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Department of Energy

Ohio Field Office
Fernald Closure Project
175 Tri-County Parkway
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JUN 16 2005

Mr. James A. Saric, Remedial Project Manager
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DOE-0264-05

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 EXCAVATION PLAN FOR AREA 6 FORMER PRODUCTION AREA

References:
1) Letter, J. Saric to J. Reising, "Area 6 Excavation Plan," dated April 13, 2005
2) Letter DOE-0236-05, W. Taylor to J. Saric/T. Schneider, "Transmittal of Responses to Ohio Environmental Protection Agency Comments on the Draft Excavation Plan for the Area 6 Former Production Area," dated May 10, 2005
3) Letter, T. Schneider to F. Miller, "Verbal Approval of Comment Responses to Area 6 Former Production Area Excavation Plan," dated May 10, 2005

Enclosed for your approval is the Final Excavation Plan for the Area 6 Former Production Area and associated drawings. This plan was revised to include the approved Ohio Environmental Protection Agency comment responses as noted in References 2 and 3 above. As noted in Reference 1, the U.S. Environmental Protection Agency has also approved this plan.

Please make a note that the Technical Specifications and the Utility Grid and Technical Reference Drawing Package will not be included with this final package because there were no revisions to the specifications or drawings. Therefore, only the final plan and excavation drawings are enclosed.

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

Sincerely,

William J. Taylor
Director

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June 13, 2005

Fernald Closure Project
Letter No. C:PROJ:2005-0069

Mr. Johnny W. Reising, Associate Director
U. S. Department of Energy
Ohio Field Office - Fernald Closure Project
175 Tri-County Parkway
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Dear Mr. Reising:

CONTRACT DE-AC24-01OH20115, TRANSMITTAL OF THE FINAL EXCAVATION PLAN FOR AREA 6 FORMER PRODUCTION AREA

References:
1) Letter, J. Saric to J. Reising, "Area 6 Excavation Plan," dated April 13, 2005

2) Letter DOE-0236-05, W. Taylor to J. Saric/T. Schneider, "Transmittal of Responses to Ohio Environmental Protection Agency Comments on the Draft Excavation Plan for the Area 6 Former Production Area," dated May 10, 2005

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Please make a note that the Technical Specifications and the Utility Grid and Technical Reference Drawing Package will not be included with this final package because there were no revisions to the specifications or drawings. Therefore, only the final plan and excavation drawings are enclosed.

Upon your concurrence, please forward these documents to the EPA and OEPA. If you have any questions or require additional information, please contact me at (513) 738-2834 or Uday Kumthekar at (513) 738-2659.

Sincerely,

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EXCAVATION PLAN FOR AREA 6 FORMER PRODUCTION AREA

FERNALD CLOSURE PROJECT
FERNALD, OHIO

JUNE 2005

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

20602-PL-0001
REVISION 0
FINAL

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EXCAVATION PLAN FOR AREA 6 FORMER PRODUCTION AREA

FERNALD CLOSURE PROJECT

FERNALD, OHIO

JUNE 2005

U.S. DEPARTMENT OF ENERGY

FERNALD AREA OFFICE

20602-PL-0001

REVISION 0

FINAL

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LIST OF ACRONYMS AND ABBREVIATIONS

ALARA	As Low As Reasonably Achievable
ASCOC	area-specific constituent of concern
AWWT	Advanced Waste Water Treatment (Facility)
CAWWT	Converted Advanced Waste Water Treatment (Facility)
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFC	Certified for Construction
CFR	Code of Federal Regulations
CM	Construction Manager
COC	constituent of concern
CT	Construction Traveler
D&D	Decontamination and Demolition
DOE	U.S. Department of Energy
EMS	Excavation Monitoring System
EPA	U.S. Environmental Protection Agency
FCP	Fernald Closure Project
FRL	final remediation level
gpm	gallons per minute
HDPE	high density polyethylene
HPGe	high-purity germanium (detector)
HWMU	hazardous waste management unit
IRDP	Integrated Remedial Design Package
mg/kg	milligrams per kilogram
mg/L	milligrams per Liter
MVS	Mining Visualization System
NPDES	National Pollution Discharge Elimination System
NRRP	Natural Resource Restoration Plan
NRTs	Natural Resource Trustees
OEPA	Ohio Environmental Protection Agency
OHPO	Ohio Historic Preservation Office
OMTA	OSDF Material Transfer Area
OSDF	On-Site Disposal Facility
OU	operable unit
pCi/g	picoCuries per gram
ppm	parts per million
PSP	Project Specific Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SEP	Sitewide Excavation Plan

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

SMTA	Special Materials Transfer Area
SP	Soil Stockpile
SWPPP	Storm Water Pollution Prevention Plan
SWRB	Storm Water Retention Basin
UST	underground storage tank
WAC	waste acceptance criteria
WAO	Waste Acceptance Organization
yd^3	cubic yards

1.0 INTRODUCTION

This Excavation Plan describes the remediation of soil, sediment, surface water, and at- and below-grade structures and debris in the Area 6 Former Production Area at the Fernald Closure Project (FCP), Fernald, Ohio. This Excavation Plan follows the appropriate remedial design/remedial action steps listed in the Sitewide Excavation Plan (SEP; DOE 1998a) (i.e., predesign investigations, remedial design, and remedial action activities). Post-remediation, precertification, certification and restoration will be addressed in future documents [e.g., the Certification Design Letter (CDL) and Natural Resources Restoration Plan (NRRP; DOE 2002)].

As the integrating document for the Integrated Remedial Design Package (IRDP), the Excavation Plan addresses the predesign investigation, remedial design, remedial actions and precertification activities for the Area 6 Former Production Area. The plan also discusses project-specific environmental controls and monitoring. A list of design drawings and technical specifications are attached to the Excavation Plan as appendices.

During production (approximately from 1952 through 1986), the Former Production Area was where most of the FCP production, manufacturing and chemical operations were conducted. The Former Production Area was enclosed by a security fence. It was bounded to the south by the Administration Area, to the west by the Waste Pits Area, and to the north and east by a security buffer zone (see Figure 1-1). Most of the Former Production Area has been or is being remediated as part of Remediation Areas 3A, 3B, 4A, 4B, and 5 as governed by the Implementations Plan for Areas 3B/4B/5 (DOE 2004a) and the Implementation Plan for Areas 3A and 4A (DOE 2001). The remediation of the remaining areas of the Former Production Area will be addressed as part of Remedial Area 6 - Former Production Area. Area 6 Former Production Area includes portions of the northern and eastern parts of the FPA. The portion of Area 6 Former Production Area required to contain and control the Soil Stockpile (SP) 7 stockpile area and associated runoff will not be addressed in this Excavation Plan, due the timing for the removal of SP-7 and the sampling requirements for soil underneath the pile. The SP-7 general area will be included in the Excavation Plan for Area 6 Waste Pits and General Areas scheduled to be submitted to the agencies for review in mid-March 2005. Contrarily due to the timing of remedial excavation within adjacent areas of the Area 6 (General Area), the area north of the Former Production Area security fence and south of the Operable Unit (OU) 1 Railyard, and the trailer area north of the Former Lime Sludge Ponds are being included with this excavation plan. In addition, a thin track of land from Area 6 General Area north of the OU4 Waste Pits will also be addressed in this document (see Figure 1-2). Since there is no remedial excavation associated with the thin track of land north of the OU4 Waste Pits, this area will not be addressed in Section 3 of this Excavation Plan. However, the predesign characterization of this

area will be addressed in Section 2 and related appendices. Surface debris and general clean up will be required in this area.

The remediation of Area 6 Former Production Area is scheduled for execution from March 2005 to July 2005.

The primary remedial actions addressed in this Excavation Plan includes the removal of approximately 159,050 cubic yards (yd^3) of impacted material including approximately 750 yd^3 of above-waste acceptance criteria (WAC) material, 113,100 yd^3 of impacted soil, and 45,200 yd^3 of debris.

During excavation, impacted material will be transported to either the On-Site Disposal Facility (OSDF) or staged at SP-7 for shipment to an off-site permitted disposal facility.

The remedial action requirements shown on the construction drawings and described in the technical specifications were developed in accordance with the concepts described in this Excavation Plan, as guided by the OSDF WAC Attainment Plan (DOE 1998b) and the SEP.

1.1 REMEDIATION AREA BACKGROUND AND DESCRIPTION

The Area 6 Former Production Area is approximately 41.8 acres and includes the northern and eastern portions of the Former Production Area as well as a trailer area north of the Lime Sludge Ponds, known as Hooperville and a thin strip of land north of the drainage ditch north of the Waste Pit Area (see Figure 1-2).

During the history of the plant, no known production facilities or processes have been located within Hooperville or the thin strip of land north of the drainage ditch north of the Waste Pit Area.

However, the northern and eastern portions of the Former Production Area have been used extensively over the years to hold and store containerized and non-containerized waste materials. The northern portion of the Former Production Area, has often been used as a storage yard for containerized waste, empty process containers, unused acid-bricks, unused construction materials, contaminated debris and soil stockpiles and a place for shearing operations. This area also has included several storage facilities, including the KC-2 Warehouse and the Quonset Huts.. This area originally included the Temporary Office Building, as known as the Old Administration Building, and associated structures used during the construction of the major site plants and facilities during the early 1950s.

The eastern portion of the Former Production Area had several storage facilities including the Finished Product Warehouse 4A (Building 77) and Plant 6 Warehouse (Building 79). It also included the Elevated

Potable Storage Tank (20D), as known as the Eastern Water Tower, the Main Electrical Substation (16A), the Gas Meter Building (22A), the OSDF Material Transfer Area (OMTA), and a fuel loading station.

For many years, the northeast corner of the Former Production Area has facilitated a contaminated scrap metal pile, an abandoned contaminated vehicle yard, a decontamination facility, and construction trailers. It was determined to contain a significant source of above-WAC soil; therefore, this area was excavated in 2000 to remove the majority of above-WAC soil.

An Impacted Materials Haul Road was constructed across the northern portion of the Former Production Area in 1998 to provide access from the Southern Waste Units (OU2) Remediation Project to the OSDF.

In various places around the northern and eastern perimeters of the Former Production Area, exist concrete drainage trenches and an underground abandoned in-place perimeter electrical trench. These structures located just outside the Former Production Area security fence will be remediated as part of the Area 6 Former Production Area. Creosoted boards were placed over the electrical utilities in the underground abandoned in-place perimeter electrical trench approximately 36-inches below grade for protection and covered over with soil.

1.2 SCOPE AND GENERAL APPROACH OF THE IMPLEMENTATION PLAN

The Area 6 Former Production Area Excavation Plan consists of the following sections:

- Section 1.0 – Introduction, which summarizes the purpose and scope of this Excavation Plan and describes programmatic strategies and requirements for this remedial action project.

- Section 2.0 – Predesign Investigations and Characterization Data for the Area 6 Former Production Area, which describes the constituents of concern (COCs) for the Area 6 Former Production Area, the surface and subsurface conditions, the nature and extent of contamination, and the anticipated excavation boundaries based on Remedial Investigation/Feasibility Study (RI/FS) data and predesign data.

- Section 3.0 – Remedial Action Approach, which presents the work associated with site preparation, above-WAC and Resource Conservation and Recovery Act (RCRA) excavations, removal of at- and below-grade structures, general excavation to remove man-made structures and contaminated soil, real-time monitoring of the excavation surface, management of waste streams in accordance with final disposition requirements, management of surface and perched water in the excavation, and documentation that the soil in the area meets the final remediation levels (FRLs) for all COCs.

- Appendix A - Characterization Data for the Area 6 Former Production Area, which tabulates all predesign characterization data used to develop the remedial design.

- Appendix B - Real Time Monitoring Data

- Appendix C - Surface Water Calculations, which provides background for sizing culverts to be installed.

- Appendix D - List of Drawings and Specifications issued with this Implementation Plan, which are components of the IRDP.

- Appendix E - Geostatistical Modeling for Title II Excavation Design.

The area-specific Remedial Design/Remedial Action process at the FCP is illustrated on Figure 1-1 of the SEP and involves the following steps:

- Predesign investigations
- Remedial design
- Remedial action
- Precertification of excavated areas
- Certification of excavated areas
- Post-remedial action.

1.3 PROGRAMMATIC STRATEGY

This Excavation Plan includes the first of four steps of the programmatic strategy.

Specific performance requirements to accomplish the scope of work presented in this plan are provided in the technical specifications, and the Construction Traveler (CT). The CT will be reviewed and approved by the DOE and Fluor Fernald.

1.3.1 Predesign Investigation

Predesign activities began in the Area 6 Former Production Area in fall of 2004. These predesign investigations were conducted to supplement RI/FS information on the nature and extent of contamination in Area 6. These predesign investigations were performed, in general, to identify the extent of soil exceeding the various action levels (i.e., RCRA, WAC, FRL). The specific goals of these predesign sampling investigations included filling data gaps, confirming questionable analytical results, bounding above-WAC or above-FRL areas, investigating potentially characteristic areas, and minimizing uncertainty in the three-dimensional computer model of total uranium contamination. Section 2.3 addresses the Project Specific Plans (PSPs) used to predesign the area addressed in this IRDP.

1.3.2 Remedial Design

The Remedial Design began in December 2004 and will continue through completion of the Certified-for-Construction (CFC) package. Title I/II design began in December 2004, and the specifications and drawings submitted with this IRDP build upon the Area 3B/4B/5 construction designs.

The design grade for excavation is depicted on the construction drawings and is based on:

- RI/FS data on the nature of COC concentrations in soil and perched groundwater
- Data collected during predesign investigations to delineate the extent of contamination for above-WAC, and below-WAC zones
- Geostatistical modeling of uranium concentrations in soil in Area 6 Former Production Area, supplemented by predesign investigation data on the other COCs.
- Three-dimensional models of at- and below-grade structures (e.g., footers and piers)
- Underground utilities based on underground utility drawings
- Excavation required to control surface water. This includes the excavation of drainage ditches, excavation sumps (basins), and excavation to promote positive drainage to centralized pumping locations.

1.3.3 Remedial Action

The Remedial Action for the Area 6 Former Production Area will be performed in accordance with Section 3.0 and is scheduled for execution from March 2005 to July 2005.

The extent of excavation will be based on actual field conditions (e.g., previously unidentified debris), radiological field survey measurements (i.e., real-time surveys), and physical sampling results. In particular, real-time surveys will be used to minimize the excavation volume of above-WAC uranium contamination (Section 3.4.1) and to evaluate potential reduction of the below-FRL soil volume that is hauled to the OSDF.

Impacted material is defined as soil with above-FRL contamination or man-made materials. Impacted material will be hauled to the OSDF for disposal if OSDF-WAC are met. Impacted material that meets the chemical/radiological WAC, but not the physical WAC, will be size-reduced to achieve the WAC and delivered to the OSDF. Items that are prohibited from disposal in the OSDF will be containerized and shipped off site to a permitted disposal facility.

Interim grading of the Area 6 Former Production Area will be performed as necessary to maintain safe stable slopes.

1.3.4 Precertification

The precertification of the Area 6 Former Production Area will be performed in accordance with Section 3.8.

1.3.5 Certification

As stated in the SEP, a (CDL will be prepared and submitted to the regulatory agencies following completion of the precertification process that summarizes the area-specific remediation completed, results of the precertification activities, and design of the certification sampling and analysis program. Certification of Area 6 Former Production Area will not be governed by this IRDP.

1.3.6 Post-Remedial Action

Final restoration of the Area 6 Former Production Area will follow interim grading and be guided on a sitewide basis by the latest/final revision of the NRRP. Area 6 Former Production Area post-remedial actions are not addressed by this IRDP.

1.4 SUMMARY OF THE REGULATORY DRIVERS

The regulatory requirements, criteria and legal obligations that constitute the drivers for FCP remediation activities are presented in Section 1.3.1 of the SEP. Those regulatory drivers applicable to the Area 6 Former Production Area remediation are summarized in this section.

1.4.1 Permits

The National Pollutant Discharge Elimination System (NPDES) permit (Permit No. 1IO0000*GD), for storm water and wastewater discharges to Paddys Run and the Great Miami River, is the permit that is applicable to Area 6 Former Production Area remediation. Activities involved in the remediation of the Area 6 Former Production Area are anticipated under the existing NPDES permit; therefore, no modification to the permit is required. Water collected within the excavation area will be pumped or drained into the site storm water collection system for discharge into the Storm Water Retention Basin (SWRB) for subsequent Converted Advanced Wastewater Treatment (CAWWT). Water from the eastern portion of the excavation will first be pumped or drained to a new detention basin located in the footprint of the eastern water tower (20D) prior to being discharged to the SWRB for CAWWT treatment. Compliance with the existing permit will be demonstrated through the effective implementation of the FCP Storm Water Pollution Prevention Plan (SWPPP)."

1.4.2 Natural Resource Trusteeship and Related Natural and Cultural Resource Regulations

Two mechanisms drive protection of natural resources during remediation: the Natural Resource Trusteeship process and compliance with pertinent federal and state regulations. Both of these mechanisms have been incorporated into Area 6 Former Production Area remedial strategy.

Conceptual restoration designs for the Area 6 Former Production Area have been presented to the Trustee Council as part of the NRRP. The proposed restoration, which consists of expanded prairie and wetland habitat, will be implemented after approval of the area specific Natural Resource Restoration Design Plan

by the Natural Resource Trustees (NRTs). Implementation of restoration activities will occur as close to the completion of required remediation activities as possible.

Regulatory drivers for the management of natural and cultural resources and associated surveys are grouped into three areas: threatened and endangered species protection, wetlands/floodplain protection, and the resolution of DOE's liability for injuries to natural resources.

1.4.2.1 Threatened and Endangered Species

Based on updated FCP property surveys conducted in 1993 through 1994, DOE does not expect to encounter any federal- or state-listed threatened or endangered species or critical habitat in the areas to be addressed by the remediation of Area 6 Former Production Area. Therefore, no additional threatened or endangered species surveys are planned for the area.

1.4.2.2 Wetlands/Floodplains

The 1993 sitewide wetland delineation identified approximately 36 acres of jurisdictional wetlands and 8.9 acres of waters of the United States within the 1,050-acre property. The 1993 Wetland Delineation was approved by the U.S. Army Corps of Engineers, Louisville District Office, in August 1993. Since the 1993 delineation, DOE has identified an additional 2.27 acres of wetlands that have been formed as the result of construction activities at the FCP. Although DOE plans to avoid or minimize impacts to these areas to the maximum extent practicable during remediation, approximately 11.87 acres of wetlands have been impacted or are planned to be impacted requiring mitigation. These planned impacts will occur as a result of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remediation activities and have been identified in the appropriate OU5 Record of Decision (ROD; DOE 1996). Because dredge and/or fill activities will be carried out under CERCLA, notification to the U.S. Army Corps of Engineers is not required and U.S. Environmental Protection Agency (EPA) is the lead agency regarding wetland mitigation. On June 20, 1995, DOE met with representatives from EPA, Ohio Environmental Protection Agency (OEPA), U.S. Fish and Wildlife Service and the Ohio Department of Natural Resources and determined that mitigation would occur on-property to the extent possible and a mitigation ratio of 1:1.5 would apply to wetlands impacted at the FCP.

The NRRP includes DOE plans for conducting wetland mitigation activities at the FCP. The NRRP currently includes plans to conduct three wetland mitigation projects to create the required 17.8 acres of new wetlands. Any additional wetland mitigation required from unanticipated impacts to wetland will be addressed through implementing the NRRP. Dredge and/or fill activities will be subject to the substantive requirements of Sections 404 and 401 of the Clean Water Act. A permit information summary will be prepared for any impact to wetlands at the FCP and will be submitted to the appropriate regulatory agencies.

1.4.2.3 Resolution of DOE's Liability for Injuries to Natural Resources

The NRTs are working to resolve liability that DOE faces for injuries to natural resources under CERCLA. In 1986, the State of Ohio filed a claim against DOE for injuries to natural resources. The claim has been in stay while negotiations are proceeding toward resolution. The State of Ohio has designated OEPA as their trustee representative in matters involving natural resource injuries. The Fernald NRTs have jointly developed the NRRP and have tentatively agreed that DOE, through implementation of the plan, will resolve natural resource liability at the FCP, including the 1986 State of Ohio claim. The NRTs signed a Memorandum of Understanding in July 2001 formally agreeing to implementation of the NRRP. The NRTs are currently working on a final settlement agreement.

1.4.2.4 Cultural Resource Management

The DOE, the Ohio Historic Preservation Office (OHPO), and the Advisory Council on Historic Preservation have entered into a "Programmatic Agreement Regarding Archaeological Investigations at the Fernald Environmental Management Project" (March 6, 1997) (DOE 1997), pursuant to 36 Code of Federal Regulations (CFR) Part 800.13. Area 6 Former Production Area was excluded from survey due to past disturbances during site construction and operation. However, any unexpected discoveries of cultural resources during project activities will be managed per the Programmatic Agreement and applicable regulations.

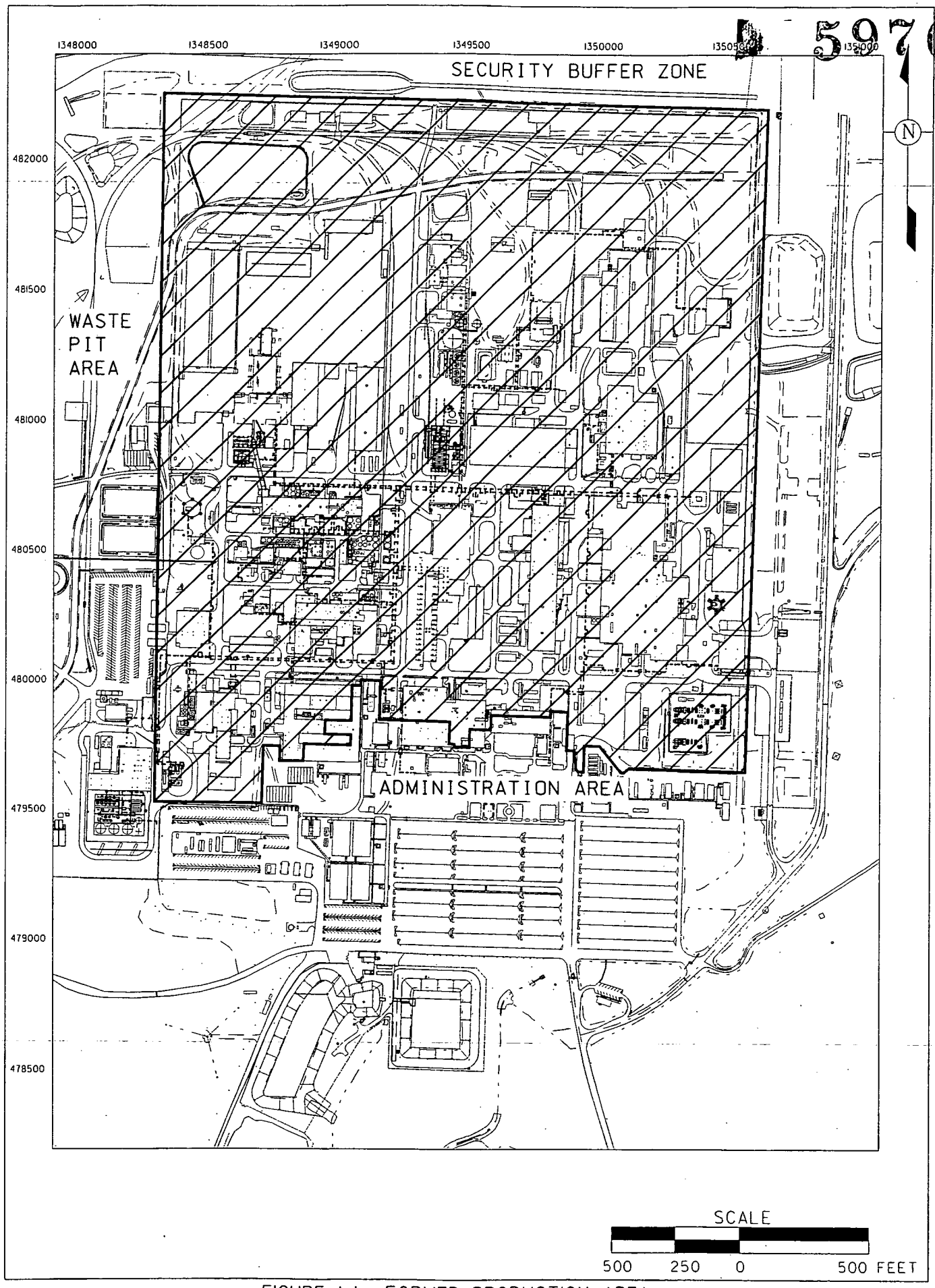

FIGURE I-1 FORMER PRODUCTION AREA

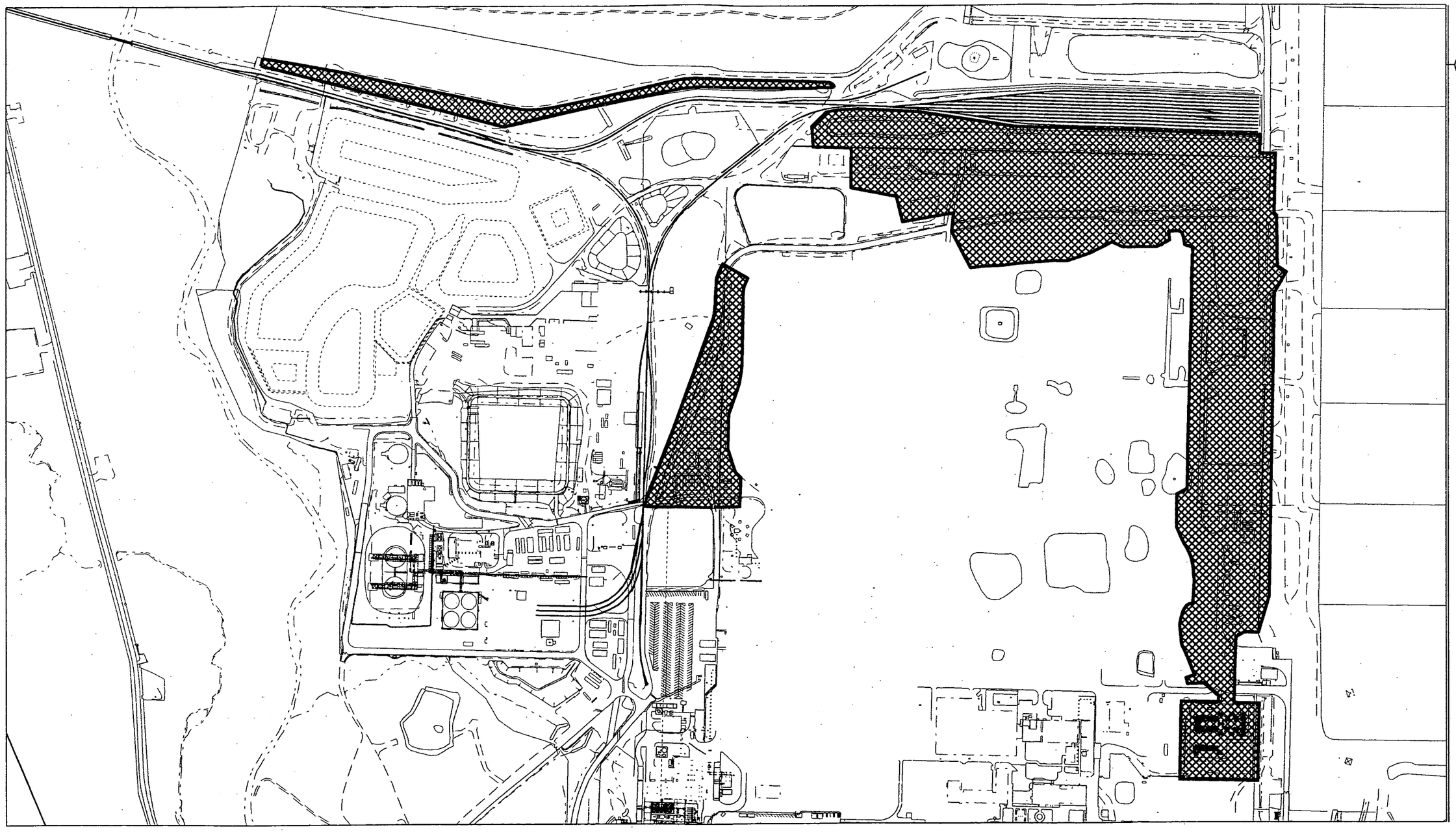

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FIGURE 1-2. AREA 6 FORMER PRODUCTION AREA

2.0 PREDESIGN INVESTIGATIONS AND CHARACTERIZATION DATA

2.1 SUMMARY OF THE RI/FS INVESTIGATION

Extensive soil sampling was performed at the FCP in the late 1980s and early 1990s as part of the OU5 RI/FS (DOE 1995a and 1995b) to characterize the nature and extent of contamination resulting from decades of uranium-metal production. Figures 2-1 through 2-8 present locations for RI/FS soil borings in the area defined in this document. Most locations shown on the figures represent multiple samples collected at various depths (i.e., multiple samples may have been collected at each boring location).

2.1.1 Preliminary Constituents of Concern

Based on results of the RI/FS investigation, the SEP presented a preliminary list of area-specific constituents of concern (ASCOCs) for Remediation Area 6 Former Production Area (Table 2-1) and stated that a more thorough screening of ASCOCs would be performed for each remediation area during the predesign phase. The additional COC screening for Area 6 Former Production Area is discussed in Section 2.5.

2.1.2 On-Site Disposal Facility Waste Acceptance Criteria

The concentration-based OSDF WAC was established in the OU5 ROD (Table 2-1). Soil excavated from Area 6 Former Production Area must meet these WAC to be eligible for disposal in the OSDF. If soil exceeds the OSDF radiological WAC, it will have to be segregated for off-site disposal. For the special case of soil with above-WAC organic or metal COCs, disposal at the OSDF is permitted if the soil treatment results in the COC levels falling below the established WAC. The Area 6 Former Production Area RI/FS data were compared to the OSDF WAC to identify areas that exceed the OSDF WAC. The results of this comparison were studied to determine the areas that require additional data to delineate the extent of the above-WAC contamination. Sampling performed to further delineate the above-WAC contamination is discussed in Section 2.3.1.

2.1.3 Final Remediation Levels for Soil

Like the OSDF WAC, the OU5 ROD established the FRLs for soil remediation (Table 2-1). FRLs are the cleanup goals for the FCP site and are defined as the average concentration of a contaminant that can remain in the soil and be considered protective of human health and the environment. Remediation in Area 6 Former Production Area will remove contaminated soil until the residual concentration of contaminants is at or below the respective FRL. There are two FRLs for total uranium - 82 milligrams per kilogram (mg/kg) outside of the high-leachability areas and 20 mg/kg within the high-leachability areas. These areas are delineated in the applicable figures depicting both RI/FS and predesign boring locations (see Figures 2-1 through 2-8). In addition, there is a goal of meeting 50 mg/kg for total uranium outside of the high-leachability areas that is driven by the as low as reasonably achievable (ALARA)

philosophy. The ALARA goal of 50 mg/kg will be reached if soil exceeding 50 mg/kg is within one lift thickness (i.e., 3 feet ±1 foot) of soil exceeding the uranium FRL of 82 mg/kg.

To establish preliminary remedial excavation boundaries in Area 6 Former Production Area, all historical RI/FS uranium concentration data were pulled from the Sitewide Environmental Database and modeled against the above-FRLs using a three-dimensional computer model. Figures 2-1 through 2-8 identify the locations of all RI/FS borings. All non-uranium FRL exceedances were then plotted on the modeled total uranium excavation map to determine if any non-uranium FRL exceedances fell outside of the planned excavation. This information was used to establish the areas where predesign investigation data were needed to verify and delineate additional remedial excavations that are necessary to capture non-uranium contamination. Predesign investigation sampling that was performed to further delineate the above-FRL contamination is discussed in Section 2.3.2.

2.1.4 Hazardous Waste Management Units

A hazardous waste management unit (HWMU) is defined as a contiguous area of land in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. There are 12 HWMUs at the FCP that will be closed during site excavation under the RCRA/CERCLA integrated remedial response. Two of the above mentioned HWMUs have been identified within the area defined by this document, the Plant 6 Warehouse (Building 79) and the KC-2 Warehouse, which were closed as above grade structures by Decontamination and Demolition (D&D).

2.1.5 Underground Storage Tanks

A historical reference to the existence of a potential underground storage tank (UST) at the Old Administration Building has been found. While the existence of this UST has been unable to be confirmed, if a UST is discovered at the Old Administration Building or in any other local during the excavation of Area 6 Former Production Area, the UST will be closed and the surrounding area will be sampled as appropriate in accordance with RCRA requirements and the SEP. Closure of a UST involves removing the UST's contents and residues, removing the tank structures and equipment, and removing contaminated soil from the UST excavation. Attainment of soil FRLs and completion of final closure will be demonstrated during certification of the area.

2.1.6 Identification of Potentially Characteristic Areas

Based on historical process knowledge and soil contaminant concentration levels identified through the OU5 RI/FS investigation, six geographic areas of the FCP have a reasonable potential for containing RCRA characteristic waste that provides an opportunity for treatment. Two of these areas are located within the boundaries of Area 6 Former Production Area, the footprints of the KC-2 Warehouse and the

Scrap Metal Pile. Physical sampling conducted during the predesign investigation of these areas, which are referenced in Section 3.3, concluded that they are not characteristic areas and therefore require no special excavation designs.

2.2 SUMMARY OF SURFACE AND SUBSURFACE PHYSICAL CONDITIONS

Remediation Area 6 Former Production Area represents the northwest, northeast, and east limits of the Former Production Area. Within Area 6 Former Production Area the following facilities were located: OMTA Bulk Debris Staging Area, three Quonset Hut slabs, KC-2 Warehouse footprint, West OMTA, Main Electrical Substation, Plant 6 Warehouse (Building 79), Finished Products Warehouse (Building 77), Building 78, and the OMTA Soil Staging Area (OMTA Debris Stockpile). Various utilities, slabs, footers, and foundations comprise this area.

Subsurface conditions at the FCP have been described in detail in the OU5 RI/FS documents and in the Geotechnical Engineering Report for Project Order 177 (DOE 1998c). Briefly, the stratigraphic column under Area 6 Former Production Area is generally fill, glacial deposits, sand and gravel deposits of the GMA, and carbonate bedrock. The discussion here is on the fill and glacial deposits, as these are the impacted materials being addressed by the soil remediation activities. Fill is a mixture of gravel and the native deposits of clay, silt and sand that have been moved or mechanically placed to level areas for building pads and roadbeds. A large amount of gravel was imported into the area for construction of building pads and roadbeds. The fill thickness under Area 6 Former Production Area is expected to vary from 0 to 5 feet and to contain mostly gravel.

Glacial deposits are comprised primarily of a carbonate clay matrix enclosing muddy stream deposits. The stream deposits are primarily silt and sand with minor gravel and are continuous along the channel traces (primarily northeast to southwest) but discontinuous over broad lateral areas. When present, most of the channel deposits lie between the gray clay and overlying brown clay layers. Over half of Area 6 Former Production Area is underlain by silty stream and lacustrine deposits. Most of these deposits are 5 to 7 feet thick and lie approximately 6 to 12 feet beneath the surface.

2.2.1 High-Leachability Zones

High-leachability zones in Area 6 Former Production Area are delineated in the applicable figures depicting both RI/FS and predesign boring locations, see Figures 2-1 through 2-15. As committed in the SEP, soil within this high-leachability zone will be excavated to the uranium FRL of 20 mg/kg.

2.3 SUMMARY OF PREDESIGN INVESTIGATIONS

Several predesign investigations were conducted to supplement RI/FS information on the nature and extent of contamination in Area 6 Former Production Area. These predesign investigations were performed, in general, to identify the extent of soil exceeding the various action levels (i.e., RCRA, WAC, and FRL). The specific goals of these predesign sampling investigations included filling data gaps, confirming questionable analytical results, bounding above-WAC or above-FRL areas, investigating potentially characteristic areas, and minimizing uncertainty in the three-dimensional computer model of total uranium contamination. Figures 2-9 through 2-15 identify the locations of all predesign borings. The following predesign investigations were completed to meet these goals:

- PSP for Predesign of Area 6 Subarea 1 (Supplement to 20300-PSP-0011) (DOE 2005a)

  This PSP (referred to in this Excavation Plan as the Area 6 Subarea 1 Predesign PSP) describes the investigation of the areas collectively constituting the General Area and the Former Production Area to the north of Areas 3B and 3A, including the OMTA Bulk Debris Staging Area, the Railyard and vicinity, the Locomotive Maintenance Building, the Quonset Hut slab, and West OMTA.

- PSP for Predesign of Area 6 Subarea 2 (Supplement to 20300-PSP-0011) (DOE 2004b)

  This PSP (referred to in this Excavation Plan as the Area 6 Subarea 2 Predesign PSP) describes the investigation of the areas collectively constituting the Former Production Area to the east of Areas 3A and 4A, including the Main Electrical Substation, Plant 6 Warehouse (Building 79), Finished Products Warehouse (Building 77), Building 78, and the OMTA Soil Staging Area (OMTA Debris Stockpile).

- PSP for Predesign of Area 6 Subareas 3 and 4 (Supplement to 20300-PSP-0011) (DOE 2005b)

  This PSP (referred to in this Excavation Plan as the Area 6 Subareas 3 and 4 Predesign PSP) describes the investigation of the area in the northwest quadrant of the property comprising the Fernald Closure Project, including the footprint of the solid-waste landfill and the rail lines not included in Area 6 Subarea 1 and Subarea 2 PSPs, the Treatment Building, Railcar-Loading Facility, and the Biodenitrification Surge Lagoon. Two small portions of Subareas 3 and 4 are included in this Excavation Plan, the triangular area east of the OU1 Stockpile Area, part of Subarea 4, and the area north of the railroad in Subarea 3.

- PSP for Predesign Investigation in Area 7 (Supplement to 20300-PSP-0011) (DOE 2005c)

  This PSP (referred to in this Excavation Plan as the Area 7 Predesign PSP) describes the investigation of Area 7, which includes the area west and south of the former production area, the area south of the main parking lot, and the area east of Area 5. Borings placed east of the Main Electrical Substation within Area 7, as well as borings south of the triangular area east of the OU1 Stockpile Area are within the scope of this Excavation Plan.

- PSP for the Area 3 Predesign Investigation of Potentially Characteristic Areas (DOE 1998d)

  This PSP (referred to in this Excavation Plan as the Area 3 Predesign PSP) describes the investigation of three potentially characteristic areas. Two of these areas, the area south of the KC-2 Warehouse and the Scrap Metal Pile Area, are now within Area 6 Former Production Area. The investigation of these areas conducted per the Area 3 Predesign PSP concluded that the area south of the KC-2 Warehouse and the Scrap Metal Pile Area are not characteristic areas.

The predesign sampling locations in the portions of Area 6 Former Production Area are shown in Figures 2-9 through 2-15. Appendix A includes all available analytical results from the predesign investigations.

In addition to the physical sampling conducted under the above PSPs, real-time scanning was performed in unpaved and accessible areas. This was accomplished using both mobile and stationary, sodium iodide gamma detectors. However, the ability to perform these scans was severely limited due to the presence of pavement and structures covering a large majority of this surface. More information on the real-time scanning and a discussion of the results is provided in Section 2.3.3.

Excavation boundaries for Area 6 Former Production Area are established based on the following information:

- Above-FRL uranium contamination contours generated by the three-dimensional computer model supplemented with non-uranium above-FRL contamination data with depths that are outside of the modeled excavation, as well as discretely bound areas that were not amenable to modeling
- Above-WAC and non-uranium above-FRL areas which are manually established based on bounding physical sampling results
- Location of building foundations, support structures, and utilities
- Constructability and safe-slope configurations necessary to effectively excavate the material.

2.3.1 Above-WAC Exceedance Areas and Boundaries

Above-WAC Area on East Side of OMTA Bulk Debris Staging Area

An above-WAC area was found on the northeast side of Area 6, north of the Haul Road, on the east side of the OMTA Bulk Debris Staging Area when the area was investigated under the predesign of the Area 6 Subarea 1 Predesign PSP. The above-WAC results were found at borings A6-SA1-4, A6-SA1-4A, A6-SA1-4F, A6-SA1-5, A6-SA1-47, and A6-SA1-49, see Figure 2-9. These above-WAC borings were bound vertically by below-WAC results and have been bound laterally with below-WAC results: to the northwest by boring A6-SA1-46, to the southwest by A6-SA1-53, to the northeast by boring A6-SA1-48, and to the southeast by A6-SA1-52. The coordinates of these bounding borings are used to define the excavation boundaries. The deepest above-WAC results in this area were in the 4 to 4.5-foot interval in

borings A6-SA1-4 and A6-SA1-49. The 5 to 5.5-foot interval of boring A6-SA1-49 was below the WAC limit (total uranium = 750 mg/kg). Therefore, the depth of this above-WAC excavation is defined at 5 feet below surface.

Historical Above-WAC Area North of the OMTA Debris Stockpile

Historical above-WAC total uranium results were found in borings HRD-02-2, SP-19, SP-20, SP-23, SP-24, and SP-72, see Figure 2-2 in the 0 to 0.5-foot interval, located just north of the OMTA Debris Stockpile. During 2000, the surface of this area was scraped and in some cases, in addition to being scraped, the area may have been filled. Sampling conducted per Area 6 Subarea 1 Predesign PSP was performed to verify that this above-WAC soil had been removed and/or was not simply covered over. Intervals collected from the first 6-inch interval and the two subsequent 6-inch intervals, based off the historical MSL, at borings A6-SA1-26, A6-SA1-27, and A6-SA1-31 confirmed the removal of the historical above-WAC total uranium. Boring A6-SA1-28, A6-SA1-29, and A6-SA1-30 were inaccessible and could not be collected per Area 6 Subarea 1 Predesign PSP. However, borings A6-SA1-27 and A6-SA1-31, placed in the same vicinity as the proposed location of boring A6-SA1-28, A6-SA1-29, and A6-SA1-30 confirmed the removal of the historical above-WAC material during the construction of the Haul Road. Therefore it is unlikely that the above-WAC conditions are still present. Figure 2-9 provides a graphic of the borings placed in this area. As always, real-time scanning will be performed beneath all roadways, gravel, and slabs during excavation to provide additional characterization information with respect to above-WAC conditions. Therefore, there were no other designed excavations to remove above-WAC material.

2.3.2 Above-FRL Exceedance Areas and Boundaries

The extent of above-FRL contamination was defined based on the modeled excavation necessary to remove total uranium contamination exceeding the FRL (82 mg/kg; 20 mg/kg within the high leachability zones) as well as discretely bound areas. All of this information has been combined to form a complete picture of the volume of material that should be excavated from Area 6 Former Production Area (see Appendix E).

The following areas were not included in the three-dimensional excavation model and required further investigation to determine the excavation requirements for these areas (see Figure 2-16). These are described below:

- Triangular Area East of the OU1 Stockpile Area (Hooperville)

  Above-FRL uranium contamination required bounding in the triangular area east of the OU1 Stockpile Area, see Figure 2-8 and 2-15. Borings collected per the Area 6 Subarea 3 and 4 Predesign PSP, define the excavation boundary to the north (boring A6-SA4-32) and to the west (boring A6-SA4-33) for the above-FRL uranium results in this area. This above-FRL uranium

area is bounded to the east by the Area 3B excavation performed per the Area 3B IRDP and to the south by the planned borings A7-SA1-22 and A7-SA1-23, as described below.

The excavation in the triangular area east of the OU1 Stockpile Area will be extended south to borings A7-SA1-22 and A7-SA1-23, see Figure 2-15. These two borings have been placed per the Area 7 Predesign PSP as the northern bounding points for contamination that exists in Area 7 north of the Lime Sludge Pond. Borings LSP-SS-13 and LSP-SS-14 establish the boundary line between this Excavation Plan and the future Area 7 IRDP. As of the date of this Excavation Plan, the data from the Area 7 bounding borings had not been returned. This southern edge of the Area 6 Former Production Area excavation will be set at the two Area 7 borings (A7-SA1-22 and A7-SA1-23). If the excavation depths in the triangular area east of the OU1 Stockpile Area require adjustment based on the results from borings A7-SA1-22 and A7-SA1-23, then the additional excavation will be included in the IRDP for this portion of Area 7.

- Main Electrical Substation Area

Above-FRL constituents identified in the Main Electrical Switchyard Area are aroclor-1254, arsenic, and lead. Aroclor-1254 was identified in the 0 to 0.5-foot interval in borings A5P-14 and ESA-10. Arsenic was identified in boring P5-7 in the 0 to 3-foot interval and in the 0 to 1-foot interval of boring P5-19. Boring ESA-4 contained lead in the 0 to 0.5-foot interval. Discrete bounding of the above-FRL borings was completed with boring P5-16 to the northwest, boring A5P-9 to the southwest, boring A6-SA2-1 to the northeast, boring A7-SA5-13 to the east, and boring A6-SA2-2 to the southeast, with aroclor-1254 being the constituent that will control excavation in the area. Excavation was designed to capture all above-FRL borings within the Main Electrical Substation and is further supported by the scatter plots, which are discussed below (see Figures 2-4 and 2-11).

- Northwest Corner of Building 79

An above-FRL result for beryllium of 1.69 mg/kg was detected in the 1 to 1.5-foot interval of boring 12564, located outside of the northwest corner of Building 79 (see Figure 2-5). This location is bound at depth by below-FRL results at the 2 to 2.5-foot intervals, to the east by boring 12565 with a below-FRL result at the 1 to 1.5-foot interval, and to the southeast by boring 12563 with a below-FRL result at the 1 to 1.5-foot interval. Per the Area 6 Subarea 2 Predesign PSP, boring A6-SA2-12 was placed 5 feet north of boring 12564 and boring A6-SA2-13 was placed 5 feet west of boring 12564. Boring A6-SA2-13 returned below-FRL beryllium results from each of the 6-inch intervals obtained from 0 to 3.5 feet. Boring A6-SA2-12 had above-FRL beryllium results in the 0.5 to 1, 1 to 1.5, and 1.5 to 2-foot intervals, but was bound at depth with below-FRL results from each of the 6-inch intervals obtained from 2 to 3.5 feet. Boring A6-SA2-30 was placed 10 feet north of this boring to bound boring A6-SA2-12. Below-FRL results for beryllium from boring A6-SA2-30 were obtained from the 0.5 to 1 and 1.5 to 2-foot intervals. In summary, above-FRL borings 12564 and A6-SA2-12 are bounded to the east by Boring 12565, to the south by boring 12563, to the north by A6-SA2-30, and to the west by boring A6-SA2-13 (see Figure 2-12).

- Northwest Strip

No above-FRL material was identified as being located in the northwest strip of land included in Area 6 Former Production Area (see Figure 2-7 and 2-14). Modeling of this area was not required, nor is excavation.

To ensure that planned remedial investigations are sufficient to capture the identified FRL exceedances, the depth of all FRL exceedances has been plotted against the planned excavation depth at that location. A line (slope = 1:1) represents the point where the excavation depth equals the depth of the sample showing an FRL exceedance, as plotted on the X and Y-axes, respectively. Therefore, any points that would lie above and to the left of this line represent FRL exceedances that will not be captured under the planned remedial excavation for Area 6 Former Production Area (i.e., the depth of the sample with an FRL exceedance is greater than the planned excavation depth). The scatter plots for each Area 6 Former Production Area ASCOC are shown in Figures 2-17 through 2-31.

The majority of the constituents of concern have been captured in the excavation model as shown in these scatter plots. Those not captured in the excavation model are discussed below.

- Thorium

  Historical above-FRL thorium results from borings 1133, 1272, 11072, and 41066 were re-sampled during the pre-design investigation as described in the Area 6 Subarea 1, Subarea 2, and Subareas 3 and 4 Predesign PSPs. This sampling resulted in no detection of above-FRL results and, therefore, did not confirm the presence of thorium as suspected. The excavation will not be extended at these locations.

- Arsenic

  Boring SP-3 contained a result for arsenic (17.6 mg/kg) in the 36 to 42-foot interval, which is less than two times the FRL (arsenic FRL = 12 mg/kg) and often can be seen in the subsurface elsewhere on site. The interval where this result was collected is at 548 feet above MSL. The designed excavation to capture uranium in this area is at 587 feet above MSL (see Figure 2-19), as no other contamination is present below elevation 587. It is unreasonable to advance the excavation another 40 feet in order to capture this single above-FRL condition. Furthermore, the sideslope of a 40-foot excavation at this location would extend into the OSDF footprint. Therefore, this point will not be included in the remedial design.

2.3.3 Real-Time Scanning Within Area 6 Former Production Area

The real-time map for Area 6 Former Production Area is located in Appendix B. This map depicts the coverage obtained by the Real-Time Measurement Group.

2.4 IDENTIFICATION OF AREA-SPECIFIC CONSTITUENTS OF CONCERN

Section 2.1.1 identified the preliminary list of COCs for Area 6 Former Production Area, which was based on the results of sampling and analysis performed during the RI/FS investigation. These COCs were evaluated against the design and where the design, which was based on the uranium model, was extended due to a non-uranium constituent, that constituent was retained as an ASCOC.

Table 2-2 presents the revised list of COCs for Area 6 Former Production Area. This modified list will be used to verify that the planned remedial excavation limits are sufficient to capture above-FRL contamination. The list in Table 2-2 in no way represents the constituents that will be carried through certification. Note that the ASCOC Lists will again be reevaluated during the certification design process to determine which of the area-wide COCs identified in the SEP will be carried into certification.

TABLE 2-1
PRELIMINARY AREA-SPECIFIC CONSTITUENTS OF CONCERN PER THE SITE EXCAVATION PLAN

Primary COCs (Area 6)	FRL	WAC
Radium-226	1.7 pCi/g	NA
Radium-228	1.8 pCi/g	NA
Thorium-228	1.7 pCi/g	NA
Thorium-232	1.5 pCi/g	NA
Uranium, Total (outside a high-leachability area)	82 mg/kg	1030 mg/kg
Uranium, Total (inside a high-leachability area)	20 mg/kg	1030 mg/kg
Secondary COCs (Area 6)	**FRL**	**WAC**
Aroclor-1254	0.13 mg/kg	NA
Aroclor-1260	0.13 mg/kg	NA
Arsenic	12 mg/kg	NA
Benzo(a)pyrene	2 mg/kg	NA
Benzo(b)fluoranthene	20 mg/kg	NA
Beryllium	1.5 mg/kg	NA
Bromodichloromethane	4 mg/kg	9.03×10^{-1} mg/kg
Cesium-137	1.4 pCi/g	NA
Dibenzo(a,h)anthracene	2 mg/kg	NA
1,1-Dichloroethene	0.41 mg/kg	11.4 mg/kg
Dieldrin	0.015 mg/kg	NA
Fluoride	78,000 mg/kg	NA
Heptachloradibenzo-p-dioxins	0.00088 mg/kg	NA
Indeno(1,2,3-cd)pyrene	20 mg/kg	NA
Octachlorodibenzo-p-dioxin	0.0088 mg/kg	NA
Technetium-99	30 pCi/g	29.1 pCi/g
Tetrachloroethene	3.6 mg/kg	128 mg/kg
Thorium-230	280 pCi/g	NA

pCi/g – picoCuries per gram

TABLE 2-2
AREA 6 FORMER PRODUCTION AREA REVISED LIST OF AREA-SPECIFIC CONSTITUENTS OF CONCERN

Area 6
Primary COCs
Radium-226
Radium-228
Thorium-228
Thorium-232
Total Uranium
Secondary COCs
Aroclor-1254
Beryllium

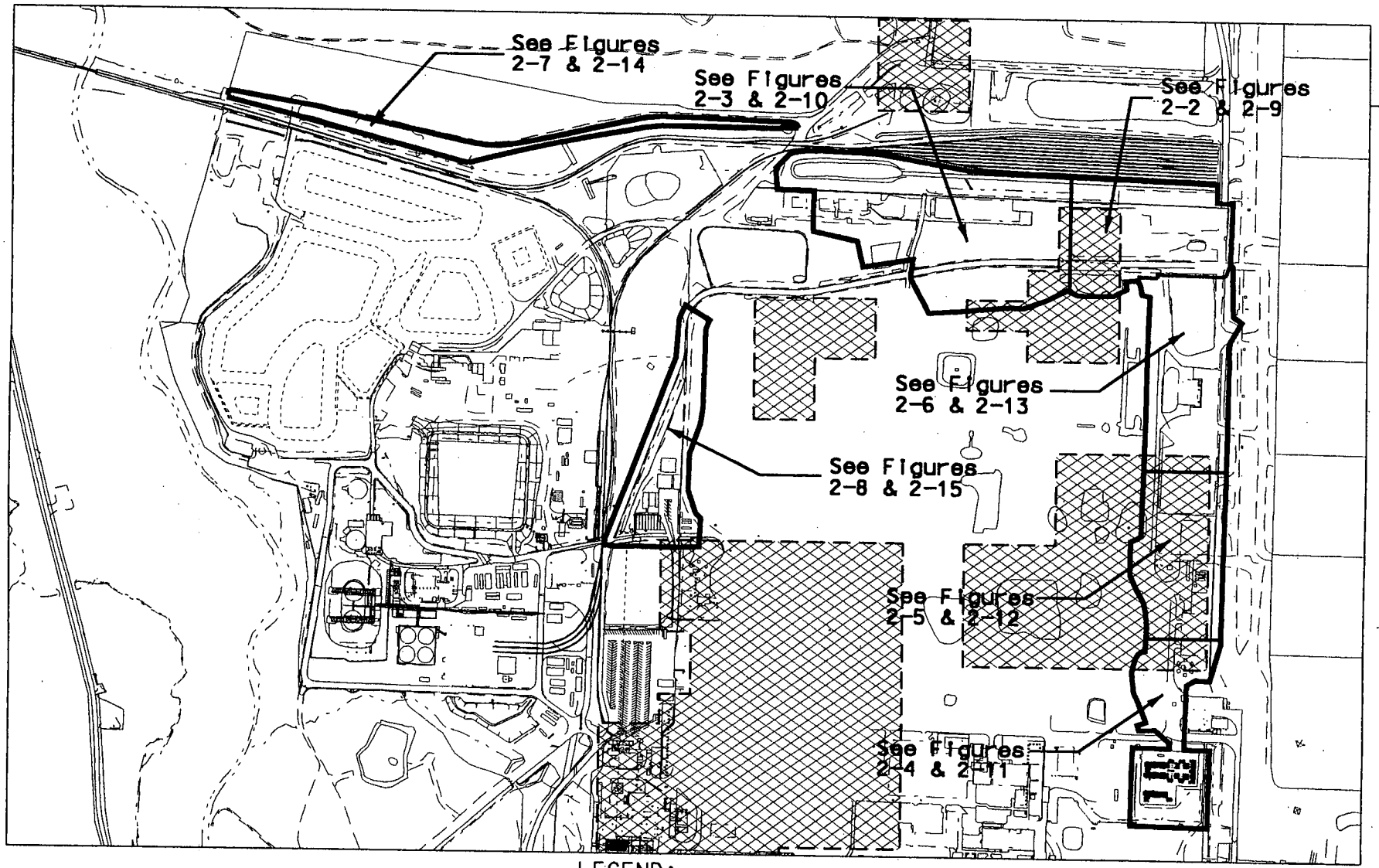

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FIGURE 2-1. AREA 6 FORMER PRODUCTION AREA

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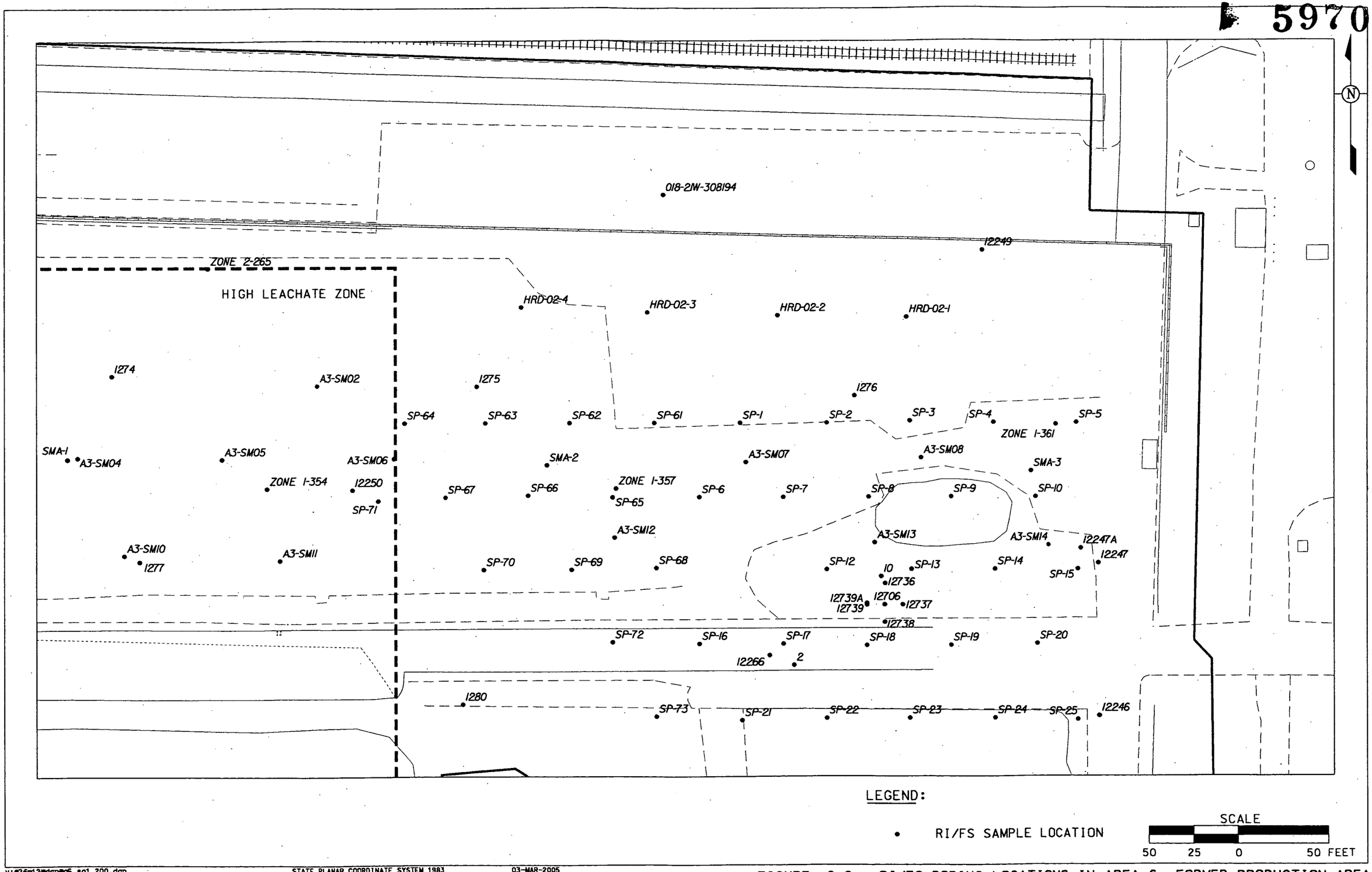

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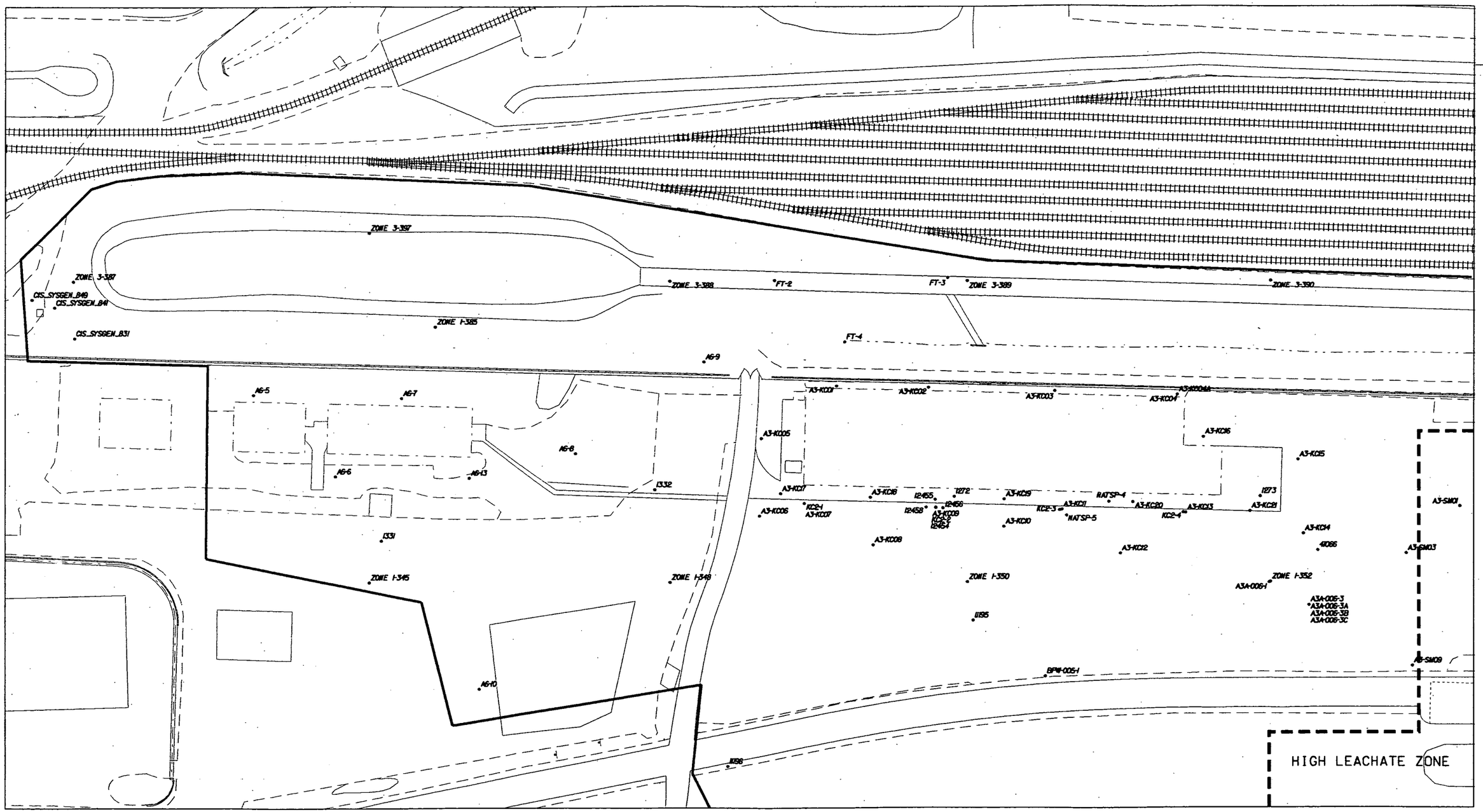
FIGURE 2-2. RI/FS BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA



LEGEND:

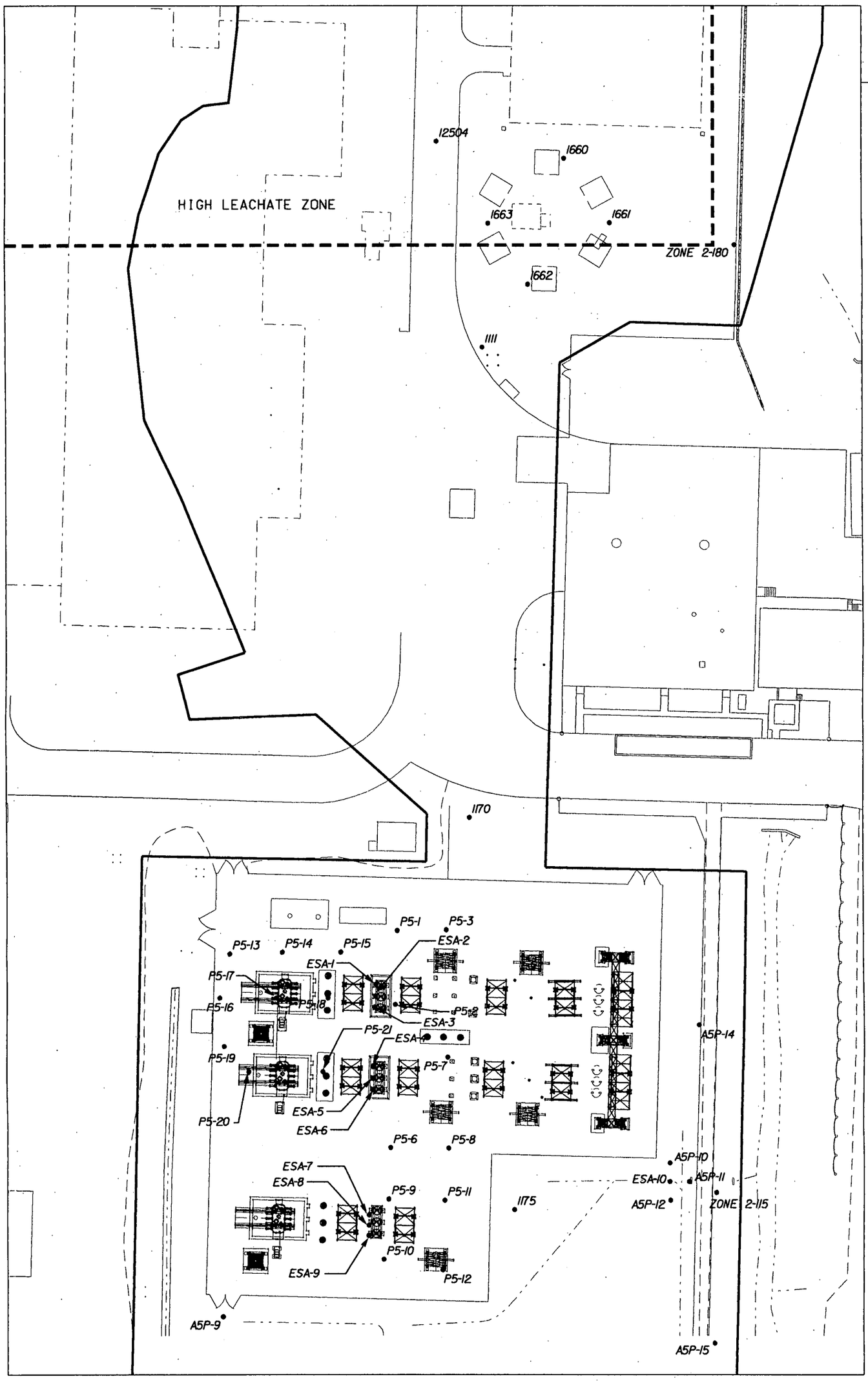
• RI/FS SAMPLE LOCATION

SCALE

80 40 0 80 FEET

v:\62fm12\dgn\a6_sa1_201.dgn STATE PLANAR COORDINATE SYSTEM 1983 01-MAR-2005

FIGURE 2-3. RI/FS BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA



LEGEND:

• RI/FS SAMPLE LOCATION

SCALE

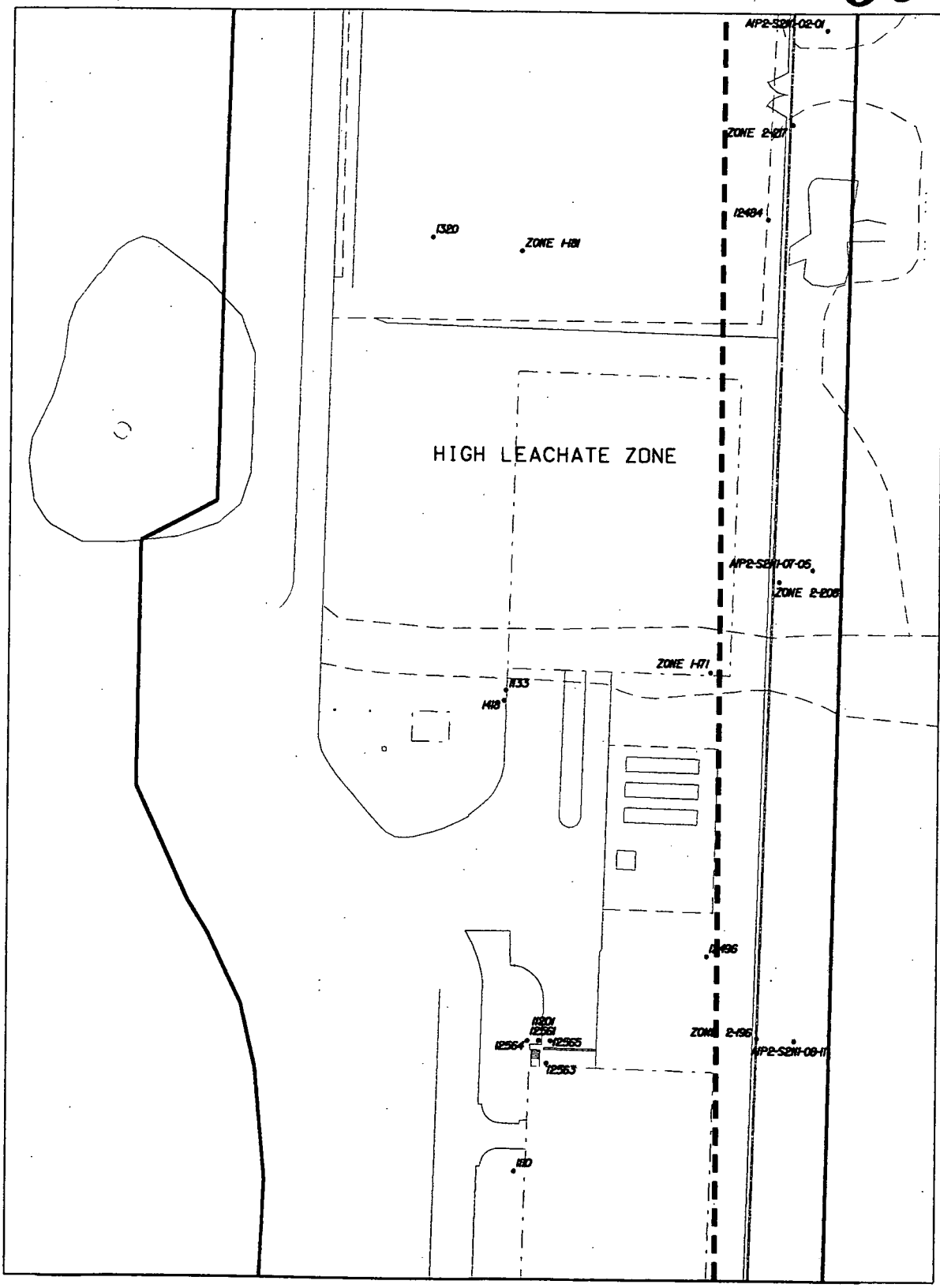
50 25 0 50 FEET

FIGURE 2-4. RI/FS BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA

STATE PLANAR COORDINATE SYSTEM 1983

03-MAR-2005

5970



LEGEND:

