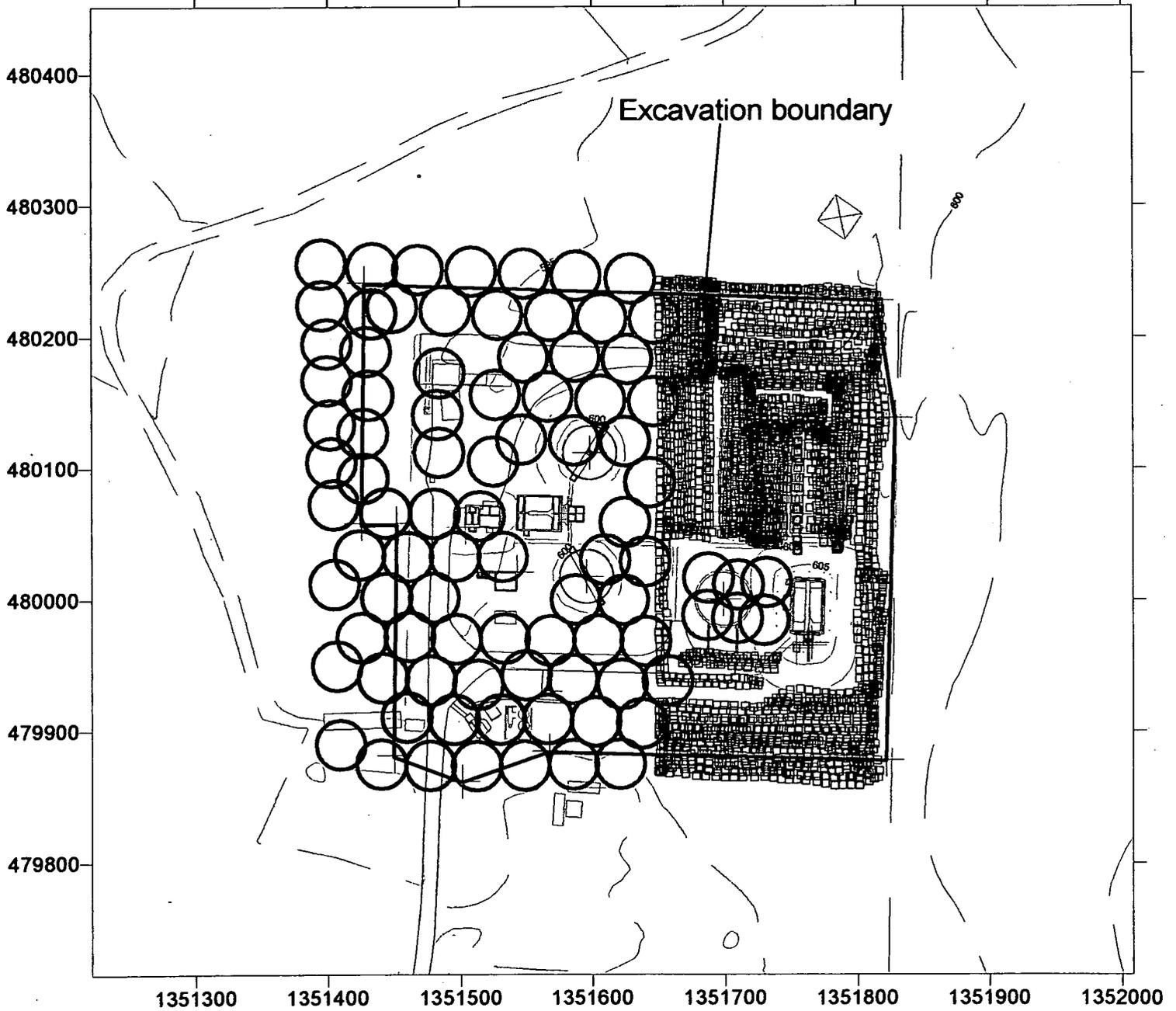
A1P2 STP

Figure D-4

Moisture and Radon Corrected Radium 226

HPGE measurements from 9/26/99 to 10/8/99
RSS batch#396-398, & 484 between 9/26/99 and 10/13/99
Field of View to scale

2802 N



RTIMP DWG Title: A1P2STP-PC-RA-2PT-MC
Project #: 20710-PSP-0007
Project Name: A1P1I Excav. Mon. & Precert.
Prepared By: David Allen
File:A1P2STP_PC_RA_2PT_MC.srf
Date Prepared: 10/22/99