• RI/FS SAMPLE LOCATION

SCALE

80 40 0 80 FEET

FIGURE 2-5. RI/FS BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA

v:\62fml2\dgn\ao6_ao2-201.dgn
STATE PLANAR COORDINATE SYSTEM 1983
01-MAR-2005

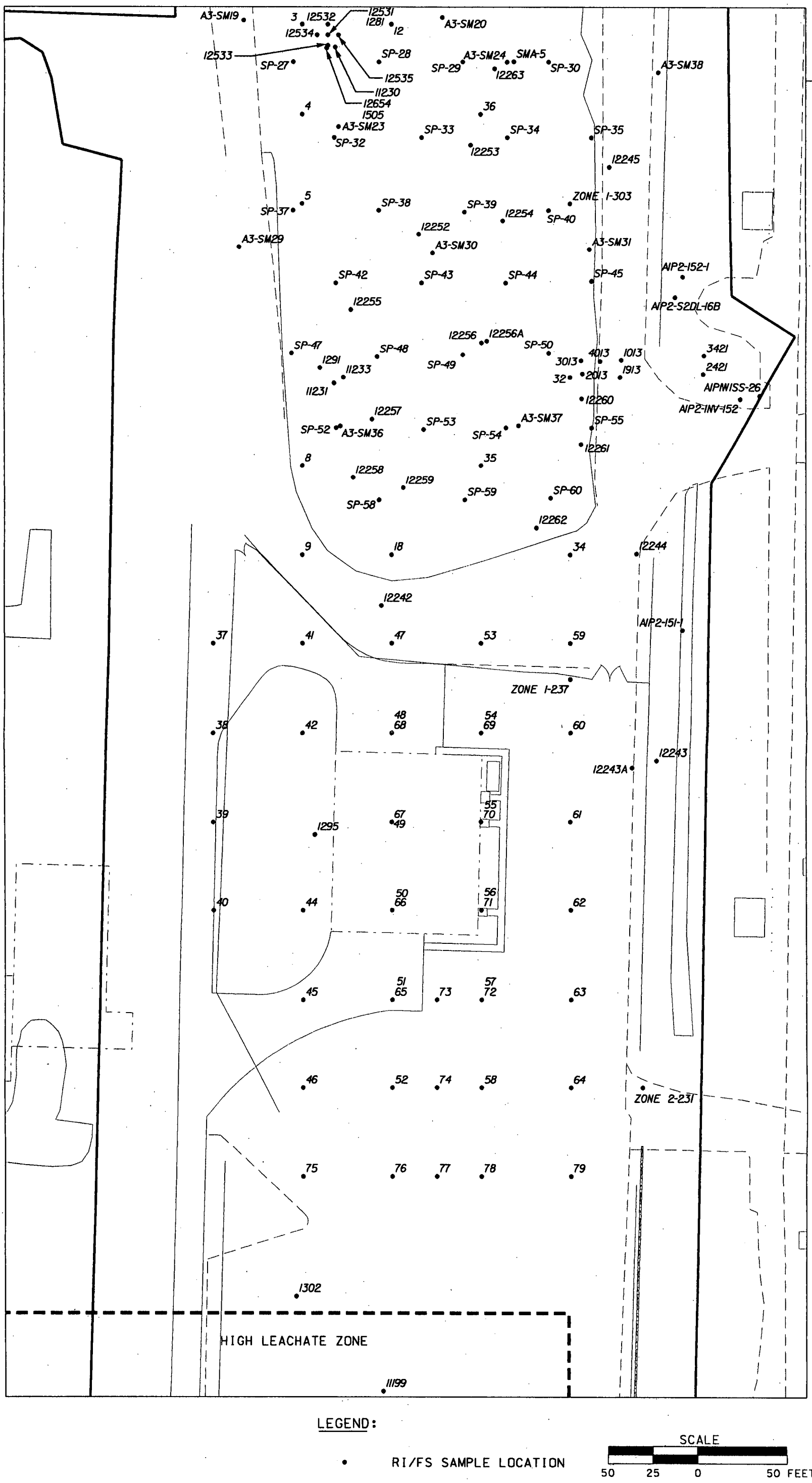


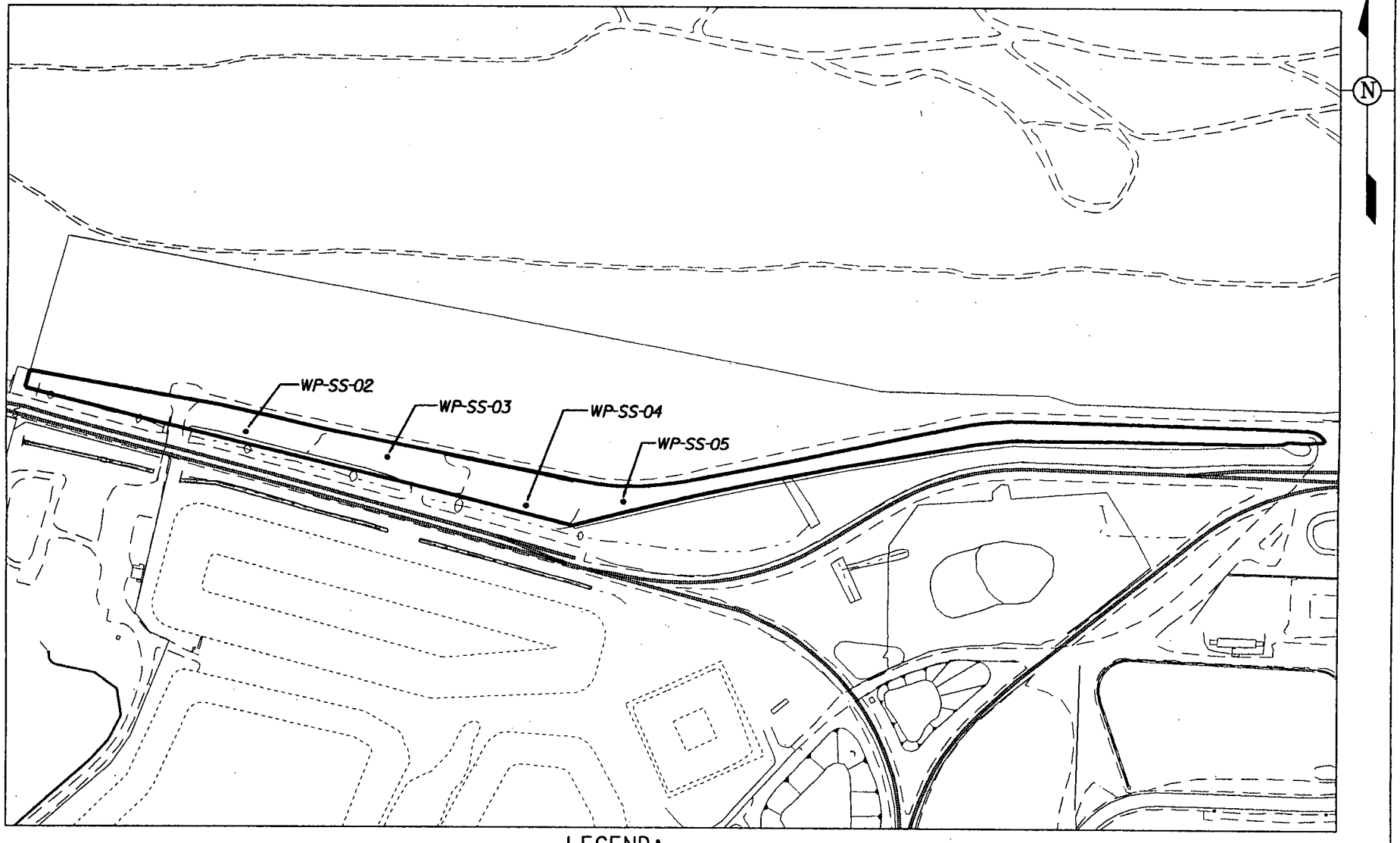
FIGURE 2-6. RI/FS BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA

STATE PLANAR COORDINATE SYSTEM 1983

v:\82fm12\dgn\ac6_ac2_202.dgn

01-MAR-2005

5970



LEGEND:

• RI/FS SAMPLE LOCATION

SCALE

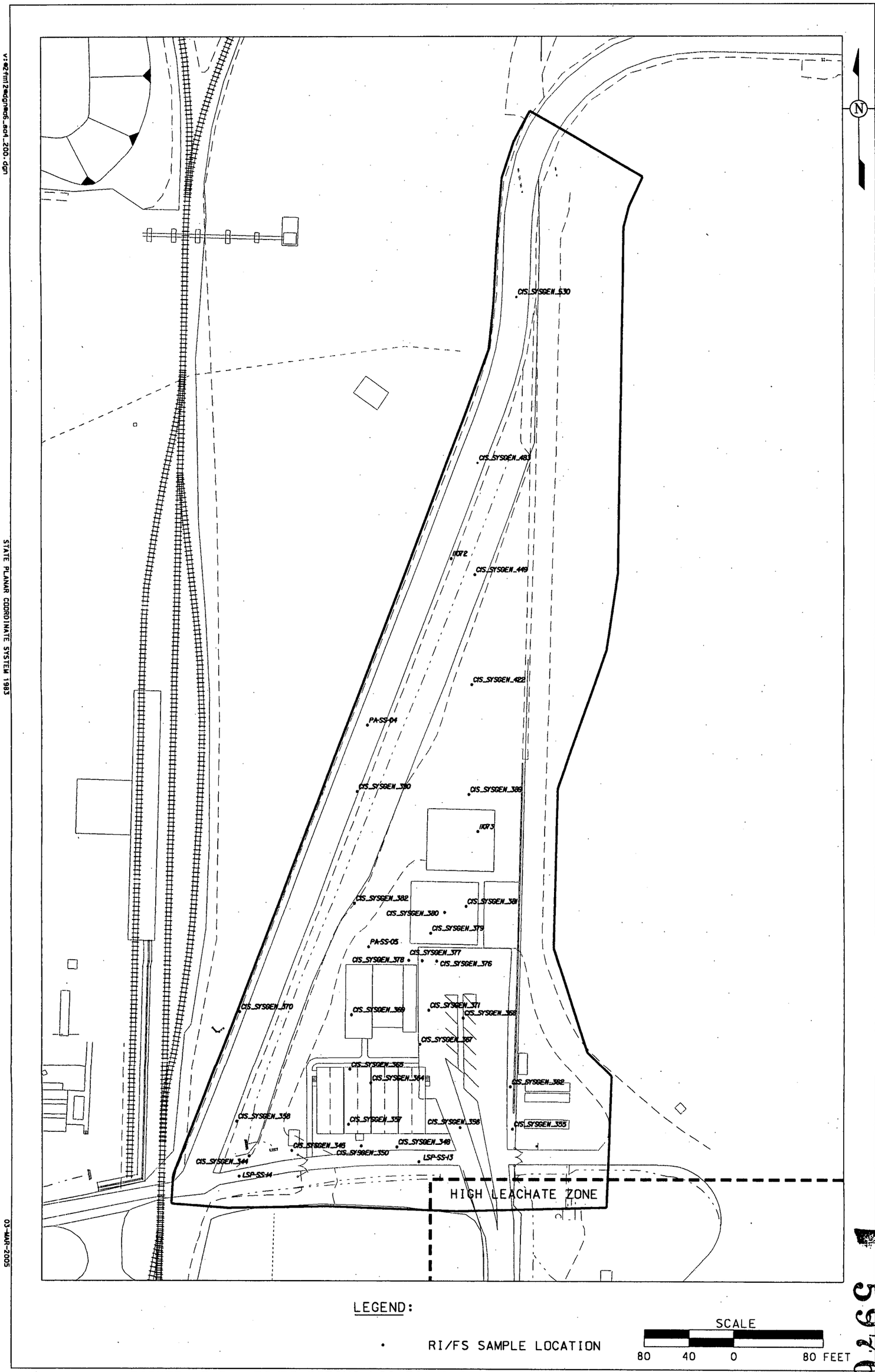
260 130 0 260 FEET

v:\#2fm12\dgn\a6_aa3_200.dgn
STATE PLANAR COORDINATE SYSTEM 1983

01-MAR-2005

FIGURE 2-7. RI/FS BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA

5970



LEGEND:

• RI/FS SAMPLE LOCATION

SCALE

80 40 0 80 FEET

FIGURE 2-8. RI/FS BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA

v:\82fm12\dgn\ae6_ae4_200.dgn

STATE PLANAR COORDINATE SYSTEM 1983

03-MAR-2005

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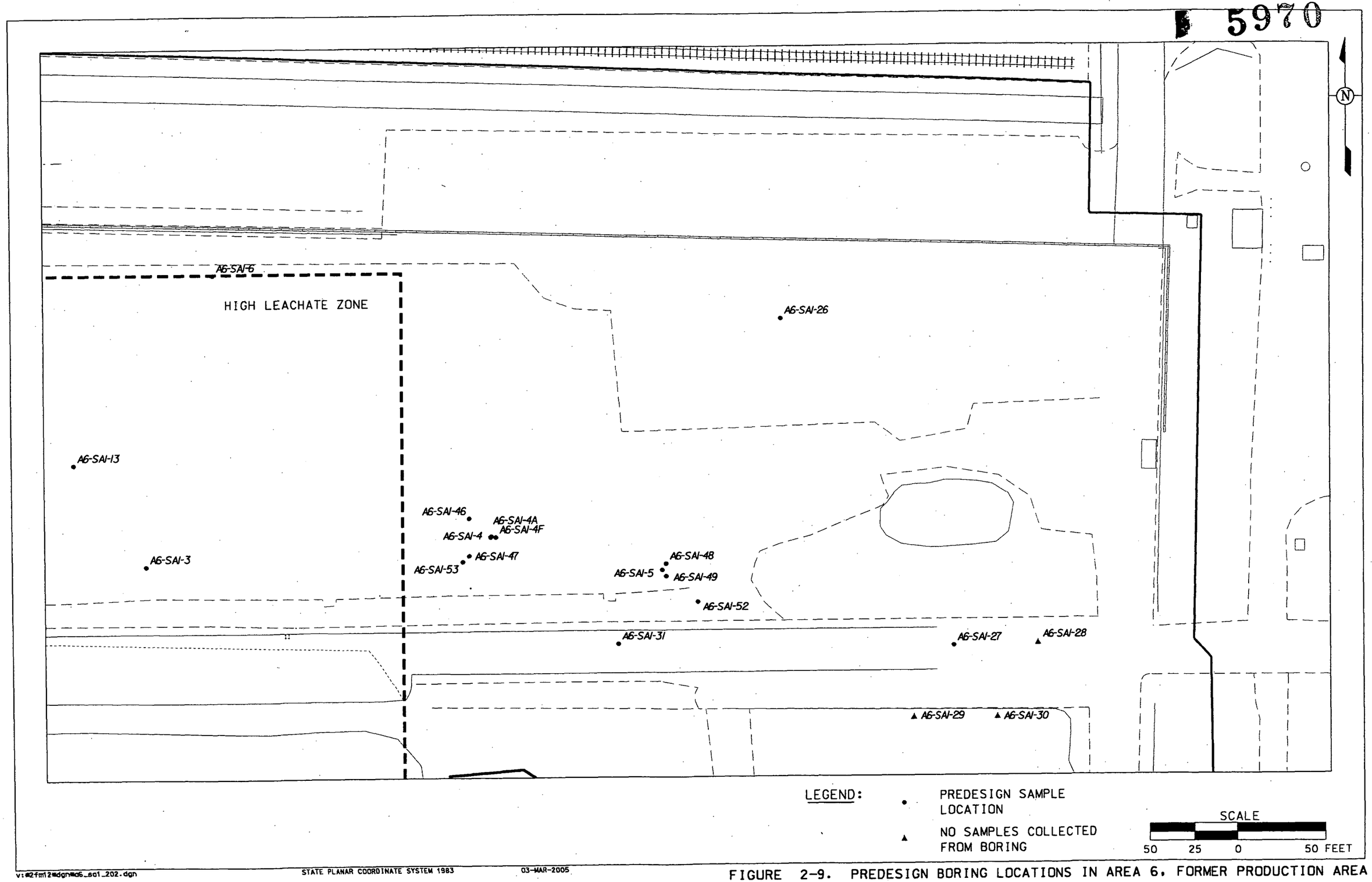
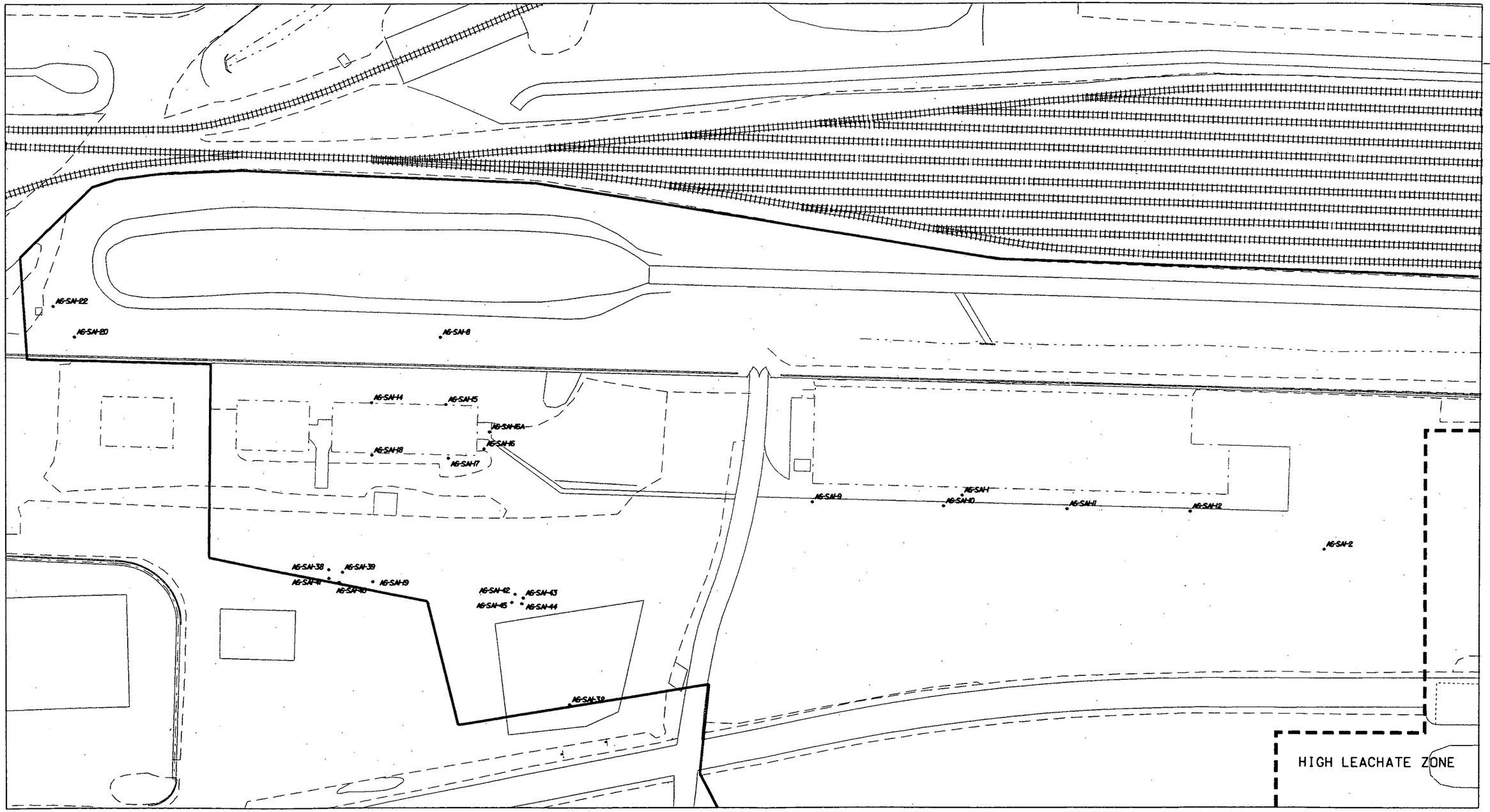


v:\#2-fm12\dgn\a6_sa1_202.dgn STATE PLANAR COORDINATE SYSTEM 1983 03-MAR-2005

FIGURE 2-9. PREDESIGN BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA



LEGEND:

• PREDESIGN SAMPLE LOCATION

SCALE

80 40 0 80 FEET

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FIGURE 2-10. PREDESIGN BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA

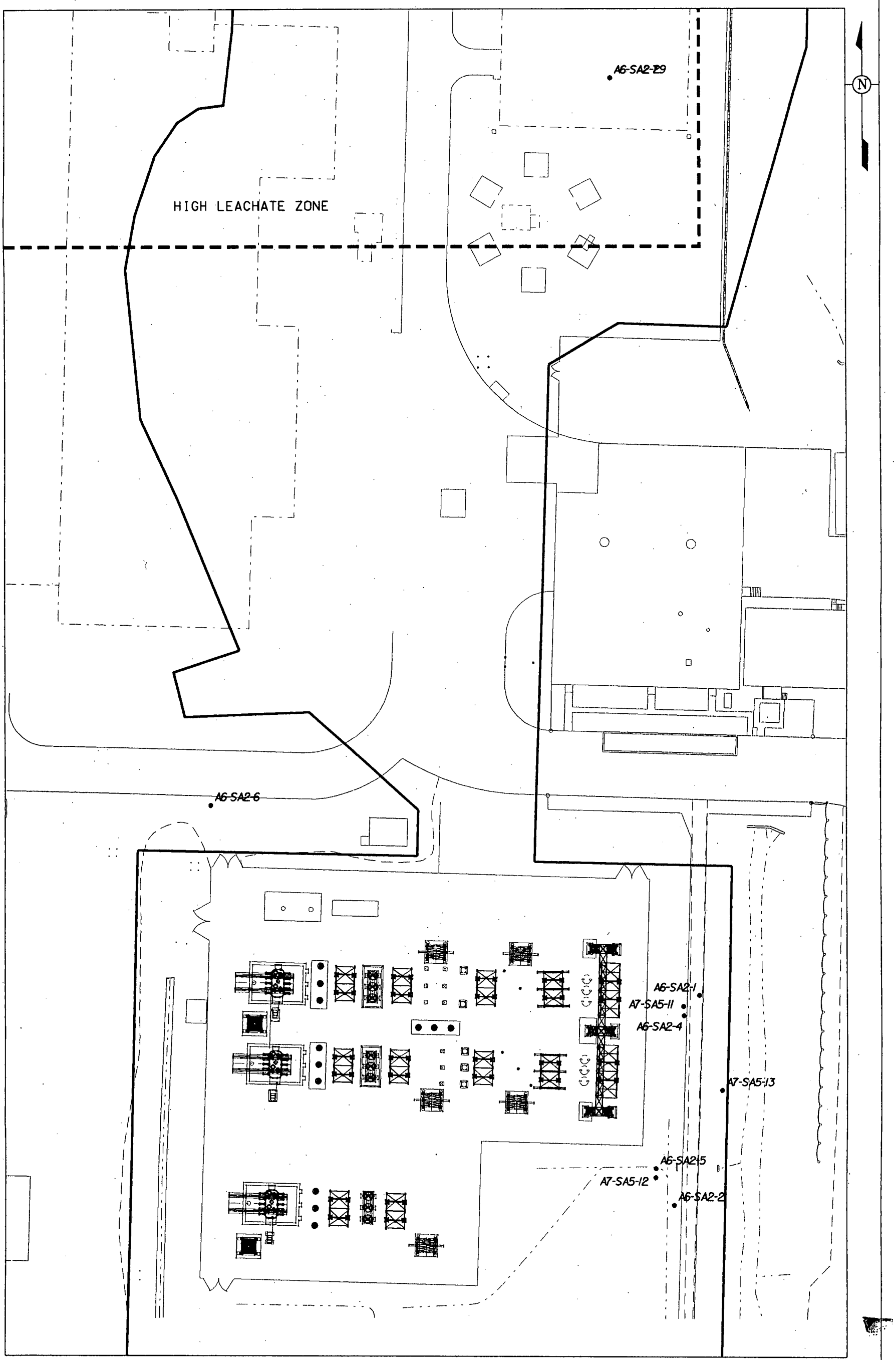

FIGURE 2-11. PREDESIGN BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA

STATE PLANAR COORDINATE SYSTEM 1983

03-MAR-2005

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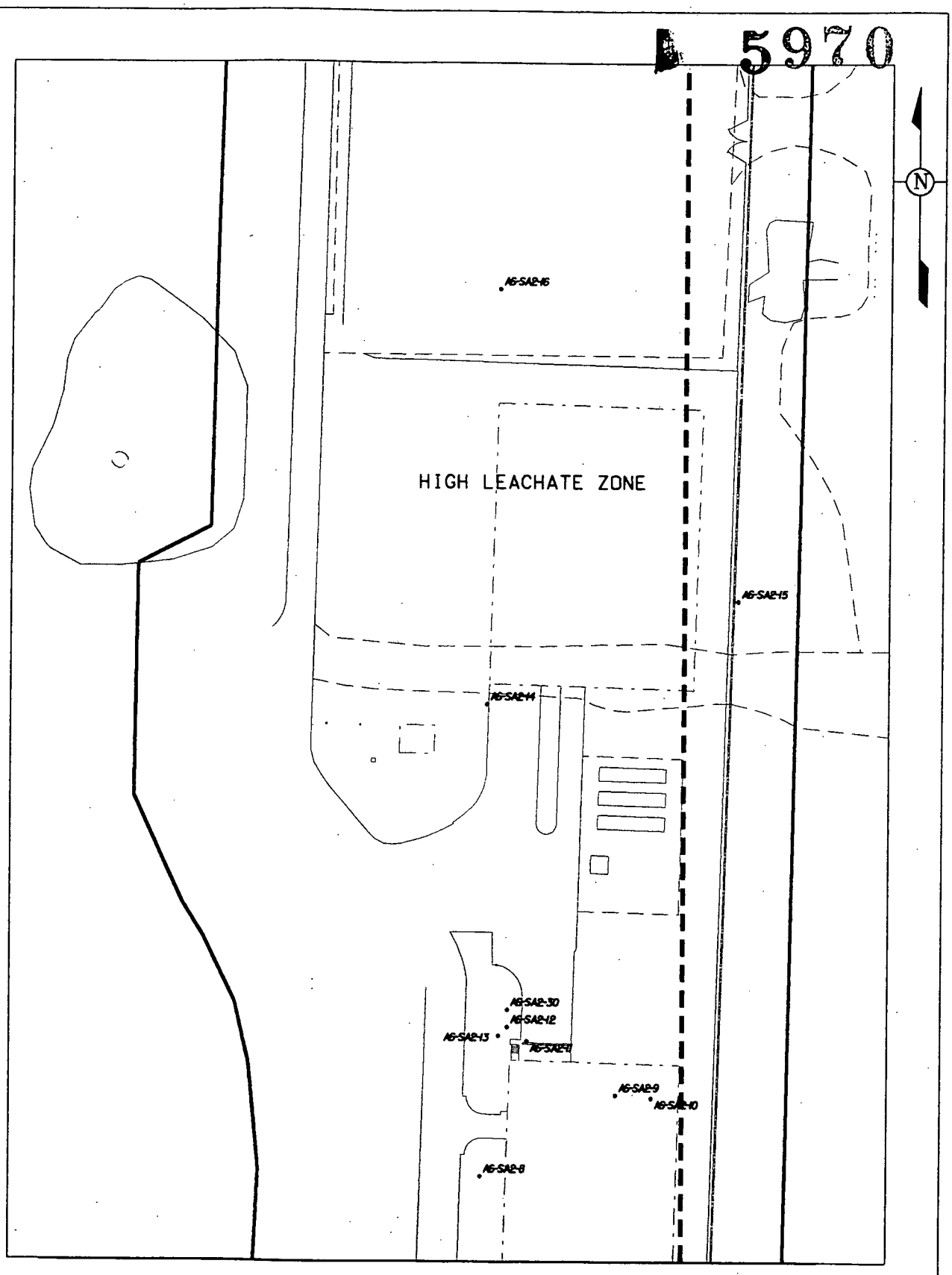


LEGEND:

• PREDESIGN SAMPLE LOCATION

SCALE

80 40 0 80 FEET

v:\82fm12\dgn\ab6_sa2_204.dgn

STATE PLANAR COORDINATE SYSTEM 1983

01-MAR-2005

FIGURE 2-12. PREDESIGN BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA

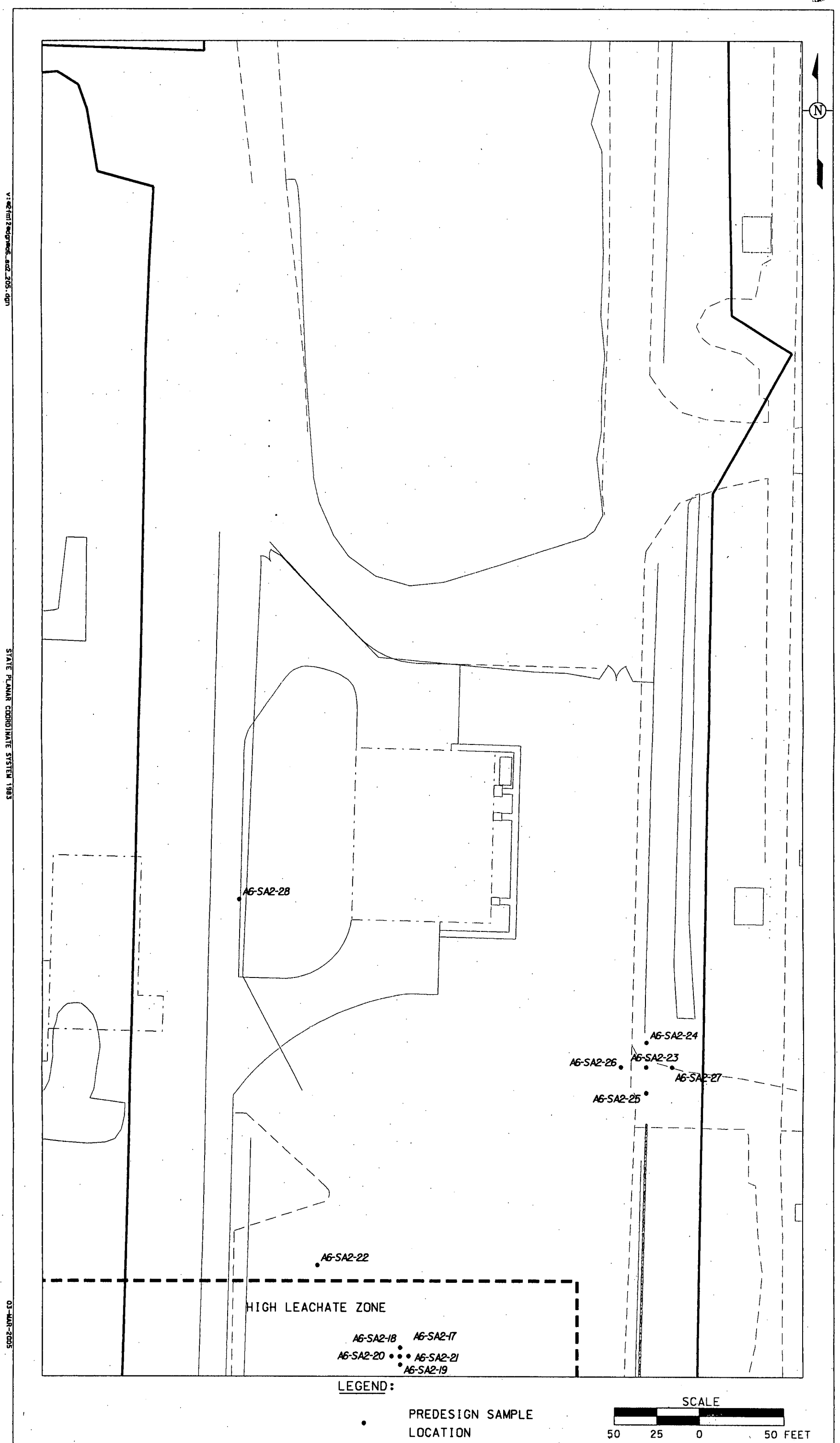
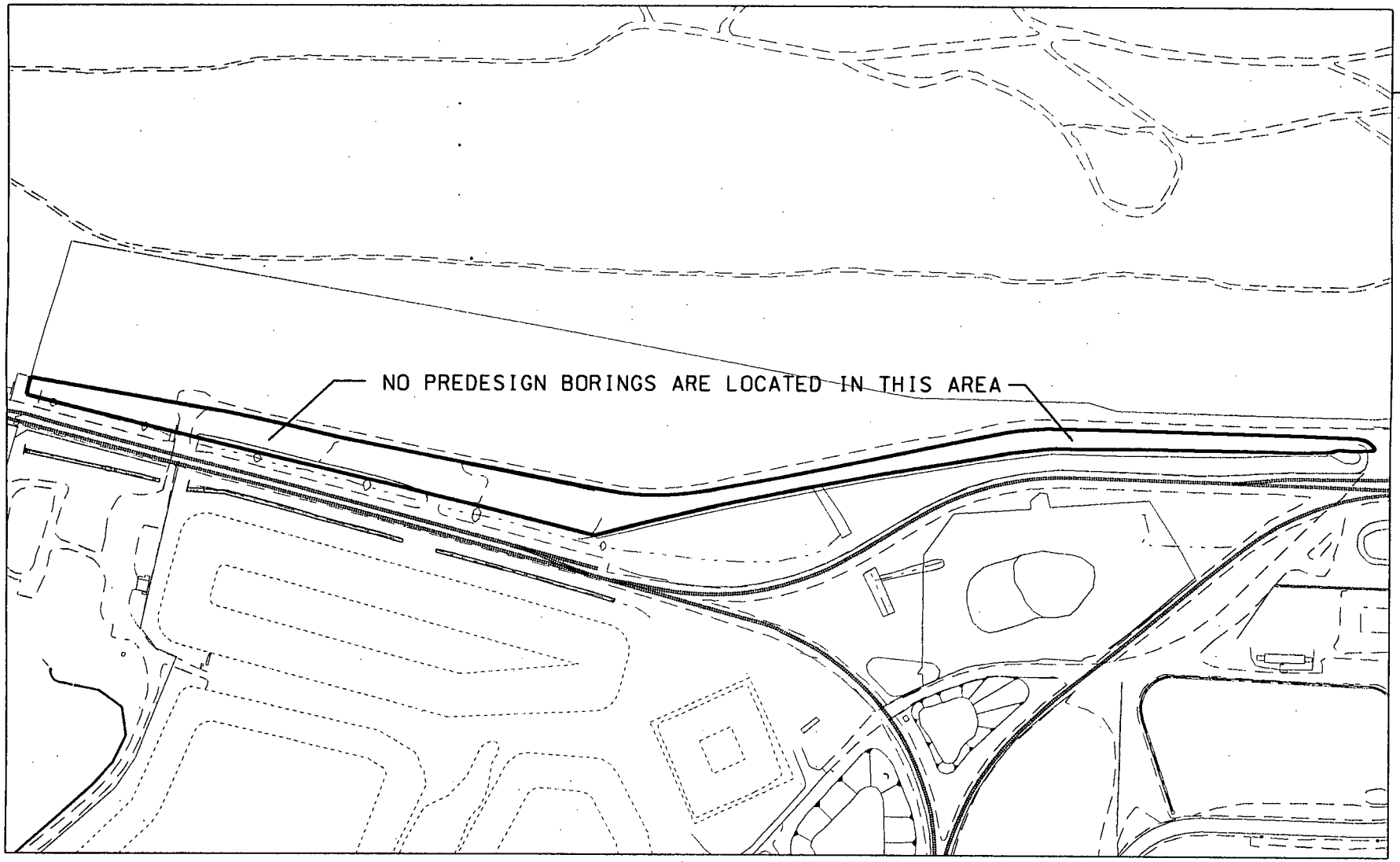


FIGURE 2-13. PREDESIGN BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA

5970



LEGEND:

• PREDESIGN SAMPLE LOCATION

SCALE

260 130 0 260 FEET

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STATE PLANAR COORDINATE SYSTEM 1983

03-MAR-2005

FIGURE 2-14. PREDESIGN BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA

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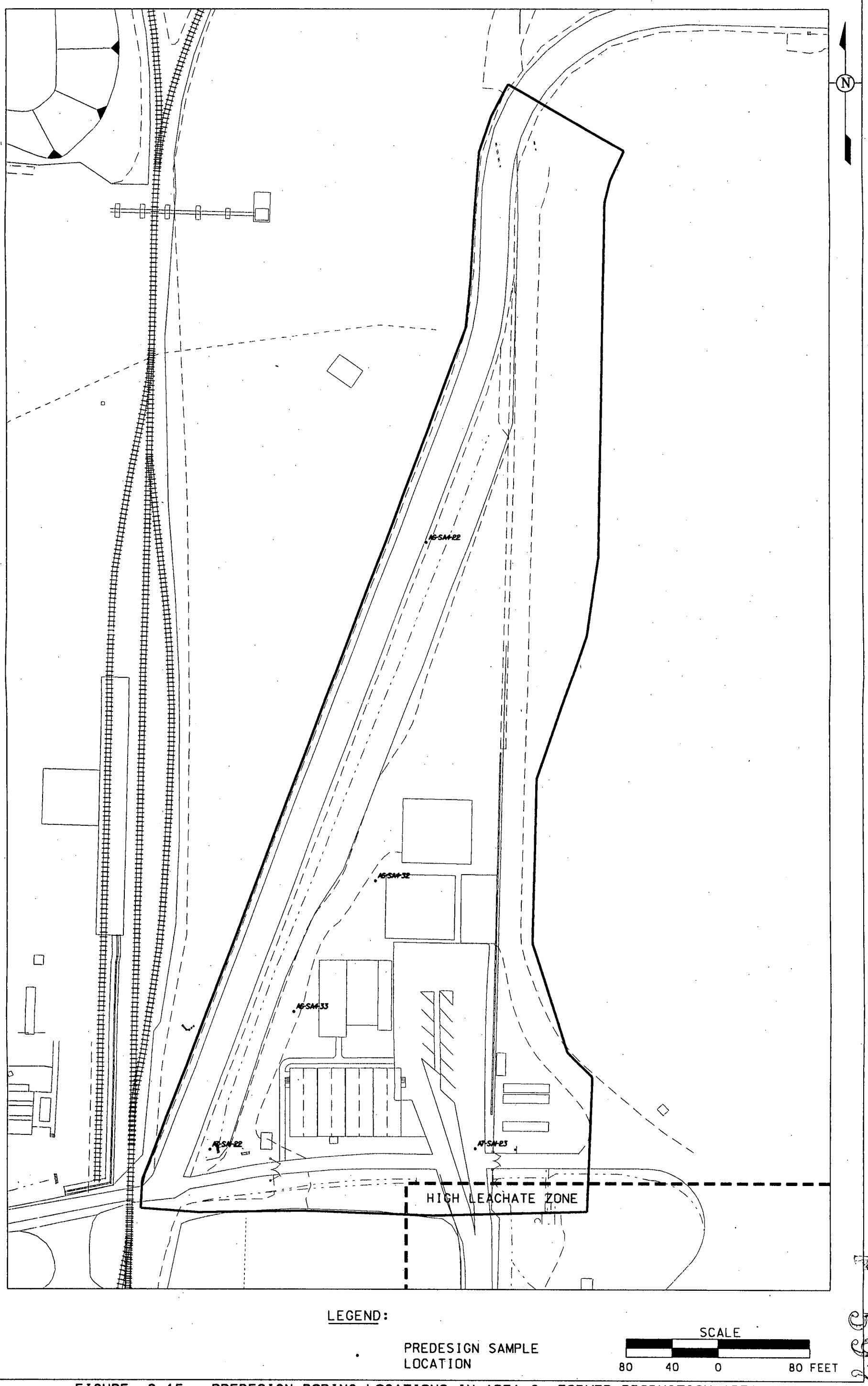

FIGURE 2-15. PREDESIGN BORING LOCATIONS IN AREA 6, FORMER PRODUCTION AREA

STATE PLANAR COORDINATE SYSTEM 1983

03-MAR-2005

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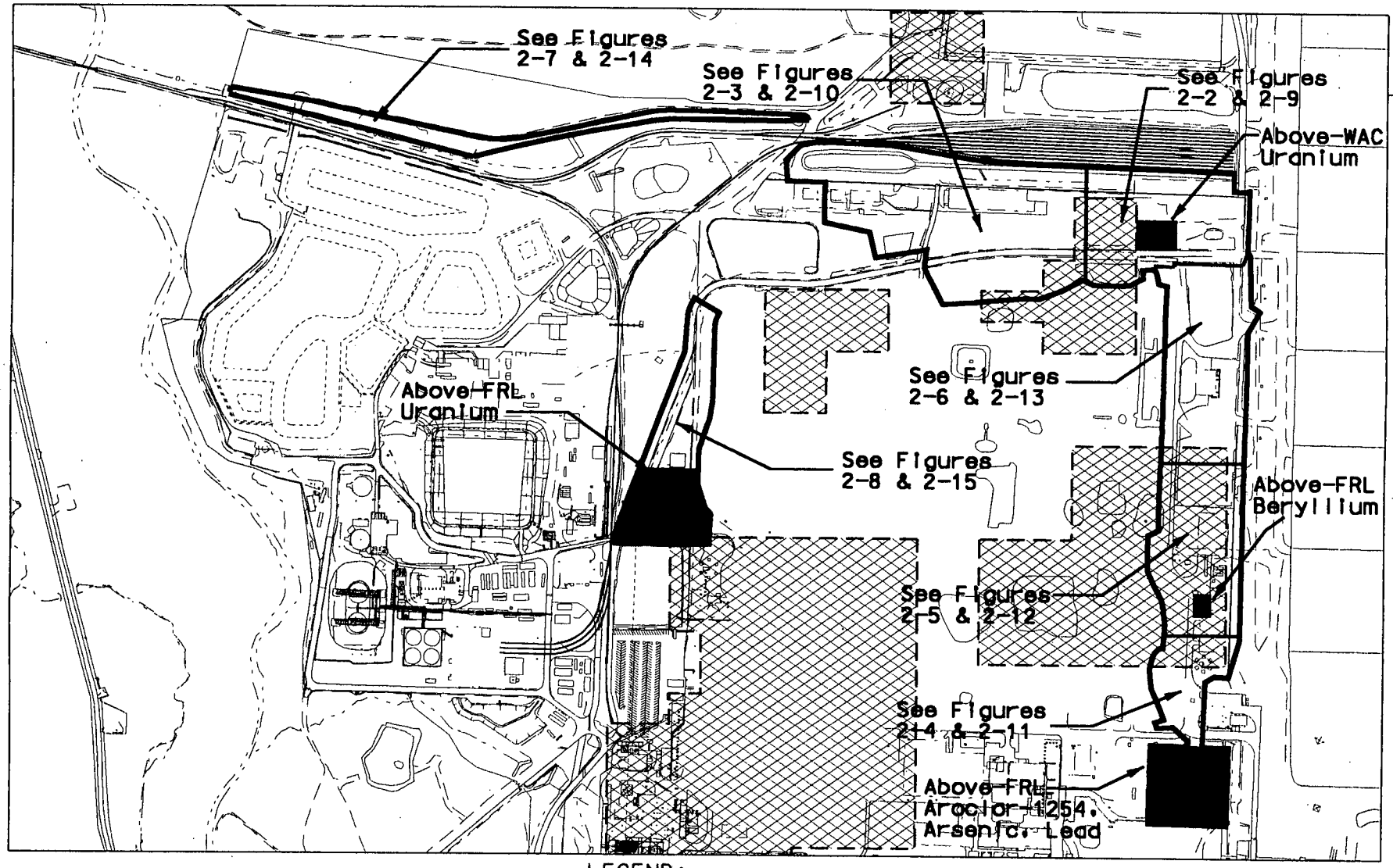
5920



LEGEND:

- - - - HIGH LEACHATE ZONES

SCALE

600 300 0 600 FEET

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STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 2-16. DISCRETELY BOUNDED AREAS (ABOVE-WAC AND ABOVE-FRL)

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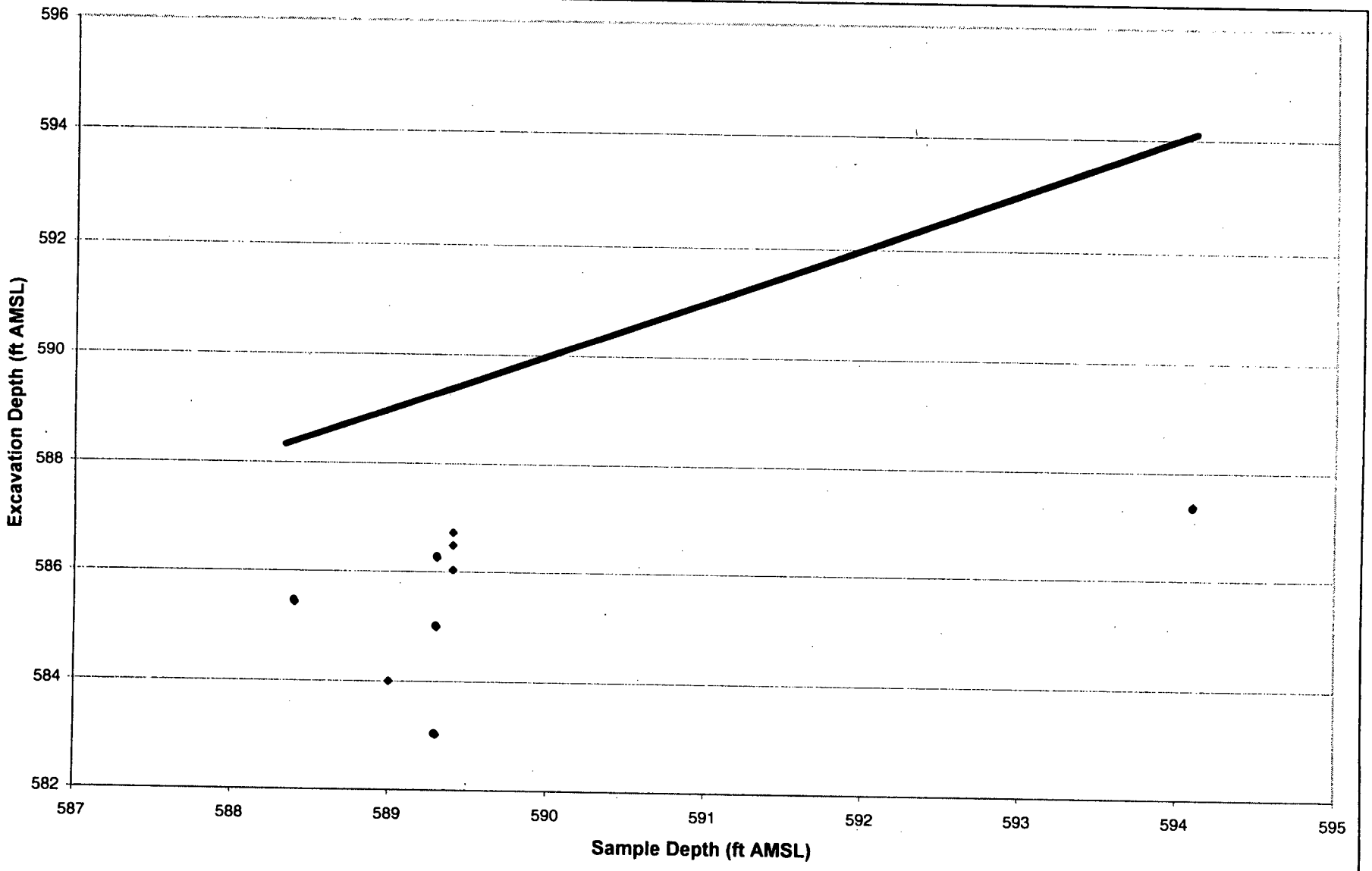

FIGURE 2-17. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR AROCLOR-1254 IN AREA 6

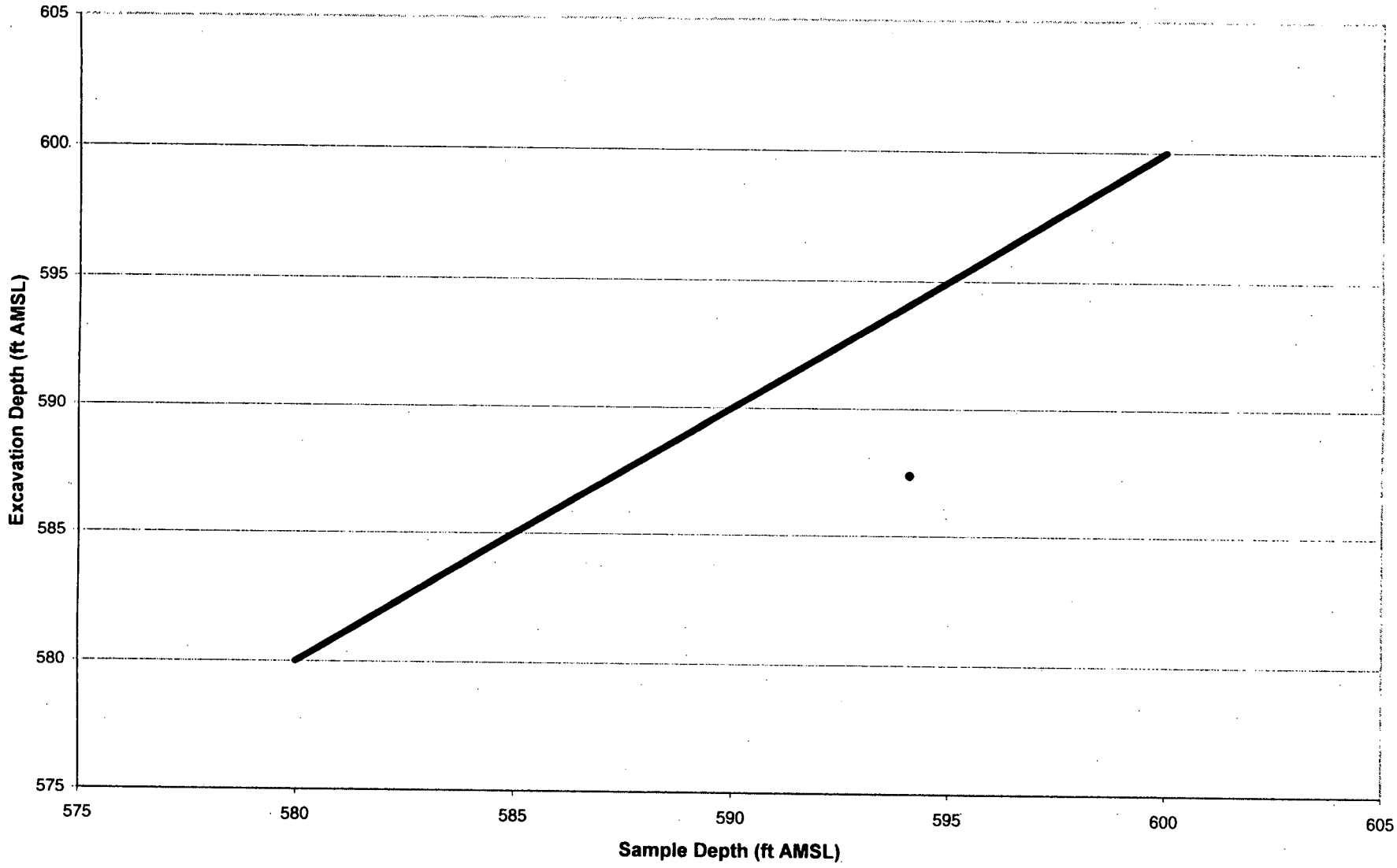

FIGURE 2-18. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR AROCLOR-1260 IN AREA 6

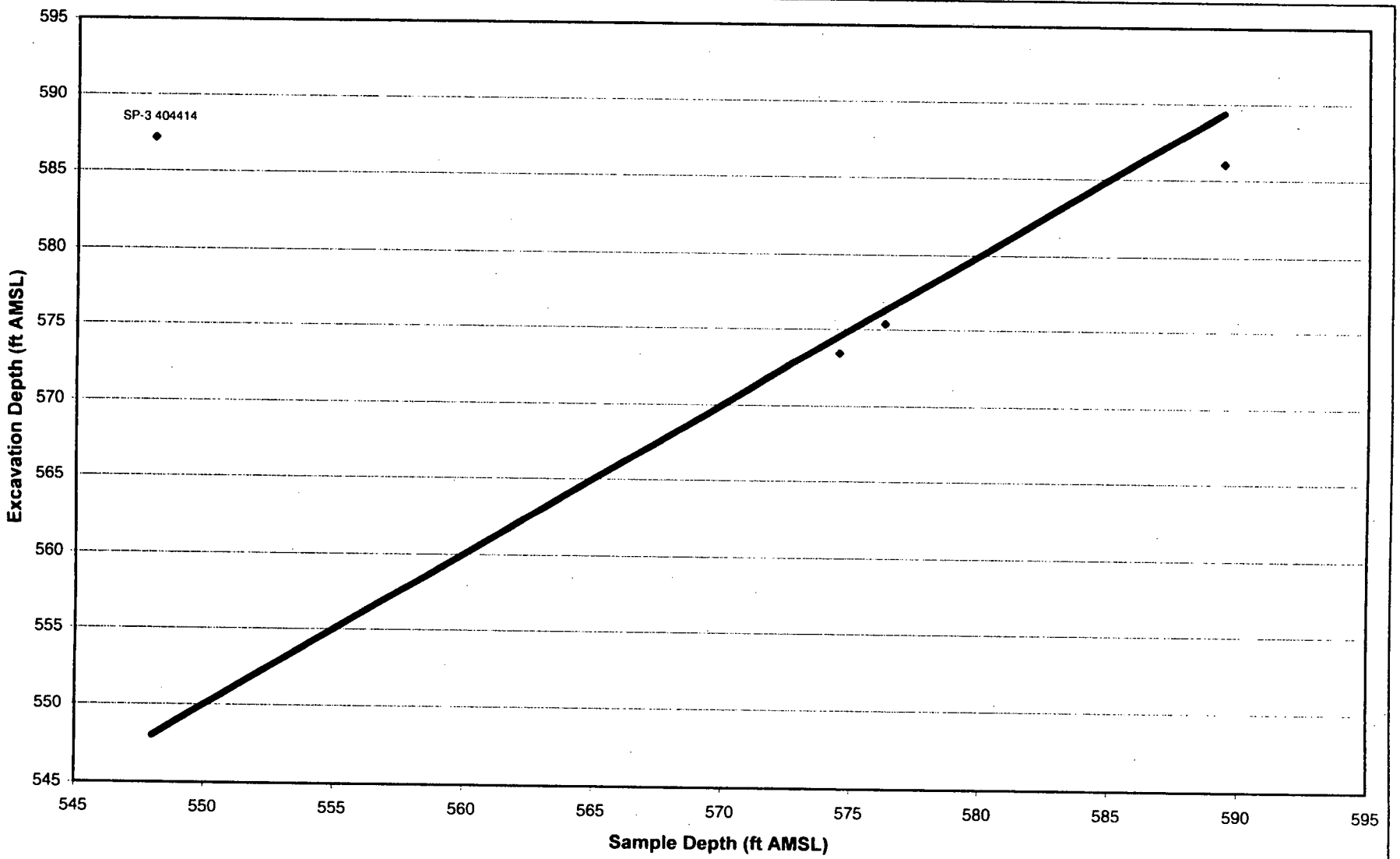

FIGURE 2-19. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR ARSENIC IN AREA 6

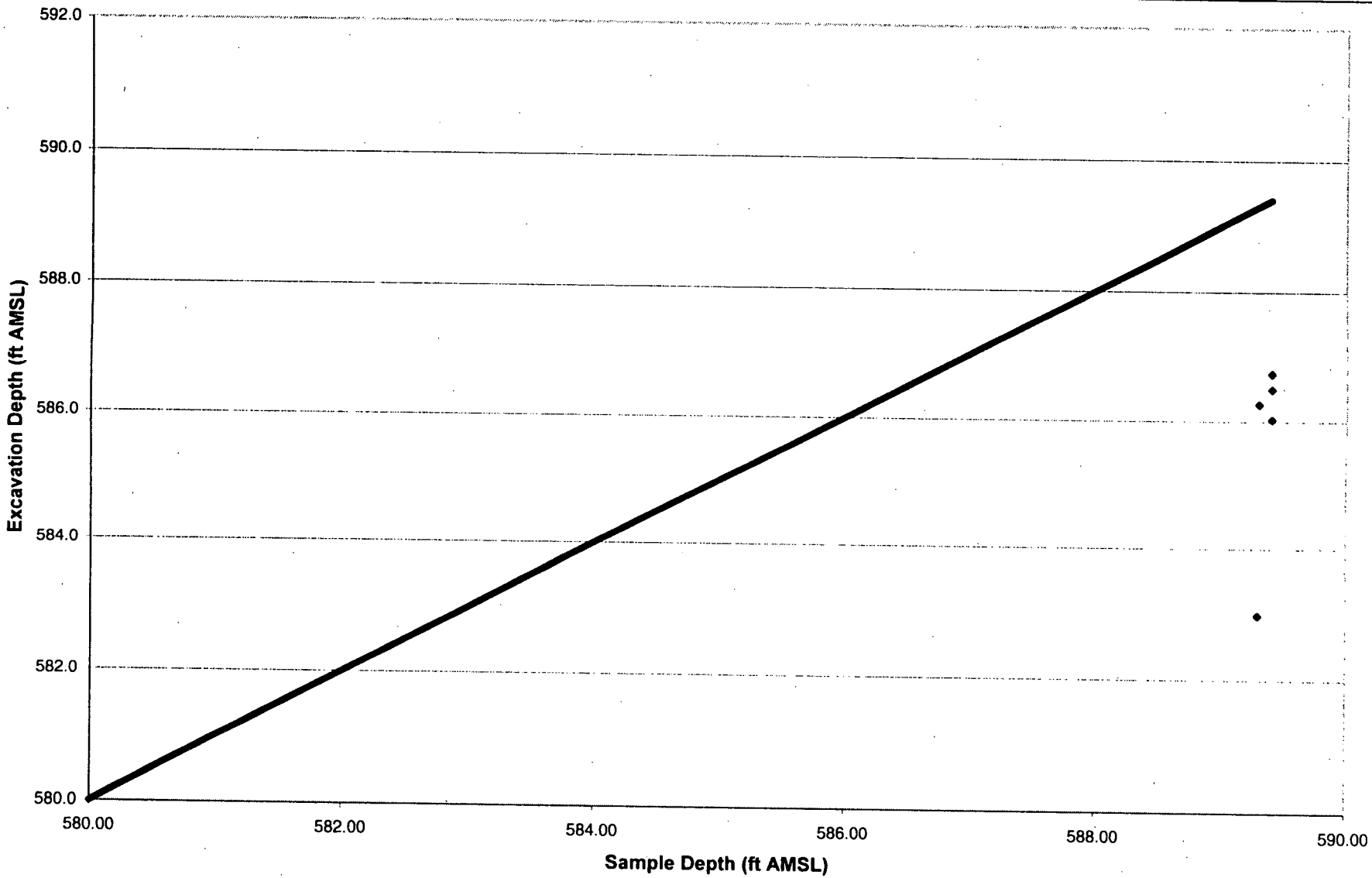

FIGURE 2-20. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR BENZO(a)PYRENE IN AREA 6

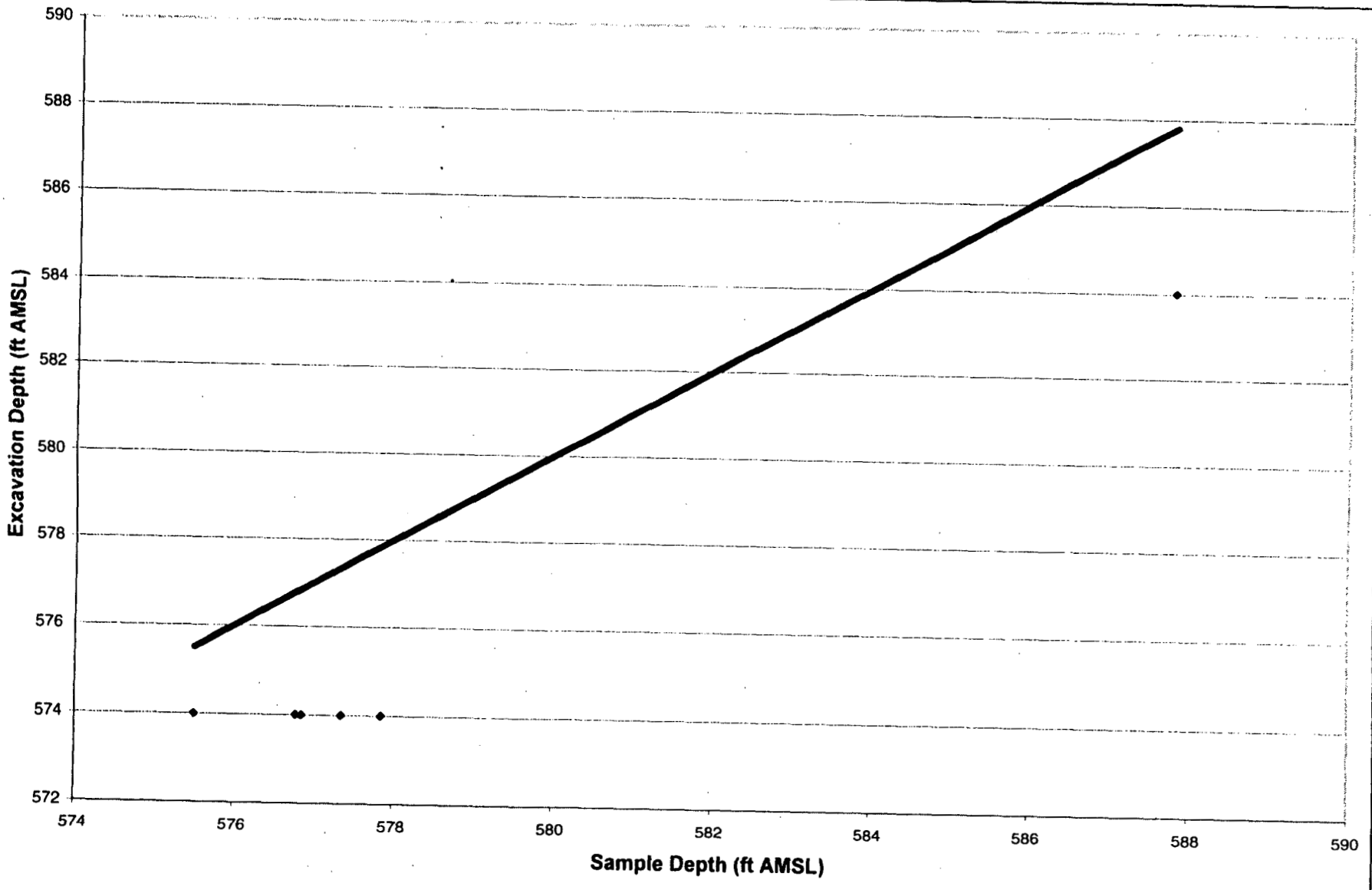

FIGURE 2-21. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR BERYLLIUM IN AREA 6

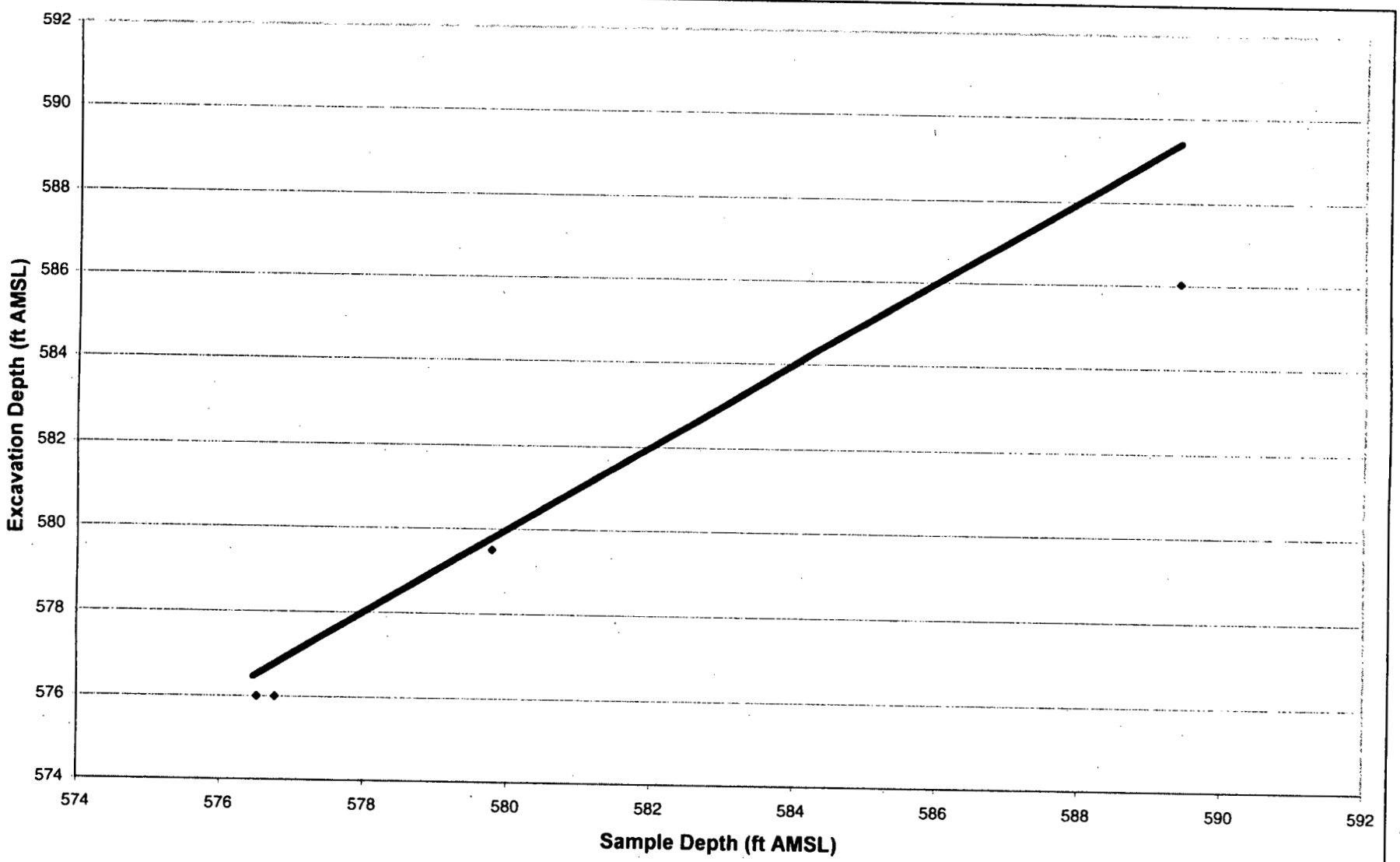

FIGURE 2-22. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR CESIUM-137 IN AREA 6

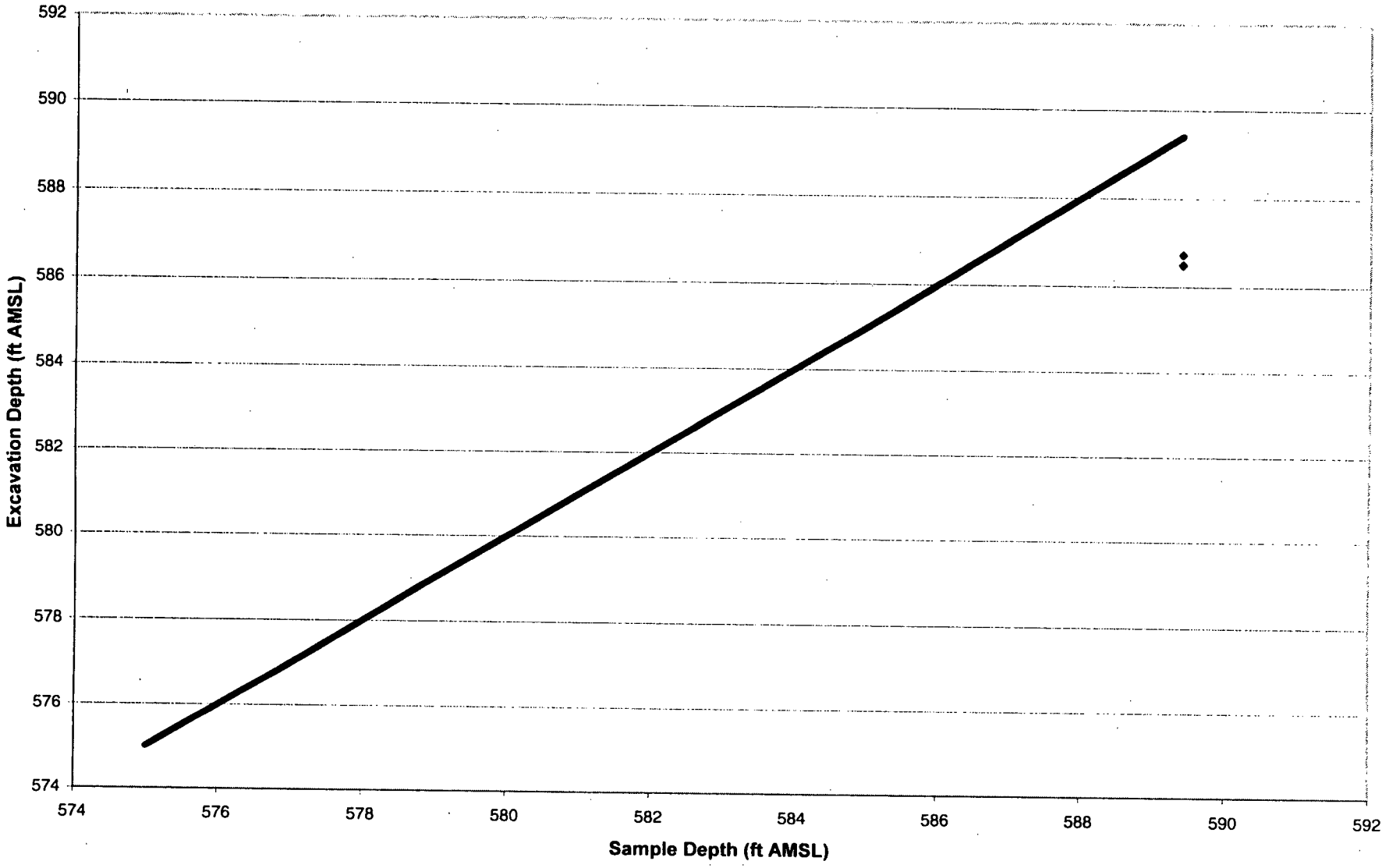

FIGURE 2-23. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR DIBENZO(a,h)ANTHRACENE IN AREA 6

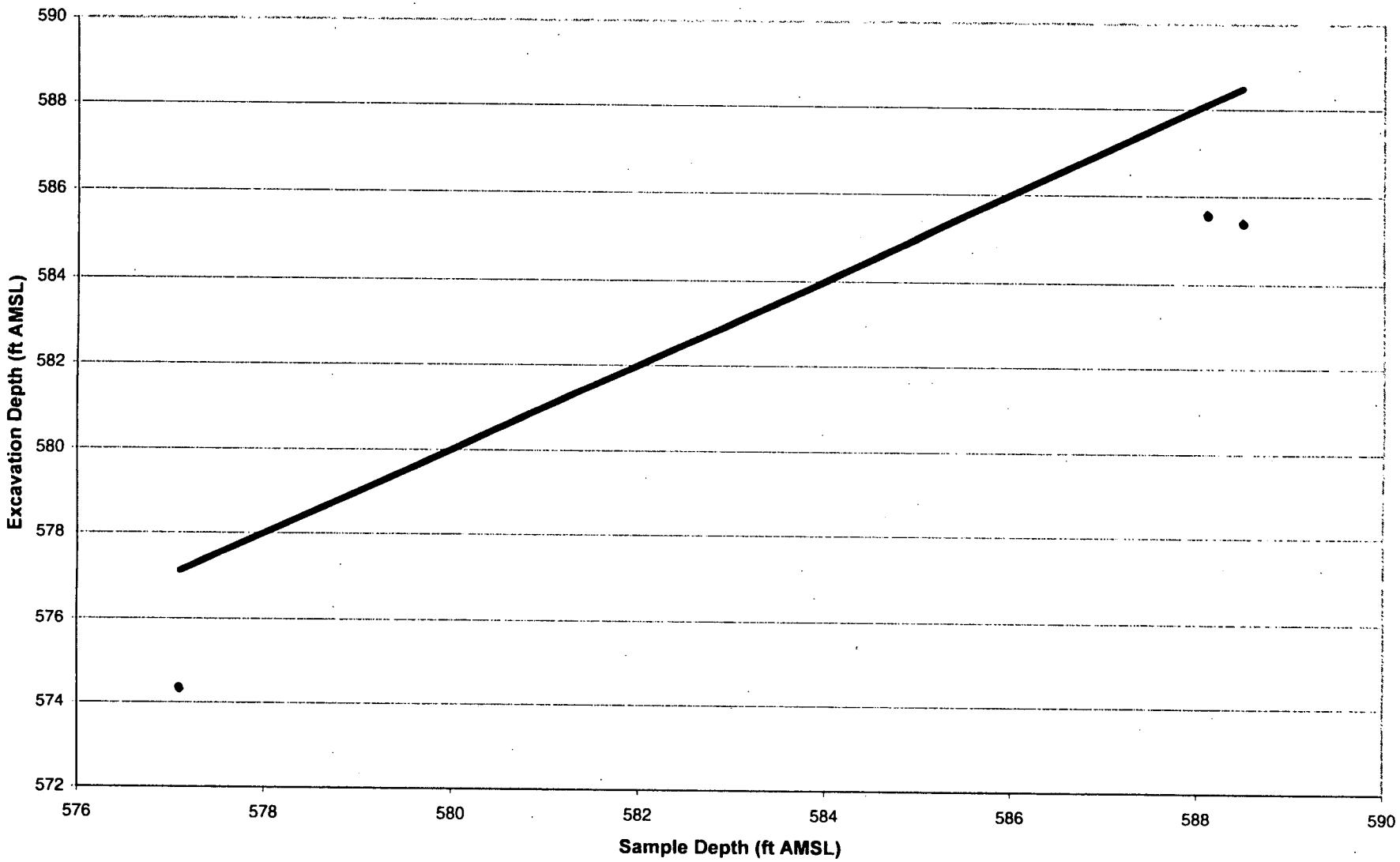

FIGURE 2-24. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR LEAD IN AREA 6

01350 5970

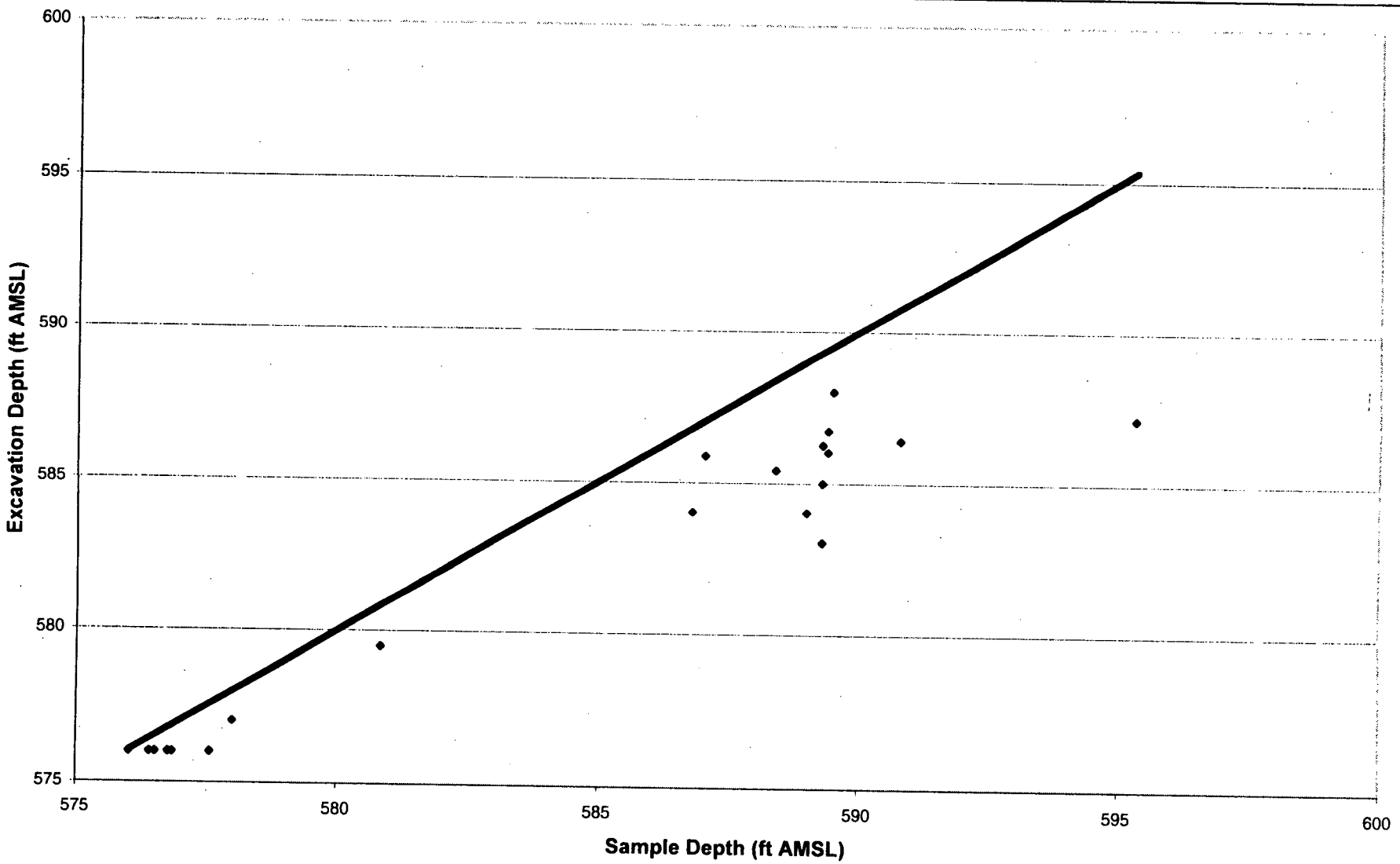

FIGURE 2-25. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR RADIUM-226 IN AREA 6

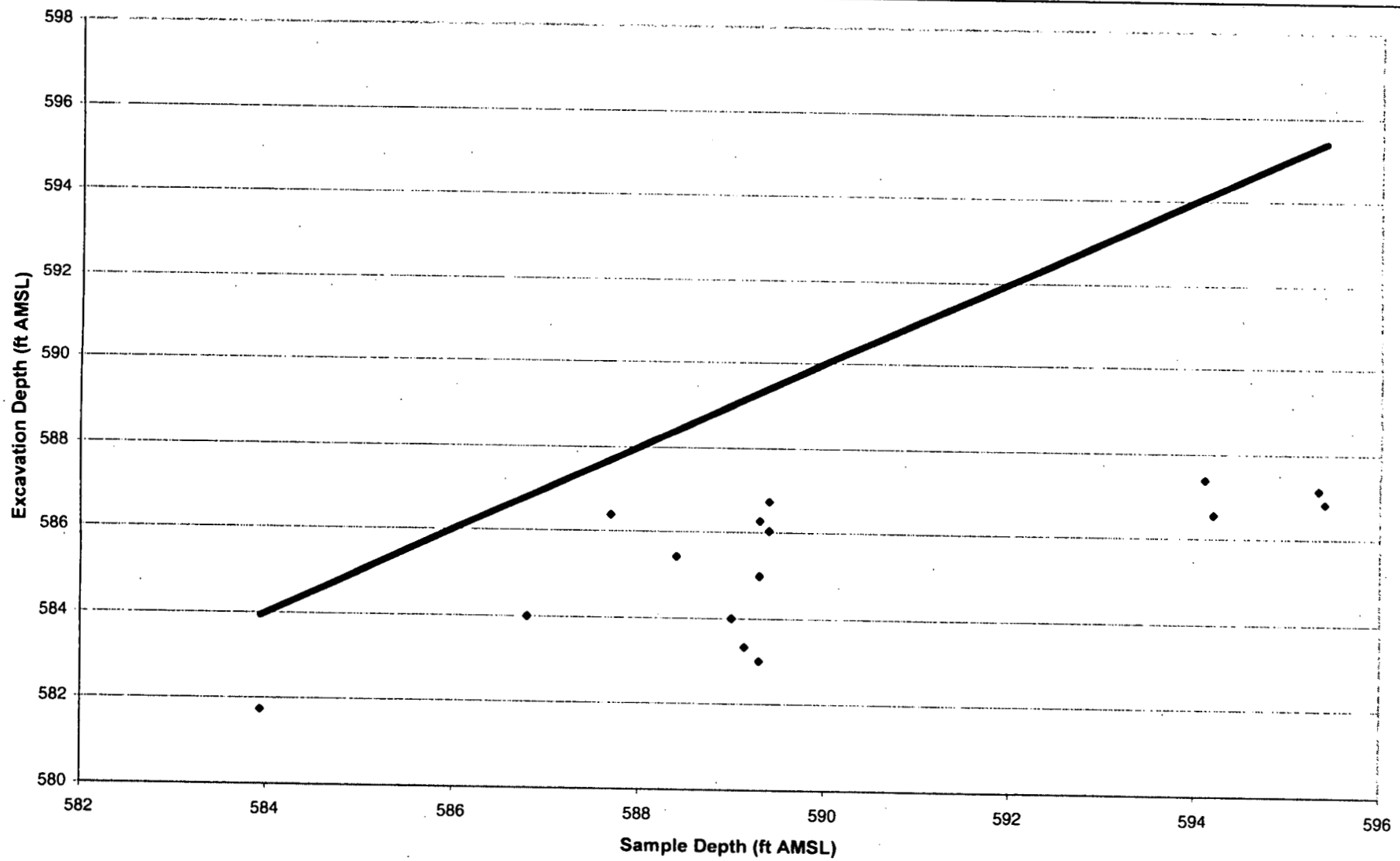

FIGURE 2-26. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR RADIUM-228 IN AREA 6

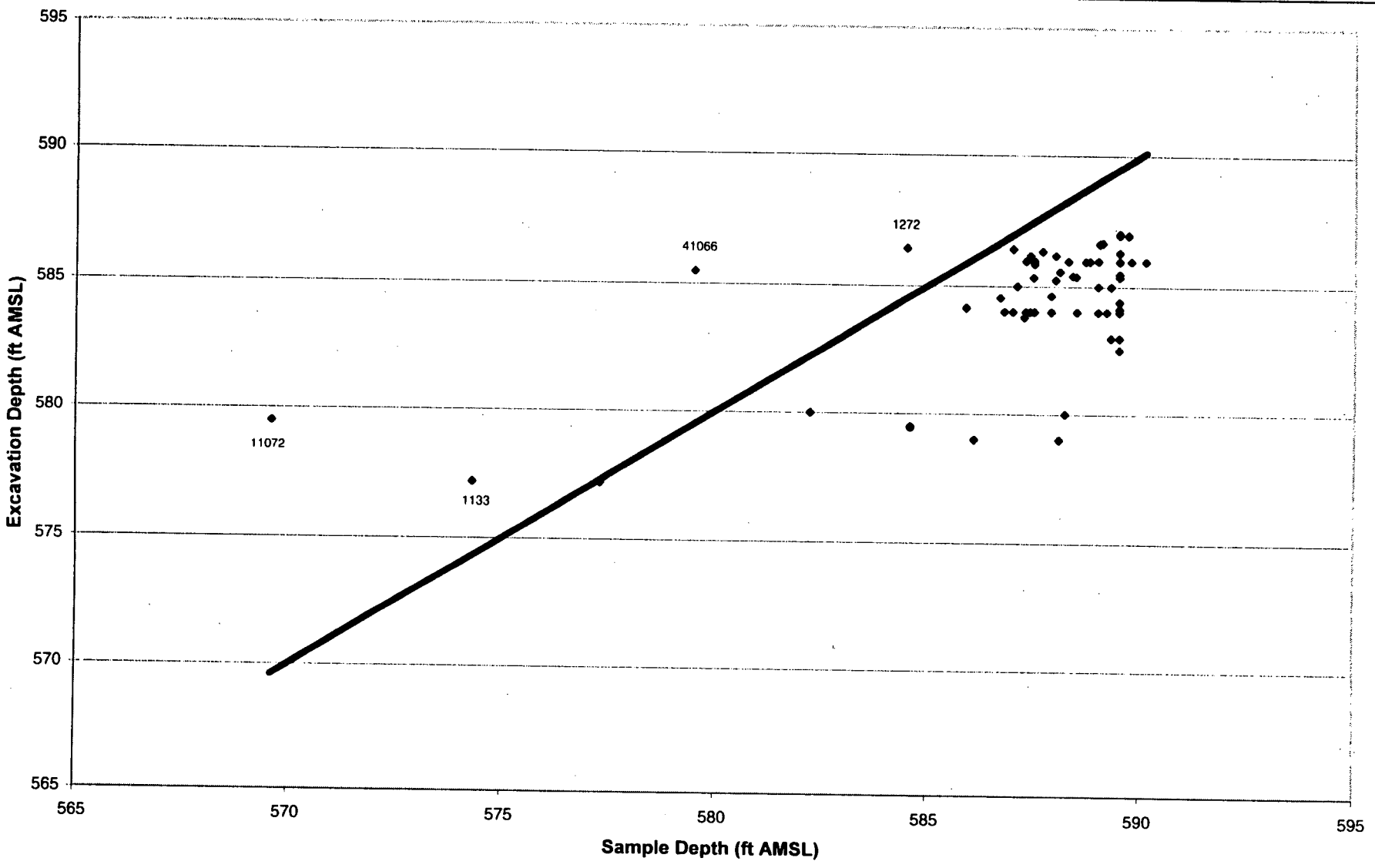

FIGURE 2-27. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR TOTAL THORIUM IN AREA 6

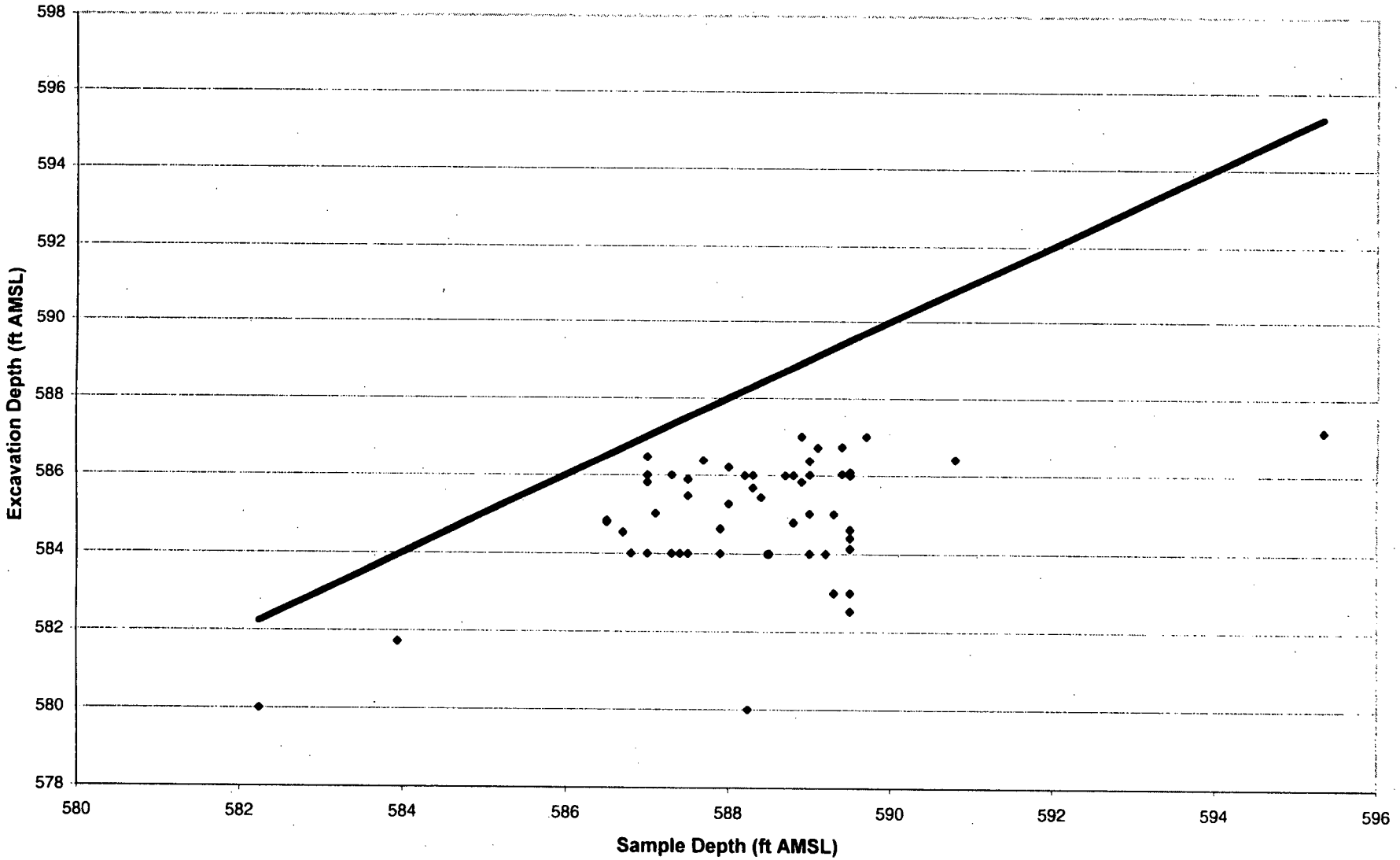

FIGURE 2-28. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR THORIUM-228 IN AREA 6

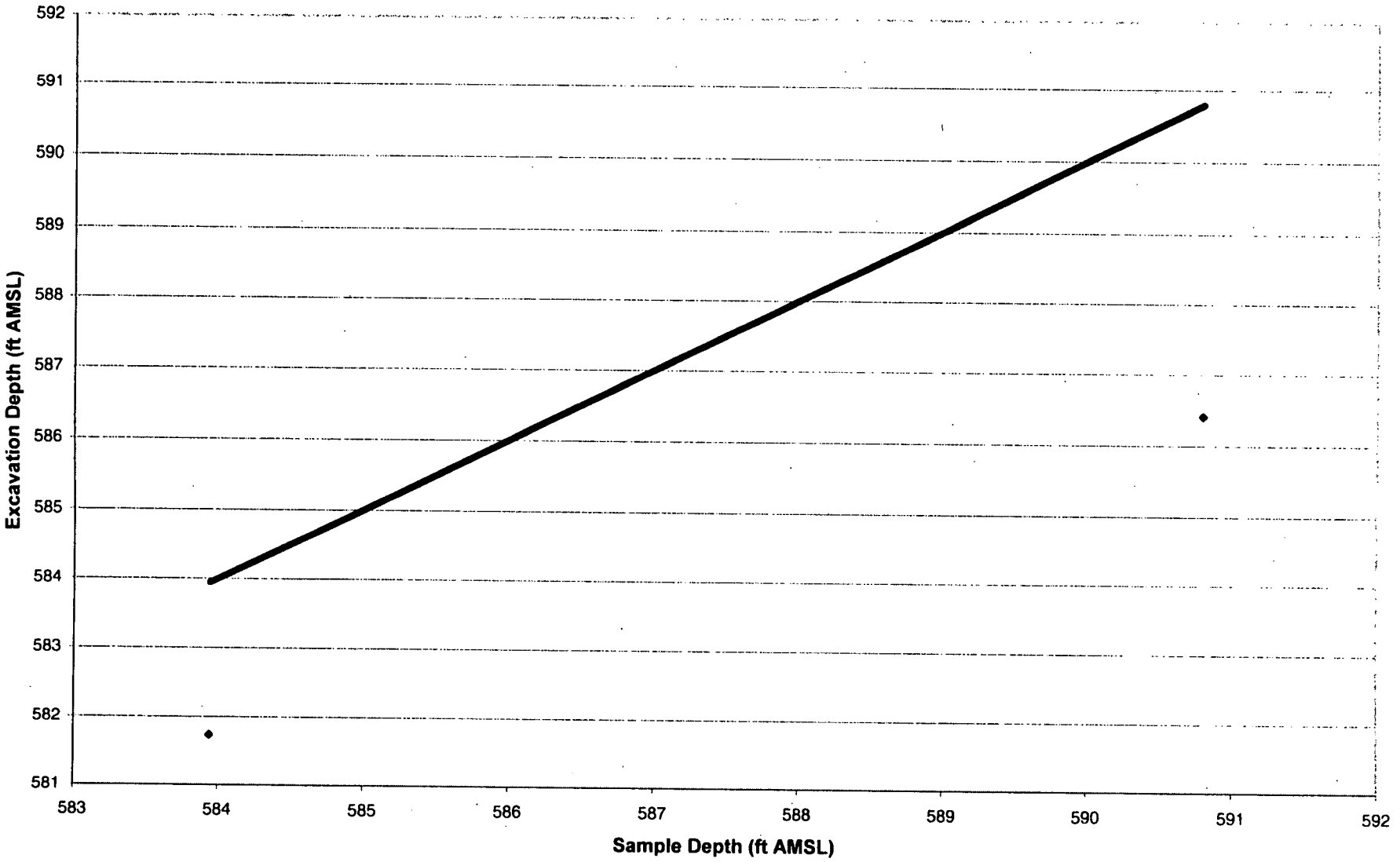

FIGURE 2-29. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR THORIUM-230 IN AREA 6

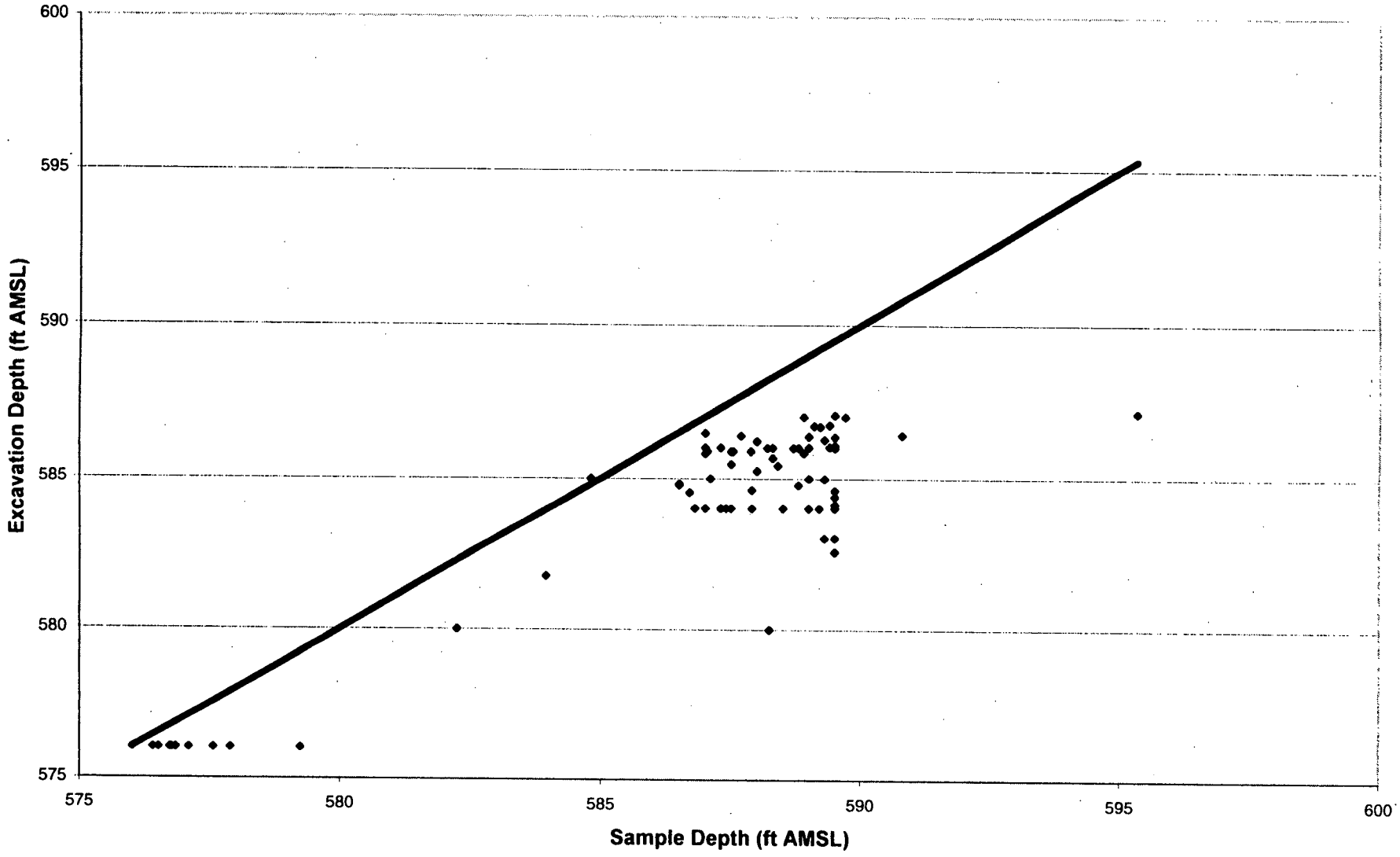

FIGURE 2-30. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR THORIUM-232 IN AREA 6

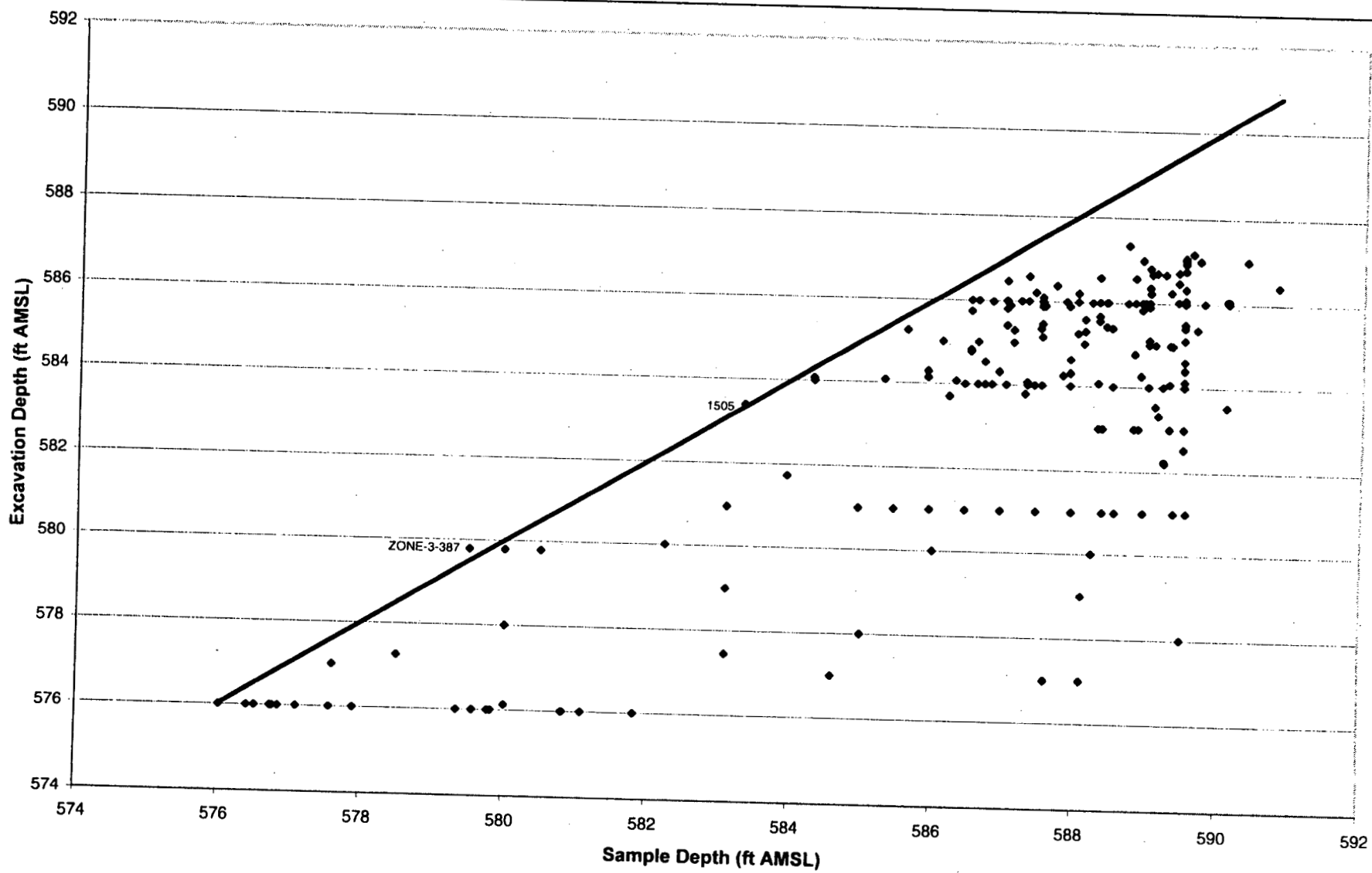

FIGURE 2-31. EXCAVATION DEPTH VERSUS SAMPLE DEPTH FOR TOTAL URANIUM IN AREA 6

3.0 REMEDIAL APPROACH

3.1 INTRODUCTION

This section describes the technical approach to remediation of Remediation Area 6 Former Production Area (see Figure 1-2). The remedial action approach discussed in this Excavation Plan follows the general guidance provided in Sections 3.0 and 4.0 and Appendix F of the SEP. Construction drawings and technical specifications comprise part of the documentation governing remedial construction activities. Construction activities will be further governed by Construction Traveler (CT) Packages that detail general construction practices, as well as health and safety requirements, for soil excavation and remediation projects at the FCP.

Remedial actions in Area 6 Former Production Area will begin with site preparation activities, progress into above-WAC soil excavation and at-grade debris removal, and finish with general excavation of debris and soil exceeding the established FRLs.

3.2 SITE PREPARATION

Site preparation activities associated with this work include isolation, protection, or installation of utilities, surveying, installation of construction fence, establishment of erosion and sediment controls, and designation of haul routes. Real time scanning may be required if site preparation activities involve soil disturbance below a depth of 6 inches. Additional detail regarding site preparation is provided in the following text and in referenced construction drawings and technical specifications.

3.2.1 Utility Isolation/Protection/Installation

Isolation trenching at the limits of Area 6 Former Production Area excavations is not required because, even though Area 6 Former Production area is outside the limits of previous isolation trenching, the vast majority of utility feeds into the areas were previously isolated during Area 3A, 4A, 3B, and 4B isolation trenching. Individual utilities may require isolation at the limit of excavation as identified during design and required for penetration permitting. Research into potential energized utilities entering the excavation areas will be performed during design and during the penetration permitting process. If energized utilities are discovered when searching historical information or during field activities, utility engineers will be consulted on utility removal, isolation, or protection. Documentation of utility removal, isolation, and protection will be made available to the Construction Manager (CM) and will be as-built on the master FCP underground utility grid drawings for reference during excavation. Penetration permitting will focus primarily on ensuring isolation from the Main Electrical Substation at the southernmost limit of Area 6 Former Production Area, as well as, isolation from pressurized water lines.

Site preparation activities will not involve utility installation, unless culvert installation is necessary at the intersection of personnel or equipment traffic routes and drainage ditches.

3.2.2 Surveying

Surveys will be performed to establish excavation boundaries for above-WAC and FRL areas and to determine soil volumes hauled to the OSDF. Area 6 Former Production Area Layout Plan (drawing 99X-5500-G-00825) illustrates limits of above-WAC and above-FRL excavation areas. The CM or his designated representative will field locate support facilities, such as laydown areas, cool-down trailers, soil dewatering areas, secondary haul routes, fuel transfer points, and Special Materials Transfer Areas (SMTAs), as needed.

3.2.3 Construction Fencing

Existing radiological control barriers and fencing will remain in place until project boundary fence is established during site preparation activities. Construction safety fence will be installed at the approximate limit of excavation, where existing fence cannot be used, in order to control access into the active work area. Personnel entering and leaving contamination areas will pass through a radiological checkpoint located in the change-out facilities. Vehicles exiting contamination areas will use contaminated haul routes to reach the decontamination and free-release station located near the southern limit of the OSDF.

3.2.4 Erosion and Sediment Control

Prior to soil disturbance, silt fence will be installed down-gradient of the proposed excavation area as necessary to provide sediment control during storm events in addition to surrounding vegetation. Excavation water, the combination of surface water and perched groundwater, will be collected in various locations within the Area 6 Former Production Area excavation, as shown on Drainage Plans (drawings 99X-5500-G-00831 and 99X-5500-G-00832). To help minimize surface water entering the excavation, the topographic surface outside excavations will be sloped away from the excavation area, where appropriate. However, runoff from excavation areas will not be allowed to enter certified areas. Excavation water will be managed as discussed in Section 3.3, Storm Water Management.

3.2.5 Haul Routes

Haul routes to the OSDF will be from approved access points at the perimeter of the excavation. SP-7 will also be accessible directly from the westernmost limit of the excavation.

3.3 STORM WATER MANAGEMENT

During the removal of debris and impacted soil from the Area 6 Former Production Area, surface water will be managed primarily from four subareas: the northern area outside the Former Production Area fence, the north production area, the east production area, and the trailer complex known as Hooperville.

The following subsections, combined with the Surface Water Calculations provided in Appendix C, which provide calculations to show storage capacity in proposed holding basins, serve as the surface water management plan for Area 6 Former Production Area.

3.3.1 Northern Area Outside the Former Production Area

A concrete trench is located immediately north of the Former Production Area northern security fence. This trench was constructed to collect runoff from the production area and prevent the spread of contamination northward beyond the radiologically controlled area. The trench drains southward through underground pipes into the site storm sewer system.

Currently the area north of this concrete trench drains northward into a detention basin located southwest of the OU1 Railyard. From this detention basin, water drains through a culvert going under the OU1 rail line then through a series of ditches to Paddys Run. The only excavation for contamination planned for this area is a small excavation at the westernmost limit of the detention basin (see design drawing 99X-5500-G-00831). A berm will be constructed in the detention basin to isolate the contaminated excavation area from the culvert that drains the basin. During remediation, water collected inside the contaminated excavation will be pumped into the former production area to drain to the site storm water system for subsequent treatment. Areas requiring remediation not due to contamination (e.g., structures and underground utilities) will drain to Paddys Run through the detention basin. Silt fence will be used to minimize the amount of suspended solids discharged into the detention basin.

3.3.2 North Production Area

Runoff from the north production area, including the SP-7 stockpile area will be discharged into the SWRB through the existing storm sewer line that runs parallel to "B" Street or through a 12-inch HDPE line that will be installed under a separate activity to replace the existing storm sewer running parallel to "B" Street from the Impacted Material Haul Road to 2nd Street.

Much of the excavation area in the eastern portion of the north production area will be graded towards a deeper excavation in the general area where the scrap metal pile was located during production. Once excavated, this deeper excavation will act as a detention basin to hold water from storm events and allow a controlled release of storm water over time to ease the treatment load for water collected in the SWRB. Water from this detention basin can be pumped and will overflow to the inlet to the storm sewer system

just north of the Impacted Material Haul Road. Runoff from other areas within the north production area, including the SP-7 stockpile area, will likewise drain to this storm sewer inlet structure.

3.3.3 East Production Area

The east production area will be graded to drain into one of two newly created detention basins. One detention basin will be created during the removal of the East Water Tower foundations. The other detention basin will be created during the removal of the Main Electrical Substation foundations. Most of the east production area will be graded to drain into one of these two basins. Water collected in these two basins will be pumped into the active storm sewer near the intersection of 1st and "E" Streets for subsequent treatment through the SWRB. The area between these two basins will be graded to drain directly into the active storm sewer through existing Manhole 82 (MH82) located just north of 1st Street.

3.3.4 Hooperville

Currently, runoff from the Hooperville trailer complex drains into the Lime Sludge Ponds excavation through an existing culvert located under 2nd Street. During remediation, water collected in the former Lime Sludge Ponds excavation will be discharged periodically either to the SWRB for treatment or to Paddys Run untreated, based on sample results of the water prior to discharge. Samples will be taken to determine the total uranium concentrations within the water. If the sampling results indicate total uranium concentrations equal to or greater than 30 milligrams per Liter (mg/L), then the water will be discharged for treatment. If the sampling results indicate total uranium concentrations less than 30 mg/L, then the water will be discharged untreated to Paddys Run via the OU1 Retention Basin.

3.3.5 Site Storm Water Treatment Capacity

The CAWWT project has recently modified the AWWT Expansion system to provide a stormwater/remediation wastewater treatment system capable of being operated at a maximum of 600 gallons per minute (gpm). The CAWWT stormwater/remediation wastewater treatment system consists of two multimedia filters and one ion exchange. The SWRB will continue to be used as the headworks, providing surge capacity for the modified 600-gpm treatment system until the SWRB is taken out of service for remediation.

Treatment of storm water from the remediation of Area 6 Waste Pit and General Area will be performed by CAWWT treatment. Since stormwater/remediation wastewater treated by CAWWT will go through the same treatment process, there will be no more need to segregate water for treatment purposes. However, process water cannot be discharged to the SWRB; therefore, process wastewater will undergo CAWWT treatment routed so that it bypasses the SWRB. Water that goes to the SWRB will go through the same treatment as water that is pumped directly to CAWWT. When discharges to SWRB are not possible due to an excessive water inventory, water will be held within the excavation until sufficient

holding capacity is reestablished within the SWRB. To the extent possible, no discharges to the storm sewer system will be made during periods when the SWRB is bypassing, overflowing, or nearing capacity. These actions will be taken consistent with the bypassing provisions included in the NPDES permit.

3.4 REMEDIAL EXCAVATION

Excavation to remove impacted material will follow the general guidance of Excavation Approach D, as discussed in the SEP. Soil and debris associated with an above-WAC area will be targeted for early removal to minimize cross contamination.

Remedial excavation will involve excavation of soil and debris necessary to meet the established FRLs. Soil excavation will involve general excavation of soil exceeding FRLs, as well as discrete soil excavation for removal structures and utilities that lie below-FRL contamination. FRL excavation will proceed in nominal 3-foot lifts that will not exceed 4 feet in thickness. Excavation driven by contamination, as shown on Excavation and Grading Plan drawings, will be performed in lifts to allow for visual inspection of excavated soil and the cut surface.

Approximately 80 percent of the Area 6 Former Production Area surface is covered by gravel, asphalt, and concrete. The soil surface under the gravel, asphalt, and concrete will be scanned with real-time *in situ* gamma spectroscopy techniques to determine if excavation is required outside the established limits of known contamination. In addition, time will be allotted for real-time monitoring of newly exposed soil lying below gravel, asphalt, and concrete surfaces, and between excavation lifts. Real-time monitoring is required to identify potential above-WAC zones prior to general excavation operations.

Unless otherwise noted on the Construction Drawings, slope stability requirements shall be as stated in technical specification Section 02205. These criteria were established based on the geotechnical properties of the soil and a maximum loading of 108,000 pounds at the top of the slope (DOE 1998c). These criteria limit the excavation equipment size to a Caterpillar 350L excavator or less. Soil sampling and geotechnical testing may be conducted to demonstrate acceptability of less stringent criteria, pending approval by a Professional Engineer registered in the State of Ohio.

Table 3-1 provides a summary of soil and debris volume estimates for Area 6 Former Production Area excavations. Quantities of modeled contamination located along the perimeter of Areas 3A and 4A to be excavated during Area 6 Former Production Area activities is not reported in this document, but rather is considered a completion of excavation for contamination modeled under Areas 3A and 4A scope. However, it should be noted that Area 6 FPA excavation scope will involve the excavation and remediation of the uncertified perimeter of Areas 3A and 4A. These areas are those where safe slopes

and run-on controls were constructed between Area 3A and 4A certification limits and the Area 6 boundary. These areas contain modeled contamination and underground utilities located below Area 3A and 4A design grade, as well as previously constructed isolation trenches that require remediation.

3.4.1 Above-WAC Excavations

Bounding above-WAC areas has been completed. As discussed in the following sections, one above-WAC area has currently been identified in Area 6 Former Production Area, accounting for an estimated 750 yd^3 of above-WAC soil and debris. If additional above-WAC material is found during excavation, real-time monitoring and/or physical sampling will be used, depending on the COC, to establish the limits of the above-WAC area. Once identified, an above-WAC area will be staked and a buffer area will be established adjacent to the excavation in accordance with technical specification Section 02205 to control the spread of contamination.

Excavated material containing only above-WAC levels of radiological constituents (uranium and/or technetium-99) will be hauled directly to SP-7. Side slopes will be excavated to 2:1 and monitored to determine material disposition and lateral excavation as necessary to verify that above-WAC contamination has been removed. The CM will direct the use of working stockpiles for materials removed from above-WAC excavation side slopes. Disposition of these materials requires the results of: 1) real-time scans performed on the slope formed by the removal of the soil or 2) analytical analyses performed on soil samples collected from the slope. This sampling and monitoring will determine if the contamination zone has been captured laterally. Upon completion of sampling or real-time scanning, this material will be transported from the working stockpile(s) to SP-7 or the OSDF.

When the design grade or excavation floor has been reached, real-time scans and/or physical sampling will be conducted depending on COCs. The CM may direct further excavation based on results. Equipment used to excavate, load, haul and place above-WAC material will be decontaminated prior to use elsewhere by rinsing until no visible material is present on exterior surfaces.

3.4.2 HWMUs and USTs

Area 6 Former Production Area contains two former HWMUs [#34 - KC-2 Warehouse and #37 - Plant 6 Warehouse (Bldg 79)], both of which were previously closed under CERCLA. These HWMUs require no further action during excavation.

There are no known USTs or former UST footprints within Area 6 Former Production Area requiring excavation and demonstration of FRL attainment. However, there is one suspect, previously unidentified, UST under investigation in the area of the Old Administration Building (not to be confused with the Administration Building 14). The Old Administration Building, which housed administrative employees

during construction of the Fernald site, was located between the Quonset Huts and KC-2 Warehouse, where "B" Street exits the former production area. Historical documents pertaining to the construction and demolition of the Old Administration Building make reference to an underground oil tank that was used in heating the building. The contractor who later dismantled the building in order to recycle the building materials was given the option of removing the underground tank or leaving it in place. There are no records to indicate that the tank was ever removed. In addition, the exact location of the tank remains in question; although the location of the boiler house is known, and it is assumed that the tank was located in the vicinity of the boiler house. Magnetometer surveys are being conducted in suspect areas to attempt to locate the tank. If found during magnetometer surveying or during excavation, the tank will be managed in accordance with the requirements stated in technical specification Section 02205.

3.4.3 General Excavation

General excavation involves removal of above-FRL but below-WAC soil and debris, along with below-FRL soil, following completion of above-WAC excavation. Above-FRL but below-WAC soil and debris will be excavated and disposed of in the OSDF for achievement of final remediation limits. Removal of below-FRL soil is occasionally necessary for excavation of safe slopes, removal of building footers and foundations, and to promote positive drainage within the excavation area. Excavation of Area 6 Former Production Area entails removal of approximately 113,072 yd^3 of above-FRL but below-WAC soil and 45,227 yd^3 of debris. Minimal below-FRL soil will be excavated for the removal of structures and for purposes of drainage. Designed excavation contours are shown on Excavation and Grading Plan drawings.

General excavation will include excavation of existing isolation trenches cut during Area 3A and 4A site preparation activities, which run adjacent to Area 6 Former Production Area. These isolation trenches will be excavated due to the likelihood that impacted material located in the path of the trencher was spread throughout the isolation trench corridor during trenching. Isolation trenches will be excavated to a width of 3 feet and a depth of 12 feet, as measured from grade elevation at the time the trenches were cut.

3.4.4 Utilities

Utility lines that remain after general excavation has reached the design grade will be removed using a backhoe and trench excavation techniques as detailed on the Civil Detail Sheet 1 of 2 drawing. A combination of *in situ* gamma measurements and laboratory analyses will be used to demonstrate the soil and bedding material removed from the trench meet OSDF WAC.

Utility overburden soil will be removed and placed in the OSDF as select and/or contouring material. The CM and Waste Acceptance Organization (WAO) will observe the excavation and stop the excavation of overburden soil when the pipe or bedding material is encountered. Once removed, the pipe's interior will

be inspected by WAO to determine its disposition. Pipe that is free of visible process residue will be size reduced to meet OSDF WAC and placed in the OSDF. Pipe that is deformed, closed or otherwise not amenable to visual inspection of the interior walls will be hauled to SP-7 in accordance with technical specification Section 02205.

If pipe bedding shows no visible signs of pipe leakage, real-time monitoring may be performed on the pipe bedding within the trench using Excavation Monitoring System (EMS) or adjacent to the trench using the high-purity germanium (HPGe) detector tripod. Material will be hauled to SP-7 (exceeds WAC) or to the OSDF based on the results of real-time scanning. If the material is below the OSDF WAC, it will be placed in the OSDF as select impacted material. As necessary, when removing the stockpiled material or pads, underlying areas will be over-excavated to a depth of 6 inches to ensure that contaminated material is removed.

If pipe bedding shows visible signs of pipe leakage, physical sampling will be performed on the pipe bedding within the trench and analyzed for appropriate constituents based upon line usage. Material will be hauled to SP-7 (exceeds WAC) or to the OSDF based on the results of physical sampling. If the material is below OSDF WAC, it may be placed in the OSDF as select impacted material.

Utility trenches will be excavated to 2:1 side slopes to stabilize the trenches and to provide a modified design grade. Excavated material will be disposed of in accordance with technical specification Section 02205.

3.5 AT- AND BELOW-GRADE STRUCTURES

Removal of at-grade concrete and asphalt pads/roads will be initiated early to prepare the area for general soil excavation activities. The soil surface below at-grade concrete and asphalt pads/roads will be scanned with *in situ* gamma spectroscopy techniques to determine if underlying soil meets OSDF WAC. At- and below-grade structures to be removed from the Area 6 Former Production Area include slabs and foundations of Quonset Huts 60 and 61, KC-2 Warehouse (Bldg 62), D&D Building (Bldg 78), Warehouses 77 and 79, East Water Tower (20D), and the Main Electrical Substation. Other than the East Water Tower, these reinforced concrete structures are located within 4 to 6 feet of existing grade. At-grade concrete and asphalt, along with stone pads, comprise the vast majority of debris to be excavated. East Water Tower footers extend to 12 feet below existing grade.

Overburden soil will be removed from around the structure and temporarily stockpiled in the area. If the structure is free of visible process residue it will be size reduced to meet OSDF WAC and placed in the OSDF. If the structure is deformed, closed or otherwise not amenable to visual inspection of the interior walls, it will be hauled to SP-7 in accordance with technical specification Section 02205. Upon removal

of the structure, real-time monitoring and/or physical sampling will be performed at the bottom of the excavation. Based on the results of real-time scanning and/or physical sampling prior to and following removal of the structure, stockpiled material removed from around the structure will be over-excavated to a depth of 6 inches and hauled to the OSDF.

3.6 PROHIBITED MATERIALS

Section 3.3.2.2 of the SEP identifies special materials that, when encountered, require WAO input before the contractor can determine their disposition. Materials from this list may be encountered in Area 6 Former Production Area include:

- Asbestos
- Drums and tanks
- Piping and pumps
- Process residues
- Uranium metal
- Miscellaneous debris
- Acid brick.

If not specifically prohibited from OSDF disposition, these materials can be placed in the OSDF if they meet the physical and chemical WAC, and if the pipe interior passes visual inspection. Materials prohibited from OSDF disposition and materials that do not meet the OSDF WAC will be placed at SP-7 or packaged into containers and placed at the SMTA. In general, special materials that exceed the OSDF WAC, except process residues and uranium metal, will be hauled to SP-7. Uranium metal will be containerized and placed at the SMTA for disposal at an off-site disposal facility. Information on the identification, management, and tracking of these materials is provided in the SEP (Section 3.6 and Appendix F).

3.7 INTERIM GRADING

Interim grading, defined as grading that occurs for slope maintenance and to prevent unsafe working conditions, is dependent on actual field conditions and may occur prior to or after precertification in accordance with technical specification Section 02206, Item 3.5. The frequency of interim grading in a given excavation will be a function of the slope materials and their ability to maintain the design grade during precipitation events that occur prior to completion of certification and restoration grading.

3.8 PRECERTIFICATION

Precertification will be performed in accordance with the PSP Guidelines for General Characterization for Sitewide Soil Remediation (DOE 2004c). Precertification activities will commence after the design grade has been reached, the perimeter ditches have been established, and other construction activities in the area have been complete.

The precertification area will be delineated and controlled to prevent cross-contamination of environmental media. Real-time monitoring of the design grade will be performed to precertify the area as attaining the uranium, thorium, and radium FRL goals.

A CDL/PSP for certification of Area 6 will be submitted to the regulatory agencies for review and approval.

TABLE 3-1
AREA 6 FORMER PRODUCTION AREA QUANTITIES

AREA	GRIDS	TOTAL	CAT 1	CAT 2	ABOVE-WAC AND RCRA
6B	GRID 9			120	
	GRID 16			5264	
	GRID 17			850	
subtotal		**12,234**	**6,000**	**6,234**	
6C	GRID 1			12,360	
	GRID 9			6180	750
subtotal		**64,540**	**45,250**	**18,540**	**750**
6D	GRID 1			400	
	GRID 2			10289	
	GRID 3			5,025	
	GRID 4			1,237	
	GRID 6			285	
subtotal		**64,236**	**47,000**	**17,236**	
6E	GRID 4			50	
	GRID 6			211	
	GRID 7			248	
subtotal		**3,009**	**2,500**	**509**	
6F	GRID N28 & N29			0	
subtotal		**1,000**	**1,000**	**0**	
6H	GRID N27			0	
subtotal		**1,000**	**1,000**	**0**	
6I	GRID 23			522	
	GRID 24			2186	
subtotal		**10,650**	**7,942**	**2,708**	
Isolation Trench					
6B			0		
6C			936		
6D			784		
6E			60		
6I			600		
subtotal		**2,380**	**2,380**	**0**	
Totals		**159,049**	**113,072**	**45,227**	**750**

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APPENDIX A

CHARACTERIZATION DATA FOR AREA 6 FORMER PRODUCTION AREA

APPENDIX A
PREDESIGN CHARACTERIZATION DATA FOR AREA 6 FORMER PRODUCTION AREA

Boring	Sample ID	Sample Date	Sample Depth (feet)		Parameter	Result	Units	Qualifier	Northing	Easting
			Top	Bottom						
A6-SA1-1	A6-SA1-1^11-R	28-Oct-04	5.0	5.5	Thorium-232	1.31	pCi/g	NV	482100.442	1349519.630
A6-SA1-2	A6-SA1-2^22-R	27-Oct-04	10.5	11.0	Thorium-232	0.466	pCi/g	-	482055.670	1349820.007
A6-SA1-3	A6-SA1-3^13-R	27-Oct-04	6.0	6.5	Uranium, Total	3.21	mg/kg	-	481988.136	1350008.852
A6-SA1-4	A6-SA1-4^3-R	26-Oct-04	1.0	1.5	Uranium, Total	1620	mg/kg	NV	482003.559	1350206.030
A6-SA1-4A	A6-SA1-4A^4-R	26-Oct-04	1.5	2.0	Uranium, Total	61.8	mg/kg	NV	482004.059	1350206.530
A6-SA1-4A	A6-SA1-4A^5-R	26-Oct-04	2.0	2.5	Uranium, Total	4670	mg/kg	NV	482004.059	1350206.530
A6-SA1-4F	A6-SA1-4F^6-R	27-Oct-04	2.5	3.0	Uranium, Total	2660	mg/kg	-	482003.559	1350209.030
A6-SA1-4F	A6-SA1-4F^7-R	27-Oct-04	3.0	3.5	Uranium, Total	4100	mg/kg	-	482003.559	1350209.030
A6-SA1-4F	A6-SA1-4F^8-R	27-Oct-04	3.5	4.0	Uranium, Total	5790	mg/kg	-	482003.559	1350209.030
A6-SA1-4F	A6-SA1-4F^9-R	27-Oct-04	4.0	4.5	Uranium, Total	2640	mg/kg	-	482003.559	1350209.030
A6-SA1-4F	A6-SA1-4F^10-R	27-Oct-04	4.5	5.0	Uranium, Total	187	mg/kg	-	482003.559	1350209.030
A6-SA1-4F	A6-SA1-4F^11-R	27-Oct-04	5.0	5.5	Uranium, Total	144	mg/kg	-	482003.559	1350209.030
A6-SA1-5	A6-SA1-5^3-R	26-Oct-04	1.0	1.5	Uranium, Total	1130	mg/kg	NV	481984.380	1350303.880
A6-SA1-5	A6-SA1-5^4-R	26-Oct-04	1.5	2.0	Uranium, Total	297	mg/kg	NV	481984.380	1350303.880
A6-SA1-6	A6-SA1-6^4-R	26-Oct-04	1.5	2.0	Uranium, Total	57.7	mg/kg	NV	482153.921	1350047.384
A6-SA1-6	A6-SA1-6^5-R	26-Oct-04	2.0	2.5	Uranium, Total	41.8	mg/kg	NV	482153.921	1350047.384
A6-SA1-6	A6-SA1-6^10-R	26-Oct-04	4.5	5.0	Uranium, Total	3.12	mg/kg	UNV	482153.921	1350047.384
A6-SA1-8	A6-SA1-8^1-R	8-Dec-04	0	0.5	Uranium, Total	10.9	mg/kg	NV	482231.588	1349086.465
A6-SA1-8	A6-SA1-8^2-R	8-Dec-04	0.5	1.0	Uranium, Total	13.6	mg/kg	NV	482231.588	1349086.465
A6-SA1-8	A6-SA1-8^7-R	8-Dec-04	3.0	3.5	Uranium, Total	4.72	mg/kg	NV	482231.588	1349086.465
A6-SA1-9	A6-SA1-9^5-R	29-Oct-04	2.0	2.5	Uranium, Total	7.3	mg/kg	-	482095.119	1349393.887
A6-SA1-9	A6-SA1-9^6-R	29-Oct-04	2.5	3.0	Uranium, Total	5.77	mg/kg	-	482095.119	1349393.887
A6-SA1-10	A6-SA1-10^3-PS	28-Oct-04	1.0	1.5	Aroclor-1254	0.0019	ug/kg	NV	482091.454	1349504.115
A6-SA1-10	A6-SA1-10^3-PS	28-Oct-04	1.0	1.5	Benzo(a)pyrene	0.036	ug/kg	UNV	482091.454	1349504.115
A6-SA1-10	A6-SA1-10^3-PS	28-Oct-04	1.0	1.5	Dibenzo(a,h)anthracene	0.036	ug/kg	UNV	482091.454	1349504.115
A6-SA1-10	A6-SA1-10^4-PS	28-Oct-04	1.5	2.0	Aroclor-1254	0.0038	ug/kg	UNV	482091.454	1349504.115
A6-SA1-10	A6-SA1-10^4-PS	28-Oct-04	1.5	2.0	Benzo(a)pyrene	0.038	ug/kg	UNV	482091.454	1349504.115
A6-SA1-10	A6-SA1-10^4-PS	28-Oct-04	1.5	2.0	Dibenzo(a,h)anthracene	0.038	ug/kg	UNV	482091.454	1349504.115
A6-SA1-11	A6-SA1-11^3-R	28-Oct-04	1.0	1.5	Uranium, Total	16.8	mg/kg	NV	482089.048	1349607.149
A6-SA1-11	A6-SA1-11^4-R	28-Oct-04	1.5	2.0	Uranium, Total	5.56	mg/kg	NV	482089.048	1349607.149
A6-SA1-12	A6-SA1-12^3-R	27-Oct-04	1.0	1.5	Uranium, Total	26.2	mg/kg	-	482086.976	1349709.609
A6-SA1-12	A6-SA1-12^4-R	27-Oct-04	1.5	2.0	Uranium, Total	4.74	mg/kg	-	482086.976	1349709.609
A6-SA1-13	A6-SA1-13^4-R	26-Oct-04	1.5	2.0	Uranium, Total	69.3	mg/kg	NV	482046.193	1349968.372
A6-SA1-13	A6-SA1-13^5-R	26-Oct-04	2.0	2.5	Uranium, Total	30.6	mg/kg	NV	482046.193	1349968.372
A6-SA1-14	A6-SA1-14^1-L	3-Nov-04	0	0.5	1,2-Dichloroethene (Total)	0.001	ug/kg	UNV	482177.635	1349029.915
A6-SA1-14	A6-SA1-14^1-L	3-Nov-04	0	0.5	Tetrachloroethene	0.0031	ug/kg	NV	482177.635	1349029.915
A6-SA1-14	A6-SA1-14^1-L	3-Nov-04	0	0.5	Trichloroethene	0.0016	ug/kg	NV	482177.635	1349029.915
A6-SA1-15	A6-SA1-15^1-L	3-Nov-04	0	0.5	1,2-Dichloroethene (Total)	0.0012	ug/kg	UNV	482175.948	1349091.008
A6-SA1-15	A6-SA1-15^1-L	3-Nov-04	0	0.5	Tetrachloroethene	0.0013	ug/kg	NV	482175.948	1349091.008

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Boring	Sample ID	Sample Date	Sample Depth (feet)		Parameter	Result	Units	Qualifier	Northing	Easting
			Top	Bottom						
A6-SA1-15	A6-SA1-15^1-L	3-Nov-04	0	0.5	Trichloroethene	0.0012	ug/kg	UNV	482175.948	1349091.008
A6-SA1-16	A6-SA1-16^1-L	25-Oct-04	0	0.5	1,2-Dichloroethene (Total)	0.0011	ug/kg	UNV	482139.227	1349122.371
A6-SA1-16	A6-SA1-16^1-L	25-Oct-04	0	0.5	Tetrachloroethene	0.0011	ug/kg	UNV	482139.227	1349122.371
A6-SA1-16	A6-SA1-16^1-L	25-Oct-04	0	0.5	Trichloroethene	0.0011	ug/kg	UNV	482139.227	1349122.371
A6-SA1-16A	A6-SA1-16A^1-L	3-Nov-04	0	0.5	1,2-Dichloroethene (Total)	0.00092	ug/kg	UNV	482153.227	1349126.871
A6-SA1-16A	A6-SA1-16A^1-L	3-Nov-04	0	0.5	Tetrachloroethene	0.00056	ug/kg	NV	482153.227	1349126.871
A6-SA1-16A	A6-SA1-16A^1-L	3-Nov-04	0	0.5	Trichloroethene	0.00092	ug/kg	UNV	482153.227	1349126.871
A6-SA1-17	A6-SA1-17^1-L	3-Nov-04	0	0.5	1,2-Dichloroethene (Total)	0.00084	ug/kg	UNV	482131.341	1349092.947
A6-SA1-17	A6-SA1-17^1-L	3-Nov-04	0	0.5	Tetrachloroethene	0.015	ug/kg	NV	482131.341	1349092.947
A6-SA1-17	A6-SA1-17^1-L	3-Nov-04	0	0.5	Trichloroethene	0.0004	ug/kg	NV	482131.341	1349092.947
A6-SA1-18	A6-SA1-18^1-L	25-Oct-04	0	0.5	1,2-Dichloroethene (Total)	0.00081	ug/kg	UNV	482134.119	1349030.058
A6-SA1-18	A6-SA1-18^1-L	25-Oct-04	0	0.5	Tetrachloroethene	0.014	ug/kg	NV	482134.119	1349030.058
A6-SA1-18	A6-SA1-18^1-L	25-Oct-04	0	0.5	Trichloroethene	0.00081	ug/kg	UNV	482134.119	1349030.058
A6-SA1-19	A6-SA1-19^4-R	29-Oct-04	1.5	2.0	Radium-226	1.35	pCi/g	-	482029.428	1349030.895
A6-SA1-19	A6-SA1-19^5-R	29-Oct-04	2.0	2.5	Radium-226	1.34	pCi/g	-	482029.428	1349030.895
A6-SA1-20	A6-SA1-20^1-R	8-Dec-04	0	0.5	Uranium, Total	51.5	mg/kg	NV	482232.367	1348781.962
A6-SA1-22	A6-SA1-22^4-R	4-Nov-04	1.5	2.0	Uranium, Total	13.2	mg/kg	NV	482257.858	1348764.723
A6-SA1-26	A6-SA1-26^4-R	26-Oct-04	1.5	2.0	Uranium, Total	7.22	mg/kg	NV	482127.293	1350371.875
A6-SA1-26	A6-SA1-26^5-R	26-Oct-04	2.0	2.5	Uranium, Total	3.12	mg/kg	UNV	482127.293	1350371.875
A6-SA1-26	A6-SA1-26^6-R	26-Oct-04	2.5	3.0	Uranium, Total	3.06	mg/kg	UNV	482127.293	1350371.875
A6-SA1-27	A6-SA1-27^9-R	2-Nov-04	4.0	4.5	Uranium, Total	5.12	mg/kg	NV	481940.286	1350471.006
A6-SA1-27	A6-SA1-27^13-R	2-Nov-04	6.0	6.5	Uranium, Total	110	mg/kg	NV	481940.286	1350471.006
A6-SA1-27	A6SA1-27^14-R	2-Nov-04	6.5	7.0	Uranium, Total	9.81	mg/kg	NV	481940.286	1350471.006
A6-SA1-27	A6SA1-27^15-R	2-Nov-04	7.0	7.5	Uranium, Total	3.12	mg/kg	UNV	481940.286	1350471.006
A6-SA1-31	A6-SA1-31^5-R	2-Nov-04	2.0	2.5	Uranium, Total	2.82	mg/kg	UNV	481942.461	1350278.839
A6-SA1-31	A6-SA1-31^9-R	2-Nov-04	4.0	4.5	Uranium, Total	96.7	mg/kg	NV	481942.461	1350278.839
A6-SA1-31	A6-SA1-31^10-R	2-Nov-04	4.5	5.0	Uranium, Total	9.09	mg/kg	NV	481942.461	1350278.839
A6-SA1-31	A6-SA1-31^11-R	2-Nov-04	5.0	5.5	Uranium, Total	7.3	mg/kg	NV	481942.461	1350278.839
A6-SA1-32	A6-SA1-32^5-R	9-Nov-04	2.0	2.5	Uranium, Total	6.36	mg/kg	NV	481927.438	1349192.976
A6-SA1-32	A6-SA1-32^6-R	9-Nov-04	2.5	3.0	Uranium, Total	17.3	mg/kg	NV	481927.438	1349192.976
A6-SA1-34	A6-SA1-34^1-R	9-Nov-04	0	0.5	Technetium-99	1.5	pCi/g	UNV	482062.745	1348851.784
A6-SA1-35	A6-SA1-35^1-R	9-Nov-04	0	0.5	Technetium-99	3.3	pCi/g	NV	482061.271	1348861.185
A6-SA1-36	A6-SA1-36^1-R	9-Nov-04	0	0.5	Technetium-99	2	pCi/g	NV	482047.177	1348862.539
A6-SA1-37	A6-SA1-37^1-R	9-Nov-04	0	0.5	Technetium-99	2.2	pCi/g	NV	482050.555	1348848.116
A6-SA1-38	A6-SA1-38^1-R	9-Nov-04	0	0.5	Technetium-99	1.7	pCi/g	UNV	482039.439	1348993.710
A6-SA1-39	A6-SA1-39^1-R	9-Nov-04	0	0.5	Technetium-99	1.7	pCi/g	NV	482037.379	1349004.858
A6-SA1-40	A6-SA1-40^1-R	9-Nov-04	0	0.5	Technetium-99	2	pCi/g	UNV	482029.052	1349002.191
A6-SA1-41	A6-SA1-41^1-R	9-Nov-04	0	0.5	Technetium-99	2.9	pCi/g	NV	482032.272	1348993.825
A6-SA1-42	A6-SA1-42^1-R	9-Nov-04	0	0.5	Technetium-99	11	pCi/g	NV	482018.835	1349148.325

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Boring	Sample ID	Sample Date	Sample Depth (feet)		Parameter	Result	Units	Qualifier	Northing	Easting
			Top	Bottom						
A6-SA1-43	A6-SA1-43^1-R	9-Nov-04	0	0.5	Technetium-99	2.5	pCi/g	NV	482015.715	1349154.966
A6-SA1-44	A6-SA1-44^1-R	9-Nov-04	0	0.5	Technetium-99	3.8	pCi/g	UNV	482011.007	1349153.766
A6-SA1-45	A6-SA1-45^1-R	9-Nov-04	0	0.5	Technetium-99	5.2	pCi/g	NV	482012.042	1349145.601
A6-SA1-46	A6-SA1-46^1-R	16-Dec-04	0	0.5	Uranium, Total	24.1	mg/kg	NV	482014.268	1350193.986
A6-SA1-46	A6-SA1-46^3-R	16-Dec-04	1.0	1.5	Uranium, Total	402	mg/kg	NV	482014.268	1350193.986
A6-SA1-46	A6-SA1-46^5-R	16-Dec-04	2.0	2.5	Uranium, Total	4.99	mg/kg	UNV	482014.268	1350193.986
A6-SA1-46	A6-SA1-46^7-R	16-Dec-04	3.0	3.5	Uranium, Total	4.96	mg/kg	UNV	482014.268	1350193.986
A6-SA1-46	A6-SA1-46^9-R	16-Dec-04	4.0	4.5	Uranium, Total	4.99	mg/kg	UNV	482014.268	1350193.986
A6-SA1-46	A6-SA1-46^11-R	16-Dec-04	5.0	5.5	Uranium, Total	13	mg/kg	NV	482014.268	1350193.986
A6-SA1-46	A6-SA1-46^13-R	16-Dec-04	6.0	6.5	Uranium, Total	4.99	mg/kg	UNV	482014.268	1350193.986
A6-SA1-46	A6-SA1-46^15-R	16-Dec-04	7.0	7.5	Uranium, Total	4.98	mg/kg	UNV	482014.268	1350193.986
A6-SA1-47	A6-SA1-47^1-R	16-Dec-04	0	0.5	Uranium, Total	1085	mg/kg	NV	481992.921	1350193.923
A6-SA1-47	A6-SA1-47^3-R	16-Dec-04	1.0	1.5	Uranium, Total	176	mg/kg	NV	481992.921	1350193.923
A6-SA1-47	A6-SA1-47^5-R	16-Dec-04	2.0	2.5	Uranium, Total	4.98	mg/kg	UNV	481992.921	1350193.923
A6-SA1-47	A6-SA1-47^7-R	16-Dec-04	3.0	3.5	Uranium, Total	4.94	mg/kg	UNV	481992.921	1350193.923
A6-SA1-47	A6-SA1-47^9-R	16-Dec-04	4.0	4.5	Uranium, Total	4.99	mg/kg	UNV	481992.921	1350193.923
A6-SA1-47	A6-SA1-47^11-R	16-Dec-04	5.0	5.5	Uranium, Total	4.95	mg/kg	UNV	481992.921	1350193.923
A6-SA1-47	A6-SA1-47^13-R	16-Dec-04	6.0	6.5	Uranium, Total	4.96	mg/kg	UNV	481992.921	1350193.923
A6-SA1-47	A6-SA1-47^15-R	16-Dec-04	7.0	7.5	Uranium, Total	4.96	mg/kg	UNV	481992.921	1350193.923
A6-SA1-48	A6-SA1-48^1-R	15-Dec-04	0	0.5	Uranium, Total	139	mg/kg	NV	481987.946	1350306.030
A6-SA1-48	A6-SA1-48^3-R	15-Dec-04	1.0	1.5	Uranium, Total	126	mg/kg	NV	481987.946	1350306.030
A6-SA1-48	A6-SA1-48^5-R	15-Dec-04	2.0	2.5	Uranium, Total	21.8	mg/kg	NV	481987.946	1350306.030
A6-SA1-48	A6-SA1-48^7-R	15-Dec-04	3.0	3.5	Uranium, Total	4.92	mg/kg	UNV	481987.946	1350306.030
A6-SA1-48	A6-SA1-48^9-R	15-Dec-04	4.0	4.5	Uranium, Total	4.93	mg/kg	UNV	481987.946	1350306.030
A6-SA1-48	A6-SA1-48^11-R	15-Dec-04	5.0	5.5	Uranium, Total	4.93	mg/kg	UNV	481987.946	1350306.030
A6-SA1-48	A6-SA1-48^13-R	15-Dec-04	6.0	6.5	Uranium, Total	4.99	mg/kg	UNV	481987.946	1350306.030
A6-SA1-48	A6-SA1-48^15-R	15-Dec-04	7.0	7.5	Uranium, Total	4.95	mg/kg	UNV	481987.946	1350306.030
A6-SA1-49	A6-SA1-49^1-R	15-Dec-04	0	0.5	Uranium, Total	130	mg/kg	NV	481980.828	1350306.102
A6-SA1-49	A6-SA1-49^3-R	15-Dec-04	1.0	1.5	Uranium, Total	1010	mg/kg	NV	481980.828	1350306.102
A6-SA1-49	A6-SA1-49^5-R	15-Dec-04	2.0	2.5	Uranium, Total	742	mg/kg	NV	481980.828	1350306.102
A6-SA1-49	A6-SA1-49^7-R	15-Dec-04	3.0	3.5	Uranium, Total	1870	mg/kg	NV	481980.828	1350306.102
A6-SA1-49	A6-SA1-49^9-R	15-Dec-04	4.0	4.5	Uranium, Total	1680	mg/kg	NV	481980.828	1350306.102
A6-SA1-49	A6-SA1-49^11-R	15-Dec-04	5.0	5.5	Uranium, Total	750	mg/kg	NV	481980.828	1350306.102
A6-SA1-49	A6-SA1-49^13-R	15-Dec-04	6.0	6.5	Uranium, Total	56.5	mg/kg	NV	481980.828	1350306.102
A6-SA1-49	A6-SA1-49^15-R	15-Dec-04	7.0	7.5	Uranium, Total	63.3	mg/kg	NV	481980.828	1350306.102
A6-SA1-50	A6-SA1-50^1-R	19-Nov-04	0	0.5	Technetium-99	3.2	pCi/g dry	NV	482061.017	1348826.417
A6-SA1-51	A6-SA1-51^1-R	19-Nov-04	0	0.5	Technetium-99	1.8	pCi/g dry	UNV	482060.505	1348833.210
A6-SA1-52	A6-SA1-52^1-R	20-Dec-04	0	0.5	Uranium, Total	24	mg/kg	NV	481966.159	1350323.998
A6-SA1-52	A6-SA1-52^3-R	20-Dec-04	1.0	1.5	Uranium, Total	28.6	mg/kg	NV	481966.159	1350323.998