000065

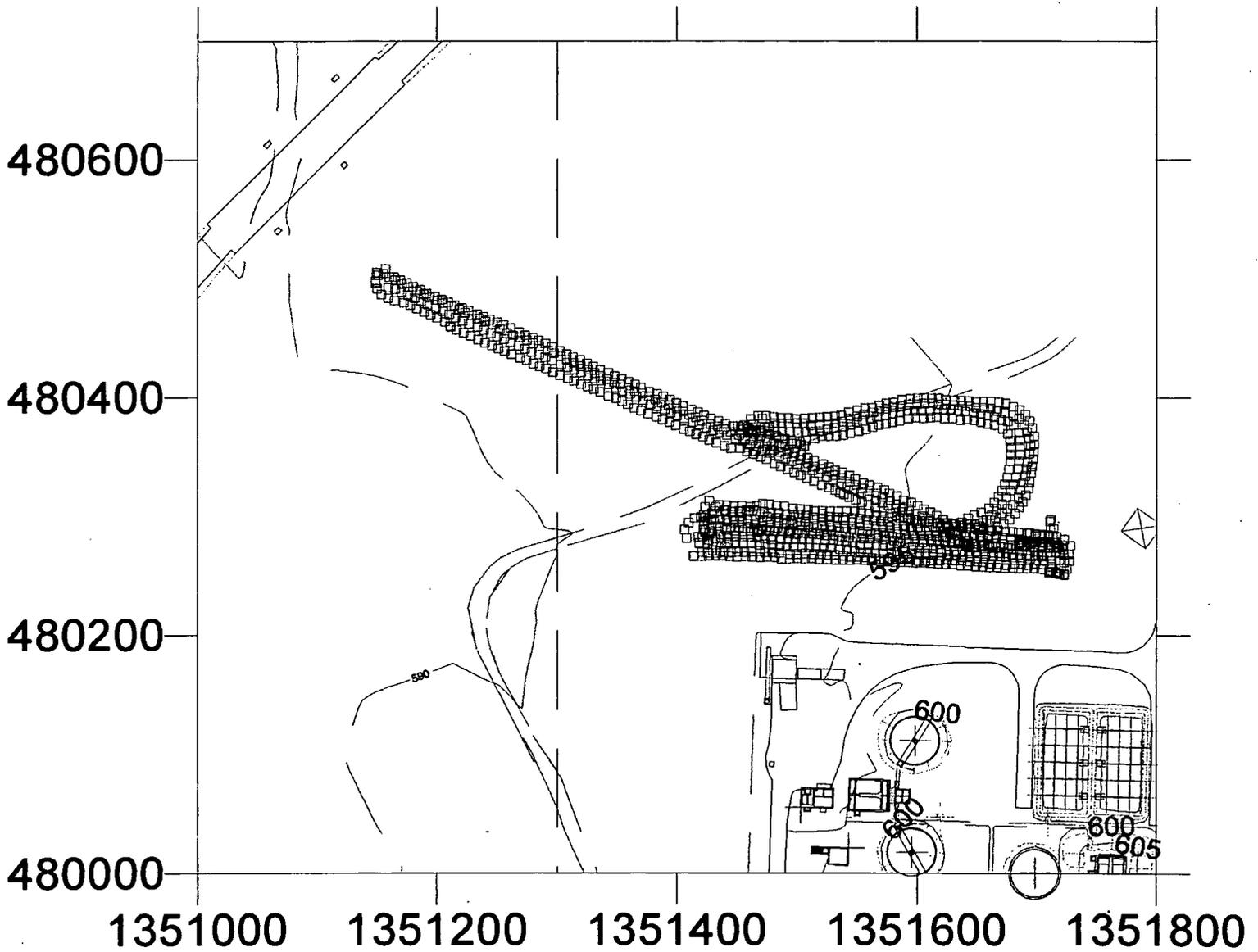
STP HAULING ROAD

Figure D-5

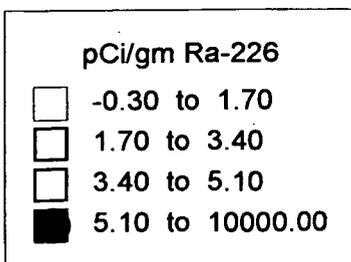
Moisture and Radon Corrected Radium 226

RTRAK batch #741
Measurement date: 10/16/99
Two spectra running average
Field of View to scale

2802



.8



RTIMP DWG Title: A1P2-PC-ROAD-RA-2PT-MC
Project #: 20710-PSP-0007
Project Name: A1PII Excavation Monitoring
Prepared By: David Allen
File:A1P2_PC_ROAD_RA_2PT_MC.srf
Date Prepared: 10/22/99

000066