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Boring	Sample ID	Sample Date	Sample Depth (feet)		Parameter	Result	Units	Qualifier	Northing	Easting
			Top	Bottom						
A6-SA1-52	A6-SA1-52^5-R	20-Dec-04	2.0	2.5	Uranium, Total	34.2	mg/kg	NV	481966.159	1350323.998
A6-SA1-52	A6-SA1-52^7-R	20-Dec-04	3.0	3.5	Uranium, Total	17.3	mg/kg	NV	481966.159	1350323.998
A6-SA1-52	A6-SA1-52^9-R	20-Dec-04	4.0	4.5	Uranium, Total	121	mg/kg	NV	481966.159	1350323.998
A6-SA1-52	A6-SA1-52^11-R	20-Dec-04	5.0	5.5	Uranium, Total	663	mg/kg	NV	481966.159	1350323.998
A6-SA1-52	A6-SA1-52^13-R	20-Dec-04	6.0	6.5	Uranium, Total	53.2	mg/kg	NV	481966.159	1350323.998
A6-SA1-52	A6-SA1-52^15-R	20-Dec-04	7.0	7.5	Uranium, Total	4.93	mg/kg	UNV	481966.159	1350323.998
A6-SA1-52	A6-SA1-52^17-R	20-Dec-04	8.0	8.5	Uranium, Total	4.92	mg/kg	UNV	481966.159	1350323.998
A6-SA1-52	A6-SA1-52^19-R	20-Dec-04	9.0	9.5	Uranium, Total	4.94	mg/kg	UNV	481966.159	1350323.998
A6-SA1-52	A6-SA1-52^21-R	20-Dec-04	10.0	10.5	Uranium, Total	4.98	mg/kg	UNV	481966.159	1350323.998
A6-SA1-52	A6-SA1-52^23-R	20-Dec-04	11.0	11.5	Uranium, Total	4.95	mg/kg	UNV	481966.159	1350323.998
A6-SA1-53	A6-SA1-53^1-R	26-Jan-05	0	0.5	Uranium, Total	102	mg/kg	NV	481989.636	1350190.142
A6-SA1-53	A6-SA1-53^3-R	26-Jan-05	1.0	1.5	Uranium, Total	169	mg/kg	NV	481989.636	1350190.142
A6-SA2-1	A6-SA2-1^4-RMP	19-Jan-05	1.5	2.0	Arsenic	5.75	mg/kg	NV	479879.417	1350529.748
A6-SA2-1	A6-SA2-1^4-RMP	19-Jan-05	1.5	2.0	Lead	9.01	mg/kg	NV	479879.417	1350529.748
A6-SA2-1	A6-SA2-1^4-RMP	19-Jan-05	1.5	2.0	Aroclor-1254	0.0039	ug/kg	UNV	479879.417	1350529.748
A6-SA2-1	A6-SA2-1^4-RMP	19-Jan-05	1.5	2.0	Uranium, Total	4.68	mg/kg	U	479879.417	1350529.748
A6-SA2-1	A6-SA2-1^6-RMP	19-Jan-05	2.5	3.0	Arsenic	4.82	mg/kg	NV	479879.417	1350529.748
A6-SA2-1	A6-SA2-1^6-RMP	19-Jan-05	2.5	3.0	Lead	6.79	mg/kg	NV	479879.417	1350529.748
A6-SA2-1	A6-SA2-1^6-RMP	19-Jan-05	2.5	3.0	Aroclor-1254	0.0039	ug/kg	UNV	479879.417	1350529.748
A6-SA2-1	A6-SA2-1^6-RMP	19-Jan-05	2.5	3.0	Uranium, Total	4.26	mg/kg	U	479879.417	1350529.748
A6-SA2-1	A6-SA2-1^9-RMP	19-Jan-05	4.0	4.5	Arsenic	6.87	mg/kg	NV	479879.417	1350529.748
A6-SA2-1	A6-SA2-1^9-RMP	19-Jan-05	4.0	4.5	Lead	13.1	mg/kg	NV	479879.417	1350529.748
A6-SA2-1	A6-SA2-1^9-RMP	19-Jan-05	4.0	4.5	Aroclor-1254	0.0039	ug/kg	UNV	479879.417	1350529.748
A6-SA2-1	A6-SA2-1^9-RMP	19-Jan-05	4.0	4.5	Uranium, Total	4.14	mg/kg	U	479879.417	1350529.748
A6-SA2-2	A6-SA2-2^4-RMP	19-Jan-05	1.5	2.0	Arsenic	4.12	mg/kg	NV	479765.623	1350516.361
A6-SA2-2	A6-SA2-2^4-RMP	19-Jan-05	1.5	2.0	Aroclor-1254	0.0038	ug/kg	UNV	479765.623	1350516.361
A6-SA2-2	A6-SA2-2^4-RMP	19-Jan-05	1.5	2.0	Uranium, Total	4.11	mg/kg	U	479765.623	1350516.361
A6-SA2-2	A6-SA2-2^6-RMP	19-Jan-05	2.5	3.0	Arsenic	4.43	mg/kg	NV	479765.623	1350516.361
A6-SA2-2	A6-SA2-2^6-RMP	19-Jan-05	2.5	3.0	Aroclor-1254	0.0037	ug/kg	UNV	479765.623	1350516.361
A6-SA2-2	A6-SA2-2^6-RMP	19-Jan-05	2.5	3.0	Uranium, Total	3.95	mg/kg	U	479765.623	1350516.361
A6-SA2-2	A6-SA2-2^9-RMP	19-Jan-05	4.0	4.5	Arsenic	3.81	mg/kg	NV	479765.623	1350516.361
A6-SA2-2	A6-SA2-2^9-RMP	19-Jan-05	4.0	4.5	Aroclor-1254	0.0037	ug/kg	UNV	479765.623	1350516.361
A6-SA2-2	A6-SA2-2^9-RMP	19-Jan-05	4.0	4.5	Uranium, Total	3.36	mg/kg	U	479765.623	1350516.361
A6-SA2-4	A6-SA2-4^3-P	19-Jan-05	1.0	1.5	Aroclor-1254	0.001	ug/kg	NV	479868.607	1350521.571
A6-SA2-4	A6-SA2-4^9-P	19-Jan-05	4.0	4.5	Aroclor-1254	0.0038	ug/kg	UNV	479868.607	1350521.571
A6-SA2-5	A6-SA2-5^2-P	19-Jan-05	0.5	1.0	Aroclor-1254	0.021	ug/kg	NV	479785.084	1350506.739
A6-SA2-5	A6-SA2-5^8-P	19-Jan-05	3.5	4.0	Aroclor-1254	0.0038	ug/kg	UNV	479785.084	1350506.739
A6-SA2-6	A6-SA2-6^9-R	27-Jan-05	4.0	4.5	Uranium, Total	1.85	mg/kg	UNV	479980.647	1350269.493
A6-SA2-7	A6-SA2-7^4-L	13-Jan-05	1.5	2.0	1,1-Dichloroethene	0.000976	ug/kg	UNV	480368.304	1350483.351

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Boring	Sample ID	Sample Date	Sample Depth (feet)		Parameter	Result	Units	Qualifier	Northing	Easting
			Top	Bottom						
A6-SA2-7	A6-SA2-7^4-L	13-Jan-05	1.5	2.0	Benzene	0.000976	ug/kg	UNV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-L	13-Jan-05	1.5	2.0	Carbon Tetrachloride	0.000976	ug/kg	UNV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-L	13-Jan-05	1.5	2.0	Chlorobenzene	0.000229	ug/kg	NV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-L	13-Jan-05	1.5	2.0	Tetrachloroethene	0.000976	ug/kg	UNV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-L	13-Jan-05	1.5	2.0	Trichloroethene	0.000976	ug/kg	UNV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-L	13-Jan-05	1.5	2.0	Vinyl chloride	0.000976	ug/kg	UNV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Arsenic	3.89	mg/kg	NV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Barium	69.9	mg/kg	NV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Cadmium	0.383	mg/kg	NV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Chromium	14	mg/kg	NV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Lead	14.1	mg/kg	NV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Mercury	0.0231	mg/kg	NV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Selenium	0.511	mg/kg	UNV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Silver	0.269	mg/kg	UNV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Aroclor-1254	0.0039	ug/kg	UNV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Aroclor-1260	0.0039	ug/kg	UNV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Chlordane	0.00973	ug/kg	UNV	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Technetium-99	0.81	pCi/g	U	480368.304	1350483.351
A6-SA2-7	A6-SA2-7^4-RMP	13-Jan-05	1.5	2.0	Uranium, Total	136	mg/kg	-	480368.304	1350483.351
A6-SA2-8	A6-SA2-8^2-L	13-Jan-05	0.5	1.0	1,1-Dichloroethene	0.00102	ug/kg	UNV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-L	13-Jan-05	0.5	1.0	Benzene	0.00102	ug/kg	UNV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-L	13-Jan-05	0.5	1.0	Carbon Tetrachloride	0.00102	ug/kg	UNV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-L	13-Jan-05	0.5	1.0	Chlorobenzene	0.000246	ug/kg	NV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-L	13-Jan-05	0.5	1.0	Tetrachloroethene	0.00102	ug/kg	UNV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-L	13-Jan-05	0.5	1.0	Trichloroethene	0.00102	ug/kg	UNV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-L	13-Jan-05	0.5	1.0	Vinyl chloride	0.00102	ug/kg	UNV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Arsenic	5.8	mg/kg	NV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Barium	112	mg/kg	NV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Cadmium	0.548	mg/kg	NV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Chromium	16.9	mg/kg	NV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Lead	20.1	mg/kg	NV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Mercury	0.0532	mg/kg	NV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Selenium	0.525	mg/kg	UNV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Silver	0.341	mg/kg	NV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Aroclor-1254	0.0011	ug/kg	NV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Aroclor-1260	0.0042	ug/kg	UNV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Chlordane	0.0105	ug/kg	UNV	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Technetium-99	0.847	pCi/g	U	480445.877	1350412.129
A6-SA2-8	A6-SA2-8^2-RMP	13-Jan-05	0.5	1.0	Uranium, Total	53.7	mg/kg	-	480445.877	1350412.129

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APPENDIX A
PREDESIGN CHARACTERIZATION DATA FOR AREA 6 FORMER PRODUCTION AREA

Boring	Sample ID	Sample Date	Sample Depth (feet)		Parameter	Result	Units	Qualifier	Northing	Easting
			Top	Bottom						
A6-SA2-9	A6-SA2-9^4-L	13-Jan-05	1.5	2.0	1,1-Dichloroethene	0.000996	ug/kg	UNV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-L	13-Jan-05	1.5	2.0	Benzene	0.000996	ug/kg	UNV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-L	13-Jan-05	1.5	2.0	Carbon Tetrachloride	0.000996	ug/kg	UNV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-L	13-Jan-05	1.5	2.0	Chlorobenzene	0.000253	ug/kg	NV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-L	13-Jan-05	1.5	2.0	Tetrachloroethene	0.000189	ug/kg	NV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-L	13-Jan-05	1.5	2.0	Trichloroethene	0.000996	ug/kg	UNV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-L	13-Jan-05	1.5	2.0	Vinyl chloride	0.000996	ug/kg	UNV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Arsenic	7.61	mg/kg	NV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Barium	92.6	mg/kg	NV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Cadmium	0.629	mg/kg	NV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Chromium	21.1	mg/kg	NV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Lead	16.7	mg/kg	NV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Mercury	0.0369	mg/kg	NV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Selenium	0.693	mg/kg	NV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Silver	0.302	mg/kg	UNV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Aroclor-1254	0.093	ug/kg	NV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Aroclor-1260	0.022	ug/kg	NV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Chlordane	0.0103	ug/kg	UNV	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Technetium-99	0.817	pCi/g	U	480493.114	1350490.429
A6-SA2-9	A6-SA2-9^4-RMP	13-Jan-05	1.5	2.0	Uranium, Total	19.1	mg/kg	-	480493.114	1350490.429
A6-SA2-10	A6-SA2-10^4-L	13-Jan-05	1.5	2.0	1,1-Dichloroethene	0.00095	ug/kg	UNV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-L	13-Jan-05	1.5	2.0	Benzene	0.00095	ug/kg	UNV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-L	13-Jan-05	1.5	2.0	Carbon Tetrachloride	0.00095	ug/kg	UNV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-L	13-Jan-05	1.5	2.0	Chlorobenzene	0.00095	ug/kg	UNV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-L	13-Jan-05	1.5	2.0	Tetrachloroethene	0.00095	ug/kg	UNV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-L	13-Jan-05	1.5	2.0	Trichloroethene	0.00095	ug/kg	UNV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-L	13-Jan-05	1.5	2.0	Vinyl chloride	0.00095	ug/kg	UNV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Arsenic	7.8	mg/kg	NV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Barium	138	mg/kg	NV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Cadmium	0.585	mg/kg	NV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Chromium	26.7	mg/kg	NV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Lead	18.2	mg/kg	NV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Mercury	0.0503	mg/kg	NV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Selenium	0.508	mg/kg	UNV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Silver	0.299	mg/kg	UNV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Aroclor-1254	0.064	ug/kg	NV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Aroclor-1260	0.04	ug/kg	NV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Chlordane	0.0102	ug/kg	UNV	480491.422	1350511.635
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Technetium-99	0.781	pCi/g	U	480491.422	1350511.635

APPENDIX A
PREDESIGN CHARACTERIZATION DATA FOR AREA 6 FORMER PRODUCTION AREA

Boring	Sample ID	Sample Date	Sample Depth (feet)		Parameter	Result	Units	Qualifier	Northing	Easting
			Top	Bottom						
A6-SA2-10	A6-SA2-10^4-RMP	13-Jan-05	1.5	2.0	Uranium, Total	46.5	mg/kg	-	480491.422	1350511.635
A6-SA2-11	A6-SA2-11^4-L	13-Jan-05	1.5	2.0	1,1-Dichloroethene	0.001	ug/kg	UNV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-L	13-Jan-05	1.5	2.0	Benzene	0.001	ug/kg	UNV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-L	13-Jan-05	1.5	2.0	Carbon Tetrachloride	0.001	ug/kg	UNV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-L	13-Jan-05	1.5	2.0	Chlorobenzene	0.001	ug/kg	UNV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-L	13-Jan-05	1.5	2.0	Tetrachloroethene	0.000593	ug/kg	NV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-L	13-Jan-05	1.5	2.0	Trichloroethene	0.001	ug/kg	UNV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-L	13-Jan-05	1.5	2.0	Vinyl chloride	0.001	ug/kg	UNV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Arsenic	7.8	mg/kg	NV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Barium	73.1	mg/kg	NV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Cadmium	0.591	mg/kg	NV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Chromium	17.2	mg/kg	NV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Lead	11.3	mg/kg	NV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Mercury	0.0258	mg/kg	NV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Selenium	0.452	mg/kg	UNV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Silver	0.277	mg/kg	UNV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Aroclor-1254	0.024	ug/kg	UNV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Aroclor-1260	0.024	ug/kg	UNV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Chlordane	0.0102	ug/kg	UNV	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Technetium-99	0.843	pCi/g	U	480524.105	1350439.001
A6-SA2-11	A6-SA2-11^4-RMP	13-Jan-05	1.5	2.0	Uranium, Total	6.39	mg/kg	-	480524.105	1350439.001
A6-SA2-12	A6-SA2-12^2-M	14-Jan-05	0.5	1.0	Beryllium	2.44	mg/kg	NV	480532.294	1350427.371
A6-SA2-12	A6-SA2-12^3-M	14-Jan-05	1.0	1.5	Beryllium	4.22	mg/kg	NV	480532.294	1350427.371
A6-SA2-12	A6-SA2-12^4-M	14-Jan-05	1.5	2.0	Beryllium	2.07	mg/kg	NV	480532.294	1350427.371
A6-SA2-12	A6-SA2-12^5-M	14-Jan-05	2.0	2.5	Beryllium	0.814	mg/kg	NV	480532.294	1350427.371
A6-SA2-12	A6-SA2-12^6-M	14-Jan-05	2.5	3.0	Beryllium	0.737	mg/kg	NV	480532.294	1350427.371
A6-SA2-12	A6-SA2-12^7-M	14-Jan-05	3.0	3.5	Beryllium	0.654	mg/kg	NV	480532.294	1350427.371
A6-SA2-13	A6-SA2-13^2-M	14-Jan-05	0.5	1.0	Beryllium	0.93	mg/kg	NV	480527.313	1350422.411
A6-SA2-13	A6-SA2-13^3-M	14-Jan-05	1.0	1.5	Beryllium	0.938	mg/kg	NV	480527.313	1350422.411
A6-SA2-13	A6-SA2-13^4-M	14-Jan-05	1.5	2.0	Beryllium	0.931	mg/kg	NV	480527.313	1350422.411
A6-SA2-13	A6-SA2-13^5-M	14-Jan-05	2.0	2.5	Beryllium	0.785	mg/kg	NV	480527.313	1350422.411
A6-SA2-13	A6-SA2-13^6-M	14-Jan-05	2.5	3.0	Beryllium	1.03	mg/kg	NV	480527.313	1350422.411
A6-SA2-13	A6-SA2-13^7-M	14-Jan-05	3.0	3.5	Beryllium	0.701	mg/kg	NV	480527.313	1350422.411
A6-SA2-14	A6-SA2-14^1-R	18-Jan-05	0	0.5	Thorium-232	0.612	pCi/g	NV	480719.204	1350414.627
A6-SA2-14	A6-SA2-14^5-R	18-Jan-05	2.0	2.5	Thorium-232	0.757	pCi/g	NV	480719.204	1350414.627
A6-SA2-14	A6-SA2-14^11-R	18-Jan-05	5.0	5.5	Thorium-232	0.89	pCi/g	NV	480719.204	1350414.627
A6-SA2-14	A6-SA2-14^12-R	18-Jan-05	5.5	6.0	Thorium-232	1.48	pCi/g	NV	480719.204	1350414.627
A6-SA2-15	A6-SA2-15^2-R	21-Jan-05	0.5	1.0	Uranium, Total	9.84	mg/kg	NV	480779.332	1350560.840
A6-SA2-16	A6-SA2-16^5-R	10-Jan-05	2.0	2.5	Uranium, Total	14.1	mg/kg	-	480959.466	1350420.837

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APPENDIX A
PREDESIGN CHARACTERIZATION DATA FOR AREA 6 FORMER PRODUCTION AREA

Boring	Sample ID	Sample Date	Sample Depth (feet)		Parameter	Result	Units	Qualifier	Northing	Easting
			Top	Bottom						
A6-SA2-17	A6-SA2-17^6-M	11-Jan-05	2.5	3.0	Beryllium	0.58	mg/kg	NV	481110.808	1350425.787
A6-SA2-17	A6-SA2-17^8-M	11-Jan-05	3.5	4.0	Beryllium	0.566	mg/kg	NV	481110.808	1350425.787
A6-SA2-17	A6-SA2-17^12-M	11-Jan-05	5.5	6.0	Beryllium	0.573	mg/kg	NV	481110.808	1350425.787
A6-SA2-18	A6-SA2-18^4-M	11-Jan-05	1.5	2.0	Beryllium	1.03	mg/kg	NV	481115.903	1350425.938
A6-SA2-18	A6-SA2-18^5-M	11-Jan-05	2.0	2.5	Beryllium	1.29	mg/kg	NV	481115.903	1350425.938
A6-SA2-18	A6-SA2-18^7-M	11-Jan-05	3.0	3.5	Beryllium	0.95	mg/kg	NV	481115.903	1350425.938
A6-SA2-18	A6-SA2-18^11-M	11-Jan-05	5.0	5.5	Beryllium	0.595	mg/kg	NV	481115.903	1350425.938
A6-SA2-19	A6-SA2-19^5-M	12-Jan-05	2.0	2.5	Beryllium	0.744	mg/kg	NV	481105.945	1350425.955
A6-SA2-19	A6-SA2-19^6-M	12-Jan-05	2.5	3.0	Beryllium	0.96	mg/kg	NV	481105.945	1350425.955
A6-SA2-19	A6-SA2-19^8-M	12-Jan-05	3.5	4.0	Beryllium	1.13	mg/kg	NV	481105.945	1350425.955
A6-SA2-19	A6-SA2-19^12-M	12-Jan-05	5.5	6.0	Beryllium	0.463	mg/kg	NV	481105.945	1350425.955
A6-SA2-20	A6-SA2-20^5-M	12-Jan-05	2.0	2.5	Beryllium	0.843	mg/kg	NV	481110.893	1350420.906
A6-SA2-20	A6-SA2-20^6-M	12-Jan-05	2.5	3.0	Beryllium	0.877	mg/kg	NV	481110.893	1350420.906
A6-SA2-20	A6-SA2-20^8-M	12-Jan-05	3.5	4.0	Beryllium	1.17	mg/kg	NV	481110.893	1350420.906
A6-SA2-20	A6-SA2-20^12-M	12-Jan-05	5.5	6.0	Beryllium	0.568	mg/kg	NV	481110.893	1350420.906
A6-SA2-21	A6-SA2-21^5-M	12-Jan-05	2.0	2.5	Beryllium	0.931	mg/kg	NV	481110.983	1350430.928
A6-SA2-21	A6-SA2-21^6-M	12-Jan-05	2.5	3.0	Beryllium	0.953	mg/kg	NV	481110.983	1350430.928
A6-SA2-21	A6-SA2-21^8-M	12-Jan-05	3.5	4.0	Beryllium	0.759	mg/kg	NV	481110.983	1350430.928
A6-SA2-21	A6-SA2-21^12-M	12-Jan-05	5.5	6.0	Beryllium	0.754	mg/kg	NV	481110.983	1350430.928
A6-SA2-22	A6-SA2-22^3-R	10-Jan-05	1.0	1.5	Thorium-232	1.23	pCi/g	-	481163.509	1350377.027
A6-SA2-22	A6-SA2-22^4-R	10-Jan-05	1.5	2.0	Thorium-232	0.863	pCi/g	-	481163.509	1350377.027
A6-SA2-23	A6-SA2-23^4-R	17-Jan-05	1.5	2.0	Thorium-232	0.647	pCi/g	NV	481279.400	1350570.816
A6-SA2-23	A6-SA2-23^9-R	17-Jan-05	4.0	4.5	Thorium-232	0.711	pCi/g	NV	481279.400	1350570.816
A6-SA2-23	A6-SA2-23^11-R	17-Jan-05	5.0	5.5	Thorium-232	0.41	pCi/g	NV	481279.400	1350570.816
A6-SA2-23	A6-SA2-23^15-R	17-Jan-05	7.0	7.5	Thorium-232	0.414	pCi/g	NV	481279.400	1350570.816
A6-SA2-24	A6-SA2-24^1-R	18-Jan-05	0	0.5	Thorium-232	0.731	pCi/g	NV	481294.267	1350571.021
A6-SA2-24	A6-SA2-24^9-R	18-Jan-05	4.0	4.5	Thorium-232	0.636	pCi/g	NV	481294.267	1350571.021
A6-SA2-24	A6-SA2-24^10-R	18-Jan-05	4.5	5.0	Thorium-232	0.755	pCi/g	NV	481294.267	1350571.021
A6-SA2-24	A6-SA2-24^12-R	18-Jan-05	5.5	6.0	Thorium-232	0.524	pCi/g	NV	481294.267	1350571.021
A6-SA2-24	A6-SA2-24^16-R	18-Jan-05	7.5	8.0	Thorium-232	0.781	pCi/g	NV	481294.267	1350571.021
A6-SA2-25	A6-SA2-25^8-R	17-Jan-05	3.5	4.0	Thorium-232	0.957	pCi/g	NV	481264.584	1350570.920
A6-SA2-25	A6-SA2-25^9-R	17-Jan-05	4.0	4.5	Thorium-232	1.13	pCi/g	NV	481264.584	1350570.920
A6-SA2-25	A6-SA2-25^11-R	17-Jan-05	5.0	5.5	Thorium-232	1.28	pCi/g	NV	481264.584	1350570.920
A6-SA2-25	A6-SA2-25^15-R	17-Jan-05	7.0	7.5	Thorium-232	0.803	pCi/g	NV	481264.584	1350570.920
A6-SA2-26	A6-SA2-26^3-R	17-Jan-05	1.0	1.5	Thorium-232	0.55	pCi/g	NV	481279.451	1350556.003
A6-SA2-26	A6-SA2-26^8-R	17-Jan-05	3.5	4.0	Thorium-232	0.616	pCi/g	NV	481279.451	1350556.003
A6-SA2-26	A6-SA2-26^9-R	17-Jan-05	4.0	4.5	Thorium-232	1.19	pCi/g	NV	481279.451	1350556.003
A6-SA2-26	A6-SA2-26^11-R	17-Jan-05	5.0	5.5	Thorium-232	0.748	pCi/g	NV	481279.451	1350556.003
A6-SA2-26	A6-SA2-26^15-R	17-Jan-05	7.0	7.5	Thorium-232	1.28	pCi/g	NV	481279.451	1350556.003

APPENDIX A
PREDESIGN CHARACTERIZATION DATA FOR AREA 6 FORMER PRODUCTION AREA

Boring	Sample ID	Sample Date	Sample Depth (feet)		Parameter	Result	Units	Qualifier	Northing	Easting
			Top	Bottom						
A6-SA2-27	A6-SA2-27^2-R	17-Jan-05	0.5	1.0	Thorium-232	0.692	pCi/g	NV	481279.318	1350586.037
A6-SA2-27	A6-SA2-27^12-R	17-Jan-05	5.5	6.0	Thorium-232	0.944	pCi/g	NV	481279.318	1350586.037
A6-SA2-27	A6-SA2-27^13-R	17-Jan-05	6.0	6.5	Thorium-232	0.851	pCi/g	NV	481279.318	1350586.037
A6-SA2-27	A6-SA2-27^15-R	17-Jan-05	7.0	7.5	Thorium-232	0.947	pCi/g	NV	481279.318	1350586.037
A6-SA2-27	A6-SA2-27^19-R	17-Jan-05	9.0	9.5	Thorium-232	0.55	pCi/g	NV	481279.318	1350586.037
A6-SA2-28	A6-SA2-28^1-R	18-Jan-05	0	0.5	Uranium, Total	9.69	mg/kg	NV	481379.485	1350330.904
A6-SA2-28	A6-SA2-28^8-R	18-Jan-05	3.5	4.0	Uranium, Total	17.2	mg/kg	NV	481379.485	1350330.904
A6-SA2-29	A6-SA2-29^5-R	28-Jan-05	2.0	2.5	Uranium, Total	56.9	mg/kg	NV	480368.411	1350483.257
A6-SA2-29	A6-SA2-29^6-R	28-Jan-05	2.5	3.0	Uranium, Total	38.5	mg/kg	NV	480368.411	1350483.257
A6-SA2-29	A6-SA2-29^7-R	28-Jan-05	3.0	3.5	Uranium, Total	7.51	mg/kg	NV	480368.411	1350483.257
A6-SA2-30	A6-SA2-30^2-M	28-Jan-05	0.5	1.0	Beryllium	0.694	mg/kg	NV	480542.301	1350427.402
A6-SA2-30	A6-SA2-30^4-M	28-Jan-05	1.5	2.0	Beryllium	0.71	mg/kg	NV	480542.301	1350427.402
A6-SA4-22	A6-SA4-22^1-R	16-Feb-05	0	0.5	Thorium-232	0.631	pCi/g	NV	481339.931	1348298.704
A6-SA4-22	A6-SA4-22^5-R	16-Feb-05	2.0	2.5	Thorium-232	0.93	pCi/g	NV	481339.931	1348298.704
A6-SA4-22	A6-SA4-22^11-R	16-Feb-05	5.0	5.5	Thorium-232	0.921	pCi/g	NV	481339.931	1348298.704
A6-SA4-22	A6-SA4-22^21-R	16-Feb-05	10.0	10.5	Thorium-232	1.08	pCi/g	NV	481339.931	1348298.704
A6-SA4-22	A6-SA4-22^31-R	16-Feb-05	15.0	15.5	Thorium-232	0.794	pCi/g	NV	481339.931	1348298.704
A6-SA4-32	A6-SA4-32^1-R	9-Feb-05	0	0.5	Uranium, Total	16.2	mg/kg	NV	481042.199	1348253.815
A6-SA4-33	A6-SA4-33^1-R	9-Feb-05	0	0.5	Uranium, Total	11.2	mg/kg	NV	480929.012	1348182.413
A7-SA5-11	A7-SA5-11^1-P	18-Jan-05	0	0.5	Aroclor-1254	0.06	ug/kg	NV	479873.551	1350521.328
A7-SA5-11	A7-SA5-11^3-P	18-Jan-05	1.0	1.5	Aroclor-1254	0.0036	ug/kg	UNV	479873.551	1350521.328
A7-SA5-11	A7-SA5-11^6-P	18-Jan-05	2.5	3.0	Aroclor-1254	0.0038	ug/kg	UNV	479873.551	1350521.328
A7-SA5-12	A7-SA5-12^1-P	18-Jan-05	0	0.5	Aroclor-1254	0.0092	ug/kg	NV	479780.127	1350506.644
A7-SA5-12	A7-SA5-12^3-P	18-Jan-05	1.0	1.5	Aroclor-1254	0.0038	ug/kg	UNV	479780.127	1350506.644
A7-SA5-12	A7-SA5-12^6-P	18-Jan-05	2.5	3.0	Aroclor-1254	0.0038	ug/kg	UNV	479780.127	1350506.644
A7-SA5-13	A7-SA5-13^1-P	19-Jan-05	0	0.5	Aroclor-1254	0.0029	ug/kg	NV	479827.978	1350542.045
A7-SA5-13	A7-SA5-13^3-P	19-Jan-05	1.0	1.5	Aroclor-1254	0.0039	ug/kg	UNV	479827.978	1350542.045
A7-SA5-13	A7-SA5-13^6-P	19-Jan-05	2.5	3.0	Aroclor-1254	0.0038	ug/kg	UNV	479827.978	1350542.045

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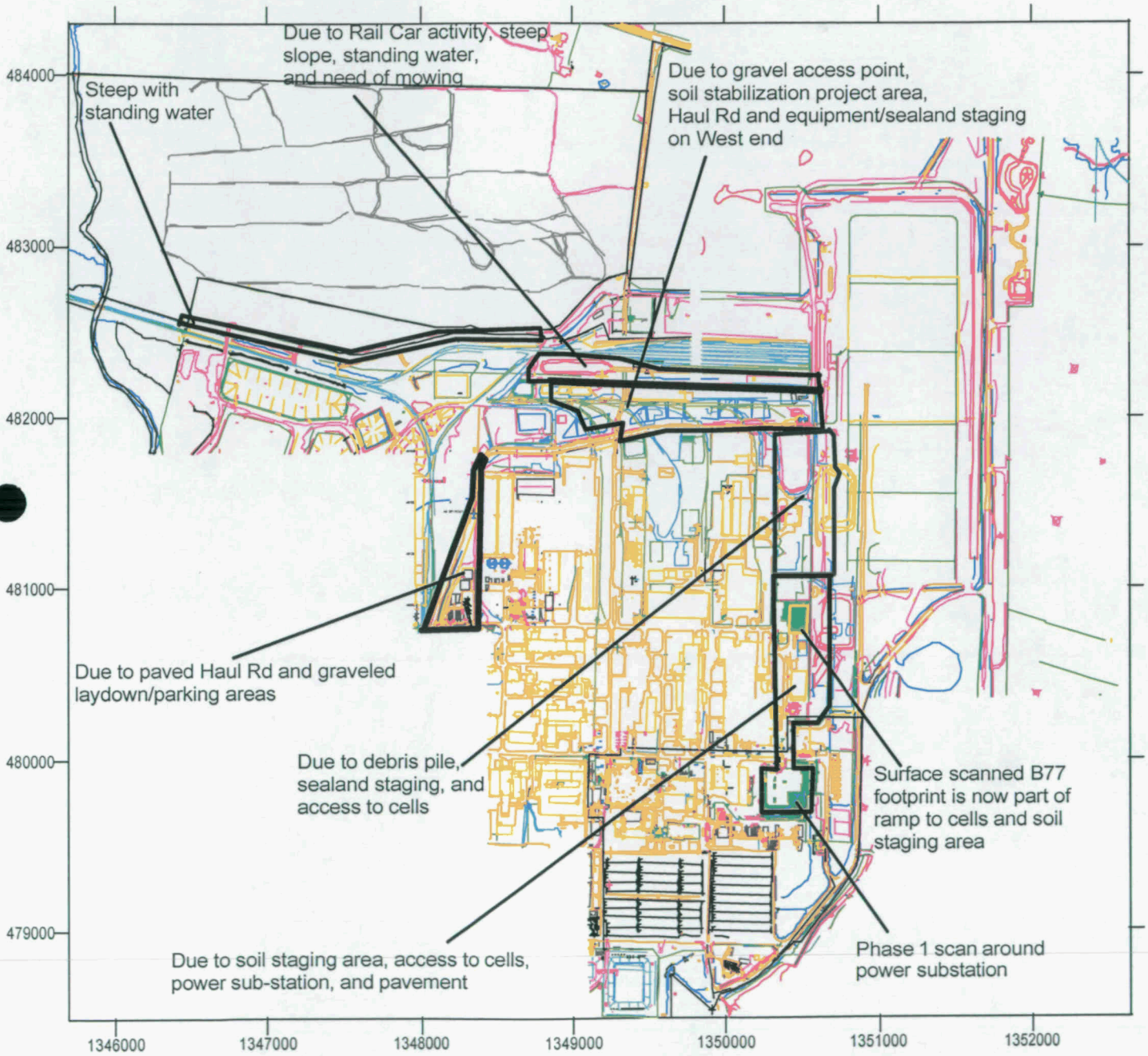
APPENDIX B

REAL TIME MONITORING

Appendix B. Area 6 Former Production Area Real-Time Total Uranium Results

Moisture Corrected Total Uranium
Field of View to Scale
NaI Batch #: RSS1-0761,0762,1293; RSS3-0568
Measurement Dates: 10/09/02, 08/25/04, 10/07/04



NaI
Total U (ppm)
- -186 to 246
- 246 to 875
- 875 to 9999

RTIMP DWG Title: A6_Appendix_B.srf
Project Names: Area 5 Precertification;
Gen Char for Site Soil Remediation
Project #'s: 20810-PSP-0005; 20300-PSP-0011
Prepared By: Joe Nikstenas/77839
Date Prepared: 03/03/05
Support Data: A6_Appendix_B_SF_P1_NAI.xls

APPENDIX C

SURFACE WATER CALCULATIONS

FLUOR FERNALD | 2/4/05

PREPARED BY: C. VAN ARSDALE
Checked By: W. Overshott 2/22/05

5970

OBJECTIVE

- DETERMINE EXISTING 10 YR PEAK FLOW TO SOUTHERN PART OF BASIN TA. CALCULATE DETENTION VOLUMES IN ORDER TO BY-PASS SECOND STREET DRAINAGE AND TIE STORM WATER INTO 1st STREET SYSTEM

ASSUMPTIONS

- ASSUME T_c = 10 MINUTES FOR OVERLAND FLOW ✓
- ASSUME TO ADD 1 MIN. TO TC FOR EACH 400 LF OF PIPE. ✓
- TYPE C SOIL ✓
- USE PIPE FLOW CALCS TO DETERMINE PEAK FLOW ✓

GIVEN

- DRAINAGE AREAS BASED ON TOPOGRAPHY FROM SEPT 2004 LIDAR SURVEY. ✓
- PIPE LENGTH, DIMENSIONS BASED ON LATEST UTILITY DRAWINGS ✓
- DESIGN STORM = 10 YEAR ✓
- INTENSITY CURVE FOR CINCINNATI, OH ✓
- USE RATIONAL METHOD FOR EXISTING CONDITION AND PIPE CHART ✓

TOPS 35502

CALCULATIONS

- BASED ON PIPE FLOW CALCULATIONS ATTACHED, THE FIRST STREET PIPE SYSTEM ONLY HAS CAPACITY FOR EXISTING DRAINAGE. THEREFORE MUST HOLD 2ND STREET DRAINAGE IN BASIN.

- DETERMINE RUNOFF VOLUME BY GRAPHICAL 1HR STORM HYDROGRAPH
  FIND STORAGE UNDER CURVE FOR
  $Q_{10\ PEAK} = 24.1$ CFS

  REQUIRED VOLUME = 3,507 CY
  (SEE ATTACHED HYDROGRAPH)

- CALCULATE STORAGE OF PROPOSED BASIN TO SEE IF IT CONTAINS APPROPRIATE CAPACITY WITH ALLOWANCE FOR FREEBOARD

TOPS
35502

WNO /

BASIN CAPACITY IN EAST PRODUCTION AREA

5970

ELEVATION (FT)	AREA (SF)	VOLUME (CF)	INCR VOLUME (CY)
568	5024		0
		5281	
569	5539		195
		5959	
570	6379		416
		9436	
571	12,494		765
		13,834	
572	15,174		1277
		15,977	
573	16,780		1869
		21,170	
574	25,560		2653
		25,998	
575	26,436		3616

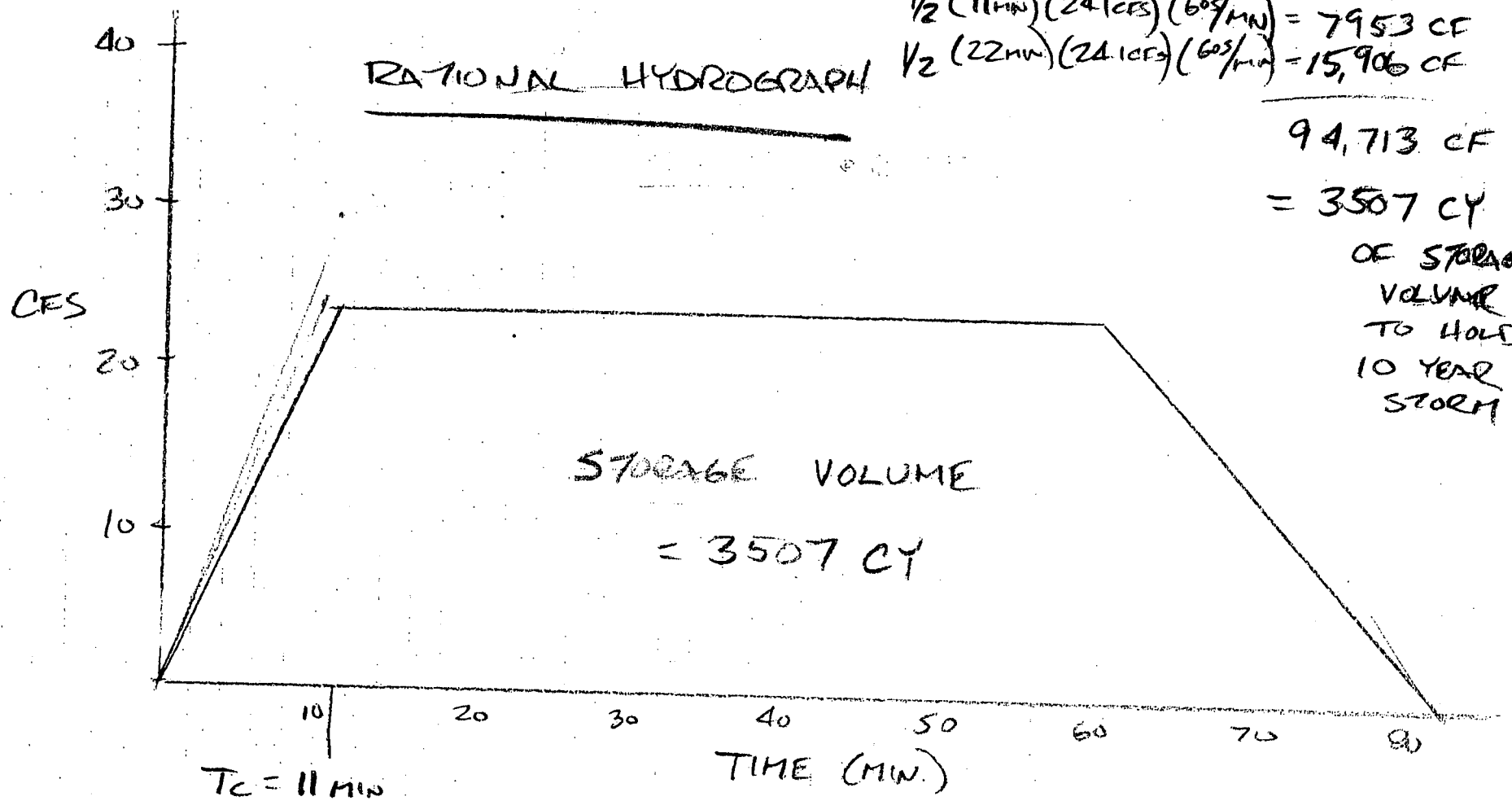
∴ ELEV 575 CAN HOLD 10 YR STORM CAPACITY. TOP OF BERM CAN BE HELD AT ELEV. 576 FOR 1' FOOT FREEBOARD.

TOPS 35502

(49 MIN)(24.1 CFS)(60 S/MIN) = 70,854 CF
1/2 (11 MIN)(24.1 CFS)(60 S/MIN) = 7953 CF
1/2 (22 MIN)(24.1 CFS)(60 S/MIN) = 15,906 CF

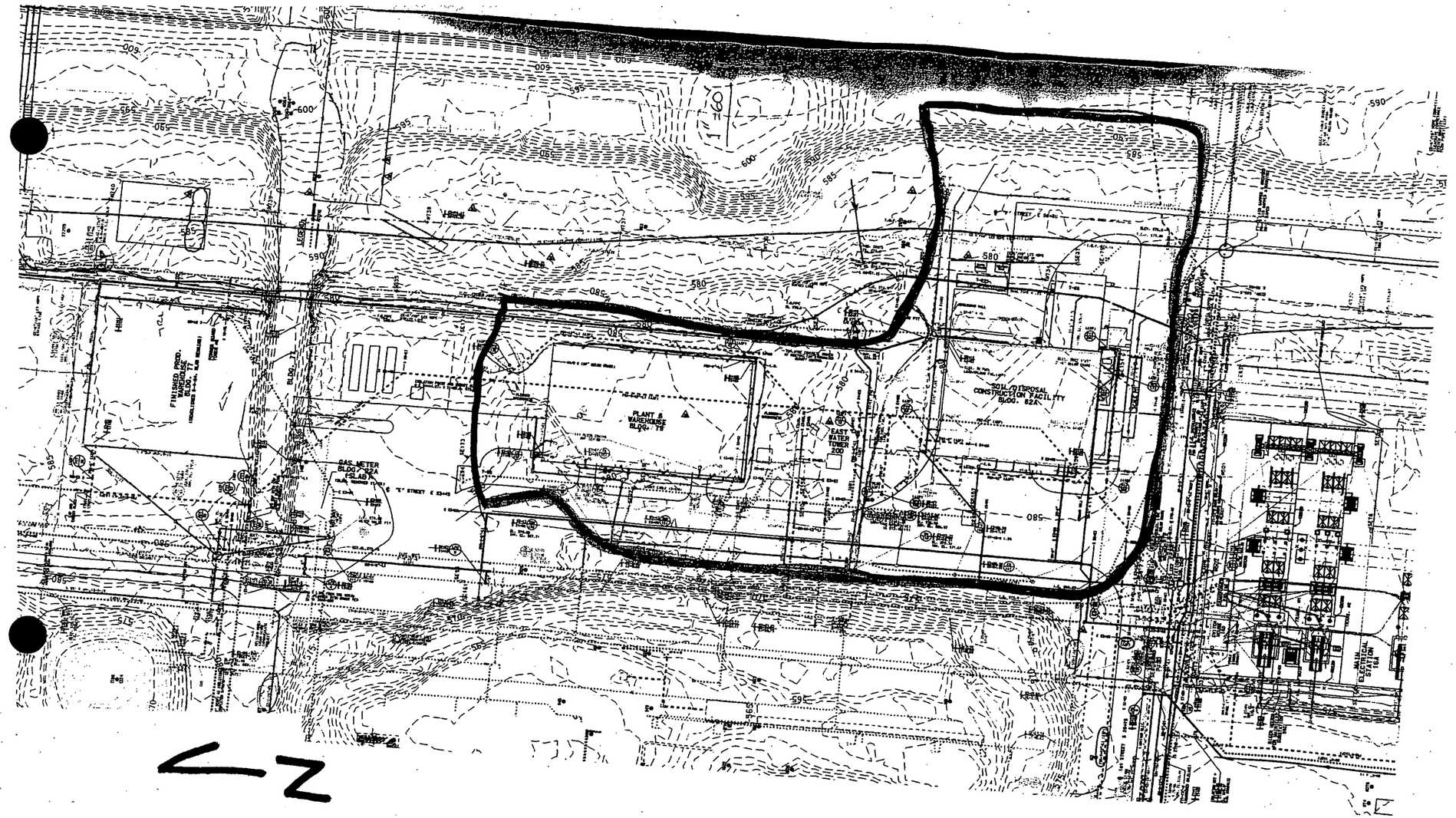
94,713 CF
= 3507 CY
OF STORAGE VOLUME TO HOLD 10 YEAR STORM

RATIONAL HYDROGRAPH



PEAK Q_{10} = 24.1 CFS

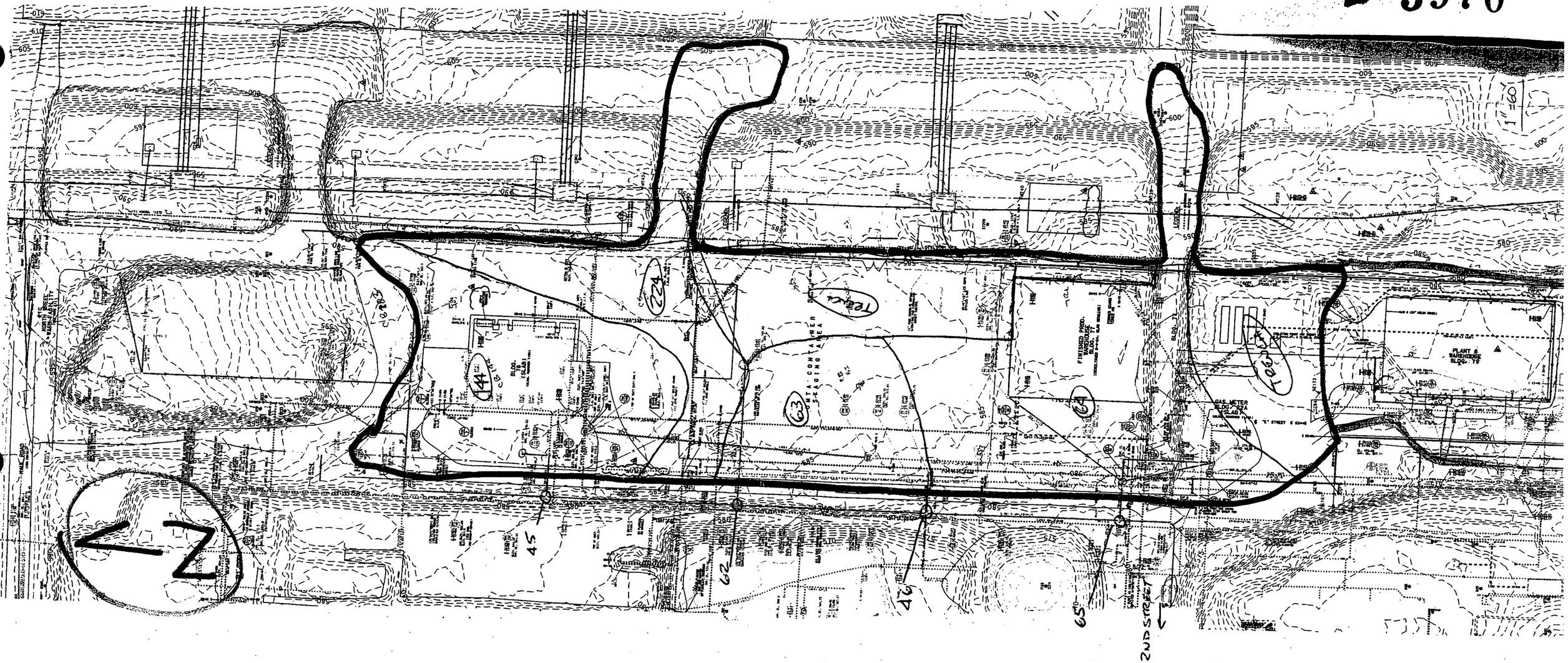
5970



Z

DRAINAGE MAP
FOR EXISTING DRAINAGE
TO 1ST STREET
FROM EAST
PRODUCTION AREA

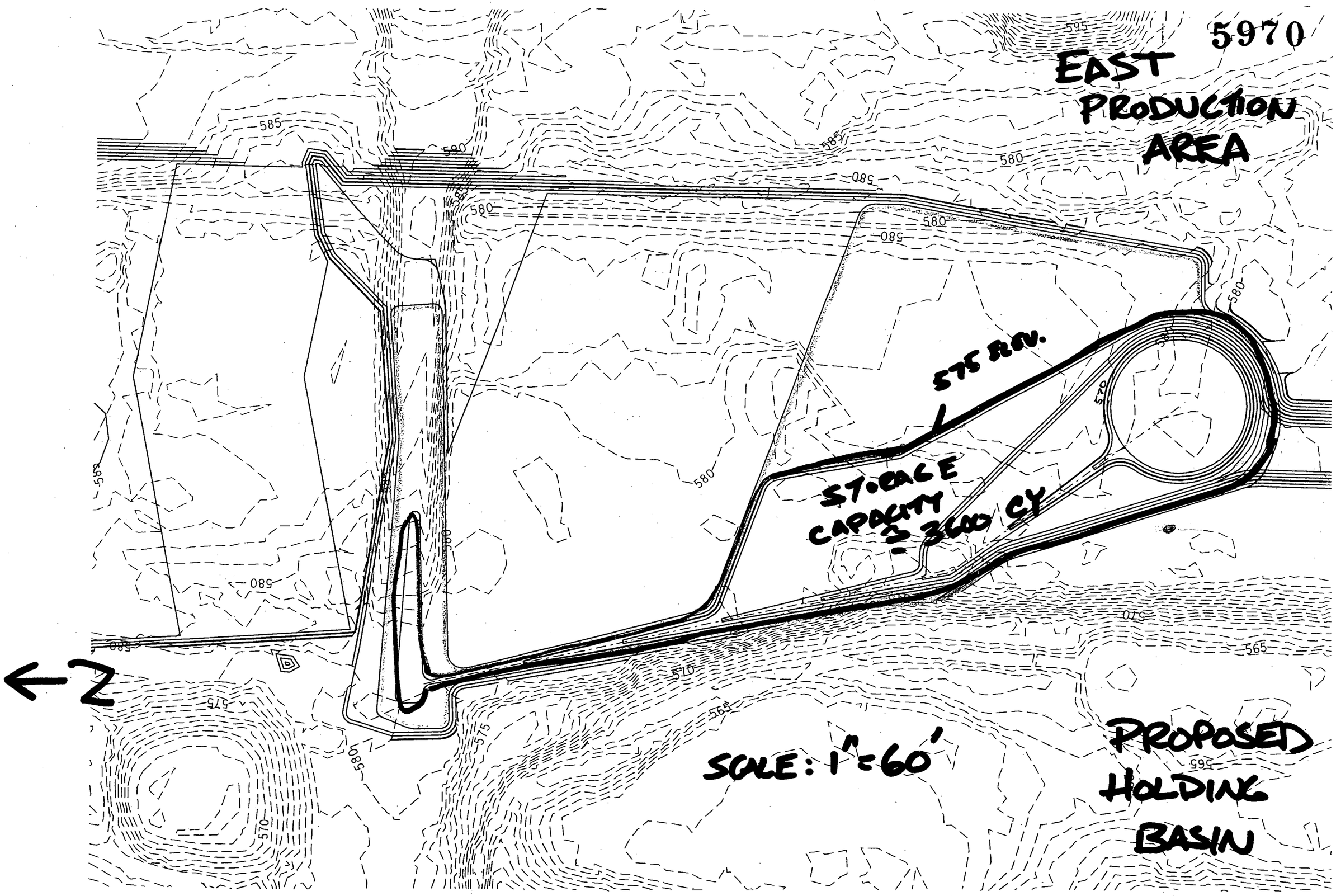
SCALE: 1" = 100'



DRAINAGE MAP FOR EXISTING DRAINAGE TO 2ND STREET FROM EAST PRODUCTION AREA

DRAINAGE AREA = 6.5 AC
10 YR PEAK = 24.1 CFS

SCALE: 1" = 100'


5970
EAST PRODUCTION AREA
595
585
590
580
575 R.W.
STORAGE CAPACITY ≥ 3600 CY
570
565
575
SCALE: 1" = 60'
PROPOSED HOLDING BASIN
← Z

PROJECT: EAST PRODUCTION AREA
LOCATION: DRAINS TO 2ND STREET

RAINFALL CURVE

STORM FREQUENCY: 10 YR.
N FACTOR:

JOB NO.:
DATE: 2/17/05
SHEET: ___ OF ___

LOCATION		ACRES					TIME OF CONC.				Q (C.F.S.)						INVERTS		
FROM	TO	SUB	TOTAL	C	C X A	ΣCA	INLET	PIPE	TOT.	I	DESIGN	CAP.	SIZE	%	VEL.	LEN.	UPPER	LOWER	REMARKS
	144	1.43		0.8	1.14	1.14	10	–	10	5.4	6.2								
45	62	–	1.43	–	–	1.14	10	–	10	5.4	6.2		18			200			
	224	0.91		0.8	0.73	0.73	10	–	10	5.4	3.9								
62	46		2.34	–	–	1.87	10	1	11	5.2	9.7		21			200			
	63	0.83		0.7	0.58	0.58	10	–	10	5.4	3.1								
46	65		3.17	–	–	2.45	10	1	11	5.2	12.7		21			200			
	TRENCH	1.54		0.5	0.77	0.77	10	–	10	5.4	4.2								
	64	1.78		0.8	1.42	1.42	10	–	10	5.4	7.7								
65	2ND ST		6.49	–	–	4.64	10	1	11	5.2	24.1 CFS		24						

02695

PROJECT: EAST PRODUCTION AREA
LOCATION: DRAINS TO 1ST STREET

RAINFALL CURVE

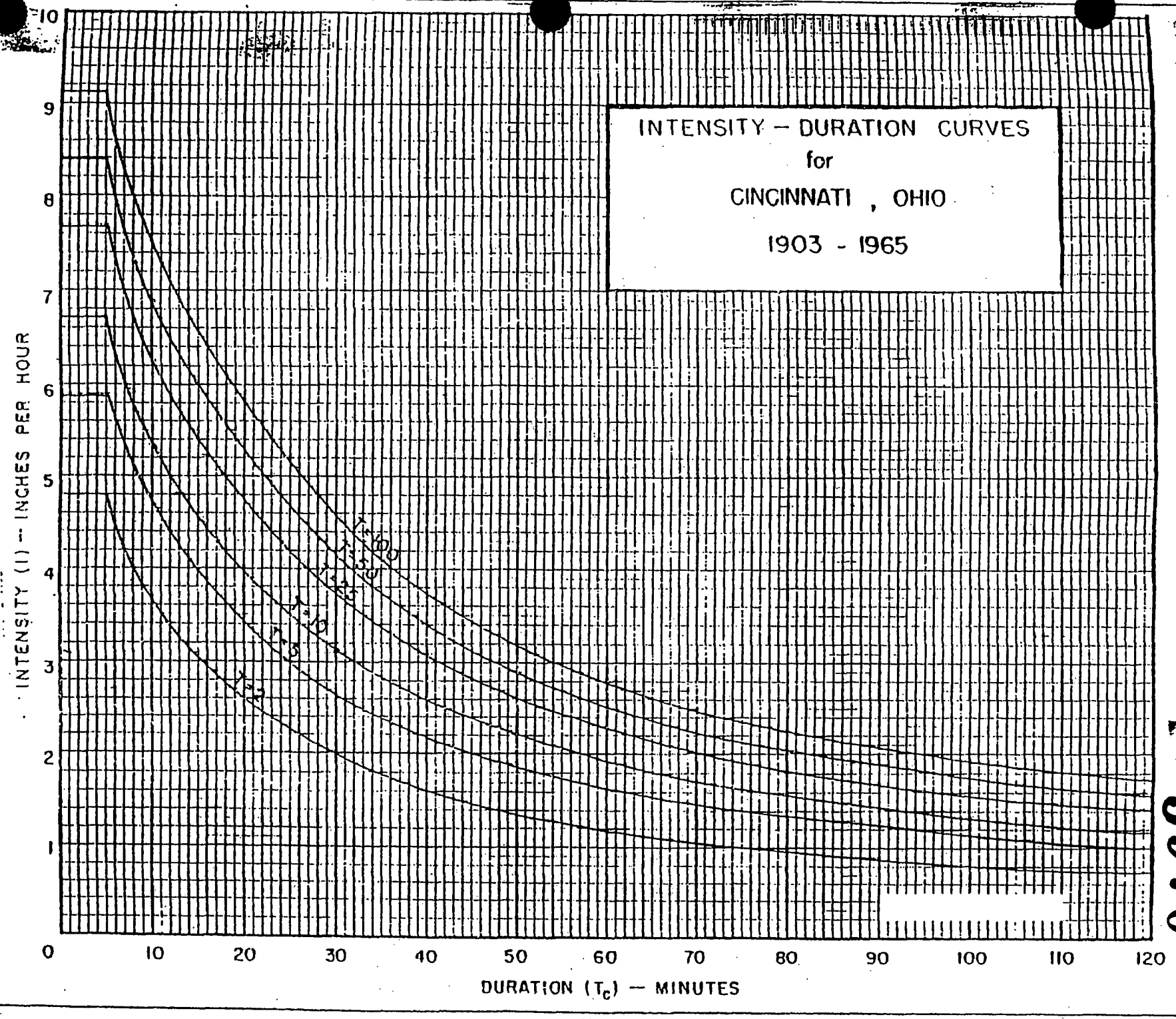
STORM FREQUENCY: 10 YR.
N FACTOR: n=.009

JOB NO.:
DATE: 2/4/05
SHEET: ___ OF ___

LOCATION		ACRES					TIME OF CONC.				Q (C.F.S.)						INVERTS		
FROM	TO	SUB	TOTAL	C	C X A	ΣCA	INLET	PIPE	TOT.	I	DESIGN	CAP.	SIZE	%	VEL.	LEN.	UPPER	LOWER	REMARKS
	90	0.77	0.77	0.9	0.69	0.69	10	–	10	5.4	3.7								
90	110	0.				0.69	10	–	10	5.4	3.7					200			
	TREVELL	0.83	GRASS/GRAVEL	0.6	0.50	0.50	10	–	10	5.4	2.7								
90	83					1.19	10	1	11	5.2	6.2					200			
	83	2.22	CONC PAVT	0.9	2.00	2.00	10	–	10	5.4	10.8								
83	82					3.19	10	1	11	5.2	16.6 CFS	15.2	18	1		70	570.44	569.79	HDPE

∴ CONTINUE TO DRAIN TO 1ST STREET SYSTEM

THE SECOND STREET DRAINAGE BASIN SHALL BE STORED IN A HOLDING BASIN



Gordon Rayburn 3/8/77	EFFECTIVE DATE 3-77	TITLE INTENSITY-DURATION CURVES CINCINNATI, OHIO	KENTUCKY BUREAU OF HIGHWAYS
			DRAWING NO 2-504.5

5970

FLUOR FERNALD | 2/7/05

PREPARED BY: C. VAN ARSDALE
Checked By W. Overholt 2/22/05

OBJECTIVE

- DETERMINE EXISTING 10 YR PEAK RUNOFF TO NORTHERN OMTA AREA. DETERMINE DETENTION VOLUME TO HOLD 10 YR STORM.

5970

ASSUMPTIONS

- ASSUME CURRENT PIPE CONFIGURATION IS INCONSEQUENTIAL BASED ON PREVIOUS GRADING CHANGES
- USE TR-55 METHOD TO DETERMINE PEAK RUNOFF
- TYPE C SOIL
- CALCULATE CN FROM INDUSTRIAL URBAN DISTRICT

GIVEN

- DRAINAGE AREA = 10.8 AC.
- EXISTING CONDITIONS DRAIN TO SW CORNER
- PRECIPITATION FOR 10 YEAR STORM $P_{10} = 4.2$ INCHES
- TYPE II STORM
- CN = 91

TOPS 35592

CALCULATE PEAK RUNOFF (INCHES)

$$Q_{10} = \frac{(P_{10} - 0.2S)^2}{(P + 0.8S)}$$

$$S = \frac{1000}{CN} - 10$$

$CN = 91$

$P_{10} = 4.2\text{IN}$

$$S = \frac{1000}{91} - 10 = 0.989$$

$$Q_{10} = \frac{(4.2 - 0.2(.989))^2}{(4.2 + 0.8(.989))}$$

$$Q_{10} = \frac{16.02}{4.99} = 3.2 \text{ INCHES}$$

$$\text{VOLUME} = \left(\begin{matrix}\text{DRAINAGE}\\ \text{AREA}\end{matrix}\right)(Q_{10}) =$$

$$(10.8\text{AC})\left(43{,}560\,\text{SF}/\text{AC}\right)\left(3.2\text{IN.}\right)\left(1\text{FT}/12\text{IN}\right)$$

$$= 125{,}453\text{ CF} \cong 4{,}646\text{ CY}$$

OF STORAGE

CALCULATE STORAGE OF PROPOSED BASIN TO SEE IF IT CONTAINS THE APPROPRIATE CAPACITY WITH ALLOWANCE FOR FREEBOARD

WO ✓

BASIN CAPACITY IN NORTHERN AREA INSIDE FORMER ~~PRODUCTION~~ AREA

5970

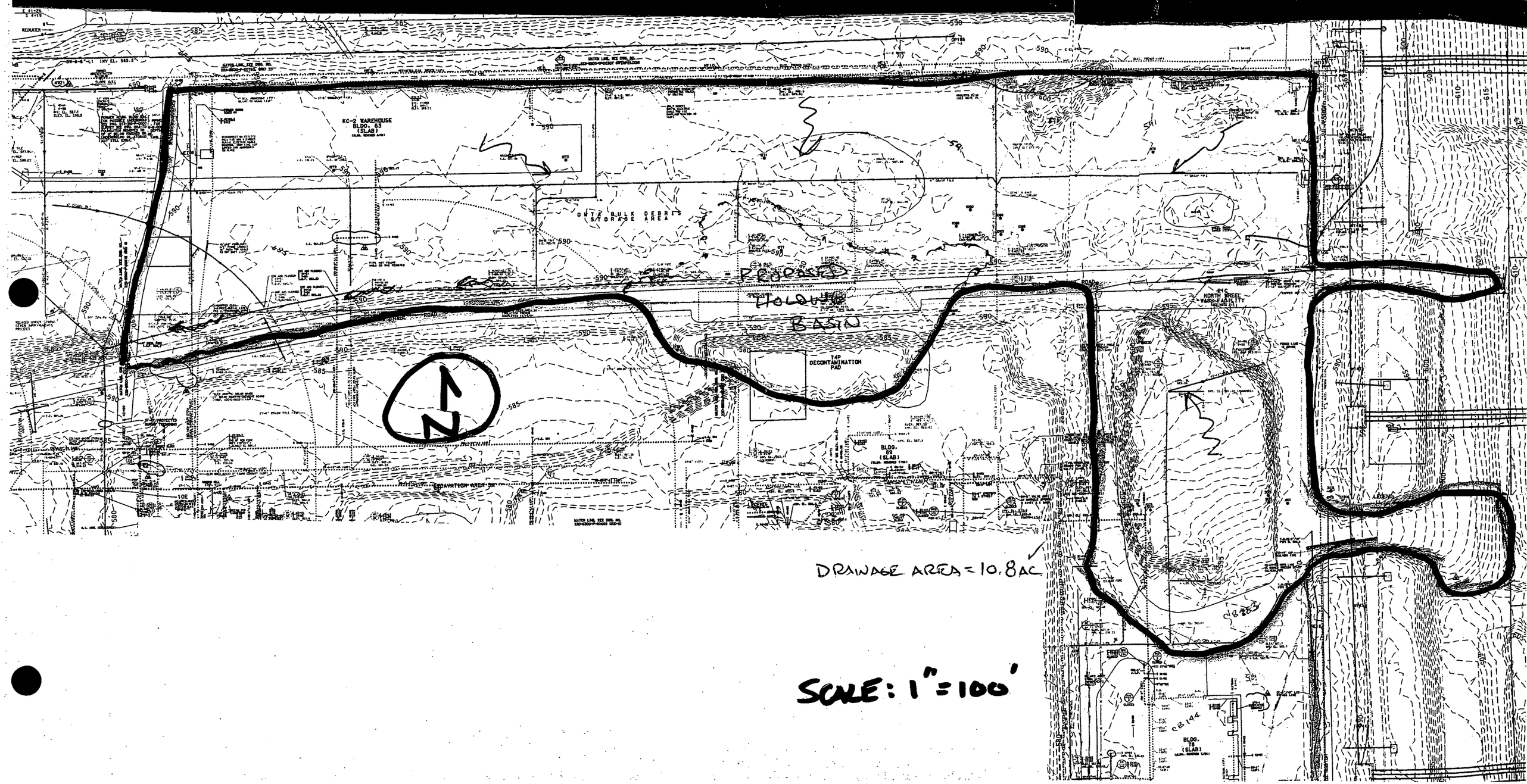
ELEVATION (FT.)	AREA (SF)	VOLUME (CF)	INCR. VOLUME (CY)
573	1265		0
		3344	
575	2079		123
		2584	
576	3090		219
		3370	
577	3651		344
		10962	
578	18,273		750
		21,999	
579	25,725		1565
		26,362	
580	27,000		2541
		29,000	
581	31,000		3615
		33,875	
582	36,750 ✓		4870

∴ ELEV 582 CAN HOLD 10 YR STORM CAPACITY. TOP OF BERM CAN BE HELD AT ELEV. 583 FOR 1' FOOT FREEBOARD ✓

TOPS 35592

DRAINAGE MAP FOR NORTHERN AREA INSIDE FORMER PRODUCTION AREA FENCE.

5970



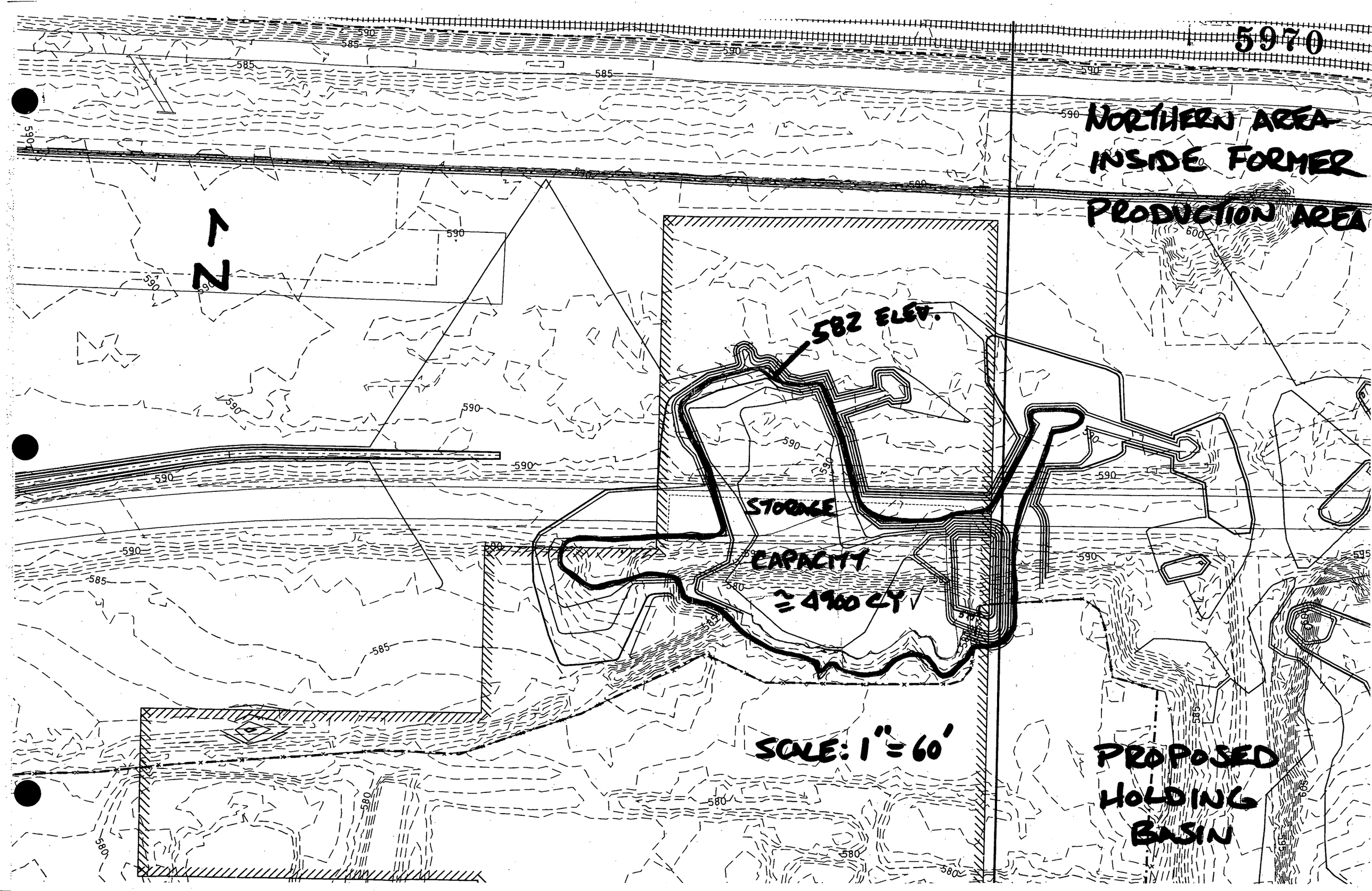

5970
NORTHERN AREA
INSIDE FORMER
PRODUCTION AREA
N
582 ELEV.
STORAGE
CAPACITY
≅ 4900 CY
SCALE: 1" = 60'
PROPOSED
HOLDING
BASIN

Table 2-2a.—Runoff curve numbers for urban areas[1]

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1]Average runoff condition, and $I_a = 0.2S$.
[2]The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3]CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4]Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5]Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

APPENDIX D

LIST OF DRAWINGS AND SPECIFICATIONS ISSUED

APPENDIX D
LIST OF DRAWINGS AND TECHNICAL SPECIFICATIONS

The following drawings and specifications have been submitted along with this Excavation Plan to constitute the IRDP for Area 6 Former Production Area:

IRDP DRAWINGS

Area	Drawing No.	Sheet No.	Drawing Title
6 (FPA)	99X-5500-G-00825	G-1	Layout Plan
6 (FPA)	99X-5500-G-00826	G-2	Excavation and Grading Plan (Northwest)
6 (FPA)	99X-5500-G-00827	G-3	Excavation and Grading Plan (Northcentral)
6 (FPA)	99X-5500-G-00828	G-4	Excavation and Grading Plan (Northeast)
6 (FPA)	99X-5500-G-00829	G-5	Excavation and Grading Plan (Central)
6 (FPA)	99X-5500-G-00830	G-6	Excavation and Grading Plan (South)
6 (FPA)	99X-5500-G-00843	G-7	Excavation and Drainage Plan (Hooperville)
6 (FPA)	99X-5500-G-00831	G-8	Drainage Plan (North)
6 (FPA)	99X-5500-G-00832	G-9	Drainage Plan (South)
6 (FPA)	99X-5500-G-00833	G-10	Civil Details

UTILITY GRID REFERENCE DRAWINGS

The following drawings are referenced in this design and are included in this IRDP. These drawings are in order by grid number.

Area	Drawing No.	Drawing Title
6 (FPA)	22X-5500-P-00659	Master Grid of Underground Utility Plans
6 (FPA)	22C-5500-P-00660	Grid 1 Underground Utilities
6 (FPA)	22C-5500-P-00661	Grid 2 Underground Utilities
6 (FPA)	22C-5500-P-00662	Grid 3 Underground Utilities
6 (FPA)	22F-5500-P-00663	Grid 4 Underground Utilities
6 (FPA)	22F-5500-P-00665	Grid 6 Underground Utilities
6 (FPA)	22H-5500-P-00666	Grid 7 Underground Utilities
6 (FPA)	22C-5500-P-00668	Grid 9 Underground Utilities
6 (FPA)	22B-5500-P-00675	Grid 16 Underground Utilities
6 (FPA)	22B-5500-P-00676	Grid 17 Underground Utilities
6 (FPA)	22B-5500-P-00682	Grid 23 Underground Utilities
6 (FPA)	22B-5500-P-00683	Grid 24 Underground Utilities
6 (FPA)	22D-5500-P-00684	Grid 25 Underground Utilities

TECHNICAL REFERENCE DRAWINGS

The following drawings are referenced in this design and are included in this IRDP.

Area	Drawing No.	Drawing Title
6 (FPA)	78X-5900-S-00167	Building 78 Foundation Plan
6 (FPA)	78X-5900-S-00168	Building 78 Slab Plan
6 (FPA)	77X-5900-S-00014	Building 77 Foundation and Slab Plan
6 (FPA)	79X-5900-S-00042	Building 79 Foundation Plan
6 (FPA)	79X-5900-S-00043	Building 79 Slab Plan
6 (FPA)	20D-5900-S-00459	East Water Tower 20D Foundation Plan
6 (FPA)	28C-5900-S-00333	Guard Tower #4 Foundation Plan
6 (FPA)	16X-5900-S-00116	Station 16A & Bldg. 16D Foundation and Slab Plan
6 (FPA)	63X-5900-S-00038	Building 63 - East Foundation Plan
6 (FPA)	63X-5900-S-00039	Building 63 - East Slab Plan
6 (FPA)	63X-5900-S-00040	Building 63 - West Foundation Plan
6 (FPA)	63X-5900-S-00041	Building 63 - West Slab Plan
6 (FPA)	57X-3115-A-00004	Temporary Office Bldg Foundation Plan
6 (FPA)	57X-3115-P-00002	Temporary Office Bldg Plumbing Plan

IRDP TECHNICAL SPECIFICATIONS

The following specifications make up the Area 6 Former Production Area technical specification package:

Section 02150	Traffic Control
Section 02205	Impacted Material Excavation
Section 02206	Earthwork for Remediation
Section 02207	Area Isolation Trenching
Section 02275	Surface Water Management and Erosion Control for Remediation

SPECIFICATIONS REFERENCED FROM OSDF DESIGN

The following specifications are referenced in this design from the OSDF technical specifications and will be applicable to this remediation effort:

Section 02100	Surveying
Section 02200	Earthwork
Section 02215	Trenching and Backfilling
Section 02230	Road Construction
Section 02270	Surface Water Management and Erosion Control
Section 02930	Vegetation

APPENDIX E

GEOSTATISTICAL MODELING FOR TITLE II EXCAVATION DESIGN

APPENDIX E
GEOSTATISTICAL MODELING FOR TITLE II EXCAVATION DESIGN

E.1 INTRODUCTION

Total uranium soil concentration data were used to create a geostatistical model of subsurface contamination in Area 6. Model results depict an estimation of the subsurface contamination levels at excavation depths and horizontal extents beyond that required to remove at- and below-grade structures and contamination identified by physical samples. This appendix presents the input data and methodology used to create the geostatistical model.

The model provides an estimate of contamination extent to the civil engineering team, which uses model results and drawings of subsurface structures to create the excavation design surface. This surface is the best estimate of debris and soil volumes that must be removed to meet FRLs. Minor changes to the excavation design surface will occur upon implementation due to local slope instability, equipment access points, and additional contamination detected by precertification and certification activities. The precertification and certification activities provide the assurance that contamination missed by the geostatistical model will be removed during the remedial action.

Since Area 6 is comprised of an irregularly shaped area around the former production area, the area was divided into four rectangular subareas (Subareas 1 through 4) to facilitate modeling computations (Figure E-1)

E.2 DATA STATISTICS

Total uranium concentration data sets for Area 6, Subareas 1 through 4 consist of 569, 1154, 479, and 757 total uranium samples respectively. The spatial data distributions for samples in the four subareas are shown in the Easting-Northing plane, the Easting-Depth plane and the Northing-Depth plane in:

- Figures E-2 through E-4 for Subarea 1,
- Figures E-6 through E-8 for Subarea 2,
- Figures E-10 through E-12 for Subarea 3, and
- Figures E-14 through E-16 for Subarea 4.

Minimum, maximum, and average total uranium sample population values for each subarea are shown in Table E-1. A frequency distribution plot of total uranium sample result values for each subarea is shown in Figures E-5, E-9, E-13, and E-17.

TABLE E-1
TOTAL URANIUM SAMPLE POPULATION STATISTICS FOR AREA 6 SUBAREAS 1 THROUGH 4

Subarea	Total Uranium Minimum Sample Result	Total Uranium Maximum Sample Result	Total Uranium Average Sample Result	Total Uranium Standard Deviation of Sample Results
1	0.0	21396.6	161.4	997.1
2	0.5	3896.6	79.5	279.3
3	1.1	36950.0	190.5	1747.1
4	1.2	4475.9	111.5	318.2

E.3 VARIOGRAM MODELING

The subsurface total uranium concentration data were analyzed for spatial correlation distances using SAGE 2001, a spatial and geostatistical modeling software package from Isaaks & Company. Based on the input data, SAGE 2001 computes and displays 3D sample variograms in multiple directions simultaneously.

Horizontal and vertical variogram plots for the data sets from each subarea are displayed in Figures E-18 through E-25 with interpreted variogram ranges shown in Table E-2.

TABLE E-2
HORIZONTAL AND VERTICAL VARIOGRAM RANGES FOR TOTAL URANIUM SAMPLE DATA FROM AREA 6 SUBAREAS 1 THROUGH 4

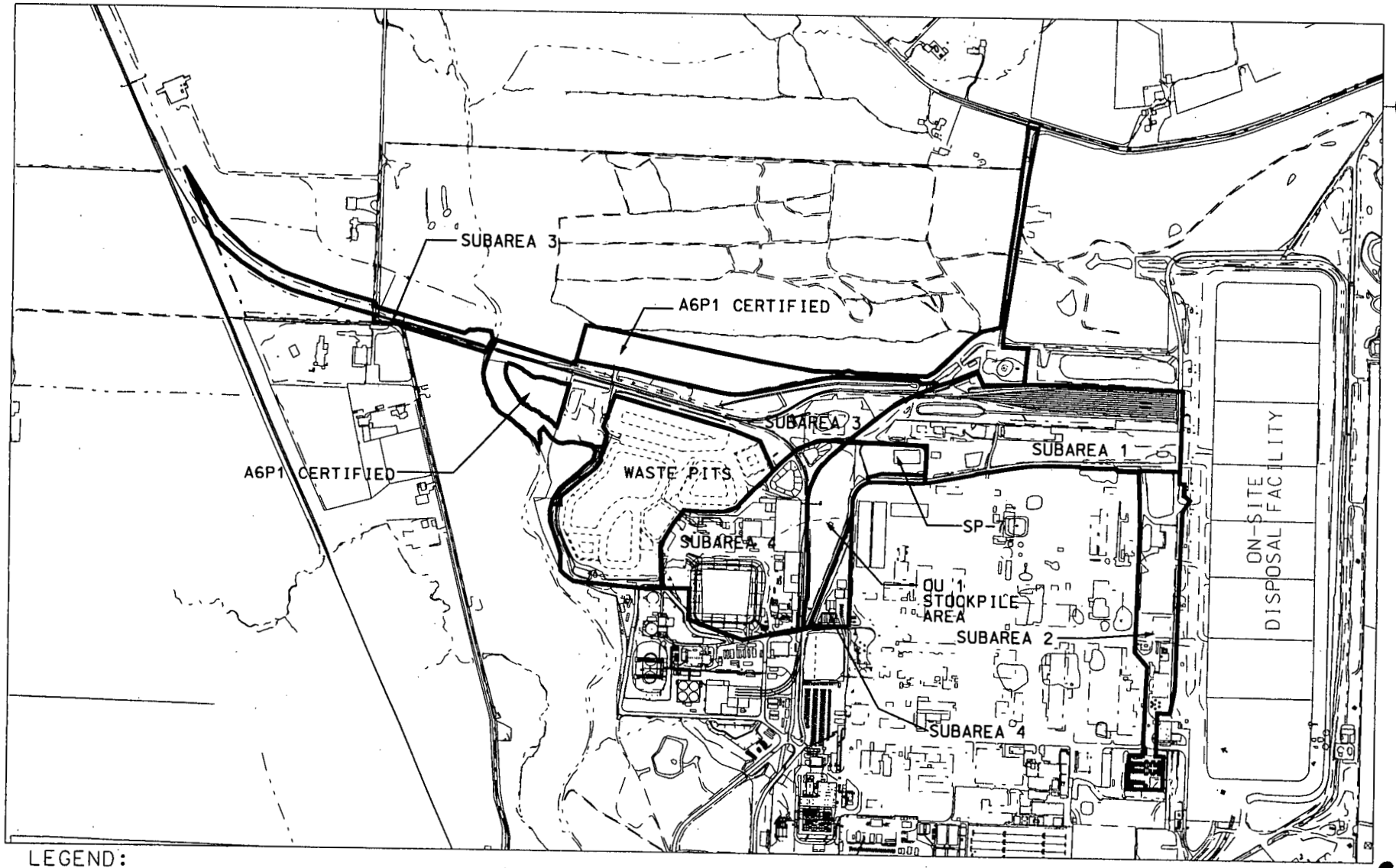
Subarea	Horizontal Range (ft)	Vertical Range (ft)	Variogram Figure Number
1	30	5	E-18 and E-19
2	40	2	E-20 and E-21
3	30	5	E-22 and E-23
4	30	5	E-24 and E-25

E.4 KRIGING AND MODEL RESULTS

The Mining Visualization System (MVS) by C Tech Development Corporation was used to Krige, visualize, and compute the contaminated soil volumes in each subarea. Kriging ranges for each subarea model were selected from the appropriate variogram range as given in Table E-2. The topographic surface was used in each case as the top of the model with the base of glacial overburden as the bottom of each model.

After Kriging, horizontal slices were made of each model at 1-foot intervals across the vertical extent of the contaminant plume. These slices were contoured with 20, 50, 82 and 1030 parts per million (ppm) contours then used by the civil engineering team as input to the excavation surface design.

Figures E-26 through E-29 show the final contamination models in plan view for Subareas 1 through 4 respectively.



LEGEND:

FERNALD SITE BOUNDARY

AREA 6, SUB-AREA BOUNDARY

SCALE

1000 500 0 1000 FEET

v:*5fgp1*dgn*ron0016.dgn
STATE PLANAR COORDINATE SYSTEM 1983

08-FEB-2005

FIGURE E-1. AREA 6, SUB-AREA LOCATIONS

5970

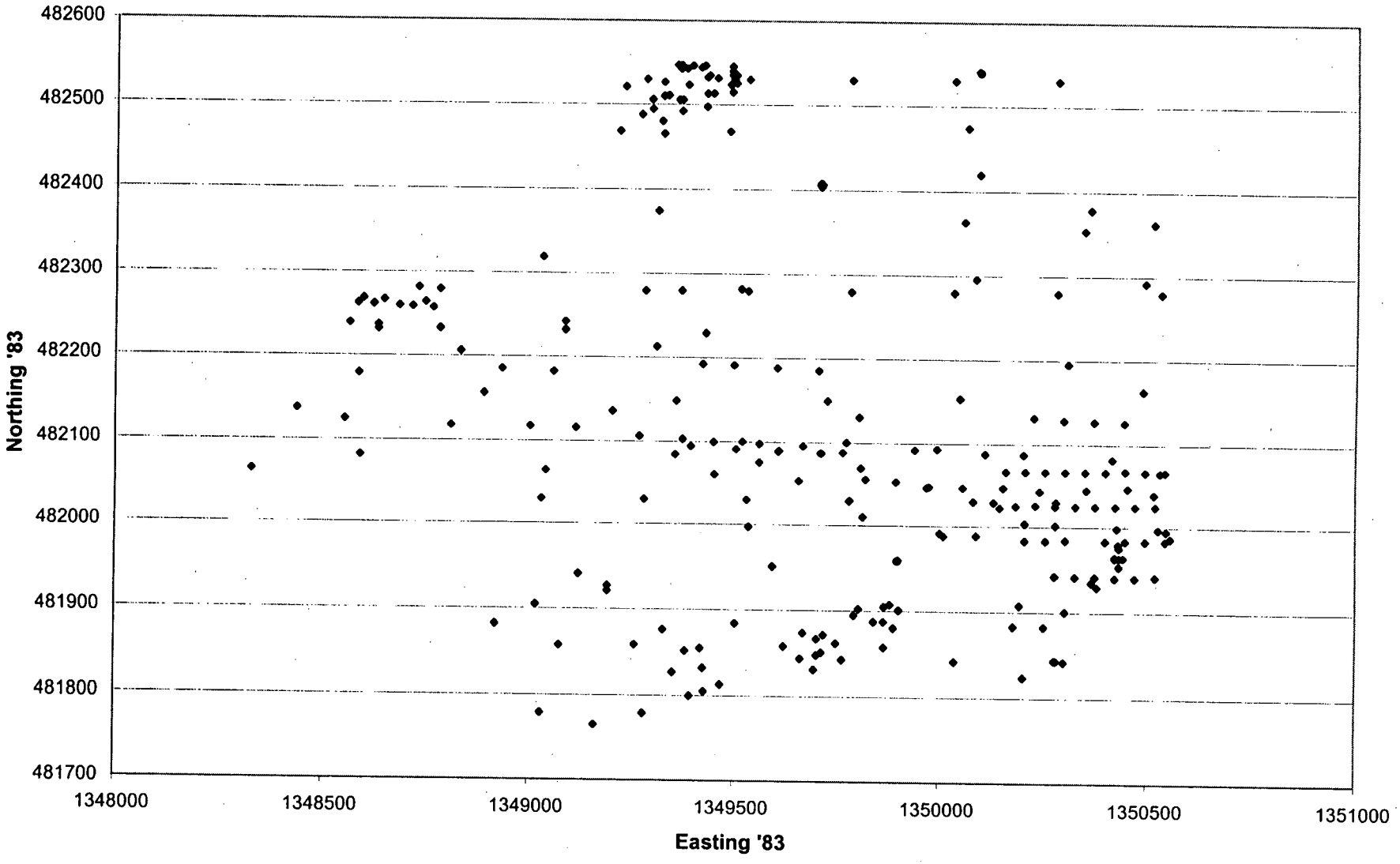


Figure E-2. Area 6 Subarea 1 Total Uranium Sample Distribution

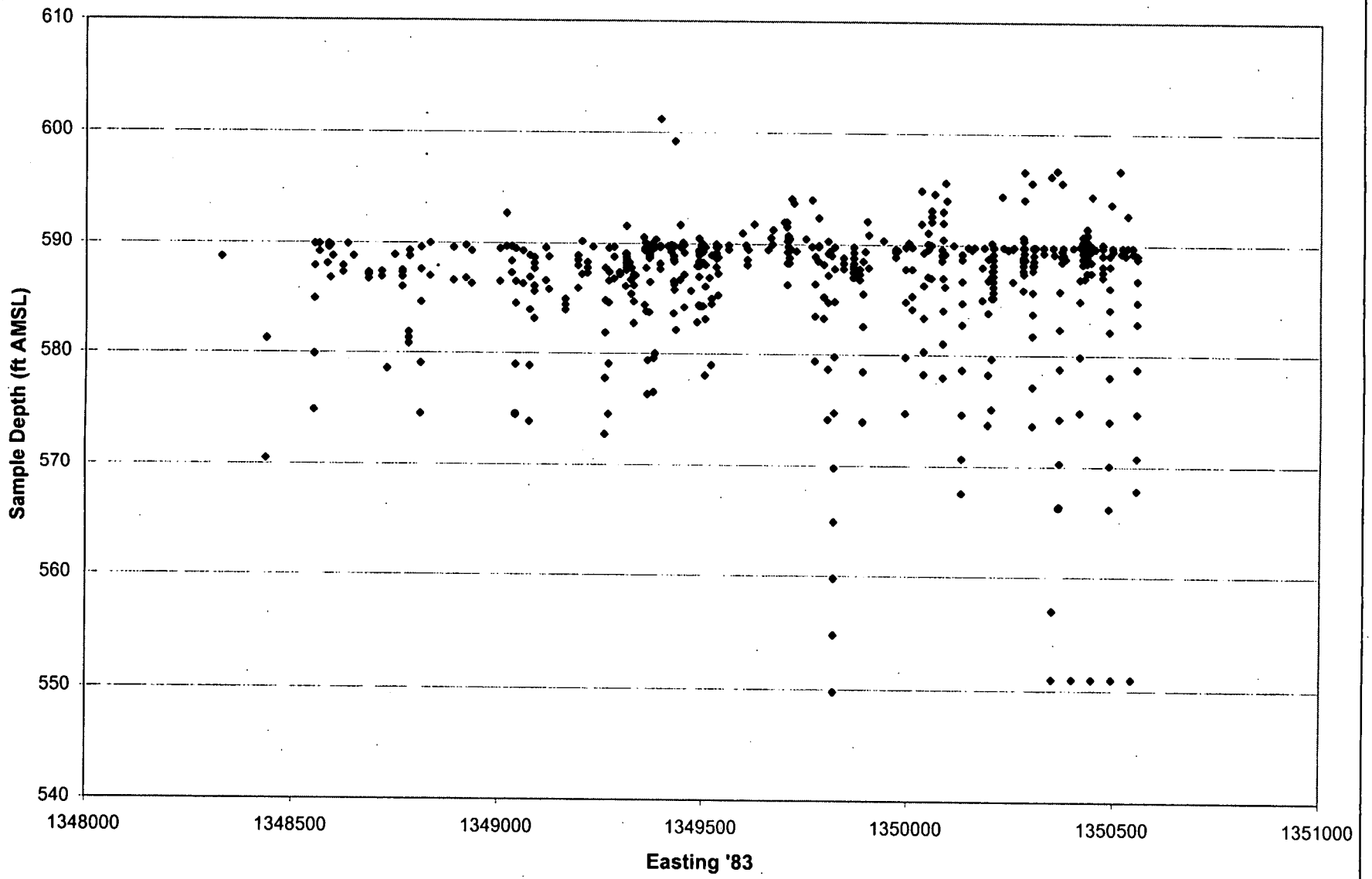


Figure E-3. Area 6 Subarea 1 Total Uranium Sample Distribution

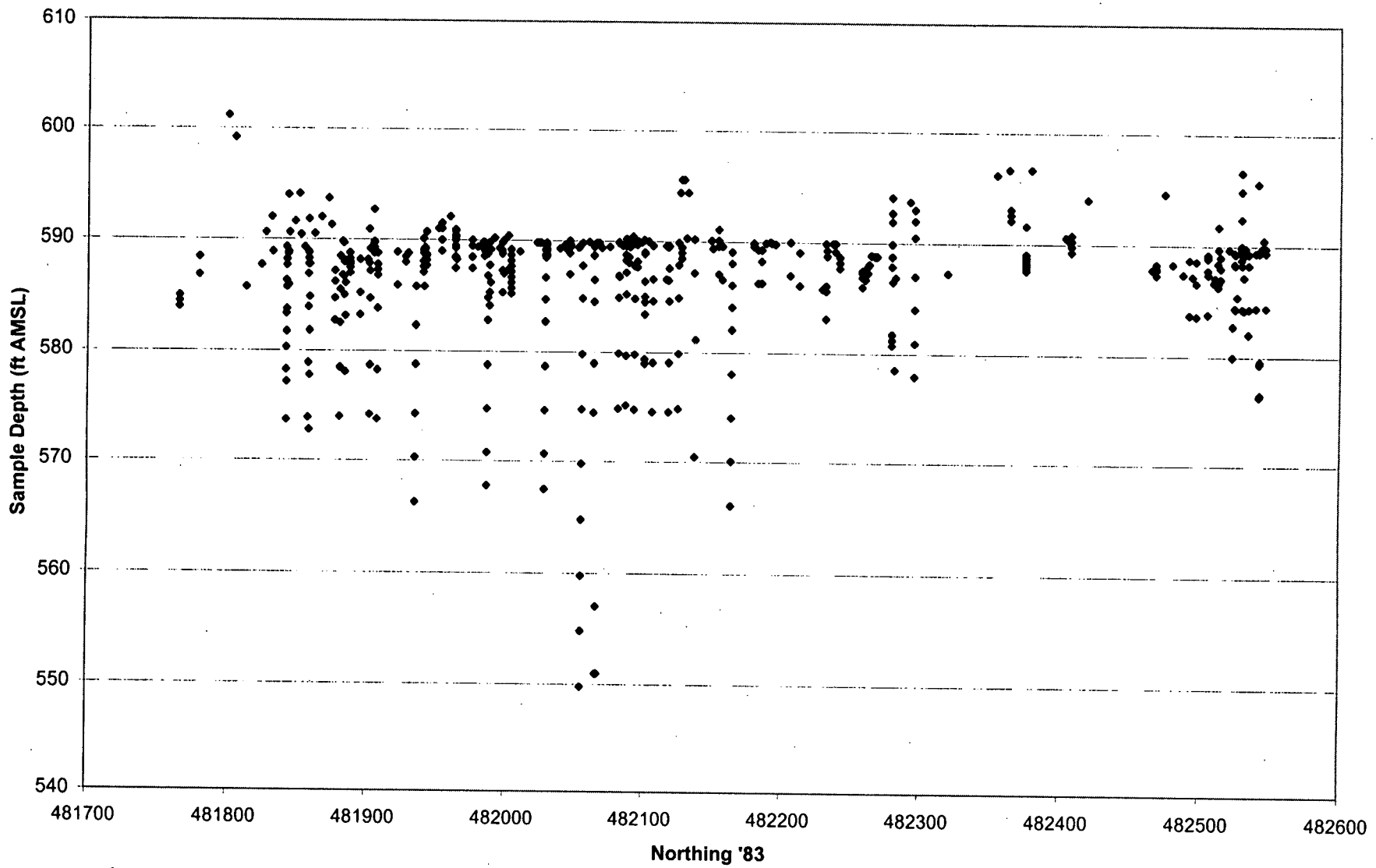


Figure E-4. Area 6 Subarea 1 Total Uranium Sample Distribution

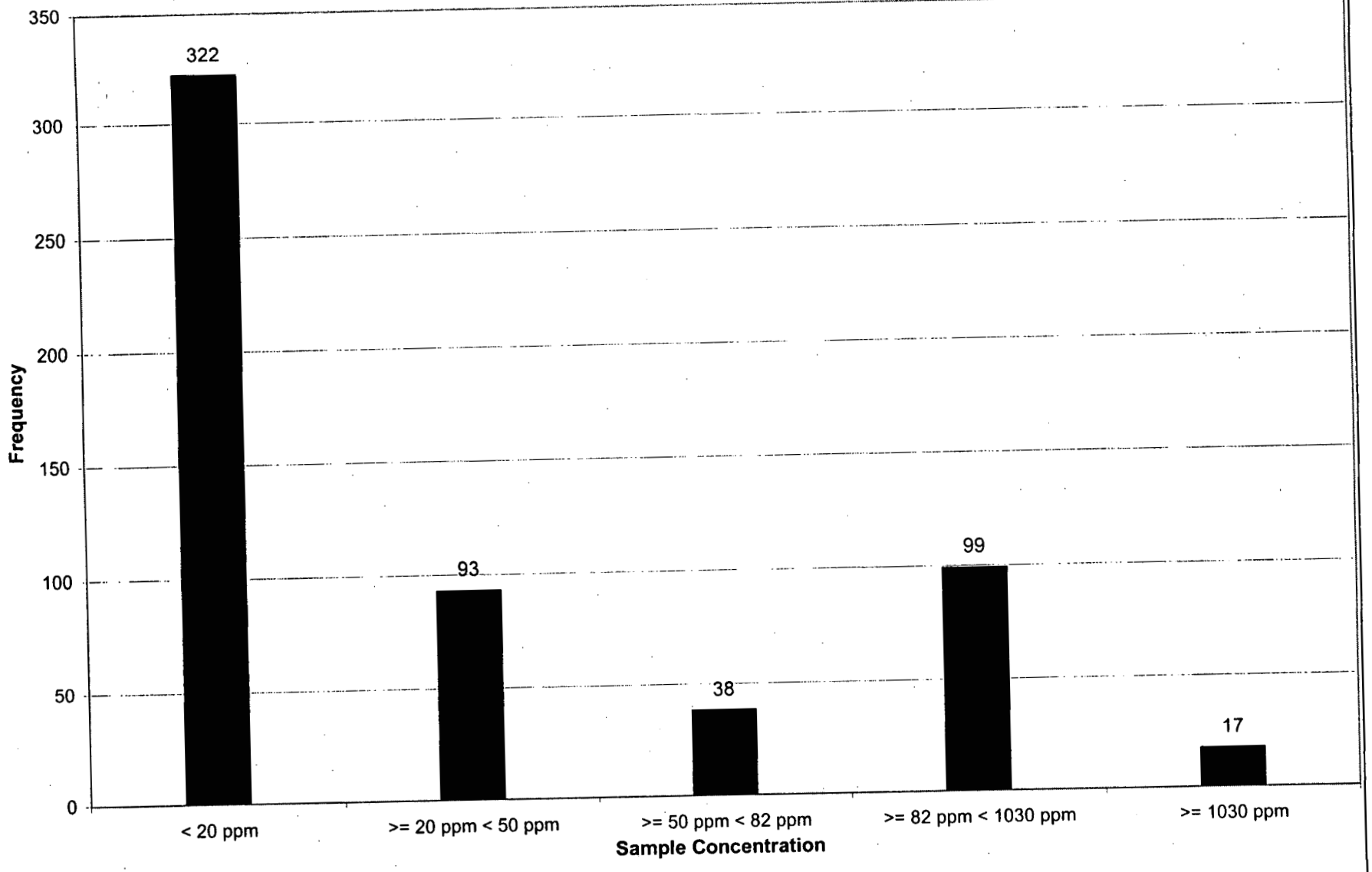


Figure E-5. Area 6 Subarea 1 Total Uranium Sample Frequency

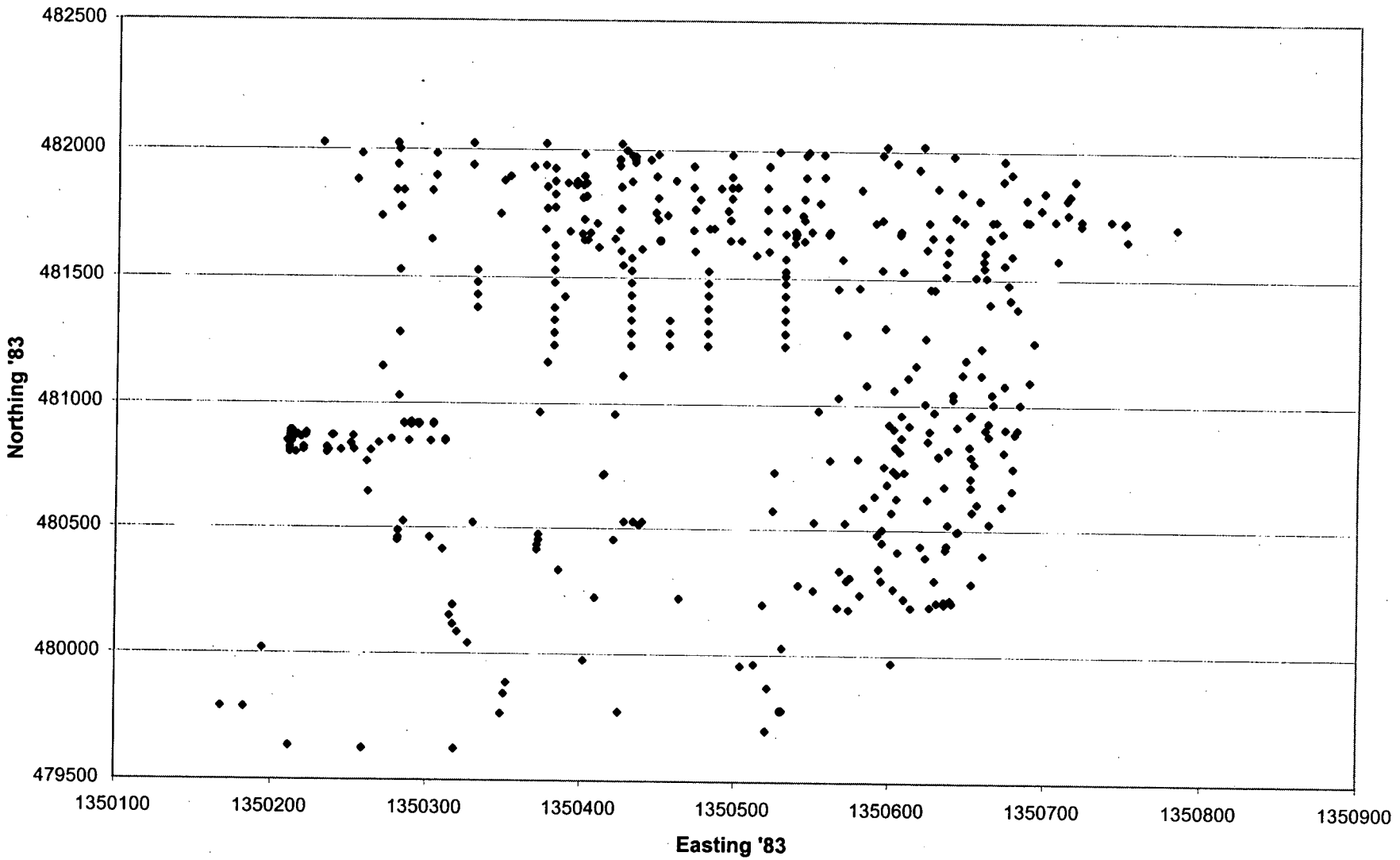


Figure E-6. Area 6 Subarea 2 Total Uranium Sample Distribution

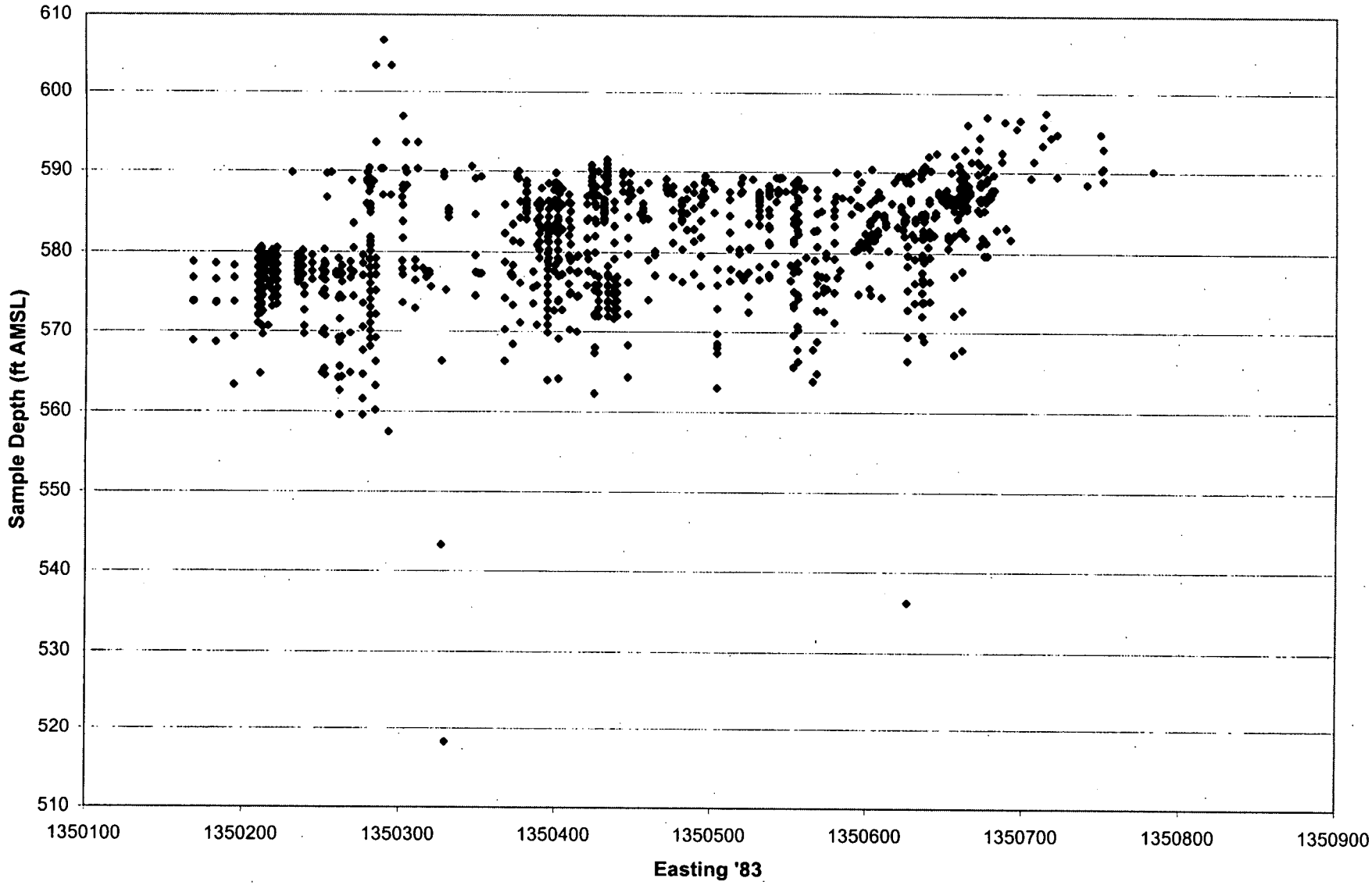


Figure E-7. Area 6 Subarea 2 Total Uranium Sample Distribution

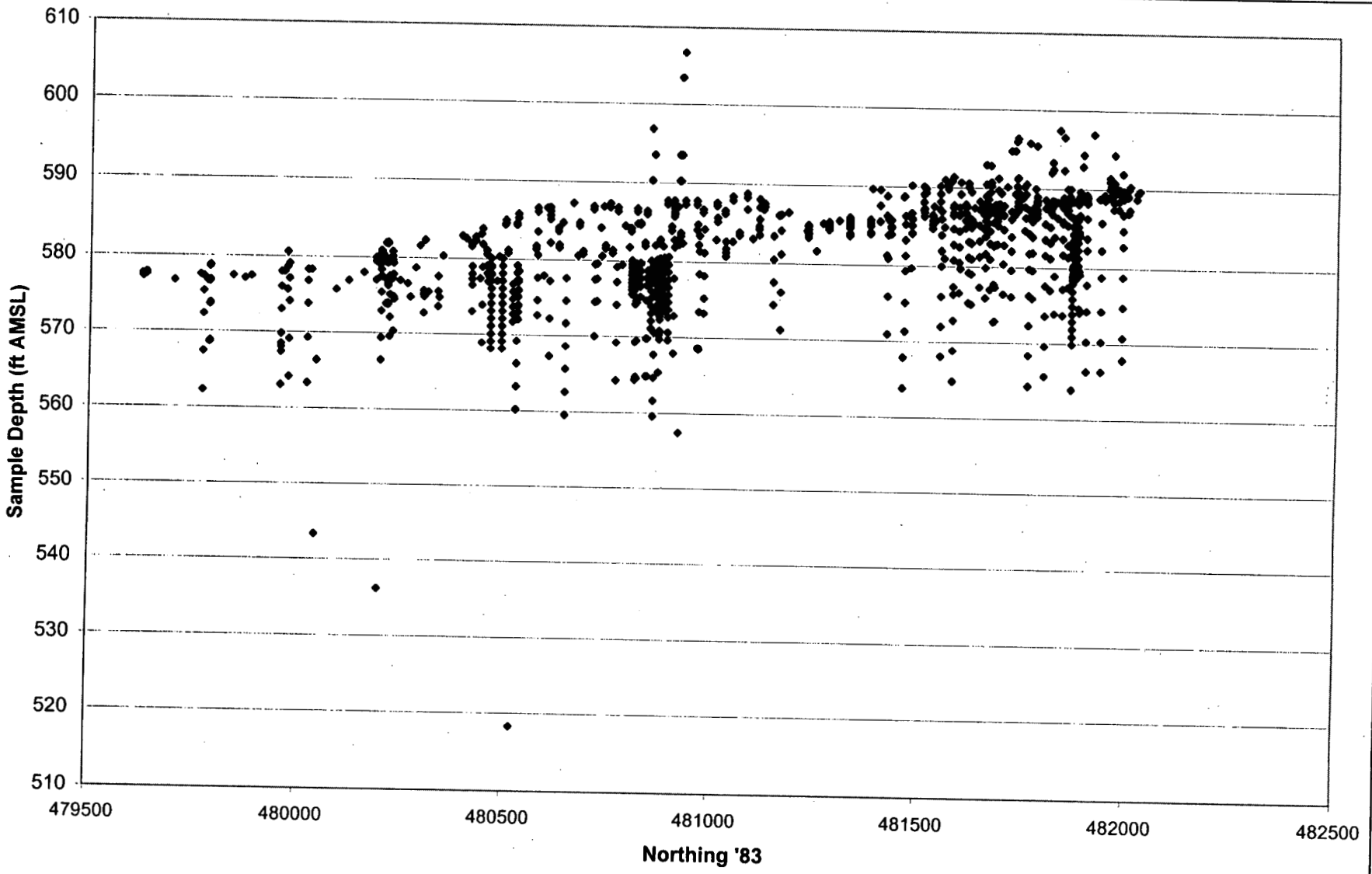


Figure E-8. Area 6 Subarea 2 Total Uranium Sample Distribution

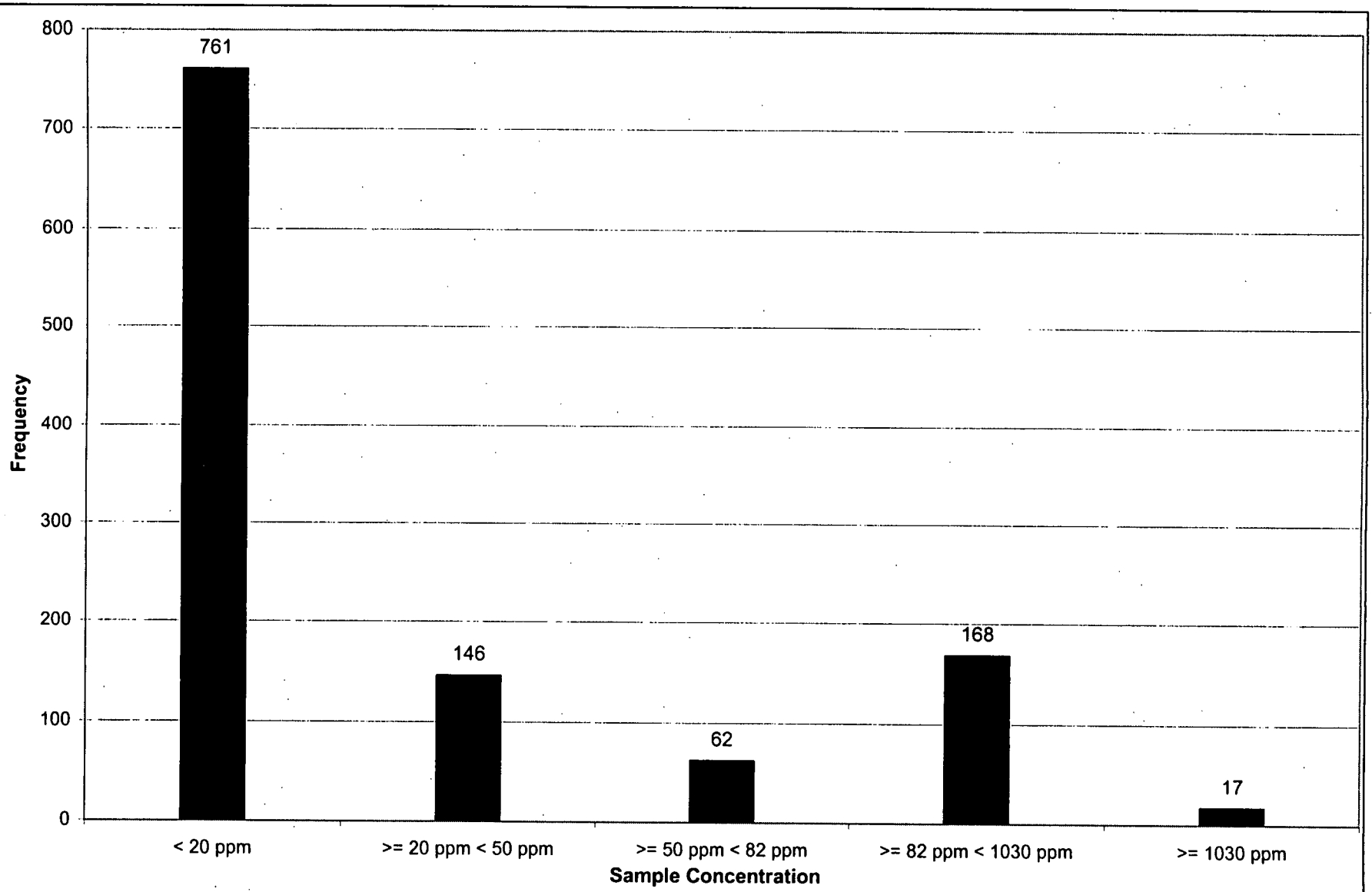


Figure E-9. Area 6 Subarea 2 Total Uranium Sample Frequency

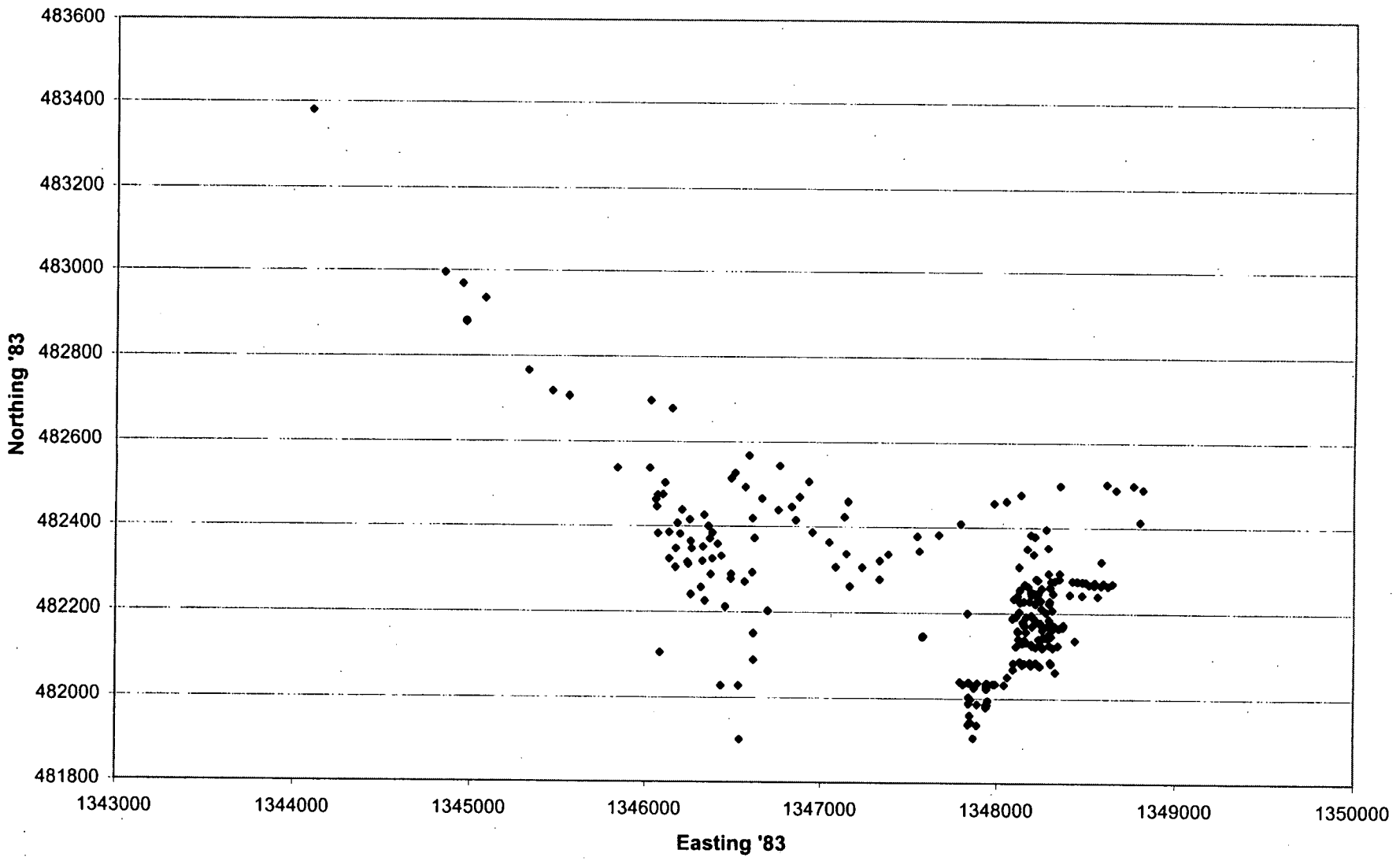


Figure E-10. Area 6 Subarea 3 Total Uranium Sample Distribution

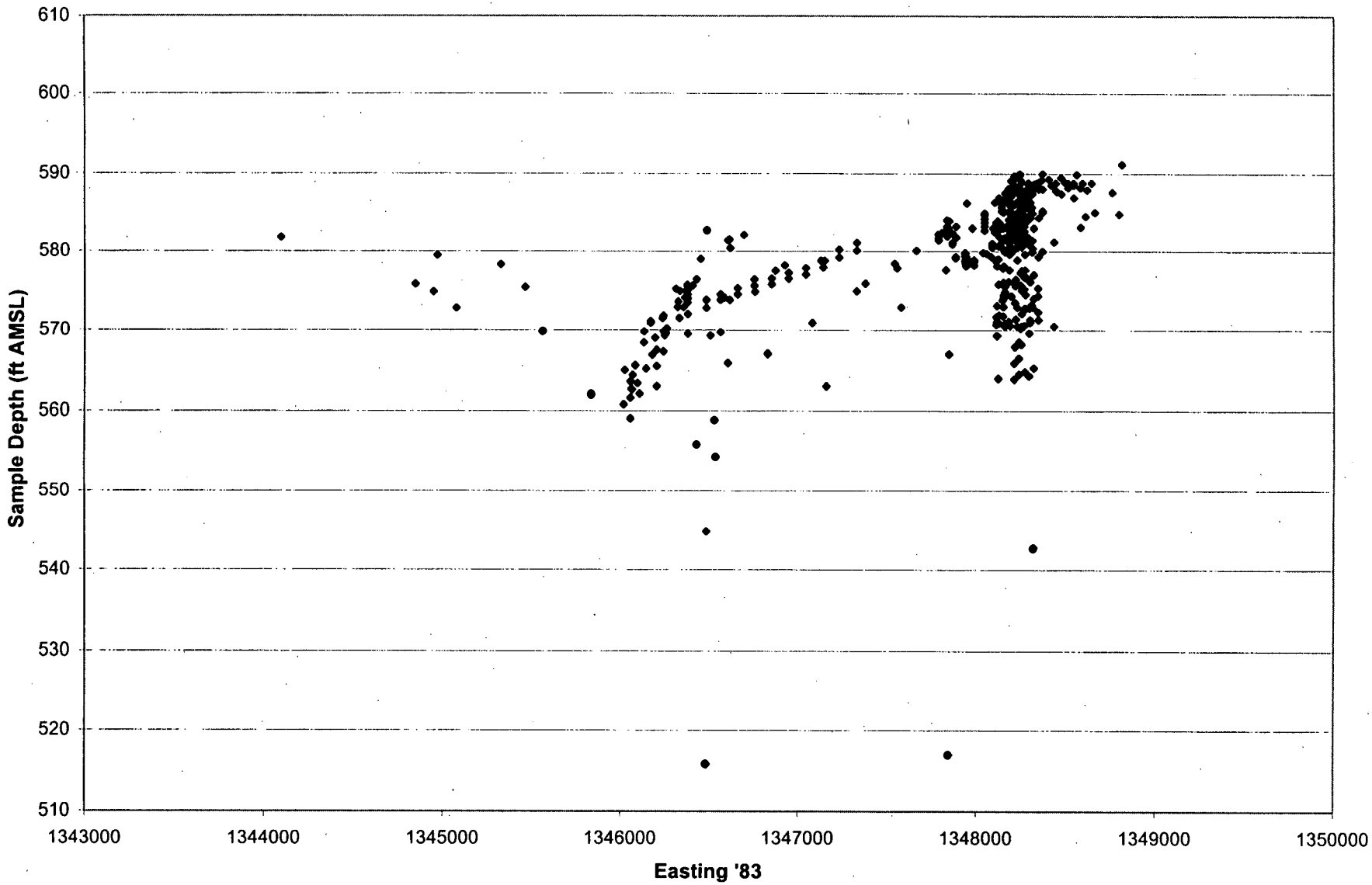


Figure E-11. Area 6 Subarea 3 Total Uranium Sample Distribution

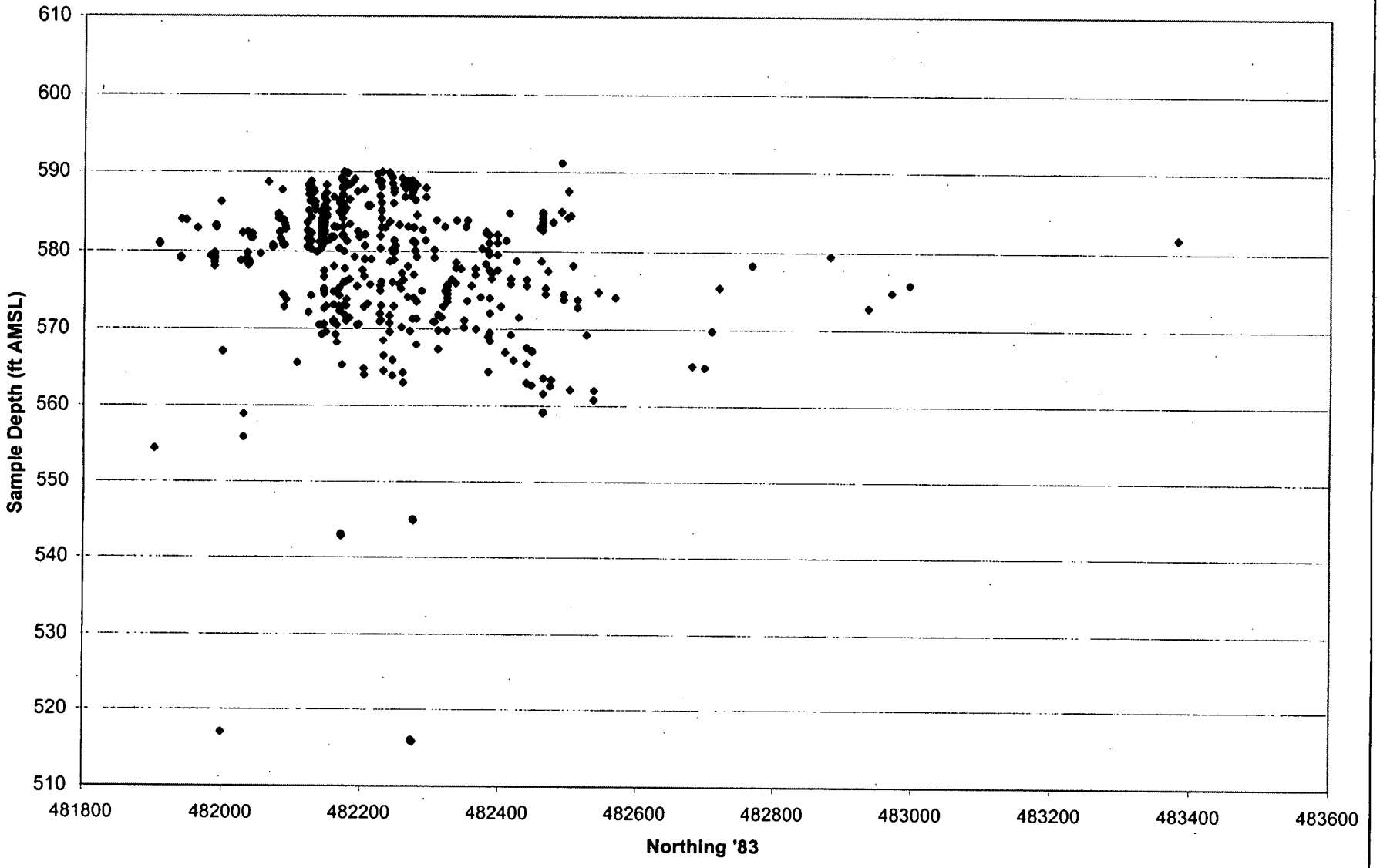


Figure E-12. Area 6 Subarea 3 Total Uranium Sample Distribution

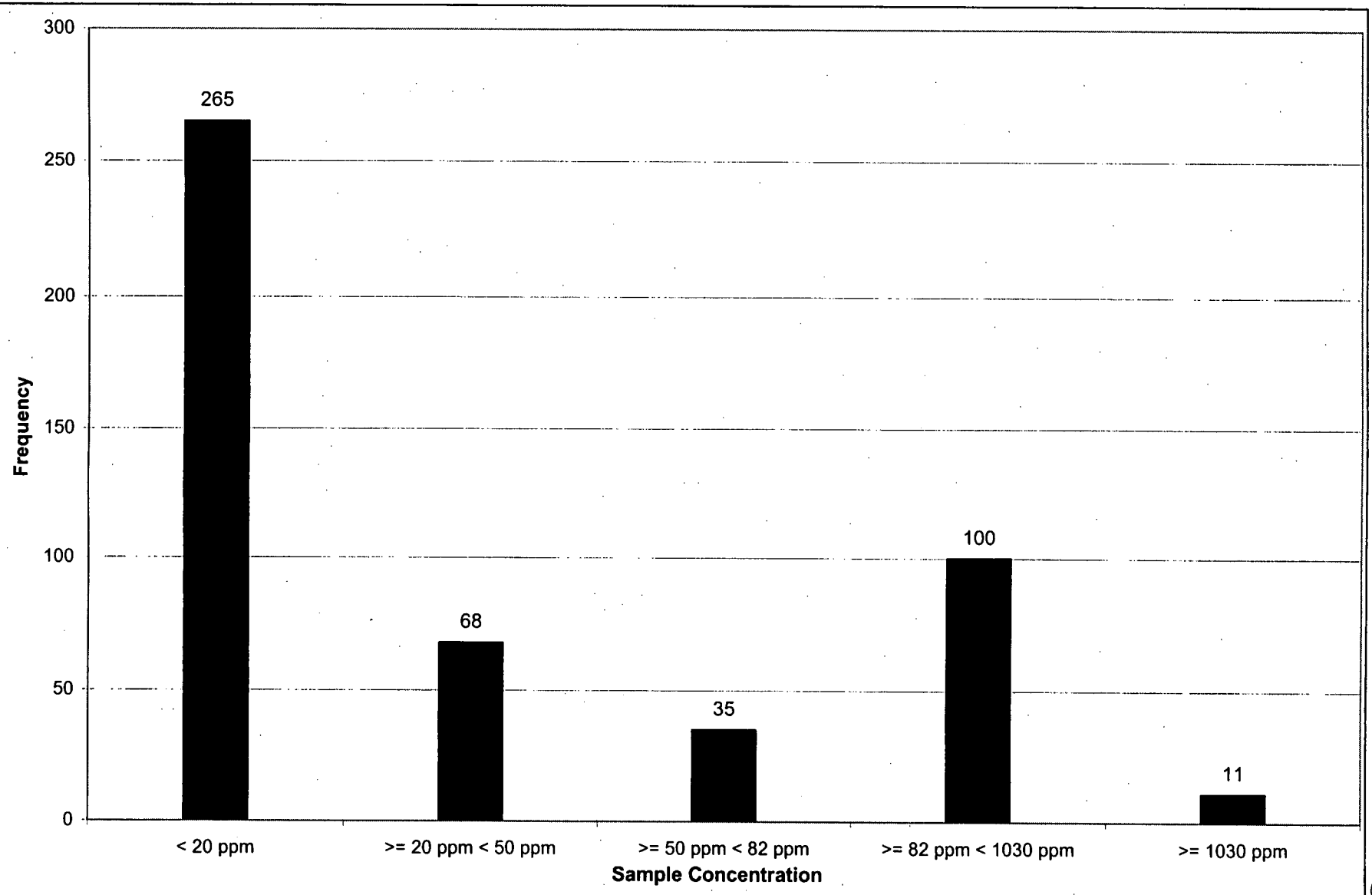


Figure E-13. Area 6 Subarea 3 Total Uranium Sample Frequency

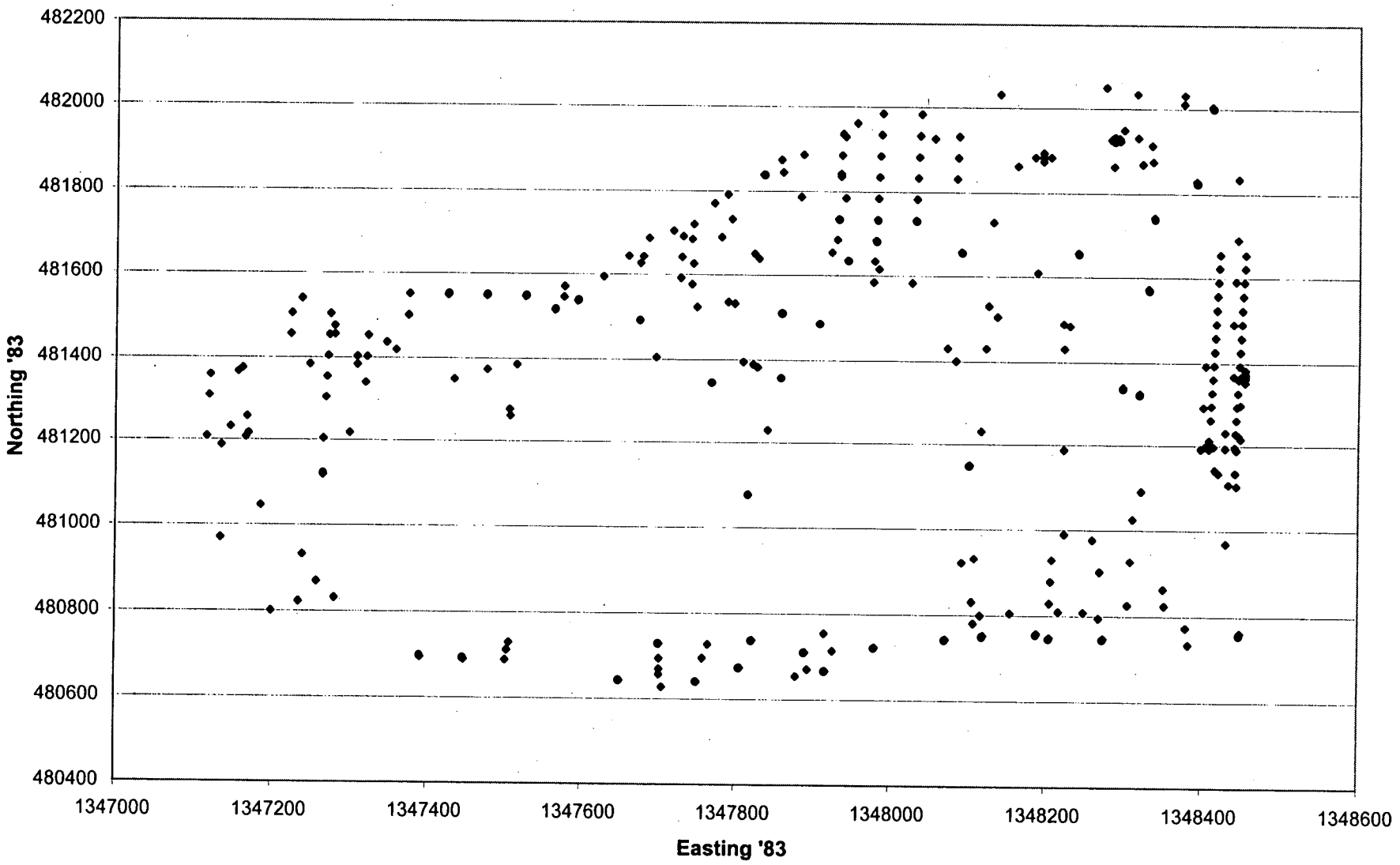


Figure E-14. Area 6 Subarea 4 Total Uranium Sample Distribution

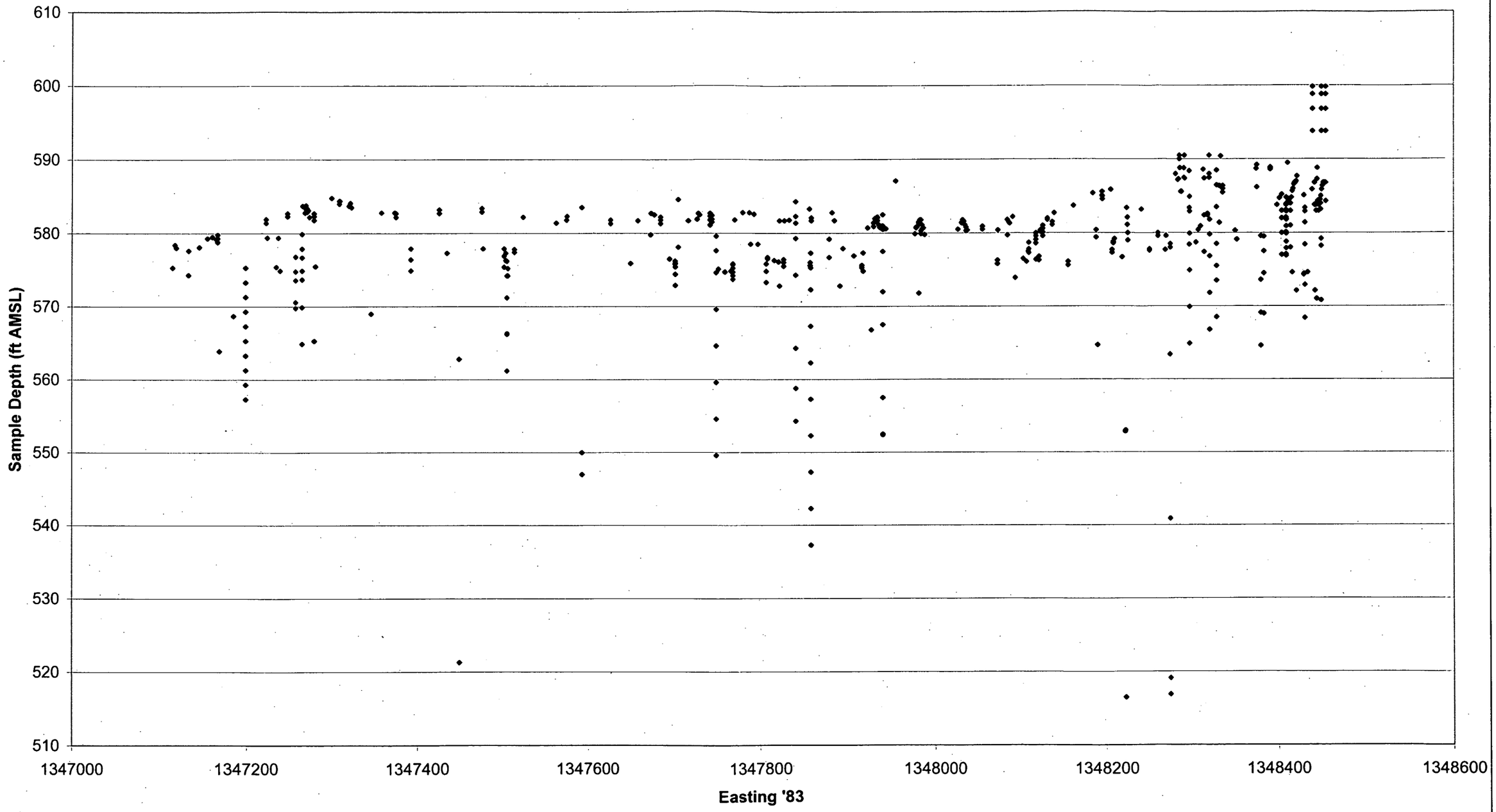


Figure E-15. Area 6 Subarea 4 Total Uranium Sample Distribution

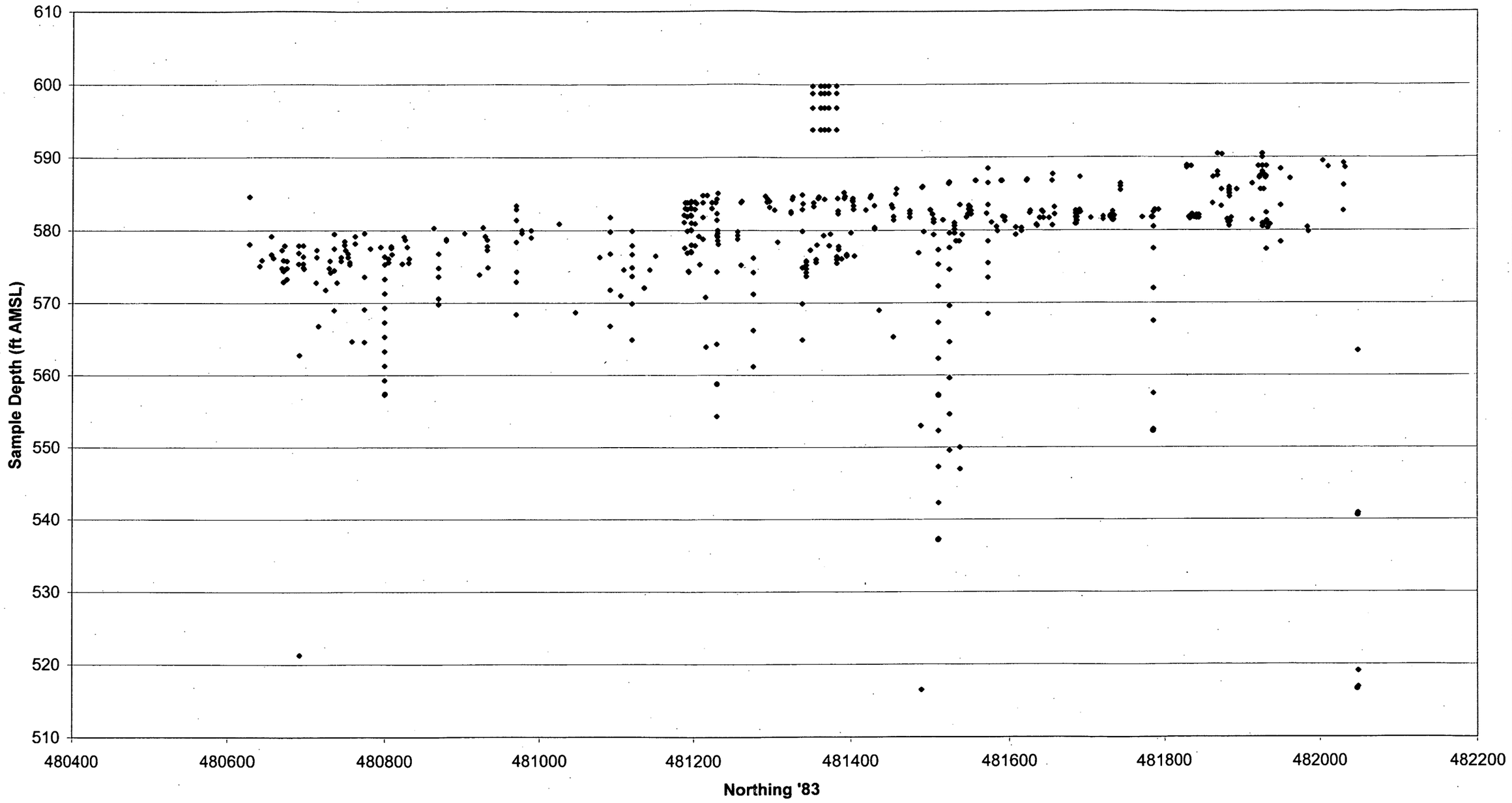


Figure E-16. Area 6 Subarea 4 Total Uranium Sample Distribution

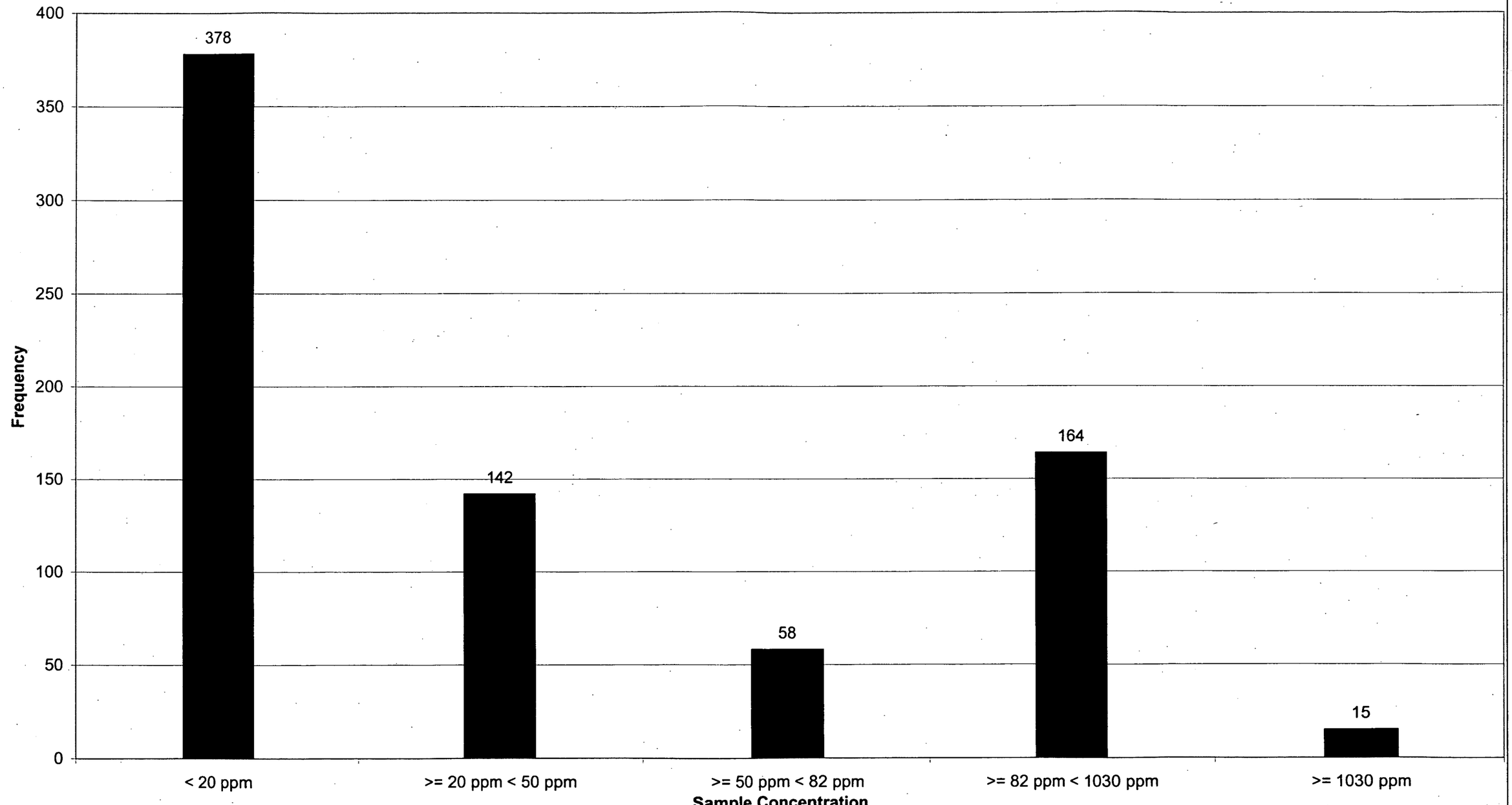


Figure E-17. Area 6 Subarea 4 Total Uranium Sample Frequency

Figure E-18. Area 6 Subarea 1 Horizontal Variograms

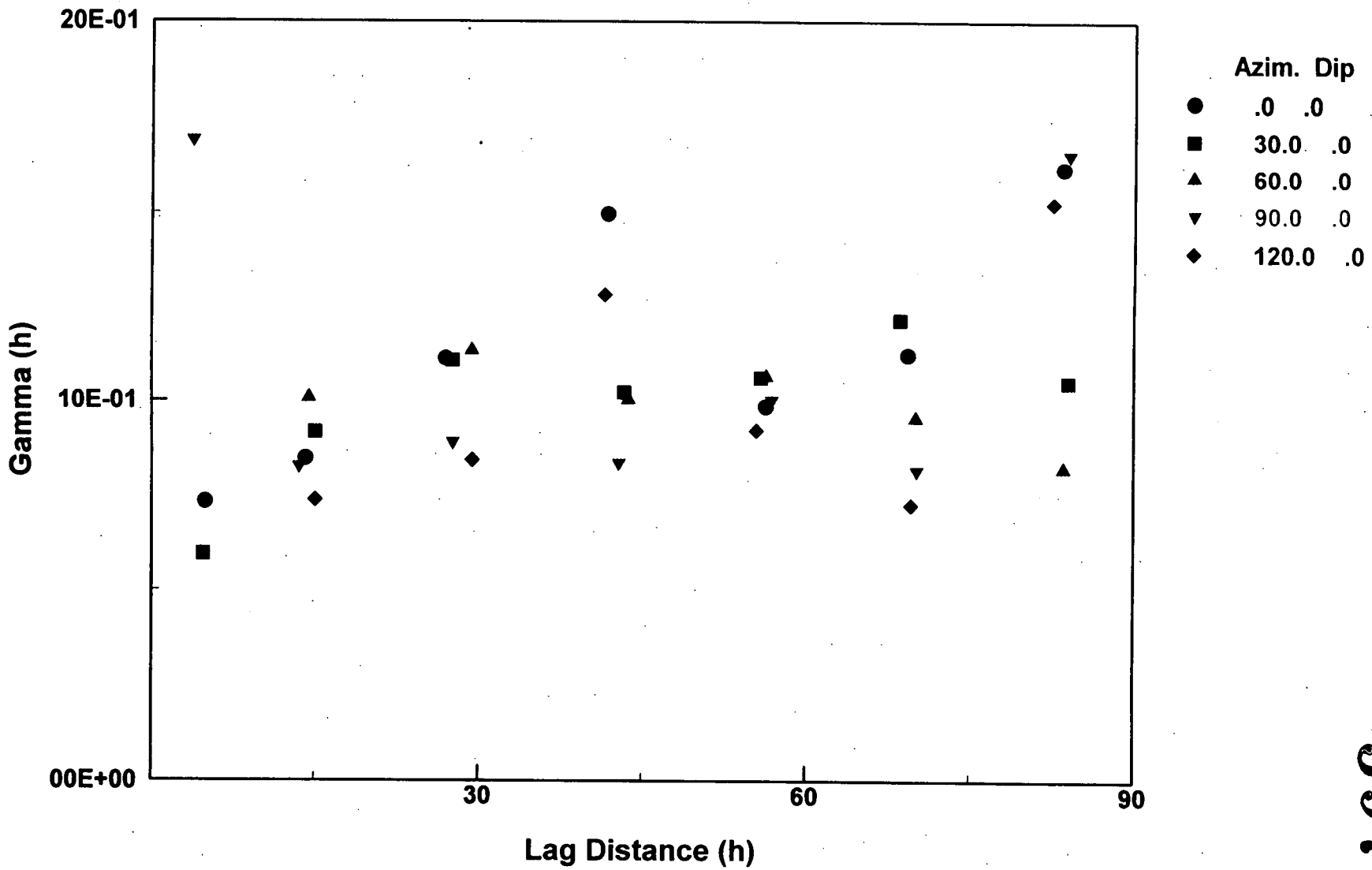


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Figure E-19. Area 6 Subarea 1 Vertical Variogram

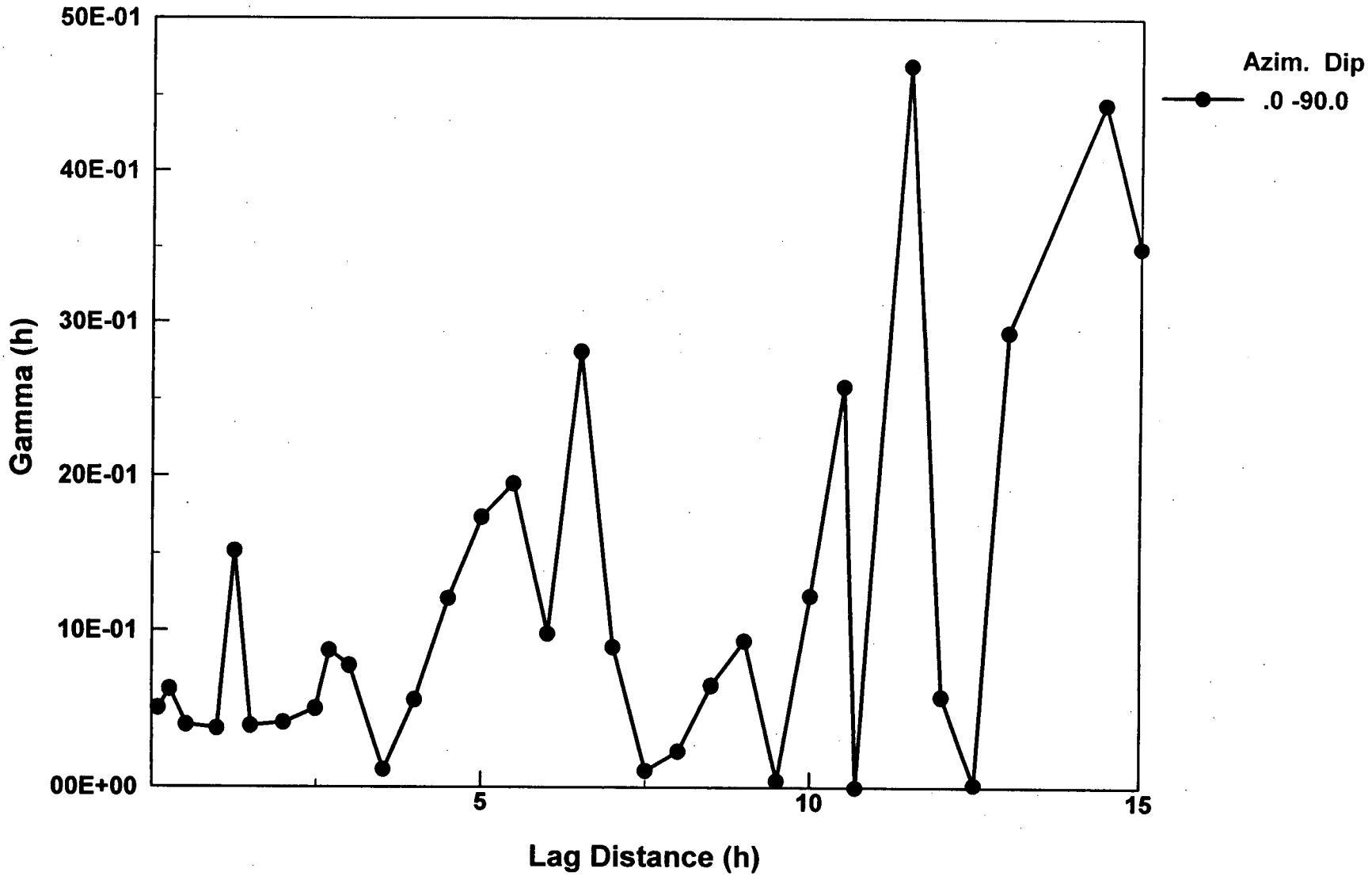

Figure E-20. Area 6 Subarea 2 Horizontal Variograms

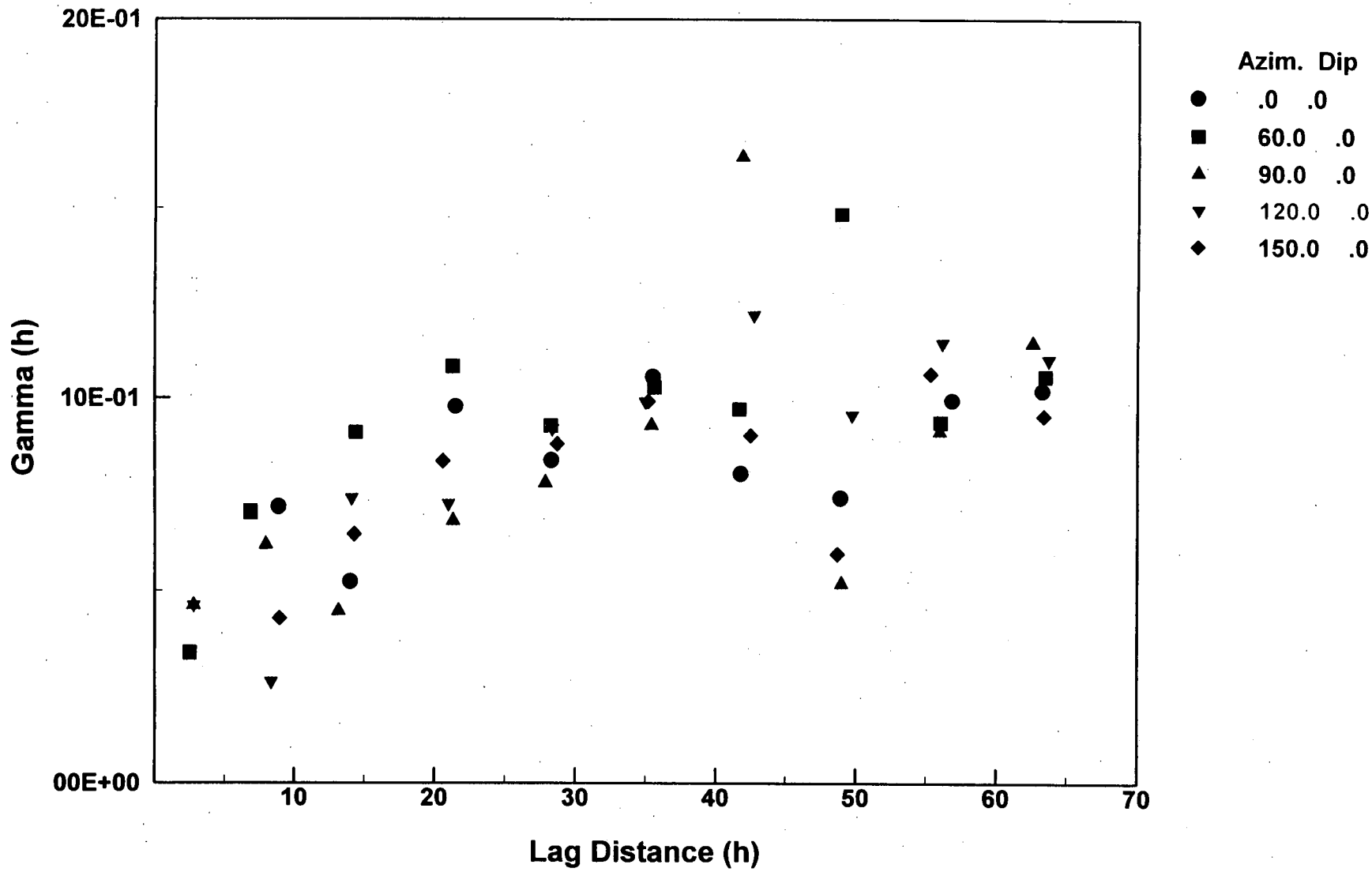

Figure E-21. Area 6 Subarea 2 Vertical Variogram

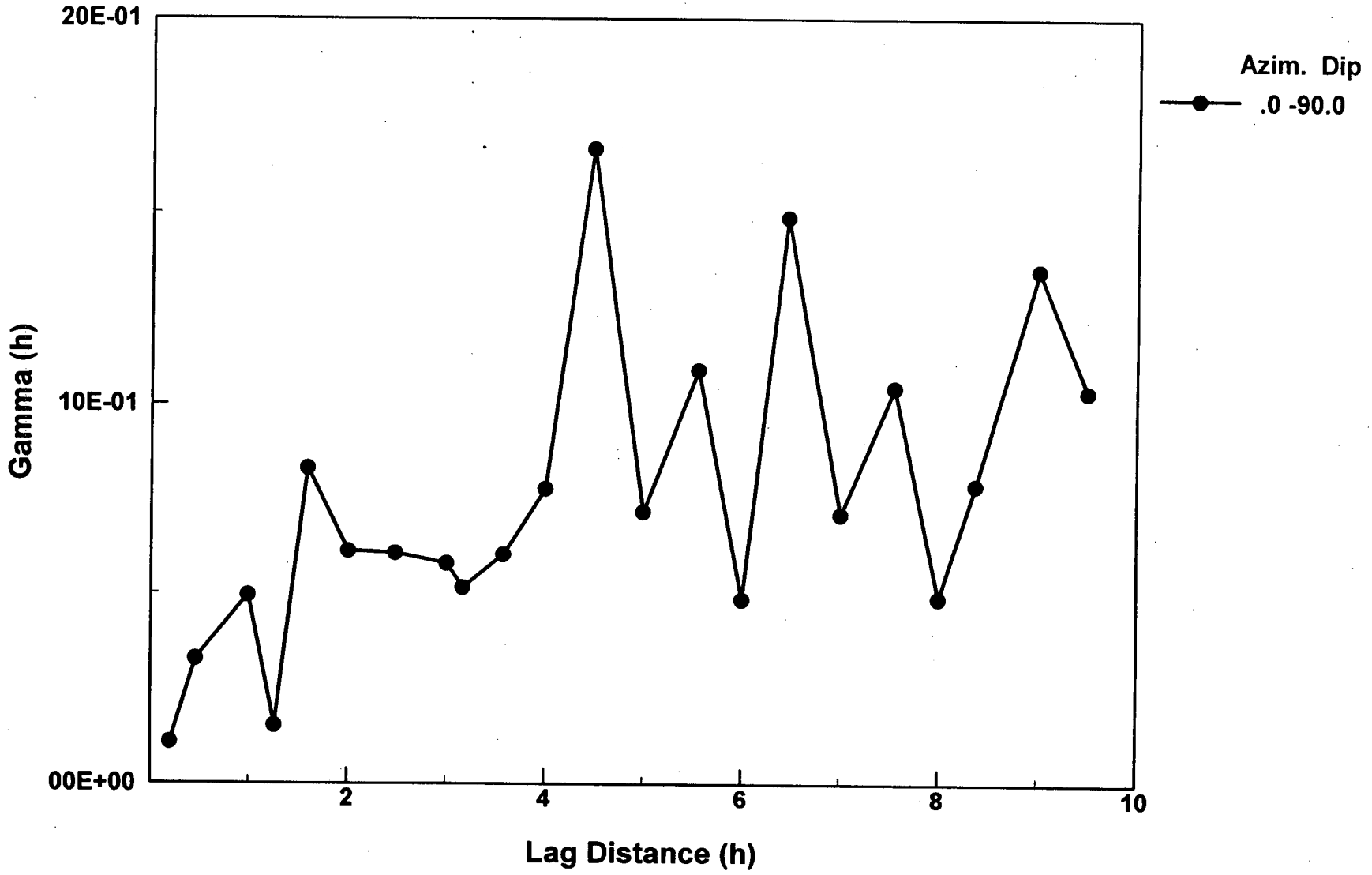

Figure E-22. Area 6 Subarea 3 Horizontal Variograms

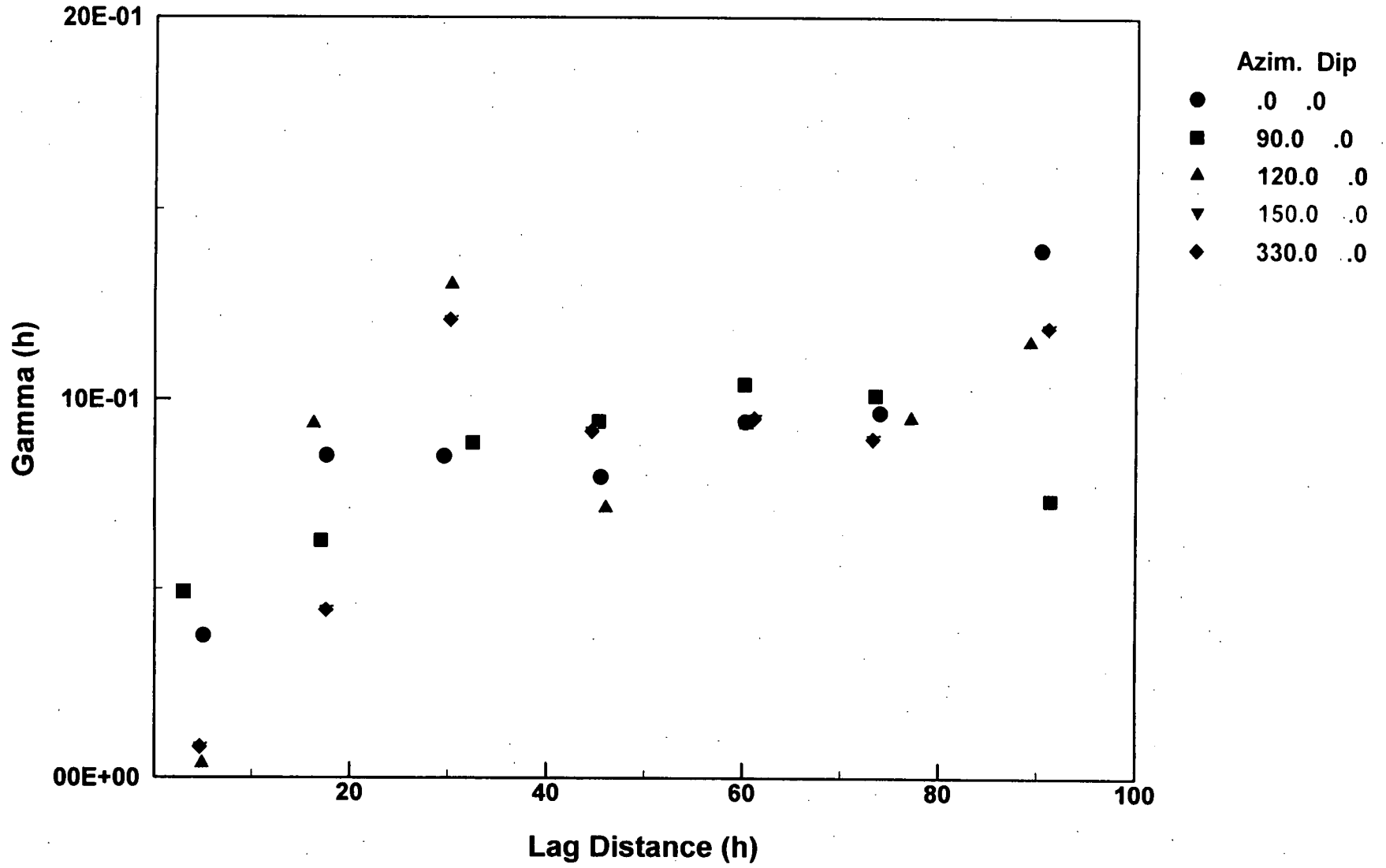

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Figure E-23 Area 6 Subarea 3 Vertical Variogram

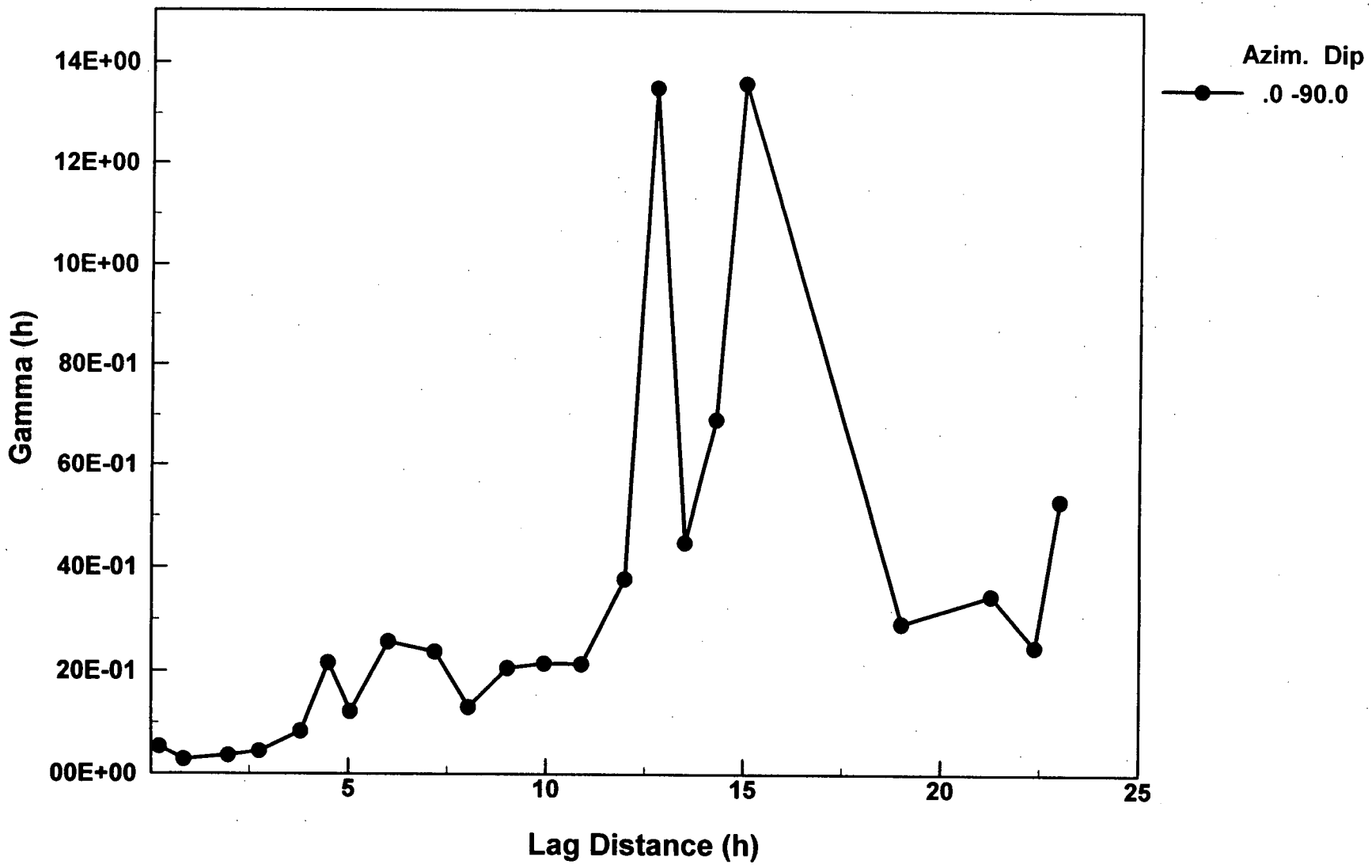


Figure E-24. Area 6 Subarea4 Horizontal Variograms

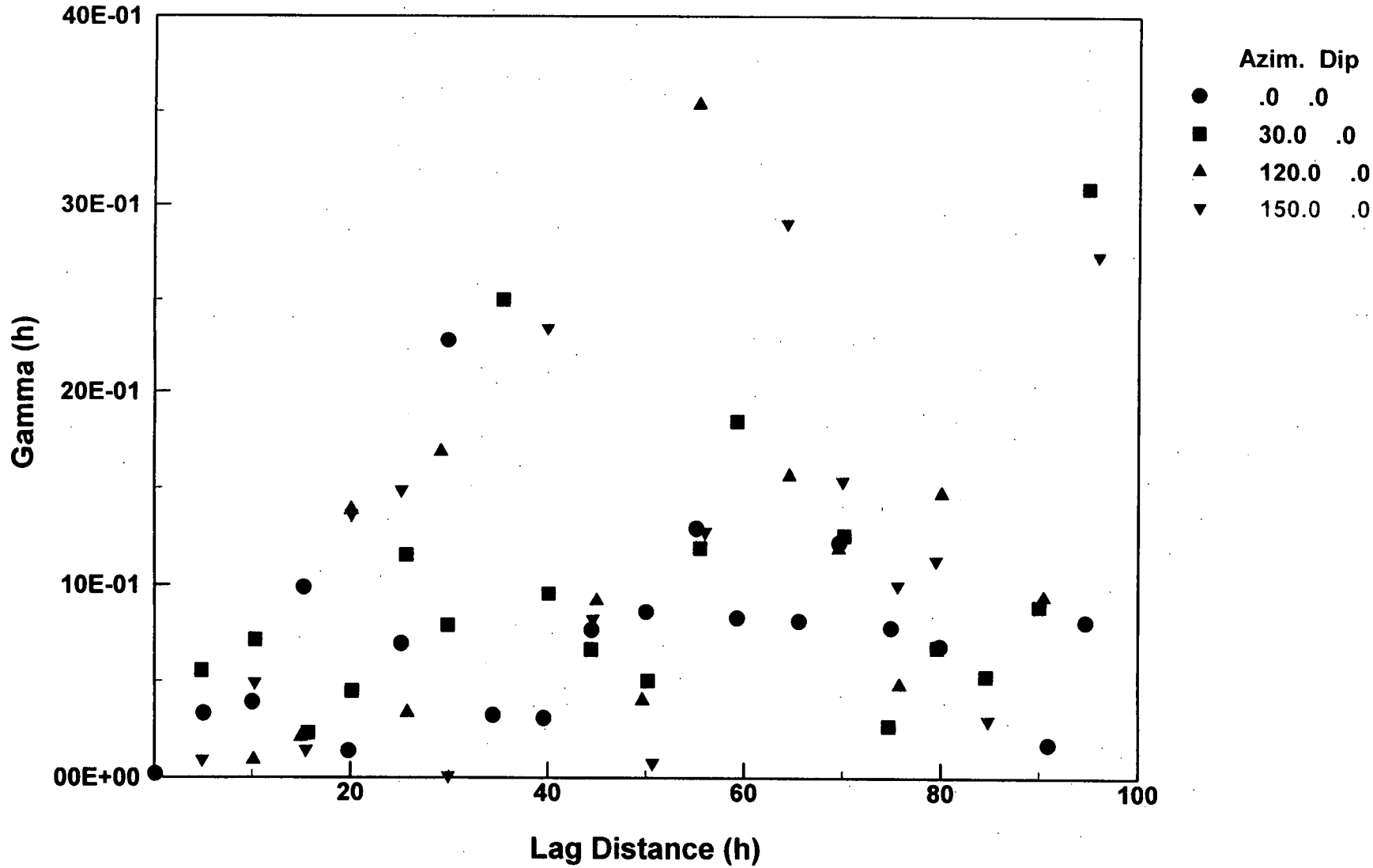
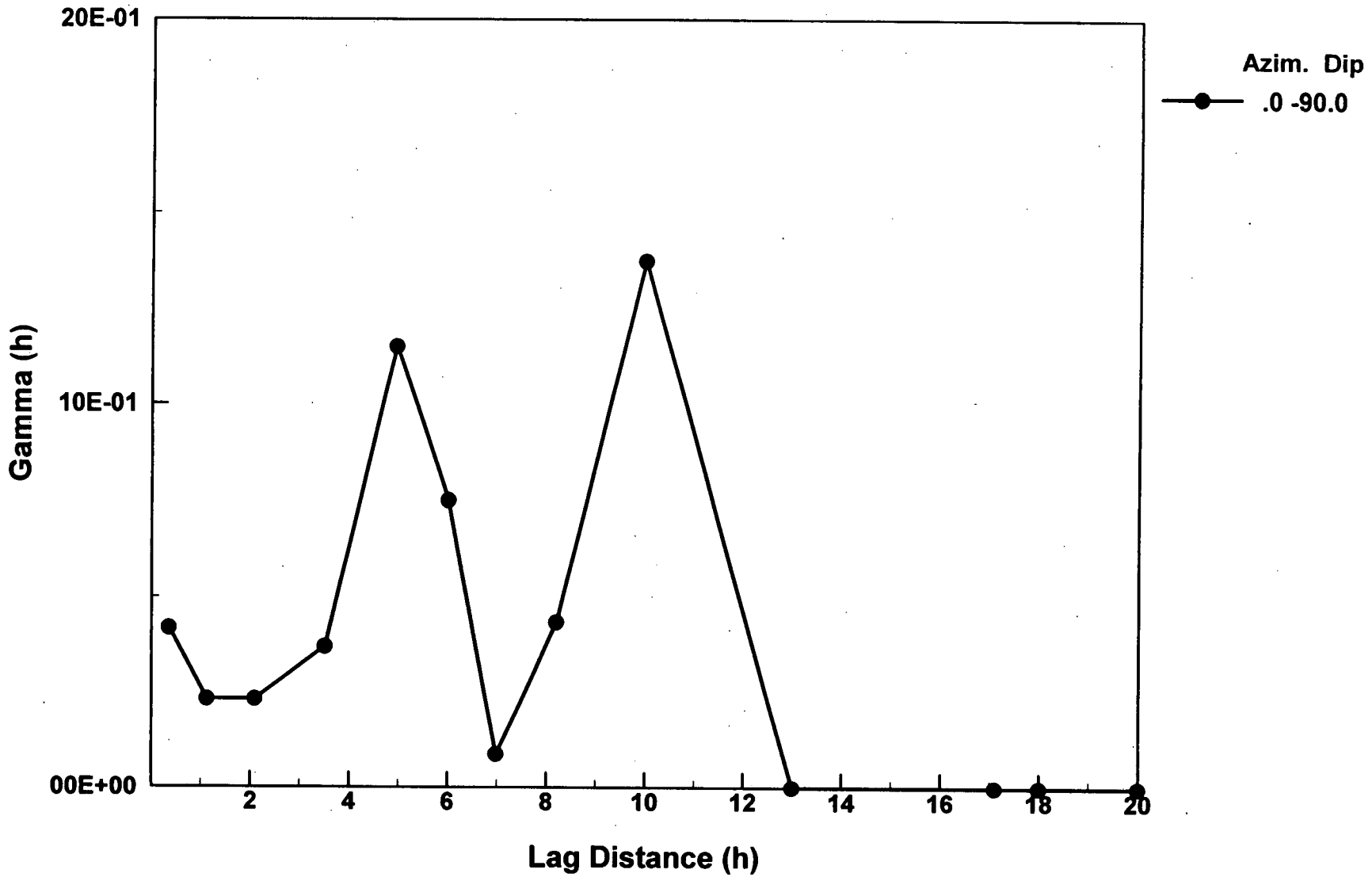


Figure E-25. Area 6 Subarea 4 Vertical Variogram



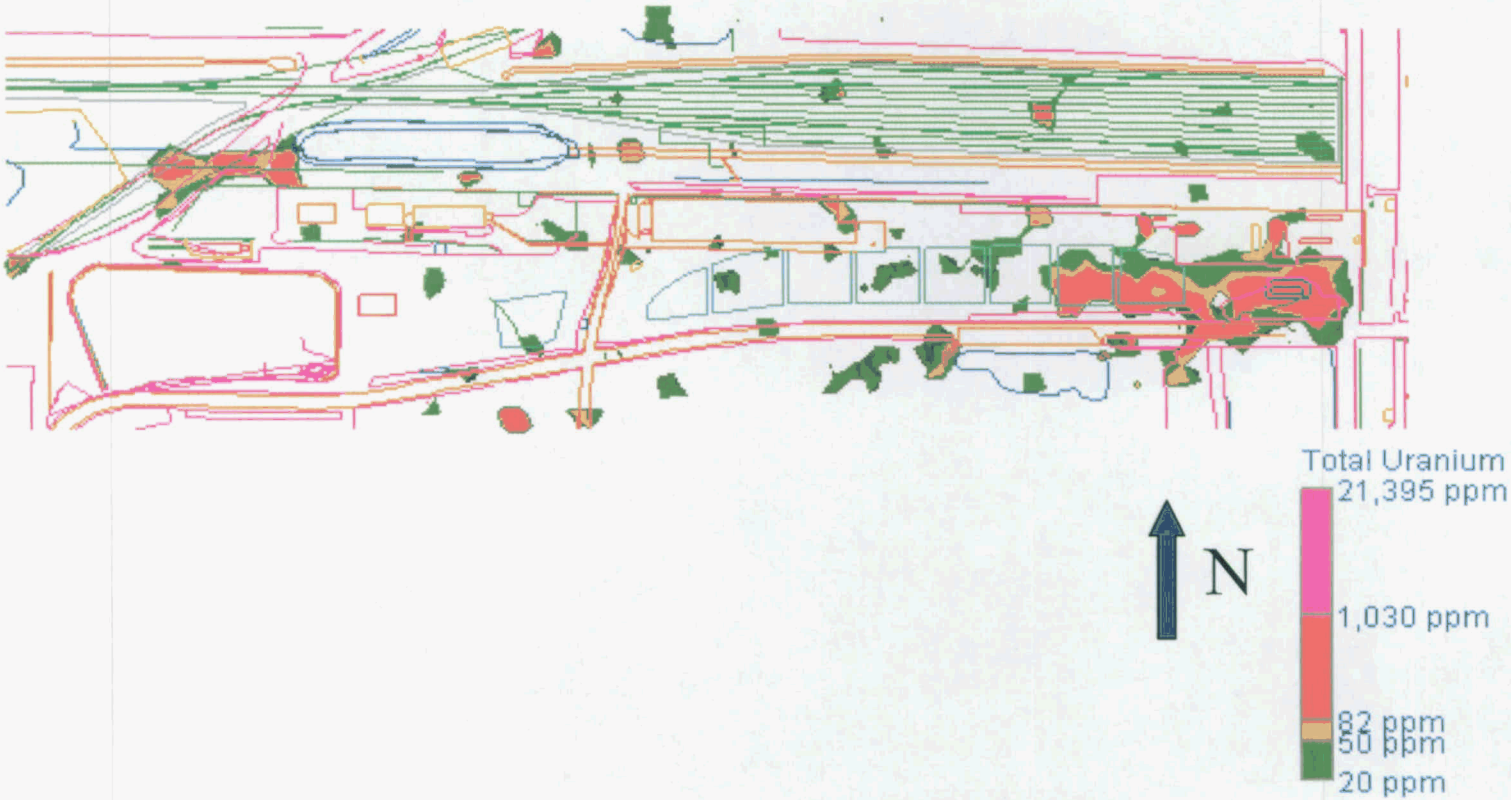


Figure E-26. Area 6 Subarea 1 Model

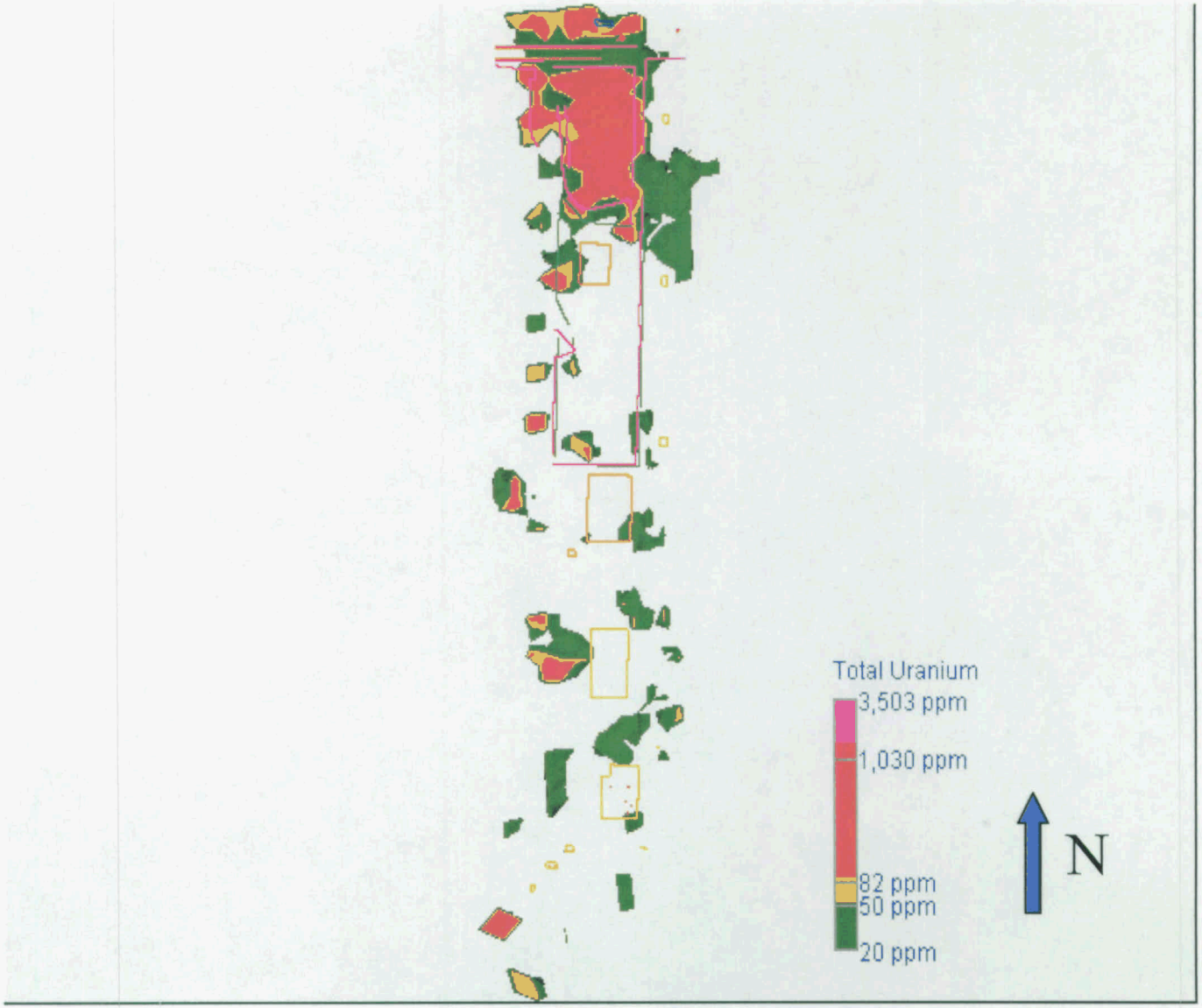


Figure E-27. Area 6 Subarea 2 Model

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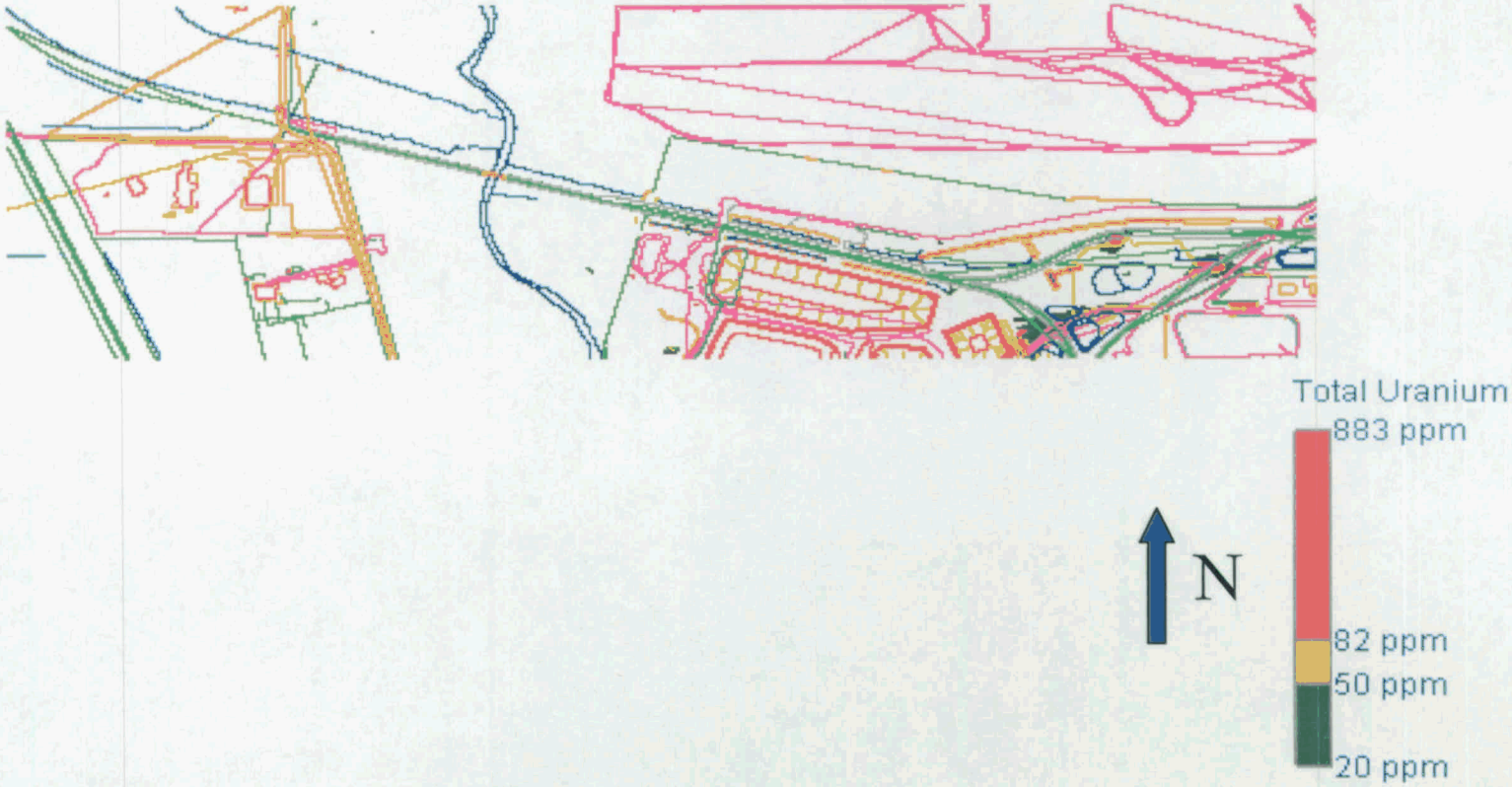


Figure E-28. Area 6 Subarea 3 Model

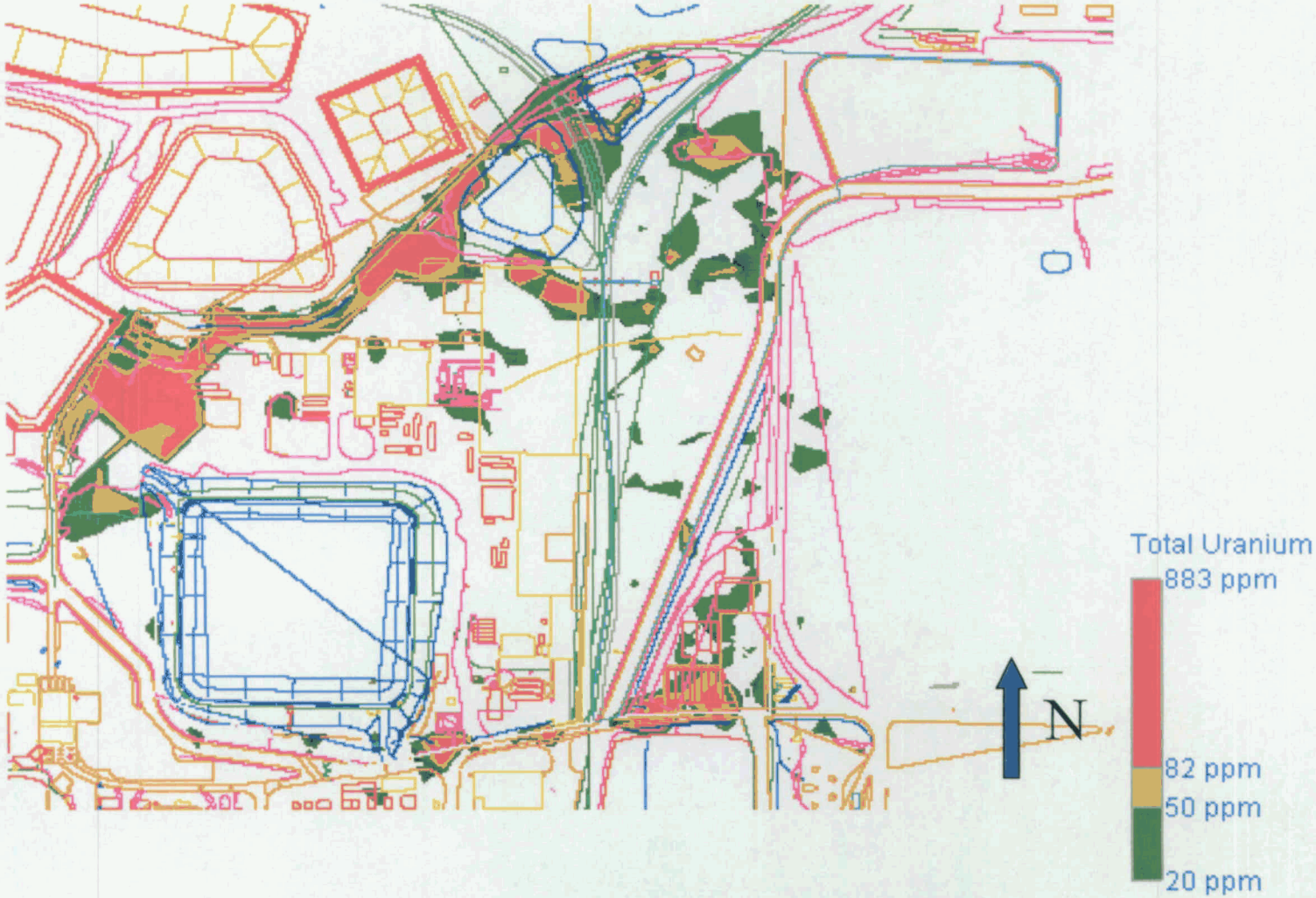
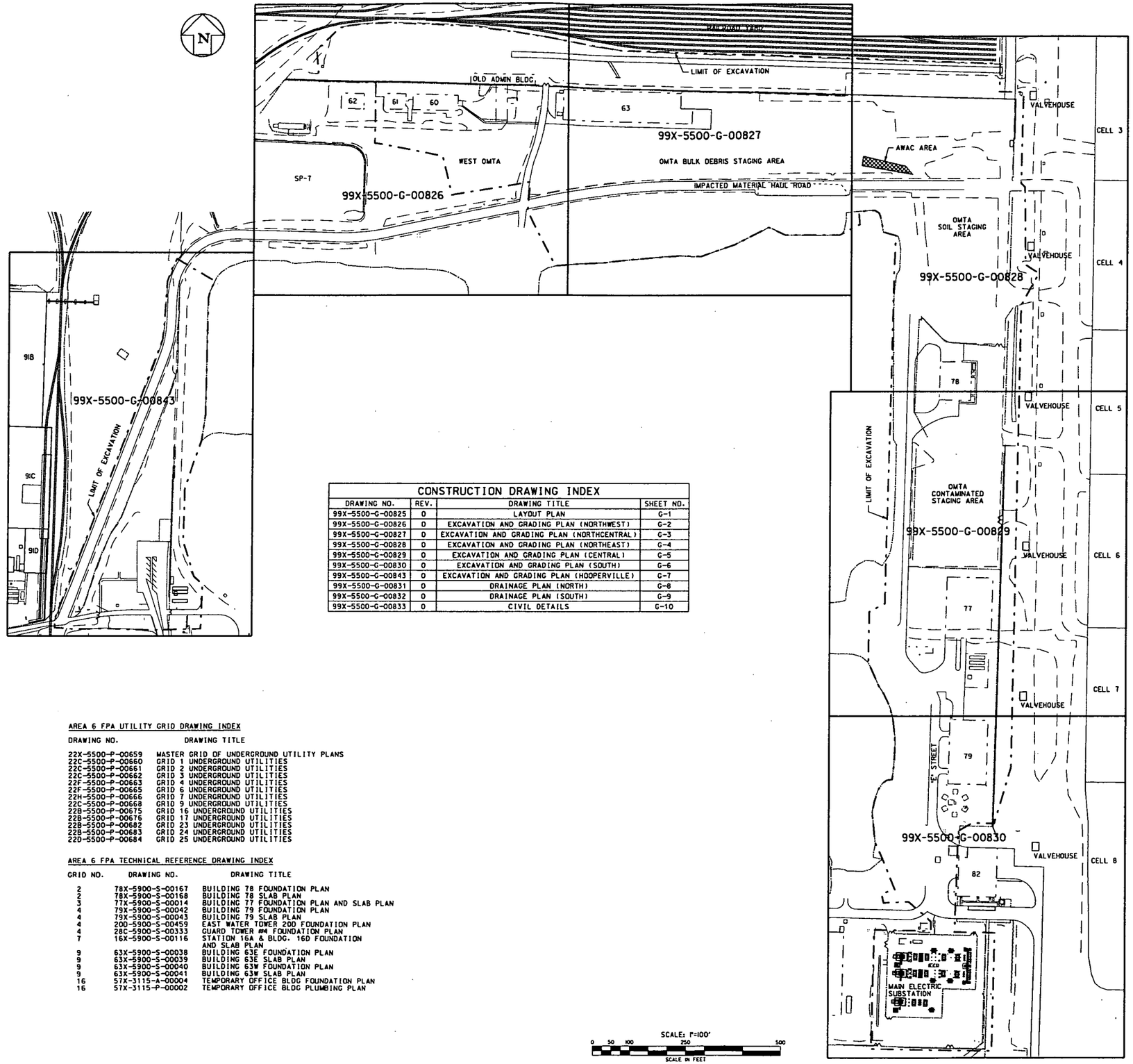


Figure E-29. Area 6 Subarea 4 Model

AREA 6 FORMER PRODUCTION AREA
EXCAVATION PLAN DRAWING PACKAGE
FOR 20602

99xg0825 CADD11 rabb7064 06/09/2005 10:44:12 AM



CONSTRUCTION DRAWING INDEX

DRAWING NO.	REV.	DRAWING TITLE	SHEET NO.
99X-5500-G-00825	0	LAYOUT PLAN	G-1
99X-5500-G-00826	0	EXCAVATION AND GRADING PLAN (NORTHWEST)	G-2
99X-5500-G-00827	0	EXCAVATION AND GRADING PLAN (NORTHCENTRAL)	G-3
99X-5500-G-00828	0	EXCAVATION AND GRADING PLAN (NORTHEAST)	G-4
99X-5500-G-00829	0	EXCAVATION AND GRADING PLAN (CENTRAL)	G-5
99X-5500-G-00830	0	EXCAVATION AND GRADING PLAN (SOUTH)	G-6
99X-5500-G-00843	0	EXCAVATION AND GRADING PLAN (HOOPERVILLE)	G-7
99X-5500-G-00831	0	DRAINAGE PLAN (NORTH)	G-8
99X-5500-G-00832	0	DRAINAGE PLAN (SOUTH)	G-9
99X-5500-G-00833	0	CIVIL DETAILS	G-10

AREA 6 FPA UTILITY GRID DRAWING INDEX

DRAWING NO.	DRAWING TITLE
22X-5500-P-00659	MASTER GRID OF UNDERGROUND UTILITY PLANS
22C-5500-P-00660	GRID 1 UNDERGROUND UTILITIES
22C-5500-P-00661	GRID 2 UNDERGROUND UTILITIES
22C-5500-P-00662	GRID 3 UNDERGROUND UTILITIES
22F-5500-P-00663	GRID 4 UNDERGROUND UTILITIES
22F-5500-P-00665	GRID 6 UNDERGROUND UTILITIES
22H-5500-P-00666	GRID 7 UNDERGROUND UTILITIES
22C-5500-P-00668	GRID 9 UNDERGROUND UTILITIES
22B-5500-P-00675	GRID 16 UNDERGROUND UTILITIES
22B-5500-P-00676	GRID 17 UNDERGROUND UTILITIES
22B-5500-P-00682	GRID 23 UNDERGROUND UTILITIES
22B-5500-P-00683	GRID 24 UNDERGROUND UTILITIES
22D-5500-P-00684	GRID 25 UNDERGROUND UTILITIES

AREA 6 FPA TECHNICAL REFERENCE DRAWING INDEX

GRID NO.	DRAWING NO.	DRAWING TITLE
2	78X-5900-S-00167	BUILDING 78 FOUNDATION PLAN
2	78X-5900-S-00168	BUILDING 78 SLAB PLAN
3	77X-5900-S-00014	BUILDING 77 FOUNDATION PLAN AND SLAB PLAN
4	79X-5900-S-00042	BUILDING 79 FOUNDATION PLAN
4	79X-5900-S-00043	BUILDING 79 SLAB PLAN
4	20D-5900-S-00459	EAST WATER TOWER 20D FOUNDATION PLAN
4	28C-5900-S-00333	GUARD TOWER #4 FOUNDATION PLAN
7	16X-5900-S-00116	STATION 16A & BLDG. 16D FOUNDATION AND SLAB PLAN
9	63X-5900-S-00038	BUILDING 63E FOUNDATION PLAN
9	63X-5900-S-00039	BUILDING 63E SLAB PLAN
9	63X-5900-S-00040	BUILDING 63W FOUNDATION PLAN
9	63X-5900-S-00041	BUILDING 63W SLAB PLAN
16	57X-3115-A-00004	TEMPORARY OFFICE BLDG FOUNDATION PLAN
16	57X-3115-P-00002	TEMPORARY OFFICE BLDG PLUMBING PLAN

SCALE: 1"=100'

0 50 100 250 500

SCALE IN FEET

GENERAL NOTES

1. HORIZONTAL CONTROLS SHOWN ARE BASED UPON NORTH AMERICAN DATUM 1983 (NAD 83).
2. VERTICAL CONTROLS SHOWN ARE BASED UPON NATIONAL GEODETIC VERTICAL DATUM 1929 (NGVD 29).
3. DIMENSIONS SHOWN TAKE PRECEDENCE OVER SCALED DIMENSIONS.
4. TECHNICAL SPECIFICATIONS GOVERNING THIS WORK ARE THE LATEST REVISIONS OF EXCAVATION FOR REMEDIATION TECHNICAL SPECIFICATIONS (DOCUMENT NO. 20300-TS-0001) AND OSDF TECHNICAL SPECIFICATIONS (DOCUMENT NO. 20105-TS-0001).
5. THE LOCATIONS OF EXISTING STRUCTURES AND UTILITIES ARE APPROXIMATE. IF UNIDENTIFIED UTILITIES ARE DISCOVERED, PROCEED AS DIRECTED BY THE CONSTRUCTION MANAGER.
6. SEE AREA 6 FPA EXCAVATION AND GRADING PLANS FOR LIMIT OF EXCAVATION SHOWN HERE FOR REFERENCE ONLY.
7. ABOVE-WAC AREAS ARE LABELED WITH THEIR PROJECT-SPECFIC IDENTIFIERS. SEE AREA 6 FPA EXCAVATION AND GRADING PLANS FOR ABOVE-WAC AREA COORDINATES, ELEVATIONS AND EXCAVATION DETAILS.
8. DO NOT STAGE LOADED HAUL TRUCKS WITHING 15 FEET FROM THE TOP OF DEEP EXCAVATION SLOPES. DO NOT STAGE GENERAL CONSTRUCTION EQUIPMENT WITHIN 10 FEET FROM THE TOP OF DEEP EXCAVATION SLOPES.
9. REQUIREMENTS CONTAINED IN REFERENCED TECHNICAL SPECIFICATIONS ARE APPLICABLE WHERE PERTINENT TO REMEDIAL ACTIVITY SCOPE ILLUSTRATED ON CONSTRUCTION DRAWINGS.

5970

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DATE	REV. BY	APPR.
0	ISSUED CERTIFIED FOR CONSTRUCTION	5/12/05	RWL	GEP

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD CLOSURE PROJECT

THIS DRAWING PREPARED BY

FLUOR FERNALD, INC.

PROJECT NAME

SOIL REMEDIATION

DRAWING TITLE

AREA 6 FORMER PRODUCTION AREA (FPA)
LAYOUT PLAN

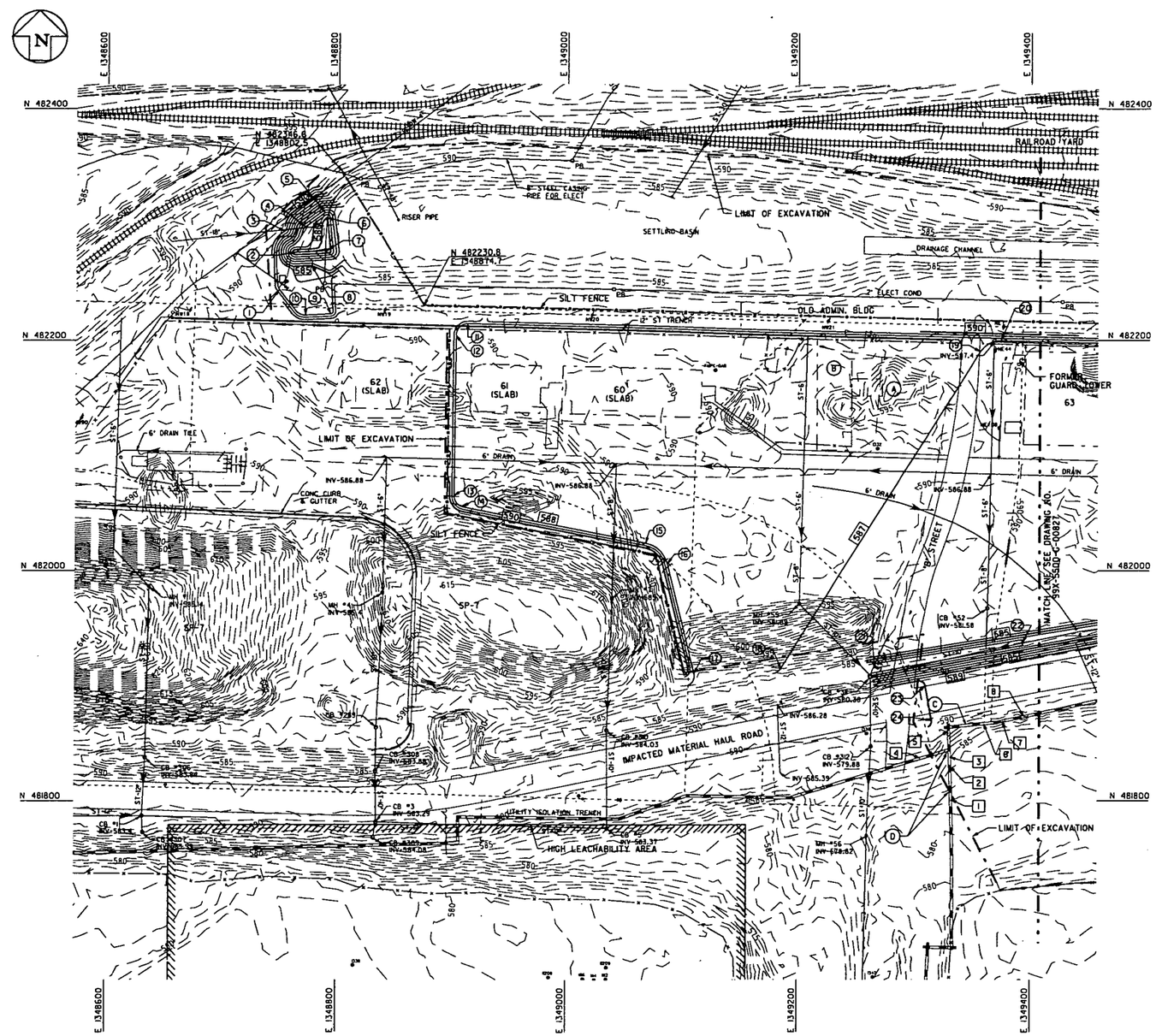
APPROVALS

COGNIZANT ENG.			SAFETY ENG.	S. JOHNSON	5/12/05
CIVIL & STR.	S. RUSSELL	5/12/05	MAINTENANCE		
ELECTRICAL			FIRE PROTECT.		
ENGINEER	A.C. SHECK	5/12/05	WAO	S. KEOHN	5/12/05
INSTRUMENT			SECURITY		
MECHANICAL			QA	R. FRISE	5/12/05
			CONSTRUCTION	K. HAREN	5/12/05
CHECKED	C. VAN ARSDALE	5/12/05	CHARACTERIZATION	F. MILLER	5/12/05
APPROVED	G.E. PAUL	5/12/05			

DRAWN BY	PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
R.M. LINDGREN	20600	99X-5500-G-00825	G-1	0
RES PROJECT NO.	FILENAME 99xg0825.dgn			

FCP54E.DGN 5/30/03

99xg0826 CADD11 rabb7064 06/09/2005 10:46:52 AM



CONTROL POINTS			
PT NO.	NORTHING	EASTING	ELEV.
1	482244.06	1348749.51	587.0
2	482276.32	1348762.93	579.0
3	482294.28	1348754.11	589.0
4	482298.29	1348771.68	582.0
5	482310.66	1348788.35	582.0
6	482305.94	1348790.61	580.0
7	482278.58	1348791.24	579.0
8	482264.84	1348777.06	585.0
9	482223.06	1348793.79	587.0
10	482222.01	1348772.16	587.0
11	482214.69	1348913.54	588.0
12	482204.79	1348901.27	588.0
13	482065.39	1348900.10	588.0
14	482055.48	1348910.14	588.0
15	482023.99	1349068.50	588.0
16	482006.15	1349087.14	588.0
17	481910.43	1349110.54	588.0
18	481915.21	1349185.65	587.0
19	482190.64	1349356.36	587.0
20	482200.09	1349373.91	587.0
21	481915.40	1349266.68	583.0
22	481937.56	1349392.99	583.0
23	481900.18	1349309.52	590.0
24	481869.84	1349315.16	590.0

5970

UTILITY TRENCH CONTROL POINTS			
PT NO.	NORTHING	EASTING	ELEV.
1	481801.25	1349332.07	575.0
2	481830.19	1349330.86	576.0
3	481838.03	1349330.71	577.0
4	481836.82	1349305.54	577.0
5	481860.94	1349329.81	578.0
6	481866.97	1349359.81	578.0
7	481869.23	1349376.09	576.0
8	481873.00	1349394.63	578.0

SCALE: 1"=40'

0 20 40 100 200

SCALE IN FEET

GENERAL NOTES

1. REFER TO THE APPROPRIATE UNDERGROUND UTILITY GRID DRAWING FOR THE AREA BEING EXCAVATED IN ACCORDANCE WITH DRAWING 22X-5500-P-00659. MASTER GRID OF UNDERGROUND UTILITY PLAN.
2. UNDERGROUND UTILITY GRID NUMBERS AND UTILITY DESIGNATIONS ARE IN ACCORDANCE WITH DRAWING 22X-5500-P-00659. MASTER GRID OF UDERGROUND UTILITY PLAN.
3. VERIFY ISOLATION OF UTILITIES WITHIN THE LIMIT OF EXCAVATION. UNLESS SPECIFICALLY IDENTIFIED FOR PROTECTION BY THE CONSTRUCTION MANAGER.
4. REFER TO MASTER FEMP BENCHMARK LOCATION PLAN. DRAWING 00X-5500-G-01846. FOR EXISTING BENCHMARK LOCATIONS.
5. BUILDING NUMBERS REFER TO FORMER LOCATIONS OF BUILDINGS OR PADS.
6. BARRICADE MANHOLE AND CATCH BASIN OPENINGS AS REQUIRED BY SPR3-5.
7. DESIGN CONTOURS AND GRADES SHOWN REPRESENT THE MINIMUM LIMITS OF EXCAVATION REQUIRED TO CAPTURE CONTAMINATION AND FOUNDATIONS. WHILE MAINTAINING SAFE SLOPE REQUIREMENTS. FIELD CHANGES SHALL BE REPORTED TO THE CONSTRUCTION MANAGER AND APPROVED BY THE ENGINEER.
8. COMPLETE ABOVE-WAC AREA EXCAVATION IN ACCORDANCE WITH SPECIFICATION SECTION 02205 PRIOR TO PERFORMING ADJACENT BELOW-WAC EXCAVATION.
9. INSTALL AIR-GAPS AND/OR PLUGS BEYOND THE LIMIT OF EXCAVATION TO PROTECT THE STORM SEWER SYSTEM TO REMAIN IN SERVICE AS SHOWN ON THE INDIVIDUAL AREA 6 FPA EXCAVATION AND GRADING PLAN DRAWINGS. SURVEY THE LOCATIONS OF AIR-GAPS AND PLUGS INSTALLED.
10. REFER TO DRAINAGE PLANS 99X-5500-G-00831 AND 99X-5500-G-00832 FOR DEWATERING OF EXCAVATIONS.
11. EXCAVATE UTILITIES THAT REMAIN BELOW THE DESIGN GRADE USING TRENCHING METHODS IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 02205. AND THE EXCAVATION OF UTILITIES BELOW DESIGN GRADE DETAIL ON DRAWING 99X-5500-G-00833.
12. SEE DRAWING 99X-5500-G-00833 FOR SILT FENCE DETAIL.
13. DO NOT STAGE EQUIPMENT WITHIN 15 FEET OF RAILROAD TRACKS. KEEP RAILROAD TRACKS CLEAR AT ALL TIMES.
14. IN HIGH LEACHABILITY AREAS. OBTAIN FILL MATERIAL. AS NEEDED MEETING THE REQUIREMENTS OF TECHNICAL SPECIFICATION SECTION 02206.
15. INSTALL MECHANICAL PLUGS INTO PROTECTED STORM SEWER LINES AS NEEDED DURING EXCAVATION SEQUENCING TO GUARD AGAINST THE INTRUSION OF SEDIMENT FROM STORM SEWER LINES COMING FROM DISTURBED AREAS.

KEYED NOTES

(A) AN UNDERGROUND OIL STORAGE TANK MAY REMAIN IN THE AREA OF THE OLD ADMINISTRATION BUILDING AREA.

(B) THE OLD ADMINISTRATION BUILDING SLAB AND FOUNDATIONS HAVE BEEN REMOVED TO A DEPTH OF 2 FEET BELOW GRADE. MANY BEARING FOOTERS MAY REMAIN IN PLACE. AS SHOWN ON TECHNICAL REFERENCE DRAWINGS.

(C) EXCAVATE EXISTING ISOLATION TRENCH TO COORDINATES AND ELEVATIONS SHOWN. MINIMUM 36 INCHES WIDE.PERFORM MONITORING OR SAMPLING OF THE TRENCH BOTTOM PRIOR TO FILLING. USING MATERIAL FROM A CERTIFIED AREA.

(D) TO GUARD AGAINST THE INFILTRATION OF CONTAMINATED SOIL AND WATER INTO THE EXCAVATED AREA. PLUG THE CONTAMINATED ISOLATION TRENCH TO BE LEFT IN PLACE USING SOIL FROM THE SURROUNDING AREA AND COMPACT IN 12 TO 18 INCH LOOSE LIFTS WITH FOUR PASSES OF EXCAVATION EQUIPMENT FOR EACH LIFT.

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DATE	REV. BY	APPR.
0	ISSUED CERTIFIED FOR CONSTRUCTION	5/12/05	RML	GEP

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD CLOSURE PROJECT

THIS DRAWING PREPARED BY

FLUOR FERNALD, INC.

PROJECT NAME

SOIL REMEDIATION

DRAWING TITLE

AREA 6 FORMER PRODUCTION AREA (FPA)
EXCAVATION AND GRADING PLAN (NORTHWEST)

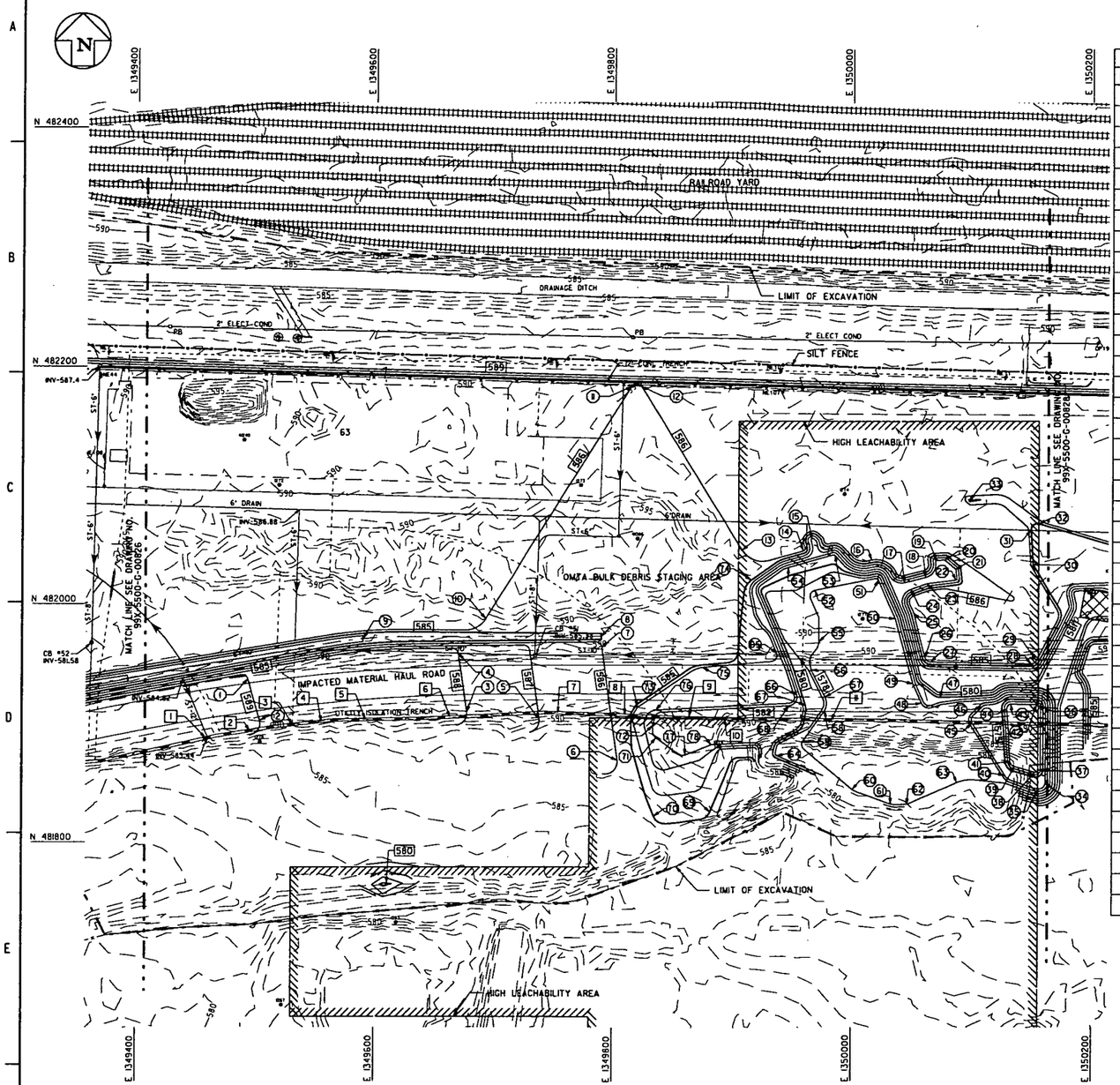
APPROVALS

COGNIZANT ENG.			SAFETY ENG.	C. JOHNSON	5/12/05
CIVIL & STR.	D. RUSSELL	5/12/05	MAINTENANCE		
ELECTRICAL			FIRE PROTECT.		
ENGINEER	A.C. SNIDER	5/12/05	WAO	S. SEBORG	5/12/05
INSTRUMENT			SECURITY		
MECHANICAL			QA	B. FRIESE	5/12/05
			CONSTRUCTION	G. HARDIN	5/12/05
CHECKED	C. VAN MIDDLE	5/12/05	CHARACTERIZATION	F. MILLER	5/12/05
APPROVED	G.E. PAUL	5/12/05			

DRAWN BY	PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
R.M. LINDGREN	20600	99X-5500-G-00826	G-2	0
RES PROJECT NO.	FILENAME 99xg0826.dgn			

FCPSAE.DGN 5/30/03

99xg0827 CADD11 rabb7064 06/09/2005 10:47:40 AM



CONTROL POINTS				CONTROL POINTS			
PT NO.	NORTHING	EASTING	ELEV.	PT NO.	NORTHING	EASTING	ELEV.
1	481936.98	1349494.13	589.0	41	481868.31	1350132.55	573.0
2	481902.28	1349503.95	589.0	42	481915.96	1350154.53	573.0
3	481909.34	1349677.06	588.0	43	481916.38	1350133.11	573.0
4	481958.59	1349670.21	588.0	44	481912.23	1350129.72	573.0
5	481903.51	1349738.45	587.0	45	481900.25	1350100.67	576.0
6	481868.59	1349803.89	586.0	46	481914.12	1350109.15	576.0
7	481964.09	1349790.60	586.0	47	481922.08	1350074.17	580.0
8	481972.96	1349790.12	585.0	48	481917.06	1350058.63	578.0
9	481970.83	1349590.17	584.0	49	481933.27	1350051.14	578.0
10	481987.78	1349693.11	586.0	50	481988.04	1350036.22	578.0
11	482183.57	1349814.47	586.0	51	482020.81	1350021.95	578.0
12	482183.57	1349822.97	586.0	52	482012.06	1349969.30	578.0
13	482045.79	1349908.37	586.0	53	482041.62	1349985.36	581.0
14	482045.11	1349959.06	586.0	54	482031.28	1349946.98	581.0
15	482055.63	1349966.34	583.0	55	481968.37	1349972.47	578.0
16	482037.56	1350016.14	586.0	56	481944.86	1349966.12	578.0
17	482018.55	1350043.88	583.0	57	481922.06	1349977.72	578.0
18	482023.04	1350061.73	583.0	58	481910.78	1349977.50	578.0
19	482037.37	1350070.75	583.0	59	481885.05	1349959.40	578.0
20	482037.70	1350077.47	583.0	60	481844.34	1350000.64	578.0
21	482029.83	1350086.93	583.0	61	481832.16	1350032.95	578.0
22	482020.79	1350087.07	583.0	62	481831.95	1350046.18	578.0
23	482017.78	1350062.80	583.0	63	481850.37	1350088.41	578.0
24	482012.86	1350049.10	583.0	64	481872.98	1349937.90	579.0
25	481993.17	1350051.44	586.0	65	481958.90	1349937.52	584.0
26	481955.44	1350061.37	586.0	66	481923.93	1349954.17	582.0
27	481951.71	1350066.11	586.0	67	481915.30	1349961.15	580.0
28	481950.06	1350149.51	586.0	68	481914.79	1349947.87	582.0
29	481952.83	1350154.09	586.0	69	481825.59	1349882.11	585.0
30	482033.93	1350151.10	585.0	70	481822.05	1349834.59	585.0
31	482063.11	1350149.30	585.0	71	481887.82	1349836.39	582.0
32	482068.23	1350155.66	585.0	72	481898.09	1349833.52	582.0
33	482087.72	1350097.70	585.0	73	481913.47	1349821.02	584.0
34	481850.04	1350161.51	576.0	74	482020.54	1349916.15	585.0
35	481845.15	1350155.49	576.0	75	481946.93	1349875.66	584.0
36	481914.96	1350155.51	573.0	76	481910.99	1349836.09	583.0
37	481861.01	1350155.51	573.0	77	481873.28	1349860.98	582.0
38	481859.09	1350152.96	573.0	78	481881.91	1349883.11	582.0
39	481863.92	1350136.15	573.0	79			
40	481856.56	1350128.14	576.0	80			

UTILITY TRENCH CONTROL POINTS							
PT NO.	NORTHING	EASTING	ELEV.	PT NO.	NORTHING	EASTING	ELEV.
1	481887.32	1349458.69	578.0	7	481908.57	1349753.99	582.0
2	481893.35	1349495.62	576.0	8	481906.92	1349810.06	581.0
3	481898.62	1349531.80	580.0	9	481904.96	1349864.10	582.0
4	481901.19	1349555.77	581.0	10	481904.05	1349894.02	581.0
5	481903.00	1349592.55	580.0	11	481902.54	1349983.03	578.0
6	481904.96	1349663.24	581.0	12			

SCALE: 1"=40'

0 20 40 100 200

SCALE IN FEET

GENERAL NOTES

1. SEE DRAWING 99X-5500-G-00826 FOR EXCAVATION AND GRADING PLAN GENERAL NOTES.

5970

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DATE	REV. BY	APPR.
0	ISSUED CERTIFIED FOR CONSTRUCTION	5/12/05	RML	GEP

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD CLOSURE PROJECT

THIS DRAWING PREPARED BY

FLUOR FERNALD, INC.

PROJECT NAME

SOIL REMEDIATION

DRAWING TITLE

AREA 6 FORMER PRODUCTION AREA (FPA)
EXCAVATION AND GRADING PLAN (NORTHCENTRAL)

APPROVALS

COGNIZANT ENG.			SAFETY ENG.	L. JOHNSON	5/12/05
CIVIL & STR.	D. RUSSELL	5/12/05	MAINTENANCE		
ELECTRICAL			FIRE PROTECT.		
ENGINEER	A.C. SNIDER	5/12/05	WAO	S. GORDON	5/12/05
INSTRUMENT			SECURITY		
MECHANICAL			QA	R. FRISCE	5/12/05
			CONSTRUCTION	L. HARDIN	5/12/05
CHECKED	C. VAN ARSDALE	5/12/05	CHARACTERIZATION	T. HILLIS	5/12/05
APPROVED	G.E. FAIR	5/12/05			

DRAWN BY	PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
R.M. LINDGREN	20600	99X-5500-G-00827	G-3	0
RES PROJECT NO.	FILENAME 99xg0827.dgn			

FCPSAE.DGN 5/30/03

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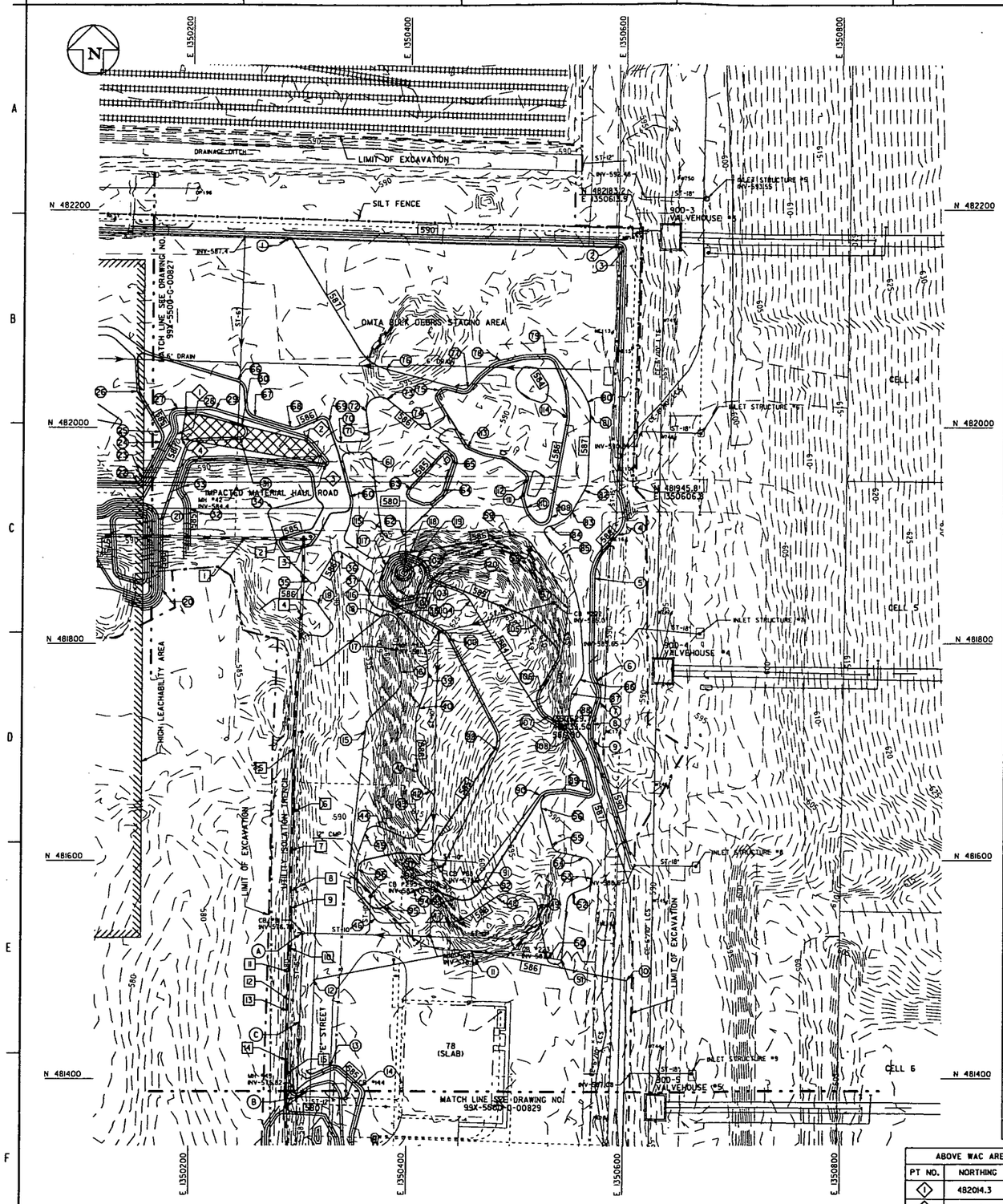


DESIGN GRADE CONTROL POINTS				DESIGN GRADE CONTROL POINTS			
PT NO.	NORTHING	EASTING	ELEV.	PT NO.	NORTHING	EASTING	ELEV.
1	482175.03	1350290.25	587.0	59	481900.40	1350493.97	586.0
2	482168.76	1350592.41	588.0	60	481936.37	1350345.86	585.0
3	482163.65	1350597.28	588.0	61	481973.05	1350365.60	586.0
4	481900.78	1350593.04	589.0	62	481900.20	1350394.56	586.0
5	481860.75	1350572.08	590.0	63	481942.41	1350400.56	584.0
6	481765.97	1350574.38	590.0	64	481942.40	1350430.42	584.0
7	481746.81	1350577.29	590.0	65	481968.09	1350438.55	584.0
8	481725.39	1350571.23	590.0	66	482044.62	1350241.35	586.0
9	481710.46	1350571.25	590.0	67	482010.78	1350257.94	586.0
10	481490.12	1350603.24	586.0	68	482000.81	1350291.16	586.0
11	481517.72	1350458.22	586.0	69	482006.06	1350326.83	586.0
12	481490.46	1350314.96	586.0	70	481986.51	1350337.62	586.0
13	481411.31	1350330.98	585.0	71	481992.96	1350363.11	586.0
14	481392.85	1350359.67	585.0	72	482015.01	1350360.35	586.0
15	481720.26	1350361.53	587.0	73	482025.93	1350379.68	586.0
16	481773.81	1350393.21	587.0	74	481999.27	1350418.44	586.0
17	481794.11	1350388.95	587.0	75	482034.62	1350426.35	586.0
18	481824.86	1350374.61	587.0	76	482054.06	1350378.07	587.0
19	481836.37	1350317.68	586.0	77	482037.23	1350452.38	587.0
20	481850.04	1350173.51	582.0	78	482062.17	1350482.91	587.0
21	481914.96	1350169.51	580.0	79	482067.82	1350525.11	587.0
22	481950.06	1350149.51	586.0	80	482023.64	1350564.72	587.0
23	481952.83	1350154.09	586.0	81	482012.13	1350567.16	587.0
24	481986.54	1350170.91	586.0	82	481942.25	1350562.23	587.0
25	481996.00	1350170.63	586.0	83	481922.28	1350550.85	587.0
26	482033.34	1350149.14	586.0	84	481909.12	1350530.32	587.0
27	482017.46	1350186.33	584.0	85	481883.29	1350542.34	587.0
28	481993.60	1350185.60	581.0	86	481766.70	1350559.24	587.0
29	482017.50	1350221.64	584.0	87	481753.93	1350551.13	587.0
30	482002.92	1350245.86	582.0	88	481724.84	1350553.59	587.0
31	481991.22	1350244.02	581.0	89	481664.39	1350569.08	584.0
32	481924.58	1350198.81	586.0	90	481660.25	1350522.38	584.0
33	481945.45	1350192.01	586.0	91	481579.81	1350460.71	584.0
34	481925.39	1350274.62	586.0	92	481572.89	1350468.27	585.0
35	481857.80	1350309.45	586.0	93	481565.17	1350443.98	585.0
36	481884.57	1350338.80	586.0	94	481572.40	1350406.62	585.0
37	481847.15	1350363.67	586.0	95	481557.08	1350378.40	585.0
38	481827.01	1350388.22	586.0	96	481591.68	1350355.26	585.0
39	481773.25	1350417.41	586.0	97	481605.57	1350411.47	585.0
40	481740.16	1350409.58	586.0	98	481596.33	1350433.52	584.0
41	481681.54	1350408.34	586.0	99	481701.34	1350482.64	584.0
42	481663.42	1350420.44	586.0	100	481804.59	1350436.39	585.0
43	481625.01	1350409.79	586.0	101	481834.25	1350389.63	585.0
44	481630.89	1350375.37	586.0	102	481866.00	1350394.70	577.0
45	481625.04	1350361.87	586.0	103	481849.67	1350390.45	581.0
46	481546.47	1350371.26	586.0	104	481840.14	1350455.69	584.0
47	481543.38	1350437.96	586.0	105	481811.98	1350517.37	585.0
48	481566.66	1350482.14	586.0	106	481756.17	1350523.05	586.0
49	481558.56	1350520.62	586.0	107	481733.50	1350529.70	586.0
50	481509.75	1350530.11	586.0	108	481713.78	1350549.38	584.0
51	481509.44	1350543.28	586.0	109	481917.27	1350531.27	586.0
52	481570.45	1350554.53	586.0	110	481926.03	1350508.51	585.0
53	481583.35	1350571.20	586.0	111	481938.53	1350506.30	585.0
54	481603.09	1350563.49	586.0	112	481951.68	1350509.55	585.0
55	481614.48	1350533.67	586.0	113	481982.31	1350452.72	585.0
56	481648.27	1350523.84	586.0	114	482009.08	1350545.66	585.0
57	481832.68	1350547.51	586.0	115	481907.01	1350374.13	586.0
58	481891.70	1350514.03	586.0	116	481843.87	1350378.37	585.0
				117	481872.43	1350378.42	585.0
				118	481882.62	1350400.19	585.0
				119	481880.23	1350406.79	585.0
				120	481860.01	1350421.17	585.0

ABOVE WAC AREA CONTROL POINTS			
PT NO.	NORTHING	EASTING	ELEV.
1	482014.3	1350194.0	584.0
2	481987.9	1350306.0	584.0
3	481966.2	1350324.0	584.0
4	481989.6	1350190.0	584.0

SCALE: 1"=40'

0 20 40 100 200

SCALE IN FEET

GENERAL NOTES

1. SEE DRAWING 99X-5500-G-00826 FOR EXCAVATION AND GRADING PLAN GENERAL NOTES.
2. DO NOT REMOVE STORM SEWER SYSTEM NORTH OF MH#89 (SEE DRAWING 99X-5500-G-00829). UNTIL THE WATER TOWER FOUNDATION EXCAVATION SHOWN ON DRAWING 99X-5500-G-00830 HAS BEEN COMPLETED.

5970

UTILITY TRENCH CONTROL POINTS			
PT NO.	NORTHING	EASTING	ELEV.
1	481898.02	1350249.23	578.0
2	481897.12	1350279.68	577.0
3	481893.20	1350303.80	577.0
4	481826.27	1350301.99	576.0
5	481702.97	1350295.96	576.0
6	481644.48	1350295.06	575.0
7	481609.21	1350294.15	574.0
8	481571.83	1350294.45	573.0
9	481556.15	1350294.45	572.0
10	481519.67	1350293.85	572.0
11	481497.66	1350293.25	573.0
12	481472.34	1350292.65	573.0
13	481462.09	1350291.44	574.0
14	481416.57	1350290.84	575.0
15	481403.30	1350290.23	577.0

LEGEND

AWAC BOUNDARY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DATE	REV. BY	APPR.
0	ISSUED CERTIFIED FOR CONSTRUCTION	5/2/05	RML	GEP

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD CLOSURE PROJECT

THIS DRAWING PREPARED BY

FLUOR FERNALD, INC.

PROJECT NAME

SOIL REMEDIATION

DRAWING TITLE

AREA 6 FORMER PRODUCTION AREA (FPA)
EXCAVATION AND GRADING PLAN (NORTHEAST)

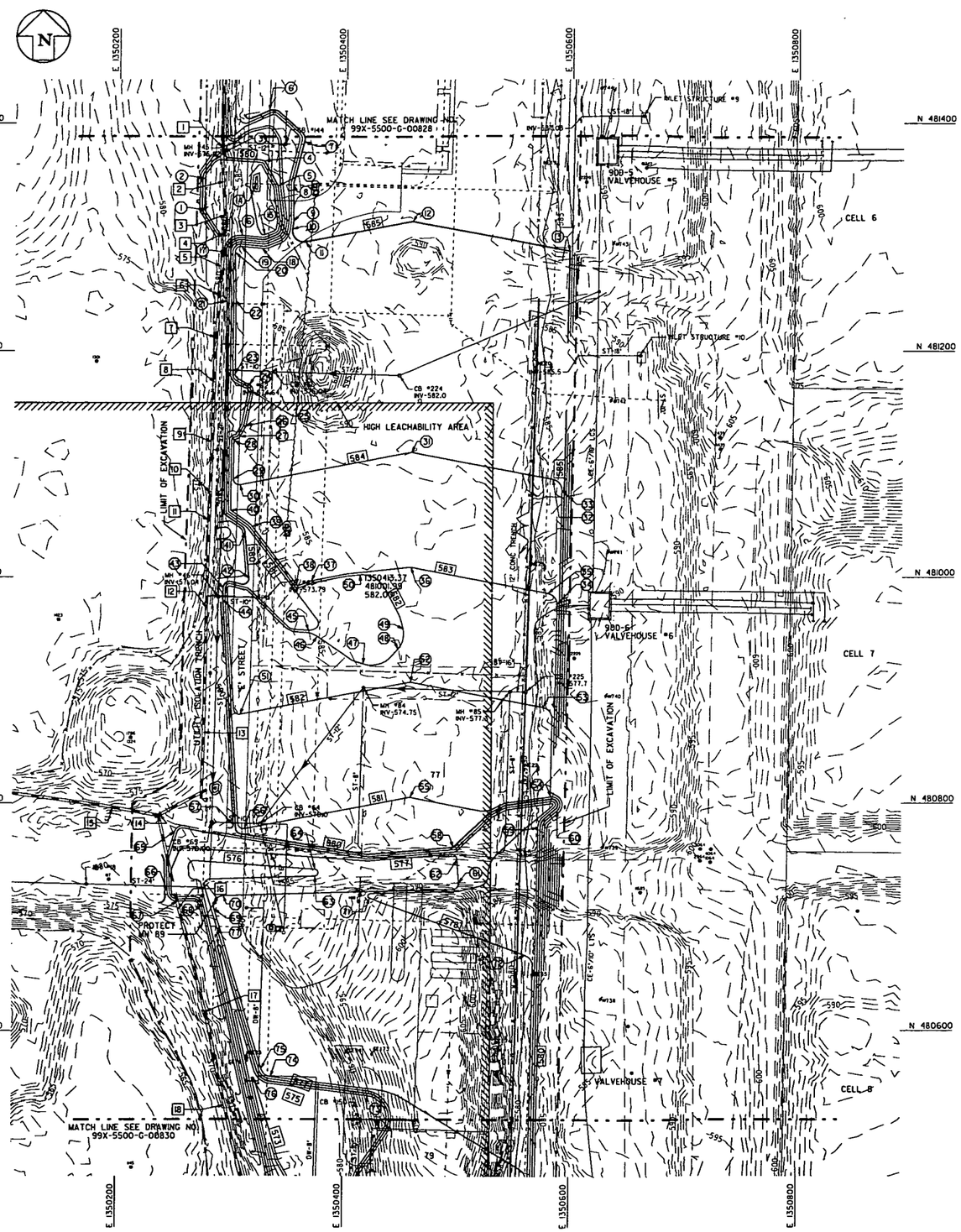
APPROVALS

COGNIZANT ENG.			SAFETY ENG.	E. JOHNSON	5/12/05
CIVIL & STR.	G. RUSSELL	5/12/05	MAINTENANCE		
ELECTRICAL			FIRE PROTECT.		
ENGINEER	A.C. SHEEN	5/12/05	WAQ		
INSTRUMENT			SECURITY	S. GIBSON	5/12/05
MECHANICAL			QA	R. FRYE	5/12/05
			CONSTRUCTION	L. BARBER	5/12/05
CHECKED	C. VAN ARSDALE	5/12/05	CHARACTERIZATION	F. MILLER	5/12/05
APPROVED	G.E. FAIR	5/12/05			

DRAWN BY	PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
R.M. LINDGREN	20600	99X-5500-G-00828	G-4	0
RES. PROJECT NO.	FILENAME 99xg0828.dgn			

FCPSAE.DGN 5/30/03

99xg0829 CADD11 rabb7064 06/09/2005 10:49:29 AM



DESIGN GRADE CONTROL POINTS				DESIGN GRADE CONTROL POINTS			
PT NO.	NORTHING	EASTING	ELEV.	PT NO.	NORTHING	EASTING	ELEV.
1	481324.00	1350274.65	579.0	40	481059.24	1350299.43	583.0
2	481351.65	1350275.02	579.0	41	481039.91	1350312.18	580.0
3	481374.41	1350291.60	580.0	42	480999.08	1350315.67	580.0
4	481367.14	1350327.38	580.0	43	480990.20	1350292.87	580.0
5	481345.21	1350339.35	580.0	44	480979.77	1350292.78	580.0
6	481411.31	1350330.98	585.0	45	480952.83	1350368.51	581.0
7	481384.23	1350362.47	585.0	46	480947.46	1350376.11	582.0
8	481345.94	1350352.78	585.0	47	480923.04	1350416.37	582.0
9	481314.46	1350353.17	585.0	48	480935.99	1350447.07	582.0
10	481307.45	1350352.15	585.0	49	480953.91	1350451.73	582.0
11	481296.19	1350363.92	585.0	50	481001.99	1350413.37	582.0
12	481314.13	1350458.22	585.0	51	480878.51	1350308.75	582.0
13	481287.62	1350597.56	585.0	52	480906.95	1350458.22	582.0
14	481347.45	1350320.15	576.0	53	480884.56	1350575.92	582.0
15	481302.25	1350327.88	578.0	54	480805.75	1350583.43	581.0
16	481301.79	1350308.28	579.0	55	480805.16	1350458.22	581.0
17	481286.52	1350293.86	580.0	56	480777.54	1350313.05	581.0
18	481290.21	1350325.57	584.0	57	480781.13	1350303.18	580.0
19	481292.0	1350307.34	584.0	58	480761.0	1350497.48	580.0
20	481286.89	1350301.85	584.0	59	480778.60	1350571.94	579.0
21	481244.33	1350294.95	580.0	60	480793.46	1350588.92	581.0
22	481244.40	1350302.95	584.0	61	480729.63	1350502.41	577.0
23	481179.79	1350302.42	584.0	62	480750.20	1350500.90	577.0
24	481170.23	1350315.11	584.0	63	480735.71	1350375.71	576.0
25	481163.74	1350318.28	584.0	64	480741.71	1350375.29	576.0
26	481133.83	1350312.50	584.0	65	480775.32	1350251.86	579.0
27	481124.52	1350307.17	584.0	66	480722.32	1350245.16	579.0
28	481120.98	1350301.94	584.0	67	480713.57	1350254.40	579.0
29	481086.83	1350301.66	584.0	68	480710.52	1350275.28	578.0
30	481081.88	1350307.59	584.0	69	480707.16	1350286.35	577.0
31	481110.54	1350458.22	584.0	70	480718.48	1350294.54	577.0
32	481086.69	1350583.59	584.0	71	480716.34	1350422.92	578.0
33	481076.68	1350591.72	584.0	72	480666.26	1350561.13	578.0
34	480975.62	1350587.88	583.0	73	480543.21	1350421.74	574.0
35	480985.62	1350579.76	583.0	74	480559.49	1350336.82	577.0
36	481008.75	1350458.22	583.0	75	480566.55	1350328.44	577.0
37	480996.75	1350370.78	583.0	76	480558.88	1350321.14	573.0
38	480993.30	1350357.48	583.0	77	480674.93	1350290.57	575.0
39	481044.75	1350318.51	583.0	78			

UTILITY TRENCH CONTROL POINTS				UTILITY TRENCH CONTROL POINTS			
PT NO.	NORTHING	EASTING	ELEV.	PT NO.	NORTHING	EASTING	ELEV.
1	481378.88	1350289.93	577.0	10	481074.99	1350281.49	570.0
2	481348.73	1350291.44	576.0	11	481050.57	1350279.68	569.0
3	481319.49	1350292.95	576.0	12	480972.79	1350278.78	568.0
4	481303.21	1350292.04	575.0	13	480862.45	1350276.67	568.0
5	481274.27	1350289.63	575.0	14	480790.10	1350238.38	568.0
6	481248.95	1350288.12	573.0	15	480796.13	1350196.48	568.0
7	481211.86	1350285.11	573.0	16	480706.59	1350254.66	568.0
8	481172.37	1350284.51	572.0	17	480616.75	1350279.38	567.0
9	481119.61	1350282.40	571.0	18	480534.75	1350295.96	567.0

SCALE: 1"=40'

0 20 40 100 200

SCALE IN FEET

GENERAL NOTES

1. SEE DRAWING 99X-5500-G-00826 FOR EXCAVATION AND GRADING PLAN GENERAL NOTES.
2. DO NOT REMOVE STORM SEWER SYSTEM NORTH OF MH 89, UNTIL THE WATER TOWER FOUNDATION EXCAVATION SHOWN ON DRAWING 99X-5500-G-00830 HAS BEEN COMPLETED.

5970

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DATE	REV. BY	APPR.
0	ISSUED CERTIFIED FOR CONSTRUCTION	5/2/05	RML	GEP

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD CLOSURE PROJECT

THIS DRAWING PREPARED BY

FLUOR FERNALD, INC.

PROJECT NAME

SOIL REMEDIATION

DRAWING TITLE

AREA 6 FORMER PRODUCTION AREA (FPA) EXCAVATION AND GRADING PLAN (CENTRAL)

APPROVALS

COGNIZANT ENG.			SAFETY ENG.	G. JOHNSON	5/2/05
CIVIL & STR.	G. RUSSELL	5/2/05	MAINTENANCE		
ELECTRICAL			FIRE PROTECT.		
ENGINEER	A.C. SHEEN	5/2/05	WAO	S. ISAGHA	5/2/05
INSTRUMENT			SECURITY		
MECHANICAL			QA	B. FRIGGE	5/2/05
			CONSTRUCTION	L. WARREN	5/2/05
CHECKED	C. VAN ARSDALE	5/2/05	CHARACTERIZATION	F. MILLER	5/2/05
APPROVED	G.E. PAUL	5/2/05			

DRAWN BY	PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
R.M. LINDGREN	20600	99X-5500-G-00829	G-5	0
RES PROJECT NO.	FILENAME 99xg0829.dgn			

FCPSAE.DGN 5/30/03

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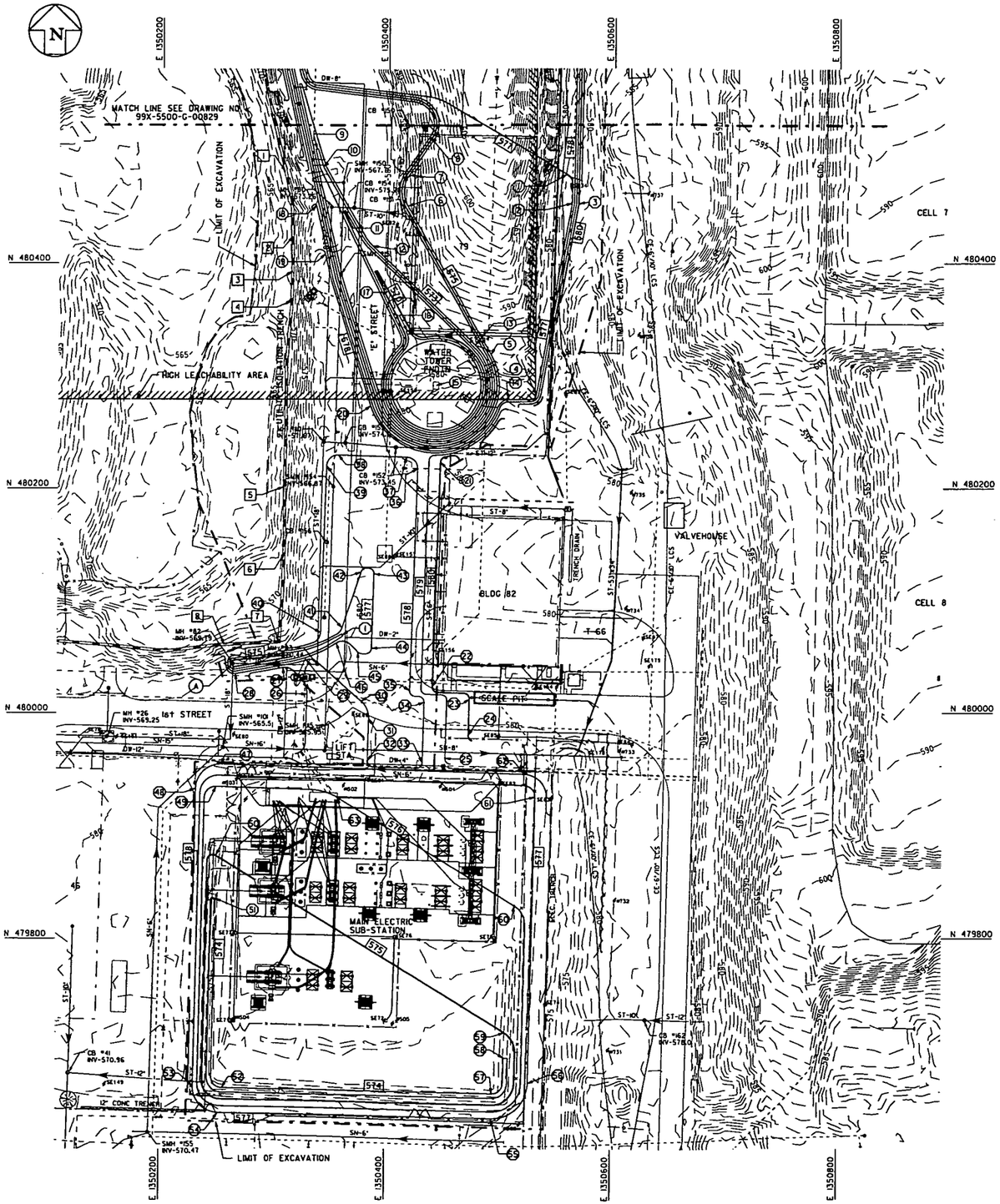

DESIGN GRADE CONTROL POINTS				DESIGN GRADE CONTROL POINTS			
PT NO.	NORTHING	EASTING	ELEV.	PT NO.	NORTHING	EASTING	ELEV.
1	480478.56	1350557.64	577.0	33	479955.50	1350431.87	578.0
2	480453.03	1350562.22	577.0	34	480009.49	1350433.35	578.0
3	480452.45	1350568.01	580.0	35	480019.86	1350420.46	578.0
4	480283.46	1350531.45	577.0	36	480217.70	1350426.42	578.0
5	480319.27	1350490.89	576.0	37	480228.00	1350416.72	578.0
6	480450.89	1350416.44	576.0	38	480229.80	1350356.75	578.0
7	480478.38	1350417.63	576.0	39	480220.11	1350346.45	578.0
8	480512.05	1350435.84	574.0	40	480071.38	1350341.98	578.0
9	480500.86	1350336.42	572.0	41	480075.60	1350360.90	577.0
10	480485.25	1350342.14	572.0	42	480125.55	1350377.36	577.0
11	480446.38	1350360.81	571.0	43	480123.79	1350388.76	577.0
12	480415.83	1350385.80	573.0	44	480057.33	1350386.77	577.0
13	480327.63	1350476.93	573.0	45	480054.12	1350374.81	577.0
14	480279.19	1350507.09	577.0	46	480062.14	1350355.80	577.0
15	480291.70	1350442.15	568.0	47	479954.42	1350254.30	578.0
16	480340.17	1350416.66	569.0	48	479932.90	1350231.57	578.0
17	480393.28	1350388.73	570.0	49	479934.56	1350249.73	576.0
18	480450.83	1350336.34	577.0	50	479873.32	1350249.82	575.0
19	480408.45	1350344.16	578.0	51	479835.36	1350249.50	574.0
20	480273.48	1350384.98	578.0	52	479668.23	1350255.94	574.0
21	480223.50	1350446.60	580.0	53	479669.78	1350229.97	577.0
22	480023.31	1350440.57	580.0	54	479646.29	1350252.48	577.0
23	480012.39	1350473.45	580.0	55	479641.15	1350494.29	577.0
24	479980.09	1350472.56	580.0	56	479672.46	1350526.96	577.0
25	479959.52	1350451.99	579.0	57	479663.14	1350494.76	574.0
26	480016.61	1350330.32	579.0	58	479694.72	1350505.43	574.0
27	480040.38	1350308.69	579.0	59	479717.01	1350505.96	575.0
28	480034.91	1350266.20	578.0	60	479829.04	1350514.34	576.0
29	480047.09	1350329.51	578.0	61	479925.20	1350532.34	577.0
30	480010.30	1350378.08	578.0	62	479945.40	1350523.01	578.0
31	479994.85	1350384.74	578.0	63	479924.46	1350357.99	576.0
32	479957.05	1350383.71	578.0	64			

UTILITY TRENCH CONTROL POINTS			
PT NO.	NORTHING	EASTING	ELEV.
1	480480.79	1350308.32	566.0
2	480423.81	1350315.56	566.0
3	480393.06	1350314.96	568.0
4	480367.13	1350314.65	567.0
5	480201.32	1350308.02	567.0
6	480143.13	1350309.83	568.0
7	480062.94	1350304.70	568.0
8	480060.83	1350256.17	568.0

SCALE: 1"=40'

0 20 40 100 200

SCALE IN FEET

GENERAL NOTES

1. SEE DRAWING 99X-5500-C-00826 FOR EXCAVATION AND GRADING PLAN GENERAL NOTES.

L 5970

KEYED NOTES

(A) BREAK OPEN EAST SIDE OF MANHOLE 82 AT ELEVATION 574 TO ALLOW DITCH TO DRAIN INTO MANHOLE. INSTALL MECHANICAL PLUG IN 10 INCH EAST LEG OF MANHOLE 90.

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DATE	REV. BY	APPR.
0	ISSUED CERTIFIED FOR CONSTRUCTION	5/12/05	RML	GEP

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD CLOSURE PROJECT

THIS DRAWING PREPARED BY

FLUOR FERNALD, INC.

PROJECT NAME

SOIL REMEDIATION

DRAWING TITLE

AREA 6 FORMER PRODUCTION AREA (FPA)
EXCAVATION AND GRADING PLAN (SOUTH)

APPROVALS

COGNIZANT ENG.			SAFETY ENG.		5/12/05
CIVIL & STR.		5/12/05	MAINTENANCE		
ELECTRICAL			FIRE PROTECT.		
ENGINEER		5/12/05	WAO		5/12/05
INSTRUMENT			SECURITY		
MECHANICAL			QA		5/12/05
			CONSTRUCTION		5/12/05
CHECKED		5/12/05	CHARACTERIZATION		5/12/05
APPROVED		5/12/05			

DRAWN BY	PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
R.M. LINDGREN	20600	99X-5500-G-00830	G-6	0
RES PROJECT NO.	FILENAME 99x00830.dgn			

FCP5AE.DGN 5/30/03

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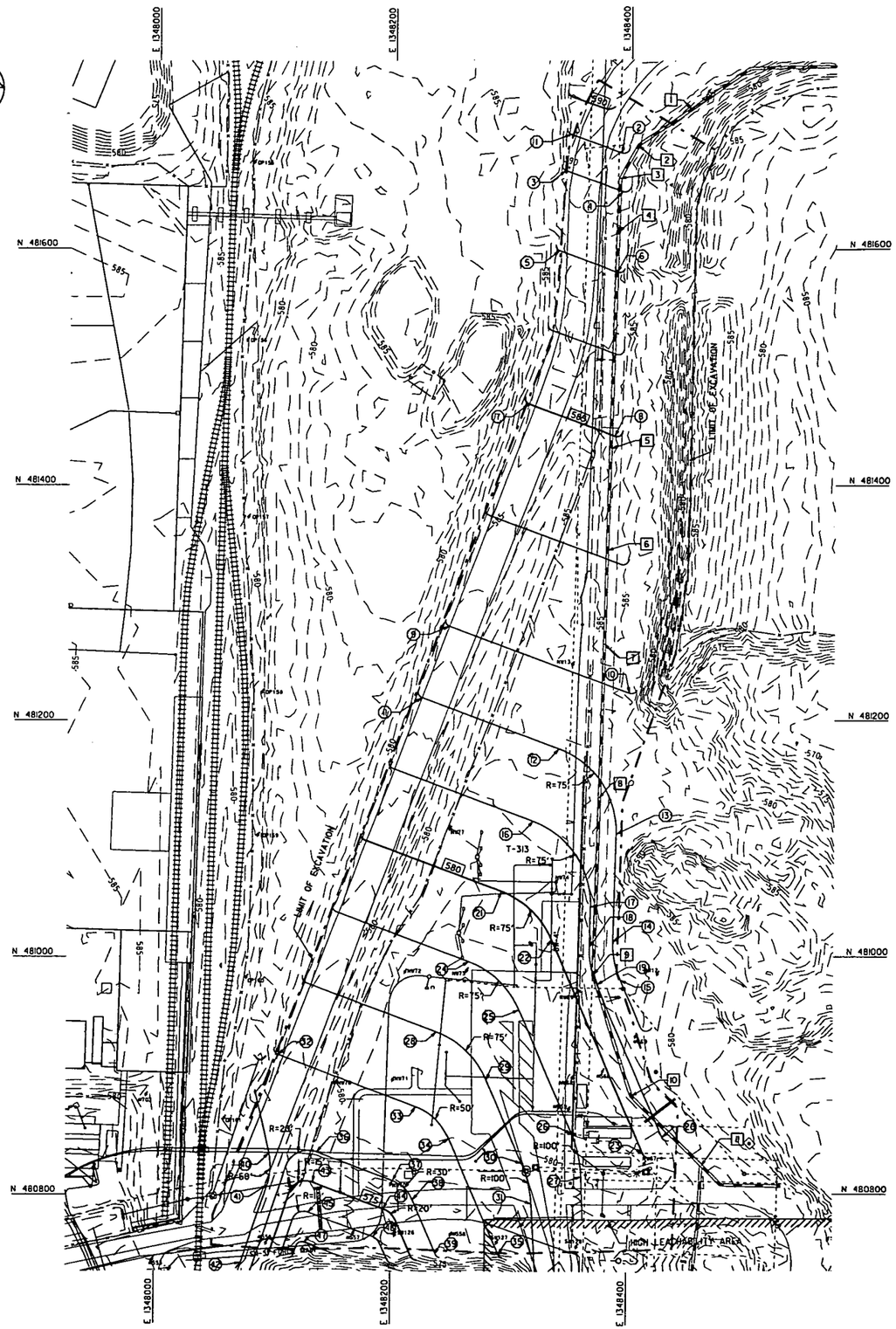

DESIGN GRADE CONTROL POINTS							
PT NO.	NORTHING	EASTING	ELEV.	PT NO.	NORTHING	EASTING	ELEV.
1	481696.13	1348348.43	589.0	26	480851.80	1348353.52	579.0
2	481680.04	1348391.70	589.0	27	480815.84	1348361.71	579.0
3	481665.79	1348343.95	588.0	28	480936.78	1348238.60	578.0
4	481647.59	1348392.87	588.0	29	480896.33	1348281.26	578.0
5	481598.20	1348339.20	587.0	30	480826.62	1348311.50	578.0
6	481579.94	1348388.29	587.0	31	480792.57	1348319.59	578.0
7	481468.89	1348313.96	585.0	32	480917.34	1348104.42	577.0
8	481441.68	1348387.13	585.0	33	480873.86	1348221.31	577.0
9	481280.10	1348247.82	583.0	34	480846.89	1348249.75	577.0
10	481223.31	1348400.51	583.0	35	480749.91	1348291.82	577.0
11	481219.40	1348224.56	582.0	36	480835.62	1348137.67	576.0
12	481175.97	1348341.32	582.0	37	480881.68	1348202.03	576.0
13	481103.78	1348390.15	582.0	38	480795.50	1348219.09	576.0
14	481012.78	1348387.85	582.0	39	480750.20	1348238.74	576.0
15	480981.03	1348394.02	582.0	40	480834.62	1348097.26	577.0
16	481014.64	1348319.76	581.0	41	480807.54	1348095.92	577.0
17	481042.45	1348368.59	581.0	42	480742.13	1348073.93	577.0
18	481008.87	1348367.74	581.0	43	480810.22	1348134.24	575.0
19	480977.13	1348373.91	581.0	44	480788.06	1348193.82	575.0
20	480848.53	1348429.70	581.0	45	480784.82	1348130.81	574.0
21	481055.20	1348293.13	580.0	46	480764.44	1348185.62	574.0
22	481014.75	1348335.79	580.0	47	480759.43	1348127.38	573.0
23	480835.88	1348413.38	580.0	48			
24	480995.99	1348265.87	579.0	49			
25	480955.54	1348308.53	579.0	50			

UTILITY TRENCH CONTROL POINTS			
PT NO.	NORTHING	EASTING	ELEV.
1	481718.04	1348450.26	576.0
2	481686.54	1348405.79	576.0
3	481658.65	1348390.26	576.0
4	481613.88	1348389.06	576.0
5	481431.04	1348384.23	575.0
6	481344.66	1348381.52	574.0
7	481265.53	1348378.96	573.0
8	481134.38	1348374.89	572.0
9	480985.46	1348370.93	572.0
10	480883.71	1348403.56	570.0
11	480824.17	1348462.88	568.0

SCALE: 1"=40'

0 20 40 100 200

SCALE IN FEET

GENERAL NOTES

1. SEE DRAWING 99X-5500-G-00826 FOR EXCAVATION AND GRADING PLAN GENERAL NOTES.

5970

REV. NO.	REVISION PURPOSE - DESCRIPTION	DATE	REV. BY	APPR.
0	ISSUED CERTIFIED FOR CONSTRUCTION	5/12/05	RML	CEP

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD CLOSURE PROJECT

THIS DRAWING PREPARED BY

FLUOR FERNALD, INC.

PROJECT NAME

SOIL REMEDIATION

DRAWING TITLE

AREA 6 FORMER PRODUCTION AREA (FPA)
EXCAVATION AND GRADING PLAN (HOOPERVILLE)

APPROVALS

COGNIZANT ENG.			SAFETY ENG.	E. JOHNSON	5/12/05
CIVIL & STR.	D. RUSSELL	5/12/05	MAINTENANCE		
ELECTRICAL			FIRE PROTECT.		
ENGINEER	A.C. SHECK	5/12/05	WAO	S. OSBORN	5/12/05
INSTRUMENT			SECURITY		
MECHANICAL			QA	R. FRISE	5/12/05
			CONSTRUCTION	L. WARREN	5/12/05
CHECKED	E. VAN HESSELL	5/12/05	CHARACTERIZATION	F. MILLER	5/12/05
APPROVED	G.E. PAUL	5/12/05			

DRAWN BY	PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
R.M. LINDGREN	20600	99X-5500-G-00843	G-7	0
RCS PROJECT NO.	FILENAME 99xg0843.dgn			

FCP5AE.DGN 5/30/03

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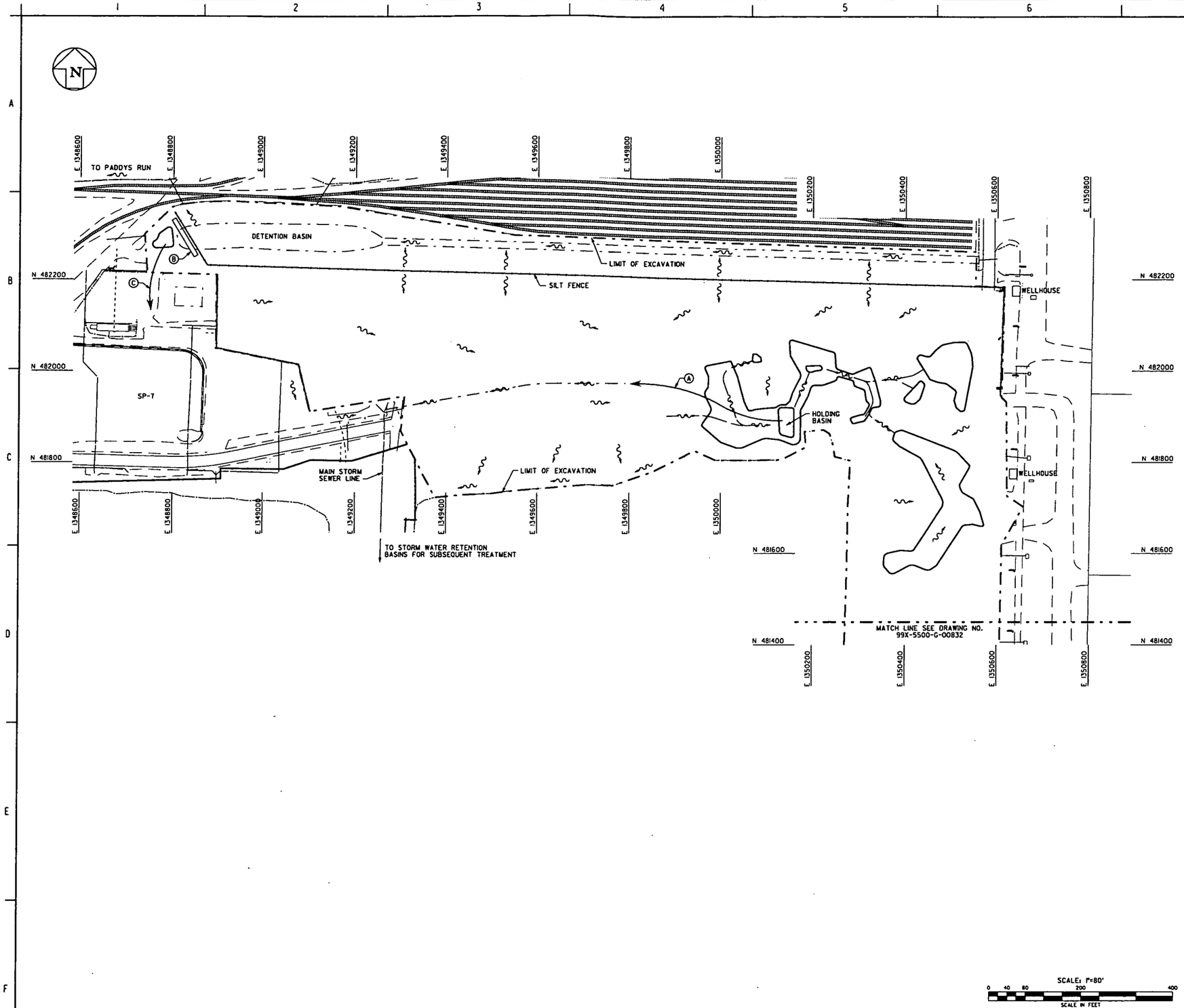

GENERAL NOTES

5970

KEYED NOTES

Ⓐ PUMP WATER FROM HOLDING BASIN TO DITCH DRAINING TO MAIN STORM SEWER LINE, AS NEEDED.

Ⓑ CONSTRUCT EARTHEN BERM, USING SOIL OBTAINED FROM A CERTIFIED AREA, PRIOR TO PERFORMING EXCAVATION AT THE WEST END OF THE DETENTION BASIN.

Ⓒ PUMP WATER FROM EXCAVATION AT THE WEST END OF DETENTION BASIN INTO AREA NORTH OF SP-7, AS NEEDED.

LEGEND

DIRECTION OF DRAINAGE FLOW

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DATE	REV. BY	APPR.
0	ISSUED CERTIFIED FOR CONSTRUCTION	5/12/05	RWL	GEP

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD CLOSURE PROJECT

THIS DRAWING PREPARED BY

FLUOR FERNALD, INC.

PROJECT NAME

SOIL REMEDIATION

DRAWING TITLE

AREA 6 FORMER PRDUCTION AREA (FPA)
DRAINAGE PLAN (NORTH)

APPROVALS

COGNIZANT ENG.			SAFETY ENG.	E. JOHNSON	5/12/05
CIVIL & STR.	G. RUSSELL	5/12/05	MAINTENANCE		
ELECTRICAL			FIRE PROTECT.		
ENGINEER	A.C. SNOOK	5/12/05	WAO	S. COOMBS	5/12/05
INSTRUMENT			SECURITY		
MECHANICAL			QA	B. FRISK	5/12/05
			CONSTRUCTION	L. MARSH	5/12/05
CHECKED	C. VAN ARSDALE	5/12/05	CHARACTERIZATION	F. WILLIS	5/12/05
APPROVED	G.E. PICL	5/12/05			

DRAWN BY	PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
R.J.M. LINDGREN	206.00	99X-5500-G-00831	G-8	0
RES PROJECT NO.	FILENAME 99xg0831.dgn			

FCPSAE.DGN 5/30/03

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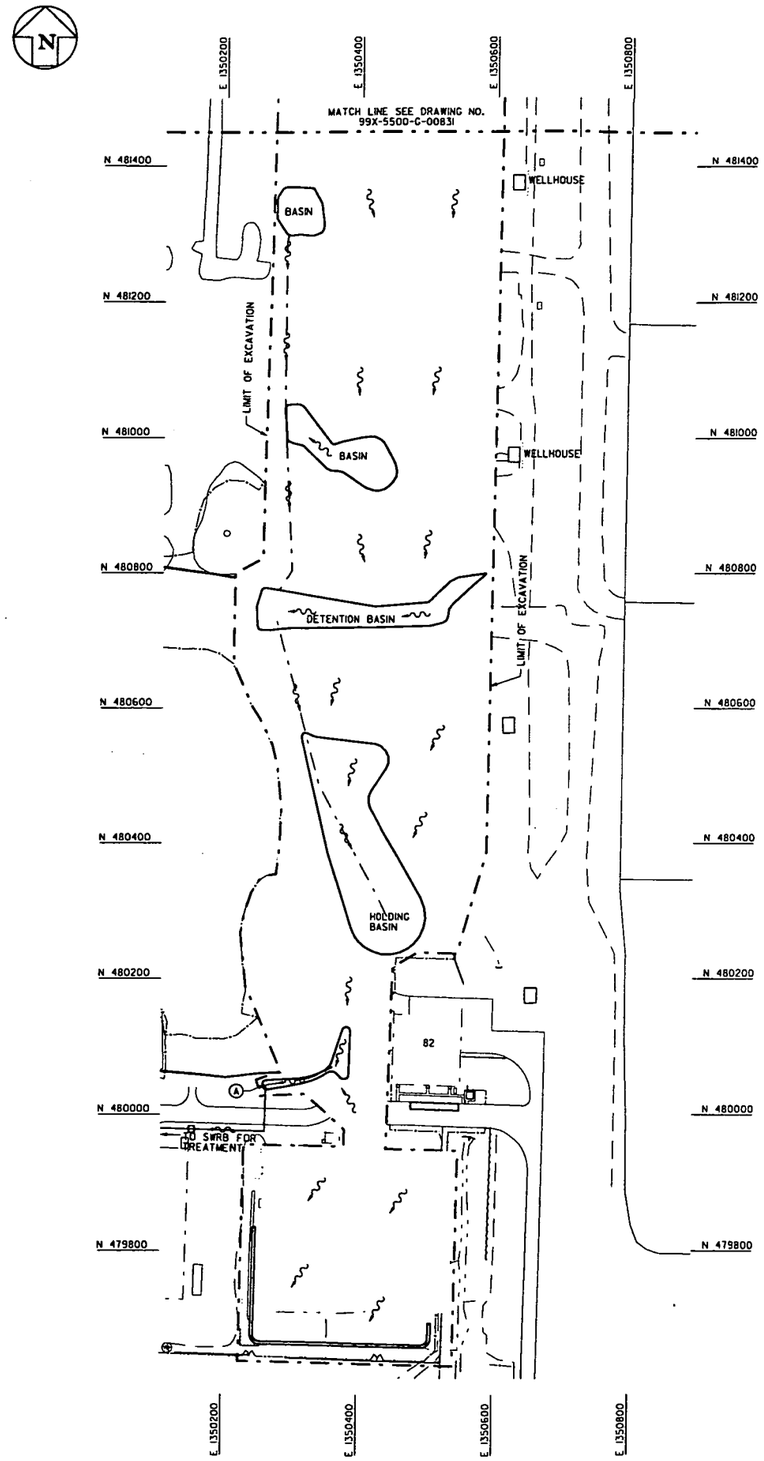


SCALE: 1"=80'

0 40 80 200 400

SCALE IN FEET

GENERAL NOTES

5970

KEYED NOTES

(A) DRAIN WATER INTO MH 82

LEGEND

DIRECTION OF DRAINAGE FLOW

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DATE	REV. BY	APPR.
0	ISSUED CERTIFIED FOR CONSTRUCTION	5/12/05	RML	GEP

DETAILS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD CLOSURE PROJECT

THIS DRAWING PREPARED BY

FLUOR FERNALD, INC.

PROJECT NAME

SOIL REMEDIATION

DRAWING TITLE

AREA 6 FORMER PRODUCTION AREA (FPA)
DRAINAGE PLAN (SOUTH)

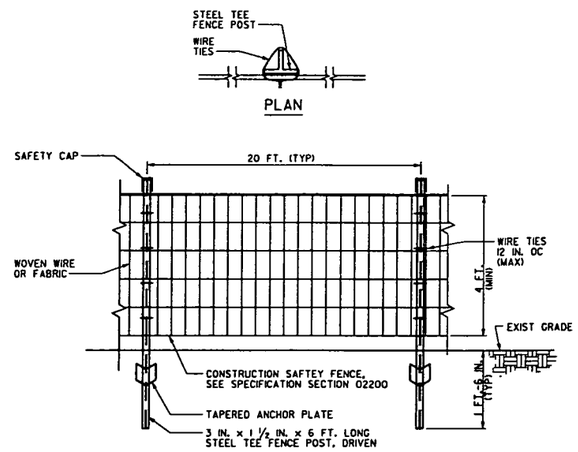
APPROVALS

COGNIZANT ENG.			SAFETY ENG.	C. JOHNSON	5/12/05
CIVIL & STR.	B. RUSSELL	5/12/05	MAINTENANCE		
ELECTRICAL			FIRE PROTECT.		
ENGINEER	A.C. SNIDER	5/12/05	WAO	S. OSBORN	5/12/05
INSTRUMENT			SECURITY		
MECHANICAL			QA	B. FRISKE	5/12/05
			CONSTRUCTION	G. HARDIN	5/12/05
CHECKED	C. VAN ARSDALE	5/12/05	CHARACTERIZATION	F. MILLER	5/12/05
APPROVED	G.E. FAIR	5/12/05			

DRAWN BY	PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
R.M. LINDGREN	20600	99X-5500-G-00832	G-9	0
RES PROJECT NO.	FILENAME 99xg0832.dgn			

FCPSAE.DGN 5/30/03

99xg0833 CADD11 rabb7064 06/09/2005 10:53:31 AM

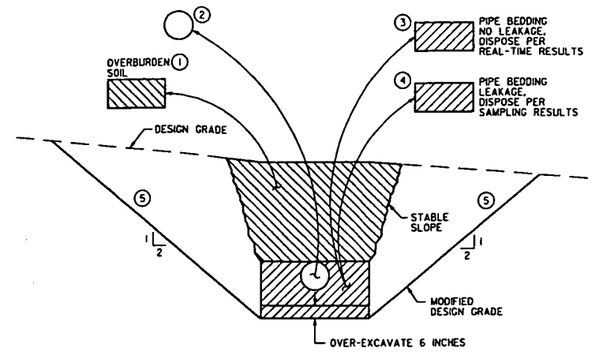


NOTE:

INSTALL SAFETY CAPS ON T-POSTS THAT ARE LESS THAN 4 FEET IN HEIGHT ABOVE-GRADE.

CONSTRUCTION SAFETY FENCE DETAIL

NTS



1. EXCAVATE OVERBURDEN SOIL FROM ABOVE THE PIPE (SEE NOTE 1) AND DISPOSE OF IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 02205. SEE LATEST REVISION OF UNDERGROUND UTILITY GRID DRAWINGS FOR LOCATIONS AND ELEVATIONS OF UTILITIES.
2. EXCAVATE THE PIPE AND PERFORM A VISUAL INSPECTION OF THE PIPE. PIPE FREE OF VISIBLE PROCESS RESIDUE SHALL BE DISPOSED OF IN ACCORDANCE WITH SPECIFICATION SECTION 02205. DISPOSE OF PROCESS PIPE THAT IS DEFORMED, CLOSED OR OTHERWISE HINDERS VISUAL INSPECTION, OR CANNOT BE CLEANED OF VISIBLE PROCESS RESIDUE, AS ABOVE-WAC DEBRIS IN ACCORDANCE WITH SPECIFICATION SECTION 02205.
3. IF PIPE BEDDING SHOWS NO VISIBLE SIGNS OF PIPE LEAKAGE:
   1. PERFORM REAL-TIME MONITORING OF THE PIPE BEDDING IN THE TRENCH USING EMS OR ADJACENT TO THE TRENCH USING THE HPGE TRI-POD ON CIRCULAR SOIL PADS.
   2. EXCAVATE PIPE BEDDING, AND OVER-EXCAVATE 6 INCHES BELOW THE PIPE BEDDING.
   3. MANAGE MATERIAL BASED ON THE RESULTS OF REAL-TIME MONITORING, IN ACCORDANCE WITH SPECIFICATION SECTION 02205.
4. IF PIPE BEDDING SHOWS VISIBLE SIGNS OF PIPE LEAKAGE:
   1. PERFORM PHYSICAL SAMPLING OF THE PIPE BEDDING.
   2. EXCAVATE PIPE BEDDING, AND OVER-EXCAVATE 6 INCHES BELOW THE PIPE BEDDING, OR AS NECESSARY TO REMOVE VISIBLE SIGNS OF PIPE LEAKAGE.
   3. MANAGE MATERIAL BASED ON SAMPLING RESULTS, IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 02205.
5. EXCAVATE SIDE SLOPES NO STEEPER THAN 2H:1V TO STABILIZE EXCAVATED UTILITY TRENCHES AND TO PROVIDE A MODIFIED DESIGN GRADE. DISPOSE OF EXCAVATED MATERIAL IN ACCORDANCE WITH SPECIFICATION SECTION 02205.

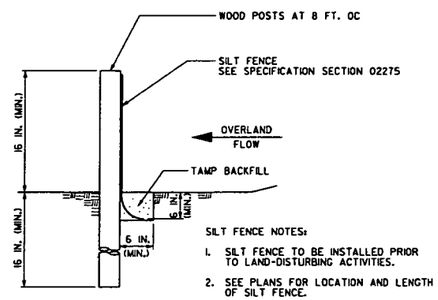
NOTES:

1. THE TERM 'PIPE' IS USED AS A GENERIC REFERENCE TO UNDERGROUND UTILITIES.

EXCAVATION OF UTILITIES BELOW DESIGN GRADE

NTS

B 5970

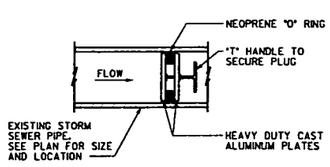


SILT FENCE NOTES:

1. SILT FENCE TO BE INSTALLED PRIOR TO LAND-DISTURBING ACTIVITIES.
2. SEE PLANS FOR LOCATION AND LENGTH OF SILT FENCE.
3. WOOD POSTS SHALL BE 2 IN. X 2 IN. (MIN.) OF OAK OR SIMILAR HARDWOOD.
4. BACKFILL MATERIAL IN ACCORDANCE WITH SPECIFICATION SECTION 02200.

SILT FENCE DETAIL

NTS

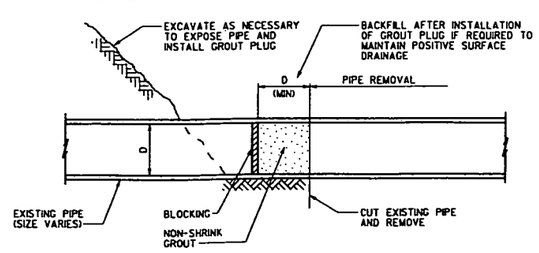


NOTE:
PIPE PLUGS SHALL BE CHERNE ALUMINUM GRIPPER PLUGS OR APPROVED EQUAL.

TYPICAL MECHANICAL PLUG DETAIL

NTS

NOTE:
MECHANICAL PLUG MAY BE USED IN PLACE OF GROUT PLUG IN ACCORDANCE WITH THE DETAIL ON THIS SHEET.



TYPICAL GROUT PLUG DETAIL

NTS

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DATE	REV. BY	APPR.
0	ISSUED CERTIFIED FOR CONSTRUCTION	5/12/05	RML	GEP

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD CLOSURE PROJECT

THIS DRAWING PREPARED BY
FLUOR FERNALD, INC.

PROJECT NAME
SOIL REMEDIATION

DRAWING TITLE
AREA 6 FORMER PRODUCTION AREA (FPA)
CIVIL DETAILS
SHEET 1 OF 2

APPROVALS

COGNIZANT ENG.			SAFETY ENG.	E. JOHNSON	5/12/05
CIVIL & STR.	B. RUSSELL	5/12/05	MAINTENANCE		
ELECTRICAL			FIRE PROTECT.		
ENGINEER	A.C. BRIDER	5/12/05	WAO	S. OSBORN	5/12/05
INSTRUMENT			SECURITY		
MECHANICAL			QA	B. FRISKE	5/12/05
			CONSTRUCTION	E. HARRIS	5/12/05
CHECKED	C. VAN ARSDALE	5/12/05	CHARACTERIZATION	F. WILLIS	5/12/05
APPROVED	G.E. PAGE	5/12/05			

DRAWN BY	PROJECT NO.	DRAWING BLOCK CODE NO.	SHEET NO.	REV. NO.
R.M. LINDGREN	20600	99X-5500-G-00833	G-10	0
RES PROJECT NO.	FILENAME 99-00833.dgn			

FCPSAE.DGN 5/30/03

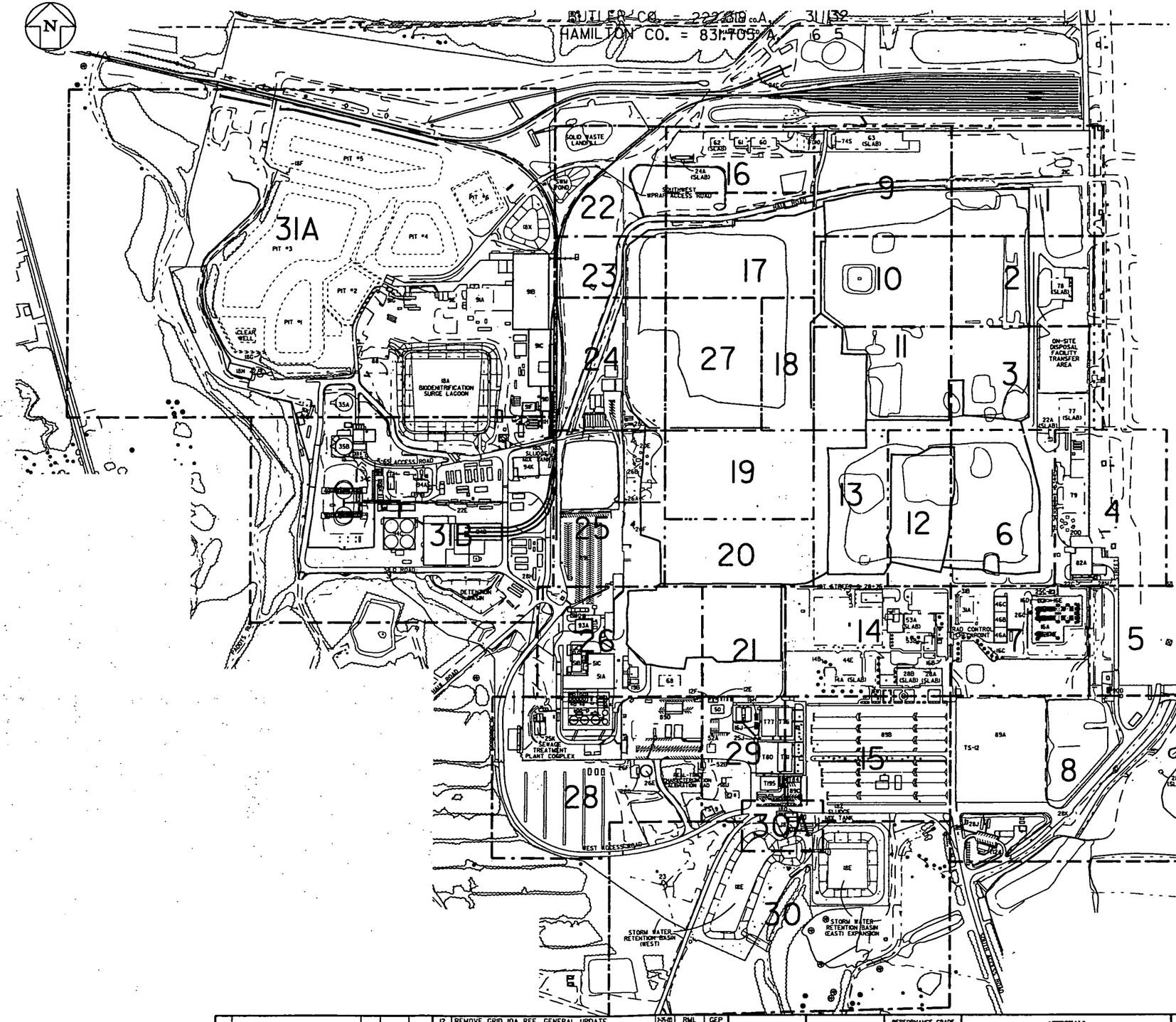
L 5970

AREA 6 FORMER PRODUCTION AREA

UTILITY GRID AND TECHNICAL REFERENCE DRAWING PACKAGE

FOR 20602

22xp0659 OSDF3 lind8392 03/03/2005 01:45:26 PM



BALLOON LEGEND	
PIV	POST INDICATOR VALVE
VLV	GATE VALVE
SMH	SANITARY MANHOLE
EMH	ELECTRICAL MANHOLE
TMH	TELEPHONE MANHOLE
CB	STORM SEWER CATCH BASIN
MH	STORM SEWER OR ACCESS MANHOLE
HFH	HIGH PRESSURE FIRE HYDRANT
LFH	LOW PRESSURE FIRE HYDRANT
PB	PULL BOX

ABBREVIATION LEGEND	
ST	STORM SEWERS
SD	SUB-SURFACE DRAINAGE
SN	SANITARY SEWERS
FCI	HIGH PRESSURE FIRE LINES
DW	LOW PRESSURE FIRE LINE/ POTABLE WATER
LS	LIVE STEAM
CN	STEAM CONDENSATE
WS	COOLING WATER SUPPLY
WR	COOLING WATER RETURN
CE	CONTAMINATED SEWER
FT.	FILTRATE OR EFFLUENT
TW	TREATED WATER
DF	DEIONIZED FEED
PW	DEIONIZED WATER
BR	BRINE
RW	RAW WATER
VE	VENT LINES
SL	SUMP LIQUOR
FG	FUEL GAS
G	ELECTRIC GROUND
VCP	VIT. CLAY PIPE
RCP	REINF. CONC. PIPE
AW	ACID WASTEWATER
——	ACTIVE LINE
- - -	ABANDONED LINE
— —	PROPOSED LINE

GRID	DRAWING NUMBER
1	22C-5500-P-00660
2	22C-5500-P-00661
3	22C-5500-P-00662
4	22F-5500-P-00663
5	22A-5500-P-00664
6	22F-5500-P-00665
7	22H-5500-P-00666
8	22H-5500-P-00667
9	22C-5500-P-00668
10	22C-5500-P-00669
11	22C-5500-P-00670
12	22E-5500-P-00671
13	22E-5500-P-00672
14	22H-5500-P-00673
15	22H-5500-P-00674
16	22B-5500-P-00675
17	22B-5500-P-00676
18	22B-5500-P-00677
19	22D-5500-P-00678
20	22D-5500-P-00679
21	22C-5500-P-00680
22	22B-5500-P-00681
23	22B-5500-P-00682
24	22B-5500-P-00683
25	22D-5500-P-00684
26	22C-5500-P-00685
27	22B-5500-P-00686
28	22A-5500-P-00687
28	22A-5500-P-00744
29	22A-5500-P-00688
30	22A-5500-P-00689
30A	22A-5500-P-00785
31A	22A-5500-P-00804
31B	22A-5500-P-00805
32	22A-5500-P-00707

LEGEND

- POST INDICATOR VALVE (P.I.V.)
- FIRE HYDRANT (F.H.)
- MANHOLE (MH)
- CATCH BASIN (CB)
- LIGHT POLE
- PIPE SUPPORT
- ELECTRICAL MANHOLE
- TELEPHONE MANHOLE
- STREET WASHERS
- VALVE BOX
- MONITORING WELL

GRID DETAIL DRAWINGS

GRID NO.	DETAIL DWG NO.
10	22C-5500-P-00706
13,14,20,21	22H-5500-P-00963
28	22A-5500-P-00744
31A	22A-5500-P-00961
31B	22A-5500-P-00930
31B	22A-5500-P-00961

FUEL GAS (FG) NOTE:

THE ONLY ACTIVE FUEL GAS LINES ARE FROM NEW GAS METER AT WILLEY ROAD TO HIGHLINE (EAST OF BLDG. 51A), THEN TO NEW BOILER HOUSE (BLDG. 93A) AND TO WPRAP AREA.

FERNALD UNDERGROUND UTILITES

THIS COMPOSITE DRAWING CONTAINS INFORMATION TAKEN FROM ENGINEERING DRAWINGS FROM 1951 TO THE PRESENT WHICH ARE PRESENTLY ON FILE IN THE FERNALD SITE ENGINEERING DEPARTMENT. NOTE: UNDERGROUND UTILITES WHICH ARE NOT OF RECORD IN THE FERNALD SITE ENGINEERING DEPARTMENT ARE NOT DISPLAYED IN THESE COMPOSITE DRAWINGS.

POST INDICATOR COLORS AT THE F.E.M.P.
(PER FRED BRAUN, UTILITY ENG. 5/18/95)

COLOR	SERVICE
WHITE	(DW) POTABLE WATER LOW PRESSURE FIRE HYDRANT
ORANGE/GREEN	HIGH PRESSURE FIRE HYDRANT
YELLOW	(TW) TREATED WATER PROCESS WATER
BLACK	(FT) EFFLUENT
GREEN	(WS) COOLING WATER SUPPLY
BLUE	(WR) COOLING WATER RETURN
PINK	(RW) RAW WATER
PINK/WHITE	UN-USED (RW) & (DW) CROSS CONNECTION
RED	PROPANE AREA SUMP PIT
PINK/GREEN	(RW) & FIRE PUMP HOUSE (25A)
GRAY	(FT) LIME SLURRY POND LINE
YELLOW/GREEN	(TW) TREATED WATER
WHITE/GREEN	(DW) FEED TO GROUNDWATER STORAGE TANK

FIRE HYDRANT COLORS AT THE F.E.M.P.

ORANGE	LOW PRESSURE HYDRANTS
ORANGE/GREEN	HIGH PRESSURE HYDRANTS

INTERIOR PIPING COLORS (PER D.BRAUN?)

BLUE	AIR
GREEN	WATER
RED	FIRE PROTECTION

5970

PRELIMINARY

CONTACT CADD SERVICES FOR PIPE SPECIFICATIONS OF OLD AND MOST OF THE NEW PIPING INSTALLATIONS.

NOTE:
1. THIS DRAWING ISSUED PERIODICALLY, FOR THE MOST RECENT VERSION OF THIS DRAWING, ACCESS THE FILENAME BELOW THE TITLE BLOCK.
2. COORDINATES SHOWN ON THIS DRAWING ARE TAKEN FROM EXISTING FEMP DRAWINGS AND ARE NOT VERIFIED TO BE "AS-BUILT". IT IS HIGHLY RECOMMENDED THAT A FIELD SURVEY BE PERFORMED PRIOR TO SITE DESIGN WORK.

NO.	REVISIONS	DATE	DWN. BY	APPD.
16	GENERAL UPDATE	11-04	GEP	
15	GENERAL UPDATE	07/01	GEP	GEP
14	ADDED GRID DETAIL DRAWING INDEX	02/00	RML	GEP
13	REVISED PER MARK-UP	10/00	SJS	GEP

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
12	REMOVE GRID 10A REF, GENERAL UPDATE	1-25-01	RML	GEP	
11	MODIFIED GRID 26 & GRID 31B OUTLINES, ADD GRID 10A	1-03-01	RML	GEP	
10	MODIFIED GRID 28 OUTLINE, ADDED DWG NO., DELETED GRID 33	3-2-01	RML	GEP	
9	UPDATED	3-1-01	GEP	GEP	
8	UPDATED	1-20-95	JSW	GEP	93X-5900-G-00273
7	UPDATED	8-1-95	GES	GEP	93X-5900-G-00272

NOTE:
FERMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

PERFORMANCE GRADE
1 2 3 4 5
BY: DATE:

APPROVALS

CIVIL & STR.		SAFETY ENG.	
ELECTRICAL		MAINTENANCE	
ENGINEER		Q.A.	
INSTRUMENT		FIRE PROTECT.	
MECHANICAL		WASTE MANAGE	
		SECURITY	
		CRU	
CHECKED	GP		
APPROVED	G E PAGE		

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald
Environmental Management Project
U.S. DEPARTMENT OF ENERGY

SITE MAP

MASTER GRID OF UNDERGROUND UTILITY PLANS

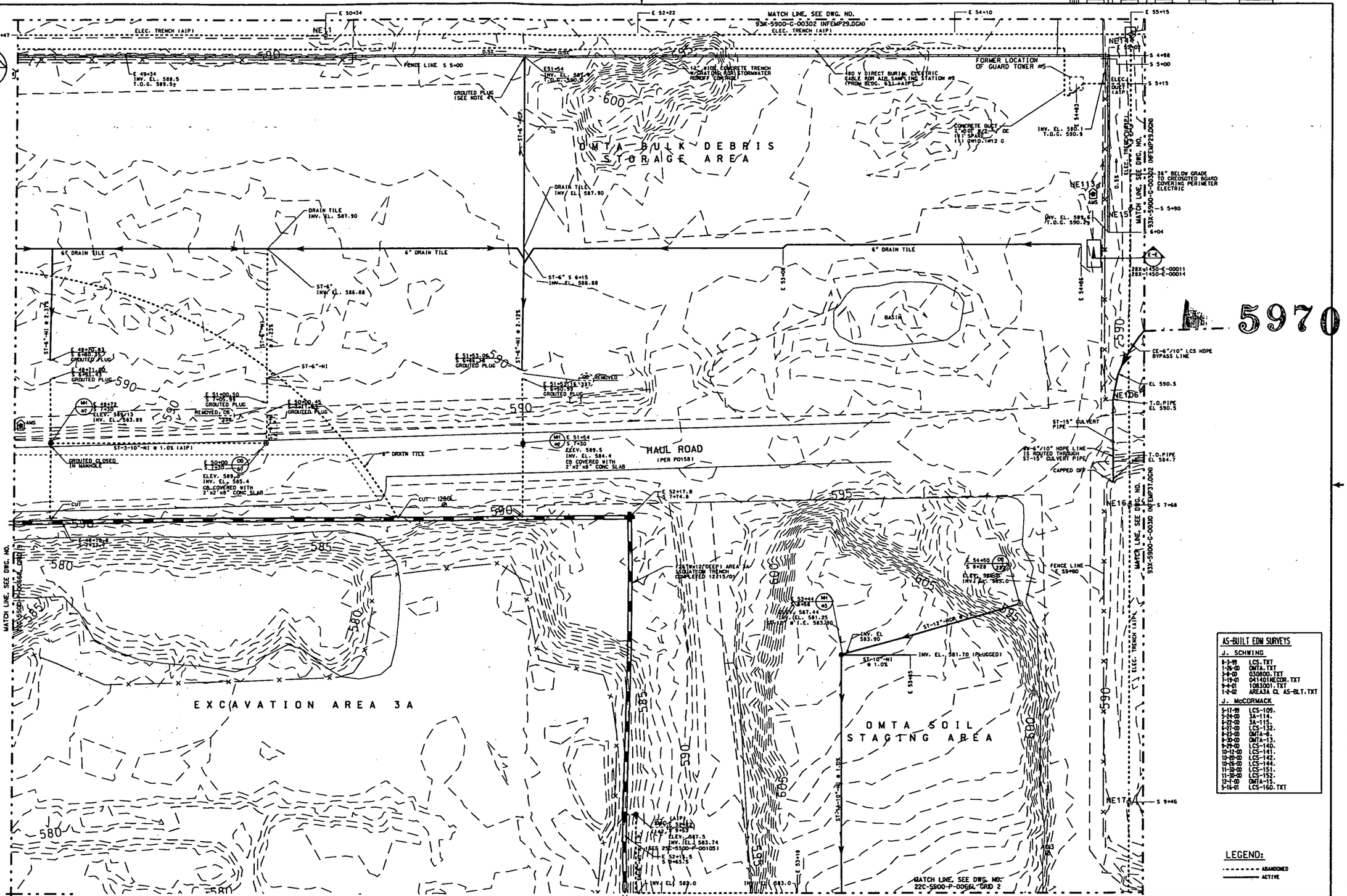
DATE 5/4/98
DRAWN G.E.S.

22X-5500-P-00659 | 16

FILE NAME: /UNDER/22XP0659.DGN

FORMAT REVISED 8/1/95

22cp0660 OSDF3 lind8392 03/03/2005 01:47:13 PM



AS-BUILT EDM SURVEYS

J. SCHWING

8-3-99	LCS.TXT
1-26-00	OMTA.TXT
3-8-00	030800.TXT
7-19-01	041401NECOR.TXT
9-4-01	10830001.TXT
1-2-02	AREA3A CL AS-BLT.TXT

J. McCORMACK

5-17-99	LCS-109.
5-24-00	3A-114.
6-22-00	3A-115.
6-27-00	LCS-132.
8-23-00	OMTA-8.
8-30-00	OMTA-13.
9-29-00	LCS-140.
10-12-00	LCS-141.
10-20-00	LCS-142.
10-26-00	LCS-144.
11-30-00	LCS-151.
11-30-00	LCS-152.
12-7-00	OMTA-15.
5-16-01	LCS-160.TXT

LEGEND:

- ABANDONED
- ACTIVE

NOTE:
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3. NEW UNDERGROUND UTILITIES EXIST FOR NORTH WHEEL WASH FACILITY, NO AS-BUILTS RECEIVED. CONTACT O.S.D.F. GROUP.
4. SEE "OMTA" EXPANSION PROJECT NO. 20002, DRAWING RES-444/SK20002-004.DGN

NO.	REVISIONS	DATE	DWN. BY	APPD.
24	T-71 ELECTRIC ISOLATED PER W.O. TK02751	2/4/03	GEP	GEP
	T-96 ELECTRIC ISOLATED PER W.O. TK02749			
	T-98 ELECTRIC ISOLATED PER W.O. TK02750			
	T-425 ELECTRIC ISOLATED PER W.O. TK02954			
	T-505 ELECTRIC ISOLATED PER W.O. TK02752			
	GENERAL UPDATE, REMOVED 21A WHEEL WASH FACILITY			
23	3A TRENCH COMPLETED DURING 4A TRENCHING ACTIVITIES 9/6/02	6/5/02	RWL	GEP

REF. DWG. NO.: 22X-5500-P-00659

NOTE: WEMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± 1/8
ANGLES ± 0° - 30'
DECIMALS
.X ± 0.4
.XX ± 0.05
.XXX ± 0.005
.XXXX ± 0.0005
FINAL RELEASE DATE

APPROVALS				
CIVIL & STR.			SAFETY ENG.	
ELECTRICAL			MAINTENANCE	
ENGINEER			O.A.	
INSTRUMENT				
MECHANICAL			FIRE PROTECT.	
			WASTE MANAGE	
CHECKED	GP		D.O.E.	
APPROVED	LE. PKL	7-20-93	SECURITY	

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

BLDG. 69 YARD AREA

GRID I
UNDERGROUND UTILITIES
SCALE 1"=20'

DATE 2-20-90
DRAWN O.D.T.

22C-5500-P-00660 | 24

FILE NAME: /UNDER/22CP0660.DGN

22cp0661 OSDF3 lind8392 03/03/2005 01:47:50 PM

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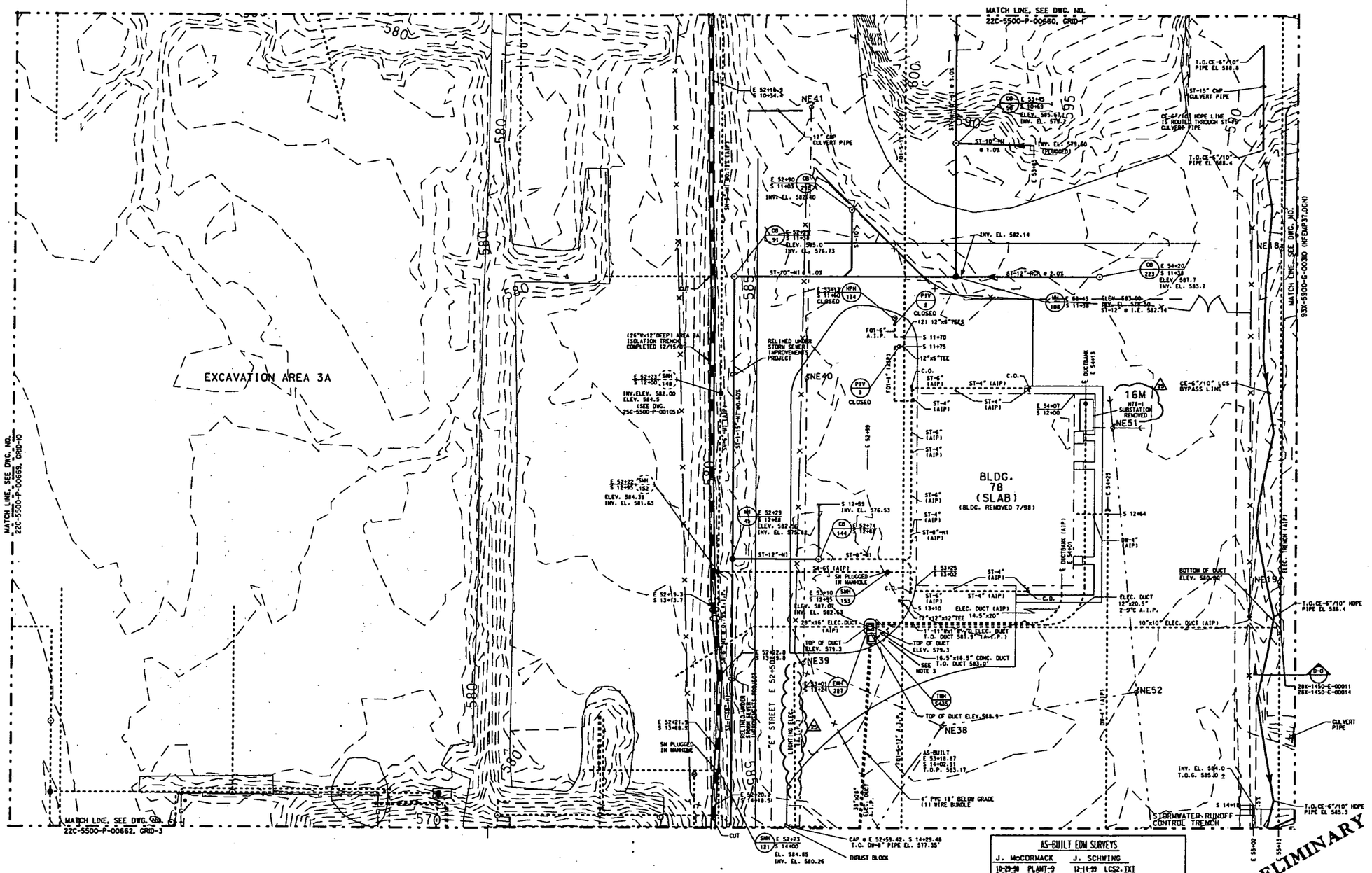

AS-BUILT EDM SURVEYS

J. McCORMACK		J. SCHWING	
10-29-98	PLANT-9	12-14-99	LCS2.TXT
5-20-99	LCS-112.	1-26-00	DMTA.TXT
5-22-99	LCS-111	7-19-01	041401RECOR.TXT
1-14.	3A-114.	1-2-02	AREA3A CL AS-BLT.TXT
5-24-00			
10-26-00	LCS-144.		
11-01-00	LCS-145.		
11-30-00	LCS-151.		

NOTE:
1. THIS DRAWING ISSUED PERIODICALLY. FOR THE MOST RECENT VERSION OF THIS DRAWING, ACCESS THE FILENAME BELOW THE TITLE BLOCK.
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3. VERIFIED THAT NO ENERGIZED WIRES IN MANHOLE 22T FEED INTO 3A EXCAVATION ZONE. W.O. # AL054806

NO.	REVISIONS	DATE	DWN. BY	APPD.
25	IGM SUBSTATION REMOVED ELEC.	1/25/01	GEP	
	LIGHTING A.I.P., GENERAL UPDATE			
24	3A TRENCH COMPLETED DURING 4A	1/5/02	RWL	GEP
	TRENCHING ACTIVITIES 9/11/02			

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
23	ELECTRIC DUCTS A.I.P. PER COMPLETED WORK ORDER AL05633	1/10/02	GES	GEP	
	FOI-5-27LI A.I.P. PER COMPLETED WORK ORDER RT00227I				
22	AREA 3A TRENCHING COMPLETED BY WSE TASK ORDER 051	1/9/02	RWL	GEP	
	12/15/01, REMOVED PORTION OF INTERIM LEACHATE LINE PER PROJ.				
	20103, FSC 642-6587, GENERAL UPDATE				
21	MOVED MATCH LINE ON EAST SIDE 42' WEST, ADD PROP AREA 3A	1/10/01	RWL	GEP	22C-4445-P-00697
	ISOLATION TRENCH AND BUFFER PER RES 427L GENERAL UPDATE				22X-5500-P-00659

NOTE:
WEMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± ½
ANGLES ± 0° - 30'
DECIMALS
.X ± 0.4
.XX ± 0.03
.XXX ± 0.005
.XXXX ± 0.0005
FINAL RELEASE DATE

APPROVALS

CIVIL & STR.			SAFETY ENG.	
ELECTRICAL			MAINTENANCE	
ENGINEER			O.A.	
INSTRUMENT				
MECHANICAL			FIRE PROTECT.	
			WASTE MANAGE	
CHECKED	GEP		D.O.E.	
APPROVED	G.E. PAUL	2-26-90	SECURITY	

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

BUILDINGS 32A & B, 64, 65 & 78 YARD AREA
GRID 2
UNDERGROUND UTILITIES
SCALE 1"=20'

DATE 2-20-90
DRAWN J. KING

22C-5500-P-00661 | 25

FILE NAME: /UNDER/22CP0661.DGN

22cp0662 OSDF3 lind8392 03/03/2005 01:48:23 PM

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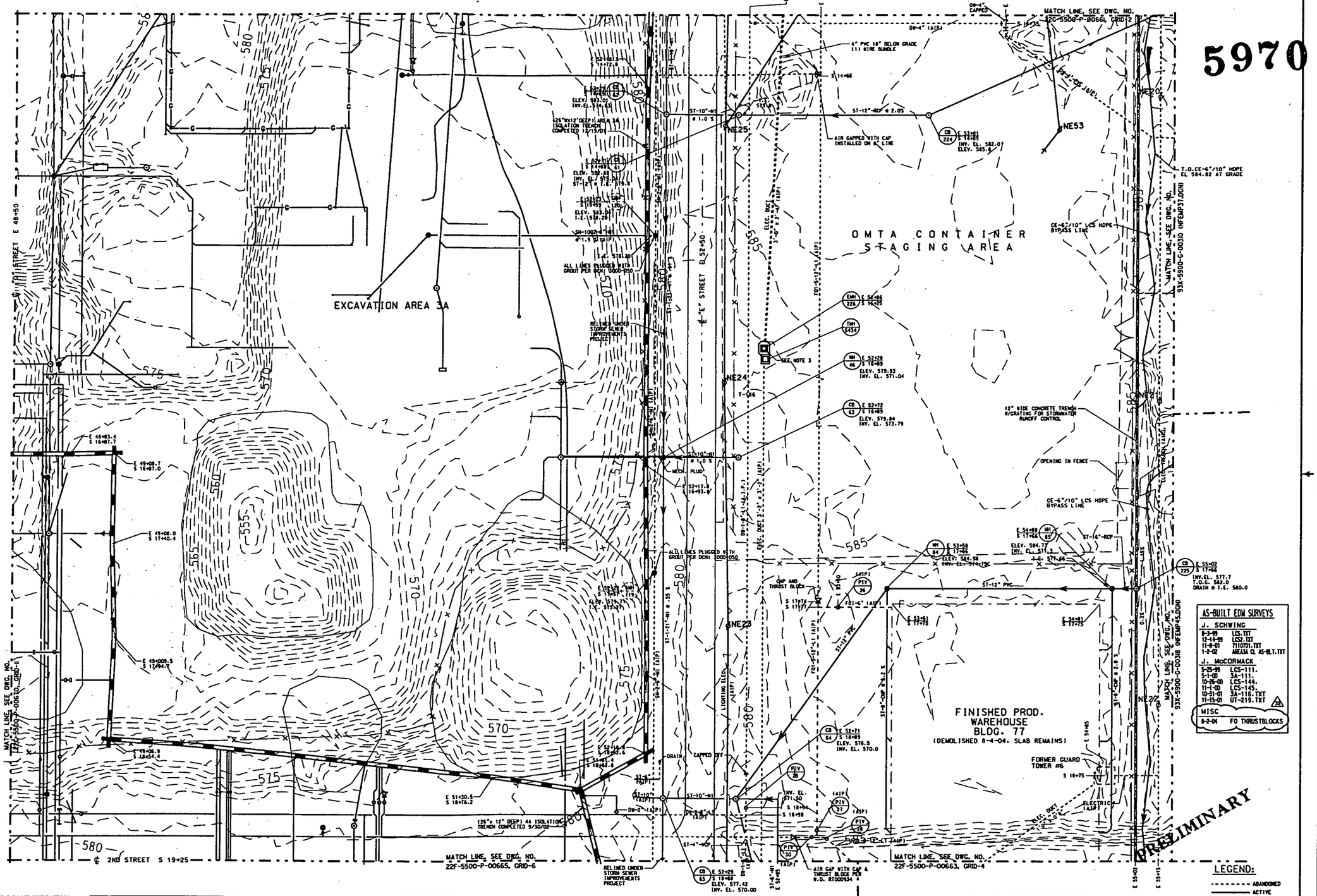

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3. VERIFIED THAT NO ENERGIZED WIRES FROM EMH-230 AND EMH-226 CROSSED INTO THE 3A EXCAVATION ZONE W.O. #AL054806.
4. THIS LINE WAS PREVIOUSLY LABELLED AS CE-5"CP, USED TO CONVEY CONTAMINATED EFFLUENT FROM SUMP AT BLDG 69 DECONTAMINATION PAD (T4PL.

NO.	REVISIONS	DATE	DWN. BY	APPD.
33	GENERAL UPDATE	1/26/01	GEP	
32	FO-5-12"-LI AIP PER COMPLETED W.O.	1/6/01	GEP	GEP
	RT002234, AIP LIGHTING ELECTRIC			
31	CHANGE CE-6" TO ST-6", ADD NOTE 4	1/5/02	RML	GEP
30	ADD 4A ISOLATION TRENCH, ADD NEW	10/29/02	RML	GEP
	FENCE & GATE PER G. MEDL SKETCH			
	10/2/02, GENERAL UPDATE			

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
29	DW-9-8"LI AND DW-9-8"LI AIP. PER COMPLETED WORK ORDERS	1/10/02	GES	GEP	
	RT002236 AND RT002403, ELECTRIC DUCTS AIP. PER COMPLETED				
	WORK ORDER AL056331 FO-5-12"LI CAPPED & ST-T4 PER				
	COMPLETED WORK ORDER RT002271 PER R. HUGHES.				93X-5500-G-00630
28	PLANT 9A UTILITY LINES ABANDONED IN PLACE PER AS-BUILT	1/28/02	RML	GEP	93X-5900-E-00666083-2)
	DWG. 93X-5500-G-00631				22X-5500-P-00659

NOTE:
WEMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± 1/8
ANGLES ± 0° - 30'
DECIMALS
.X ± 0.1
.XX ± 0.03
.XXX ± 0.005
.XXXX ± 0.0005
ANSI Y14.5M-1982

APPROVALS			
CIVIL & STR.		SAFETY ENG. MAINTENANCE	
ELECTRICAL			
ENGINEER		O.A.	
INSTRUMENT			
MECHANICAL		FIRE PROTECT. WASTE MANAGE	
CHECKED	GEP	1-30-02 O.O.E.	
APPROVED	G.E.PAUL	1-30-02 SECURITY	

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

PLANT 9 — YARD AREA

GRID 3
UNDERGROUND UTILITIES
SCALE 1"=20'

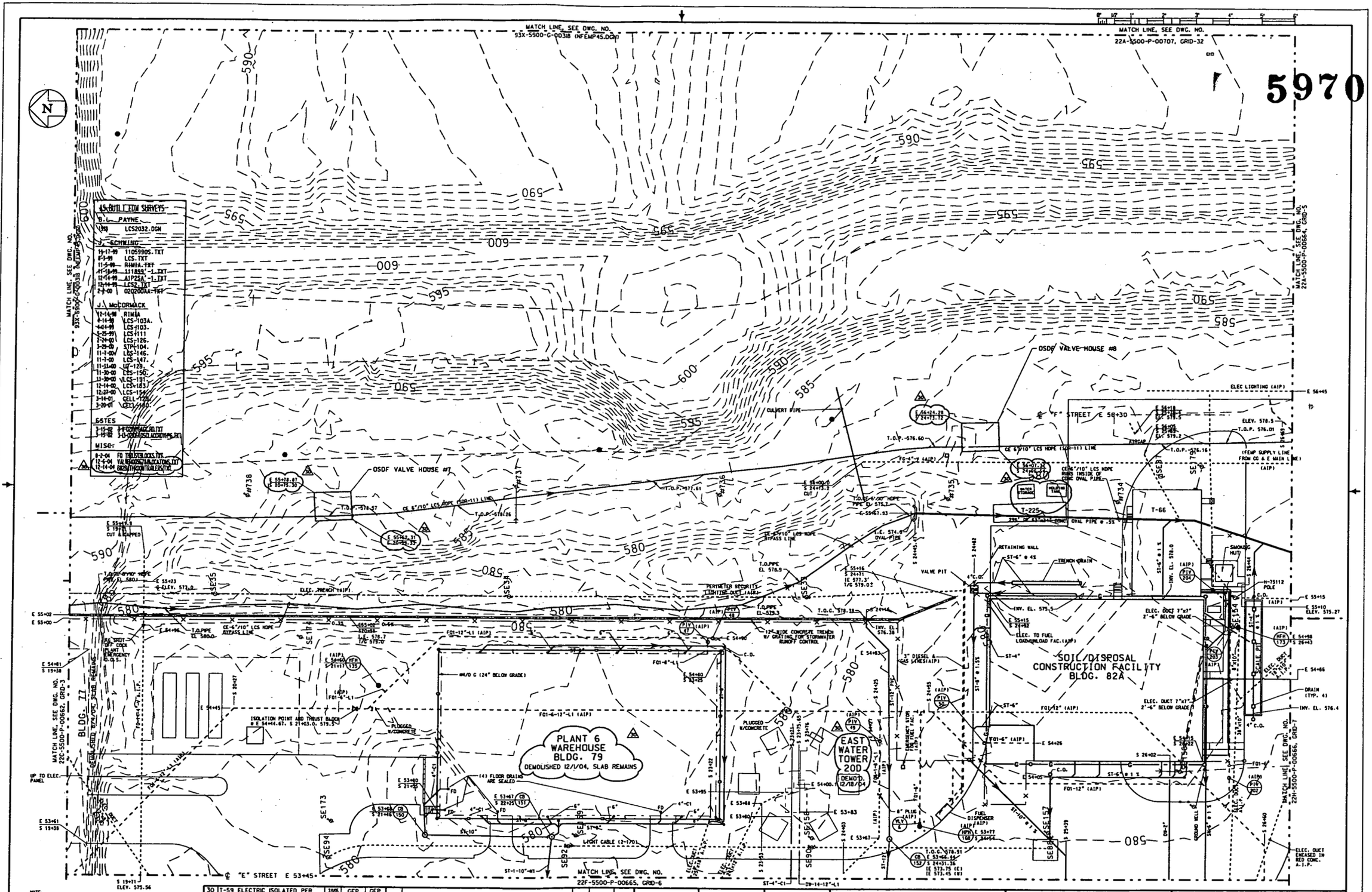
DATE 2-20-90
DRAWN J. KING

22C-5500-P-00662 | 33

FILE NAME: /UNDER/22CP0662.DGN

22fp0663 OSDF3 lind8392 03/03/2005 01:49:05 PM

5970



NOTE:
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2. COORDINATES SHOWN ON THIS DRAWING ARE TAKEN FROM EXISTING FEMP DRAWINGS AND ARE NOT VERIFIED TO BE "AS-BUILT". IT IS HIGHLY RECOMMENDED THAT A FIELD SURVEY BE PERFORMED PRIOR TO SITE DESIGN WORK.
3. LEACHATE CONVEYANCE SYSTEM (PO &/O ELCS) LINE IS FROM B.L. PAYNE AS-BUILT SURVEY, SEE /PAYNE/LCS/LESSLOGL

NO.	REVISIONS	DATE	DWN. BY	APPD.
30	T-59 ELECTRIC ISOLATED PER W.O. TK014273, ADDED BLDG. 79 & TOWER 20D DEMOLITION INFO ALL "FOI" FIRE PROTECTION LINES AIP PER COMP. W.O. RT004474 ISOLATED TOWER 20D 480V PER COMP. W.O. TK014637. SURVEYS	1/V/05	GEP	GEP

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
29	FOI-6-12"-L1 AIP PER COMPLETED W.O. RT004234 AND MISC. SURVEY ON 8-2-04. BLDG. 77 AERIAL FEED ISOLATED PER COMP. W.O. RT004233 @ POLE SE659	1/V/04	GEP	GEP	
28	DW-22-1000-4" L3 AIP PER COMPLETED W.O. RT003979	1/V/01	GEP	GEP	
27	A.I.P. ELECTRIC TO FUEL LOADING/UNLOADING REMOVED METAL LIGHT POLE AND ELEC. REMOVED PER H. GEAR	1/V/01	JSW	GEP	22X-5500-P-00659

NOTE: WEMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± 1/64
DECIMALS
.X ± .1
.XX ± .03
.XXX ± .010
.XXXX ± .0005
ANGL ± 0°30'
FINISH 125
DEBURR AND BREAK SHARP EDGES
MATERIAL
NEXT ASSY USED ON
APPLICATION
DO NOT SCALE DRAWING
SOIL RELEASE DATE

APPROVALS				
CIVIL & STR.			SAFETY ENG.	
ELECTRICAL			MAINTENANCE	
ENGINEER				
INSTRUMENT			O.A.	
MECHANICAL			FIRE PROTECT.	
			WASTE MANAGE	
CHECKED	GEP		D.O.E.	
APPROVED	G.E.PAUL	2-20-90	SECURITY	

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

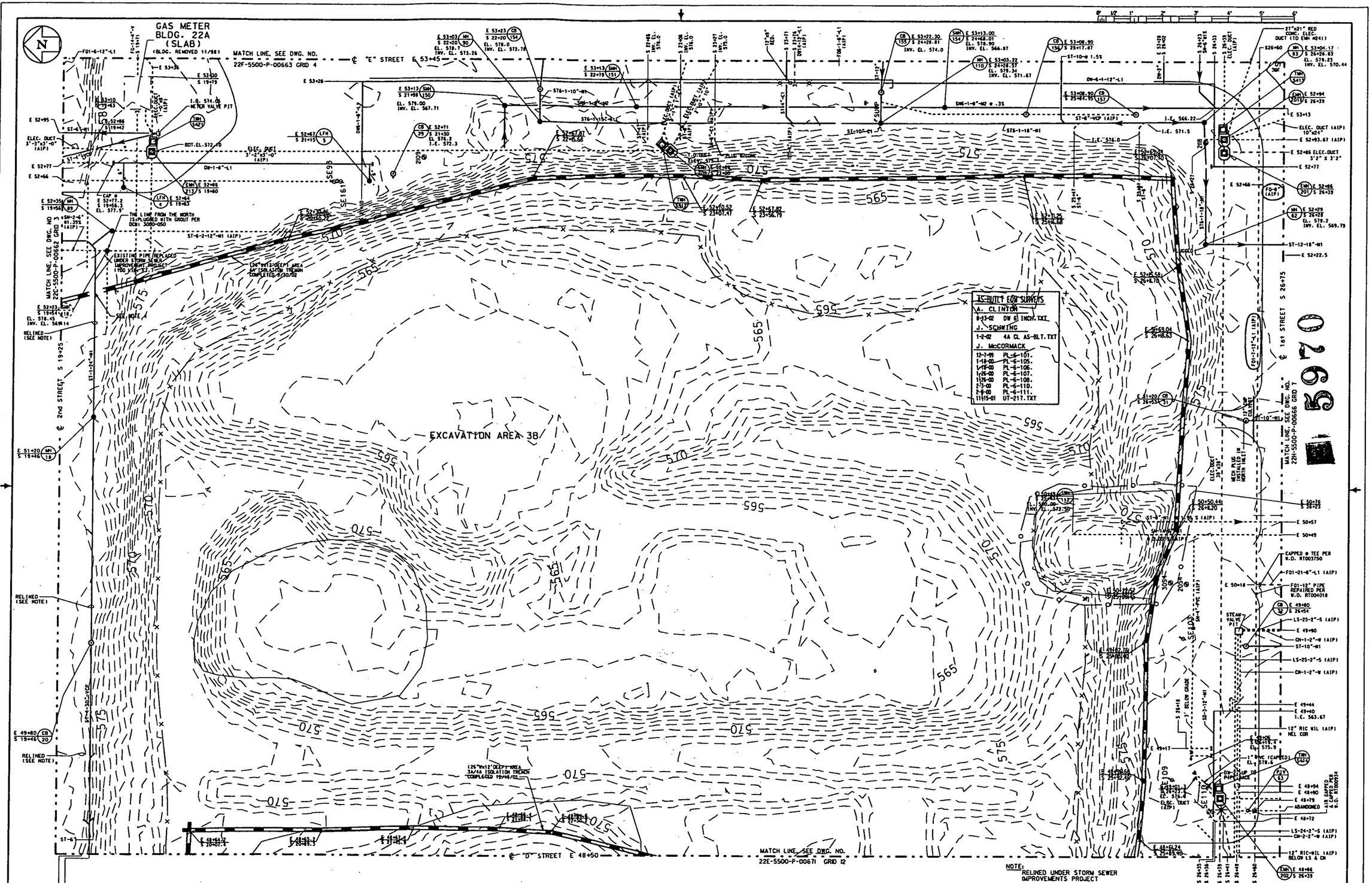
BLDG. 79,82 & E. WATER TOWER YARD AREA
GRID 4
UNDERGROUND UTILITIES
SCALE 1"=20'

DATE 2-20-90
DRAWN A. KING

22F-5500-P-00663 | 30

FILE NAME: /UNDER/22FP0663.DGN

22fp0665 OSDF3 lind8392 03/03/2005 01:49:47 PM

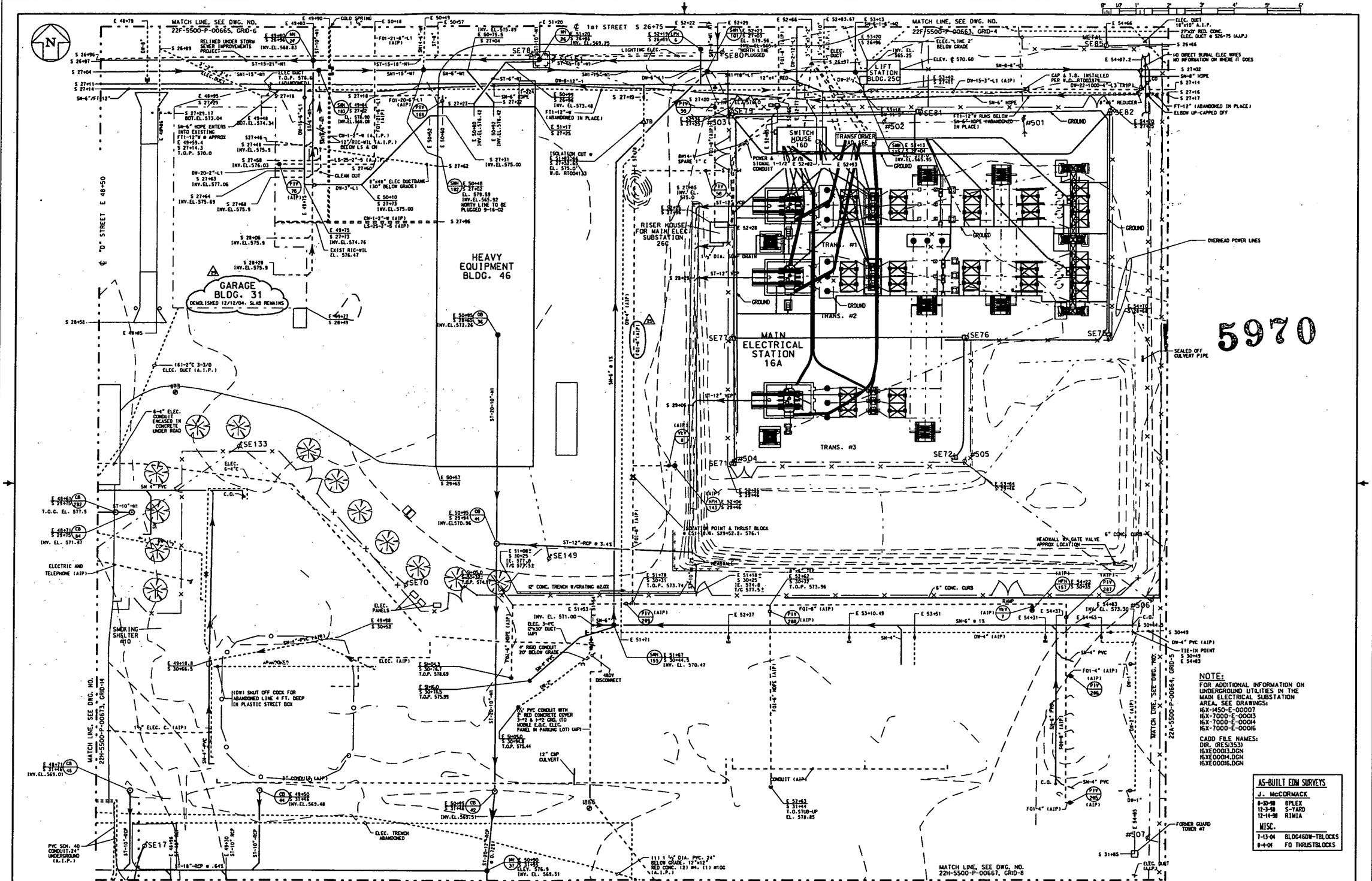


NO.	REVISIONS	DATE	DWN. BY	APPD.
25	ALL FOI FIRE PROTECTION LINES, PIV's, HYDRANTS, ETC., A.I.P.	11/95	GEP	GEP
	PER COMPLETED W.O. RT004474, GENERAL UPDATES			
24	CAP INSTALLED ON FOI-21-8" LI PER COMPLETED W.O. RT003750	5/00	GEP	GEP
	FOI-7-12" LI PIPE REPAIRED PER COMPLETED W.O. RT004018			

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
25	ALL FOI FIRE PROTECTION LINES, PIV's, HYDRANTS, ETC., A.I.P.	11/95	GEP	GEP	
	PER COMPLETED W.O. RT004474, GENERAL UPDATES				
24	CAP INSTALLED ON FOI-21-8" LI PER COMPLETED W.O. RT003750	5/00	GEP	GEP	99X-5500-G-00631
	FOI-7-12" LI PIPE REPAIRED PER COMPLETED W.O. RT004018				22X-5500-P-00659

0169

22hp0666 OSDF3 lind8392 03/03/2005 01:50:27 PM



NOTE:
FOR ADDITIONAL INFORMATION ON UNDERGROUND UTILITIES IN THE MAIN ELECTRICAL SUBSTATION AREA, SEE DRAWINGS:
16X-1450-E-00007
16X-7000-E-00003
16X-7000-E-00014
16X-7000-E-00016

CADD FILE NAMES:
DIR. (RES)353)
16XE00013.DGN
16XE00014.DGN
16XE00016.DGN

AS-BUILT EDM SURVEYS
J. McCORMACK
6-30-98 8PLEX
12-3-98 S-YARD
12-14-98 R1M1A
MISC.
7-13-04 BLDG460W-TBLOCKS
8-4-04 FO THRUSTBLOCKS

NOTE:
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NO.	REVISIONS	DATE	DWN. BY	APPD.
25	ALL FOI FIRE PROTECTION LINES, PIVs, HYDRANTS, ETC., AIP PER COMPLETED W.O. RTO04474, TRAILER T-224 ADDED, POWERED FROM BLDG. 46 PER COMP. W.O.s TK013616 & TK013632, GENERAL UPDATES	1-16	GEP	1-16

REF. DWG. NO.: 22X-5500-P-00659

NOTE:
WEMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

APPROVALS				
CIVIL & STR.			SAFETY ENG.	
ELECTRICAL			MAINTENANCE	
ENGINEER			O.A.	
INSTRUMENT				
MECHANICAL			FIRE PROTECT.	
			WASTE MANAGE	
CHECKED	GEP		D.O.E.	
APPROVED	C.E. PAUL	1-20-92	SECURITY	

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

BLDG. 31 & 46, AREA 16 — YARD AREA
GRID 7
UNDERGROUND UTILITIES
SCALE 1"=20'

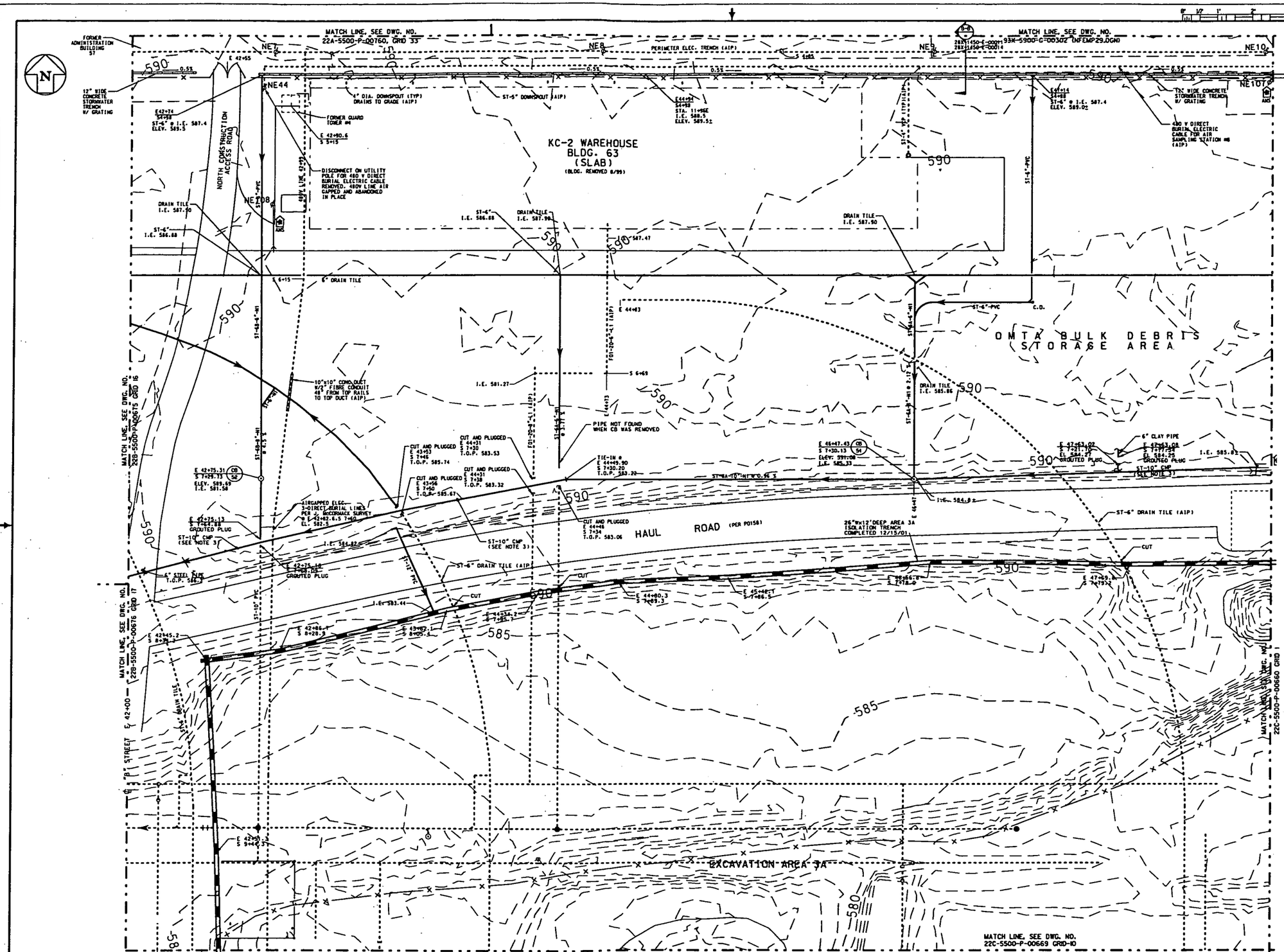
DATE 2-20-90
DRAWN J. KING

22H-5500-P-00666 | 25

FILE NAME: /UNDER/22HP0666.DGN

22cp0668 OSDF3 lind8392 03/03/2005 01:51:36 PM

L 5970



PRELIMINARY

AS-BUILT EDM SURVEYS

J. SCHWING

9-5-01	090401.TXT
11-9-01	1110701.TXT
1-2-02	AREA3A CL AS-BLT.TXT

J. McCORMACK

4-5-00	3A-109.
5-24-00	3A-114.
6-22-00	3A-115.
7-25-00	CELL-115.
7-27-00	CELL-116.
7-27-00	CELL-117.
7-28-00	CELL-118.
8-3-00	CELL-120.
8-4-00	CELL-122.
8-14-00	OMTA3.
8-16-00	OMTA-5.
12-7-00	OMTA-15.

LEGEND:

- ABANDONED
- ACTIVE

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3. STORM SEWERS PER PROJECT 20102. SEE DRAWING /RES944/S020102-005.DGN

NO.	REVISIONS	DATE	DWN. BY	APPD.
23	GENERAL UPDATE	1/30/03	GEP	
22	GENERAL UPDATE, NFM-130 & PIV-1	9/26/02	CES/RWL	GEP
	REMOVED PER COMPLETED WORK			
	ORDER RT00934, REMOVED CB 314,			
	ADDED GROUT AND MECH. PLUG			
	LOCATIONS PER COMPLETED AREA			
	3A TRENCHING ACTIVITIES.			

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
21	AREA 3A TRENCHING COMPLETED BY WISE TASK ORDER 051	1/16/02	RWL	GEP	
	12/15/01, GENERAL UPDATE				
20	ADD PROP AREA 3A ISOLATION TRENCH AND BUFFER PER RES 427L	1/07/01	RWL	GEP	
	GENERAL UPDATE				
19	480V LINE ABANDONED IN PLACE, DISCONNECT FOR	1/01/01	RWL	GEP	
	480V REMOVED FROM POLE NE44 AND 480V SERVICE				99X-5500-G-00627
	AIR GAPPED PER R. DUCKWORTH REQUEST 7-27-01.				22X-5500-P-00659

NOTE:
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TOLERANCES ARE
FRACTIONS ± ⅛
ANGLES ± 0° - 30'
DECIMALS
.X ± 0.1
.XX ± 0.03
.XXX ± 0.010
.XXXX ± 0.0005
SURF. FINISH 125

APPROVALS			
CIVIL & STR.		SAFETY ENG.	
ELECTRICAL		MAINTENANCE	
ENGINEER		Q.A.	
INSTRUMENT			
MECHANICAL		FIRE PROTECT.	
		WASTE MANAGE.	
CHECKED	GEP	D.O.E.	
APPROVED	G.E. PAUL	SECURITY	

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

BUILDING 63 — YARD AREA

GRID 9
UNDERGROUND UTILITIES
SCALE 1"=20'

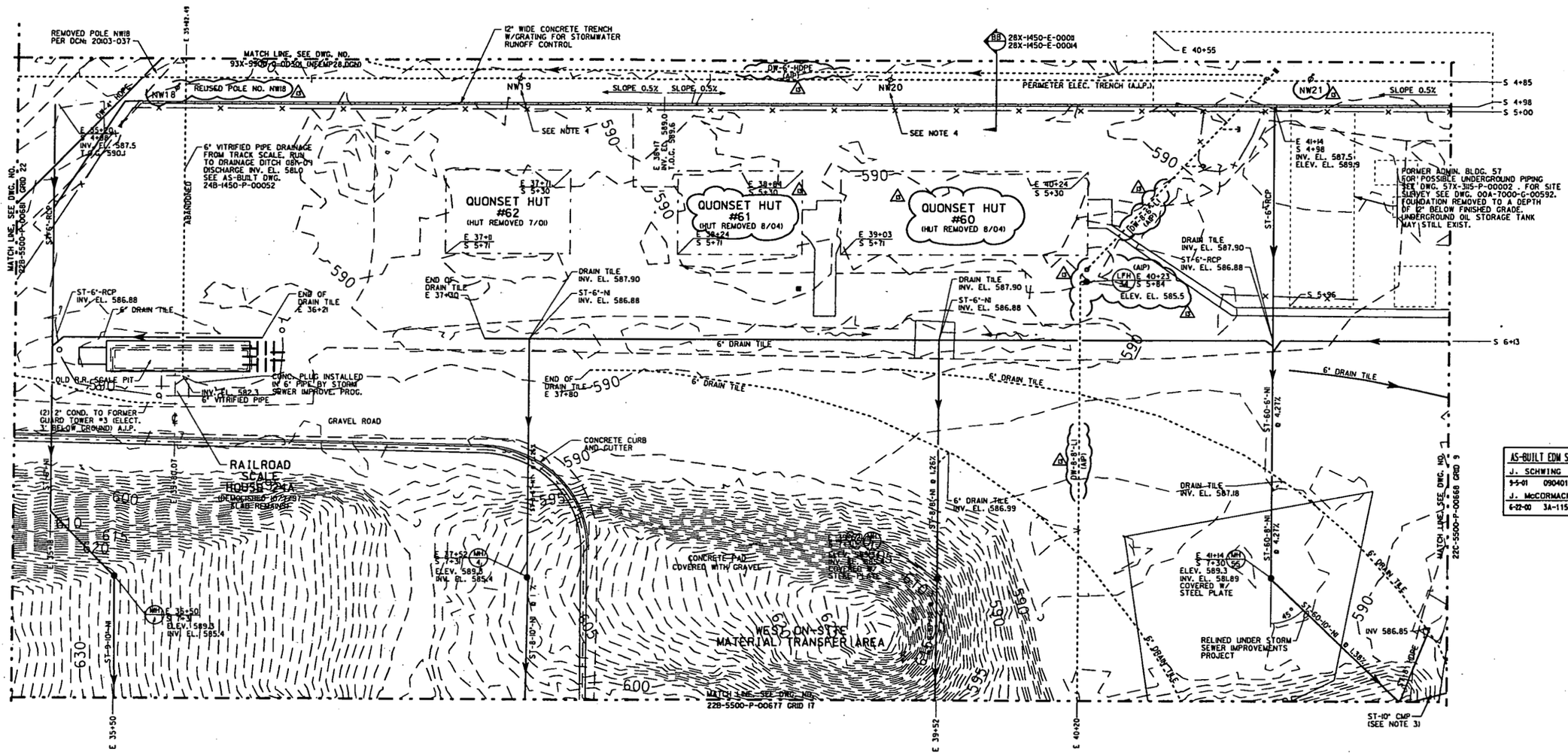
DATE 7-10-89
DRAWN J. KING

22C-5500-P-00668 | 23

FILE NAME: /UNDER/22CP0668.DGN

22bp0675 OSDF3 lind8392 03/03/2005 01:52:16 PM

L 5970



AS-BUILT EDM SURVEYS
J. SCHWING
9-5-01 090401.TXT
J. McCORMACK
6-22-00 3A-115.

NOTE:
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3. STORM SEWERS PER PROJECT 21002. SEE DRAWING /RES-044/ S22002-005.DGN
4. POLES NW19 AND NW20 REMOVED AND REPLACED WITH 35' CLASS II SOUTHERN PINE 10X2 TREATED PER DCN: 20103-037.

NO.	REVISIONS	DATE	DWN. BY	APPD.
13	DW-8-8" LI, DW-8-6" LI & DW-6" HDPE A.I.P.	HHH	GES	GEP
	PER WORK COMPLETED W.O. RT003137.			
12	INCORP WORK COMLETED DCN: 20103-037, ADDED NOTE 4.	3/31/02	RWL	GEP
11	AS-BUILT ST-10" CMP PER J. McCORMACK SURVEY 3A-115, AS-	01/01	RWL	GEP
	BUILT ST-8" HDPE PER J. SCHWING SURVEY 09040LTXT, REMOVE			
	POLES NW29 & NW30, COVERED MH 7 & MH 55 PER RES 4267,			
	GENERAL UPDATE			

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
					90X-5500-G-00576
					22X-5500-P-00659

NOTE:
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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± ¼
ANGLES ± 0° - 30'
DECIMALS
.X ± .1
.XX ± .03
.XXX ± .010
.XXXX ± .0050
GENL. DELEGATE DATE

APPROVALS

CIVIL & STR.		SAFETY ENG.	
ELECTRICAL		MAINTENANCE	
ENGINEER		Q.A.	
INSTRUMENT			
MECHANICAL		FIRE PROTECT.	
		WASTE MANAGE.	
CHECKED	GP	D.O.E.	
APPROVED	R.E. PRES.	SECURITY	

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

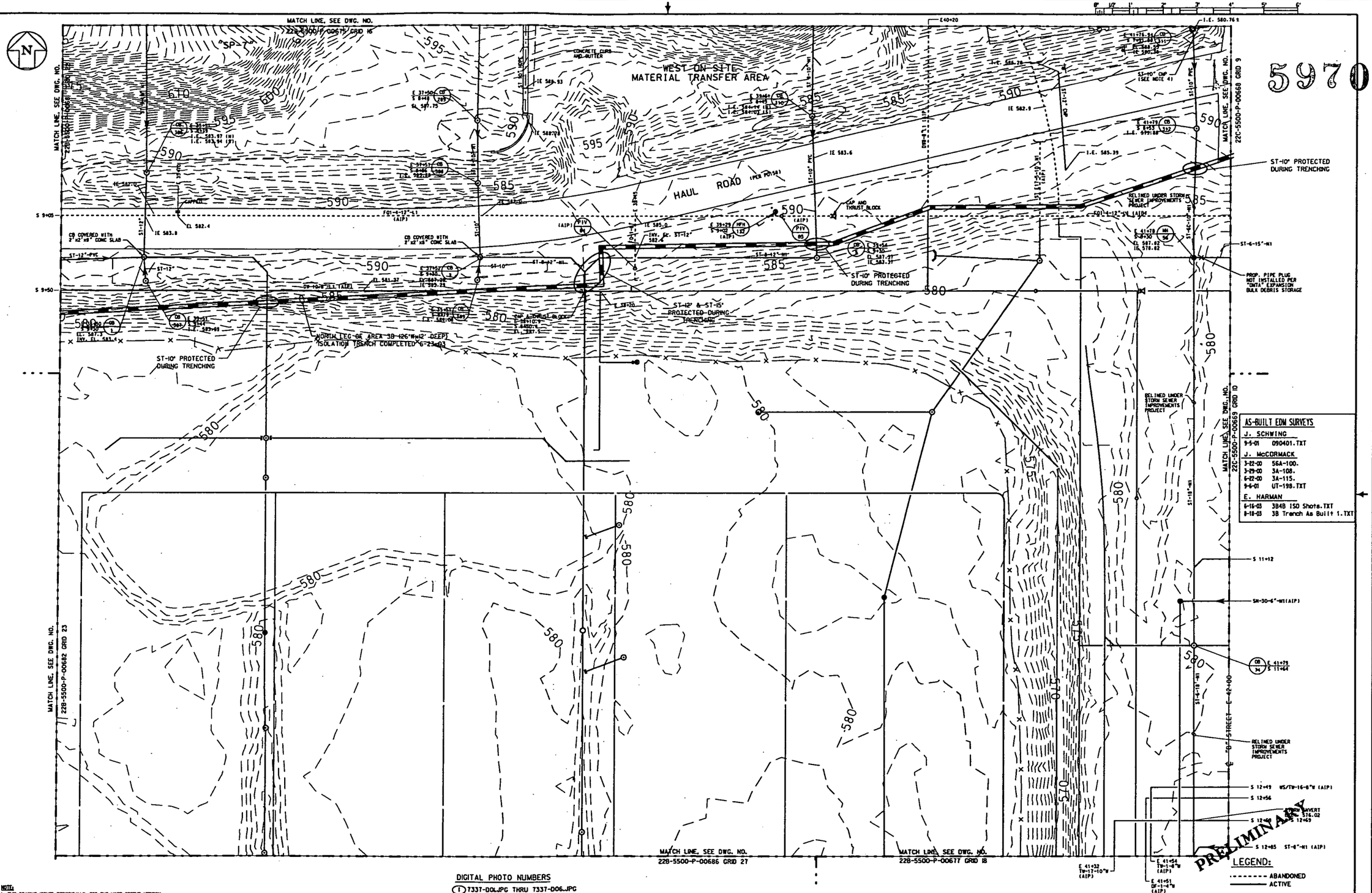
BLDG. 60,61 & 62 YARD AREA
GRID 16
UNDERGROUND UTILITIES
SCALE 1"=20'

DATE 4-25-90
DRAWN DEL. TURPIN

22B-5500-P-00675 | 13

FILE NAME: /UNDER/22BP0675.DGN

22bp0676 OSDF3 lind8392 03/03/2005 01:52:56 PM



5970

AS-BUILT EDM SURVEYS

J. SCHWING
9-5-01 090401.TXT

J. McCORMACK
3-22-00 56A-100.
3-29-00 3A-108.
6-22-00 3A-115.
9-6-01 UT-198.TXT

E. HARMAN
6-16-03 3B4B ISO Shots.TXT
8-18-03 3B Trench As Built 1.TXT

DIGITAL PHOTO NUMBERS
(1) 7337-006.JPG THRU 7337-006.JPG

NOTE:
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3. HAUL ROAD & REV 6 RELOCATED AND NEW CATCH BASINS AND FIRE HYDRANTS PER B.L. PATHE AS-BUILT SURVEY (PO 158) SEE /PATHE/HAUL/HAULROAD.DGN.
4. STORM SEWERS PER PROJECT 20102. SEE DRAWING /RES444/SK20102-005.DGN

NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
					22	GENERAL REVISIONS	1-14-03	GEP		
					21	FO-4-12" LI AP PER COMPLETED WORK ORDER RT003143, STORM SEWERS AND CATCH BASINS AIP PER AREA 3B UTILITY ISOLATIONS PROJECT	12-13	GES	GEP	17X-7000-S-00008 22X-5500-P-00659

NOTE:
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TOLERANCES ARE
FRACTIONS ± IN
ANGLES ± 0° - 30'
DECIMALS
.X ± 0.5
.XX ± 0.25
.XXX ± 0.005
.XXXX ± 0.0005
DWG. RELEASE DATE

APPROVALS			
CIVIL & STR.		SAFETY ENG.	
ELECTRICAL		MAINTENANCE	
ENGINEER		Q.A.	
INSTRUMENT			
MECHANICAL		FIRE PROTECT.	
		WASTE MANAGE	
CHECKED	GEP	D.O.E.	
APPROVED	G.E PAUL	SECURITY	

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

BLDG. 56 & PLANT #1 PAD — YARD AREA
GRID 17
UNDERGROUND UTILITIES
SCALE 1"-20'

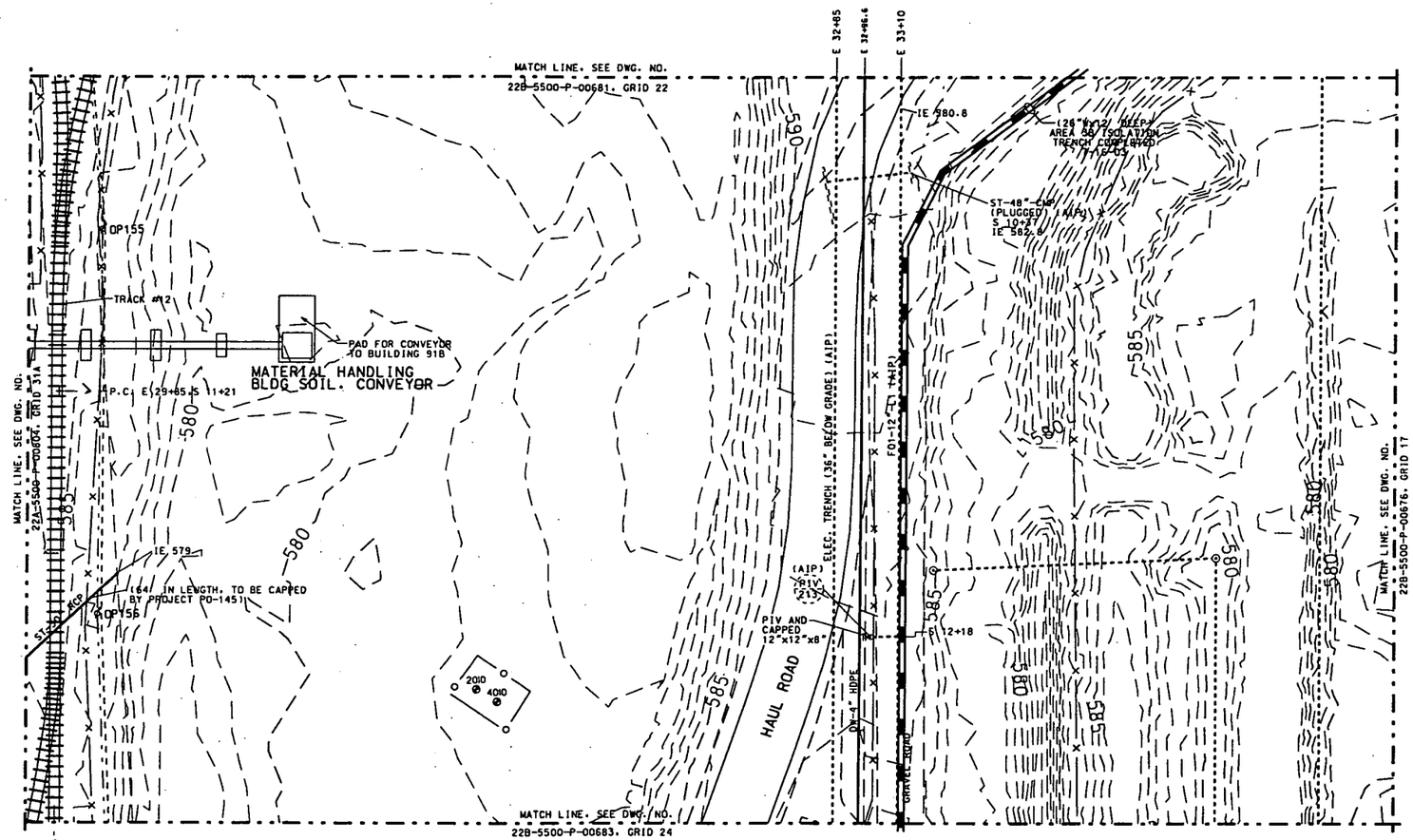
DATE 4-25-90
DRAWN DEL TURPIN

22B-5500-P-00676 | 22

FILE NAME: /UNDER/22BP0676.DGN

22bp0682 OSDF3 lind8392 03/03/2005 04:10:49 PM

5970



AS-BUILT EDM SURVEYS
E. HARMAN
8-19-03 3B Trench As Built 1.txt

PRELIMINARY

NOTE:
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3. FOR INFORMATION ON HAUL ROAD SEE P0691.

NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
12	GENERAL REVISIONS	1-11-04	GEP		7	UPDATED ADDED PROPOSED HAUL ROAD AND RELOCATED FIRE HYDRANT 56	3-8-01	GES	GEP	
11	F01-12"-LI A.I.P. PER WORK ORDER	11-1-03	GES	GEP	6	UPDATED	2-6-5	JsW	GEP	
	RT003143, STORM SEWERS A.I.P.				5	UPDATED	1-15-5	JsW	GEP	
10	REMOVED 1-53, AIP DN-6-PLL GENERAL UPDATE	1-1-12	RWL	GEP	4	ADDED NOTE	1-17-5	GES	GEP	
9	ADD PIV NUMBER TO F01 LINE, ADDED 1-53, SOIL	1-25-00	JsW	GEP	3	UPDATED	0-10/94	GES	GEP	
	CONVEYOR PAD, DELETED OSDF MAC TEXT				2	UPDATED	0-7-93	GES	GEP	
8	UPDATED, ADDED DN-4" & RELOCATED FIRE HYDRANT 56	1/5/93	SJS	GEP	1	UPDATED	1-1-9	GES	GEP	22X-5500-P-00659

NOTE:
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TOLERANCES ARE
FRACTIONS ± 1/2
ANGLES ± 0° - 30'
DECIMALS
.X ± 0.1
.XX ± 0.03
.XXX ± 0.005
.XXXX ± 0.0005
DIM. BELOW ARE IN

APPROVALS					
CIVIL & STR.			SAFETY ENG.		
ELECTRICAL			MAINTENANCE		
ENGINEER			Q.A.		
INSTRUMENT					
MECHANICAL			FIRE PROTECT.		
			WASTE MANAGE		
CHECKED	GP		O.O.E.		
APPROVED	G.L. PAUL	8/23/03	SECURITY		

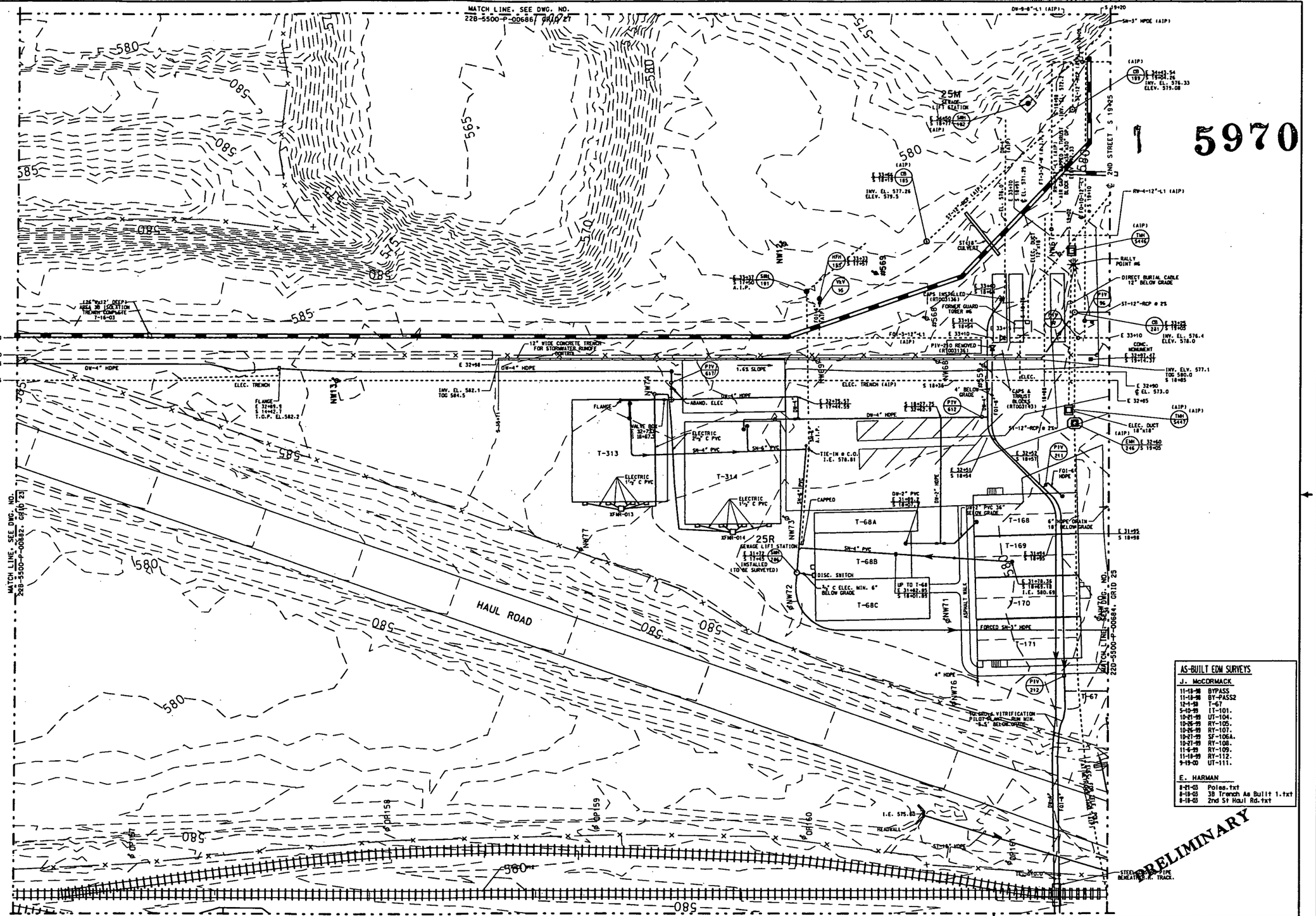
WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

E. OF BLDG. 56 — YARD AREA
GRID 23
UNDERGROUND UTILITIES
SCALE 1"=20'

DATE 3/25/90
DRAWN S.J.S.
22B-5500-P-00682 | 12

FILE NAME: /UNDER/22BP0682.DGN

22bp0683 OSDF3 lind8392 03/03/2005 04:11:58 PM



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3. FOR INFORMATION ON HAUL ROAD SEE P0658.

NO.	REVISIONS	DATE	DWN. BY	APPD.
20	GENERAL REVISIONS	9/9/99	GEP	
19	INSTALLED CAPS & THRUST BLOCK EAST OF PIV-210 AND SOUTH LEG OF TEE PER WORK ORDER RT003943. REMOVED PIV-210 CUT & CAPPED DW-4" HDPE PER COMP. W.O. RT003936, STORM SEWERS & CBs AIP	9/9/99	GES	GEP
18	A.I.P. SN-6" NW OF SMH-192 PER AS-BUILT SKETCH FROM D. HENNEKES. WORK COMPLETED DCN 4384-001	4/98	GES	GEP
17	RW-4-12"-L1 A.I.P. PER COMPLETED WORK ORDER RT002974	1/6/98	GEP	GEP
16	FT-3-3" A.I.P. PER LINE SLUDGE PONDS REMEDIATION PROJECT 20103, ADD SMH#206, 25R LIFT STATION PER DCN: 4384-001	1/29/92	RWL	GEP

REF. DWG. NO.
67X-5500-E-00003
22B-5500-P-00588
22X-5500-P-00659

NOTE: WEMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± 1/8
ANGLES ± 0° - 30'
DECIMALS
.X ± 0.1
.XX ± 0.03
.XXX ± 0.005
.XXXX ± 0.0005
ANSI Y14.5M-1982

APPROVALS			
CIVIL & STR.		SAFETY ENG.	
ELECTRICAL		MAINTENANCE	
ENGINEER		D.A.	
INSTRUMENT			
MECHANICAL		FIRE PROTECT.	
		WASTE MANAGE	
CHECKED	G.E.P.	D.O.E.	
APPROVED	G.E. PAUL	8/23/90 SECURITY	

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

BLDG. 67 YARD AREA

GRID 24
UNDERGROUND UTILITIES
SCALE 1"=20'

DATE 8/26/90
DRAWN E.J.S.

22B-5500-P-00683 | 20

FILE NAME: /UNDER/22BP0683.DGN

AS-BUILT EDM SURVEYS

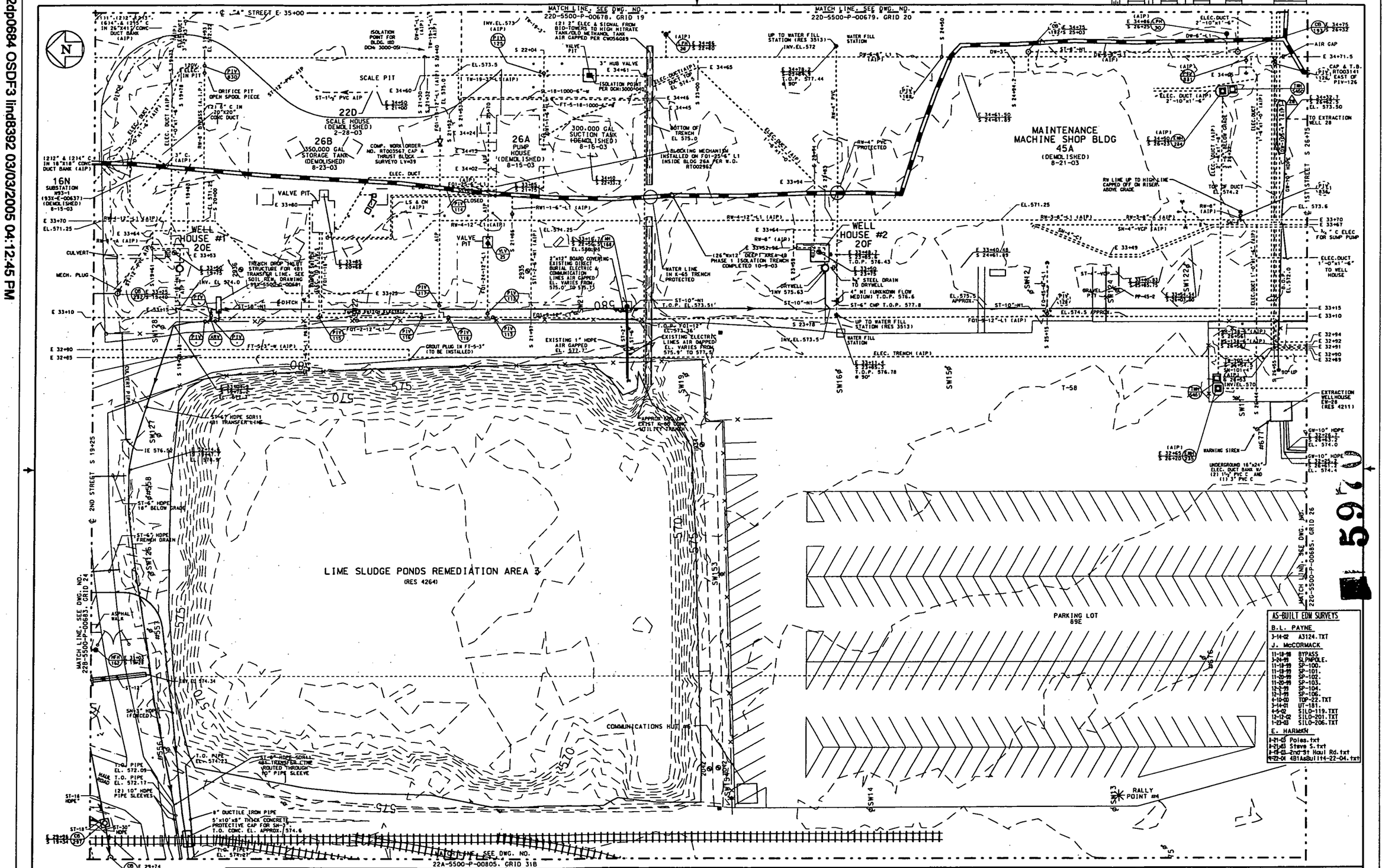
J. McCORMACK

11-18-98	BYPASS
11-18-98	BY-PASS2
12-1-98	T-67
5-10-99	TT-101.
10-21-99	UT-104.
10-26-99	RY-105.
10-26-99	RY-107.
10-21-99	SF-106A.
10-21-99	RY-108.
11-6-99	RY-109.
11-18-99	RY-112.
9-19-00	UT-111.

E. HARMAN

8-21-03	Poles.txt
8-18-03	3B Trench As Built 1.txt
8-18-03	2nd St Haul Rd.txt

22dp0684 OSDF3 lind8392 03/03/2005 04:12:45 PM



NOTE:
1. THIS DRAWING ISSUED PERIODICALLY, FOR THE MOST RECENT VERSION OF THIS DRAWING, ACCESS THE FILENAME BELOW THE TITLE BLOCK.
2. COORDINATES SHOWN ON THIS DRAWING ARE TAKEN FROM EXISTING FEMP DRAWINGS AND ARE NOT VERIFIED TO BE "AS-BUILT". IT IS HIGHLY RECOMMENDED THAT A FIELD SURVEY BE PERFORMED PRIOR TO SITE DESIGN WORK.

NO.	REVISIONS	DATE	DWN. BY	APPD.
28	DEEP WELL #1 (20E) ELECTRIC ISOLATED PER W.O. TK013491	1-16	GEP	GEP
	TRAILER T-100 ELECTRIC ISOLATED PER W.O. TK013975			
	TRAILER T-221 ELECTRIC ISOLATED PER W.O. TK014530			
	DW-4" AIP PER W.O. RT004481			

REF. DWG. NO.
51X-1910-G-00006
22X-5500-P-00659
26A-4445-P-00040

NOTE: WEMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

APPROVALS				
			SAFETY ENG. MAINTENANCE	
CIVIL & STR.				
ELECTRICAL				
ENGINEER			Q.A.	
INSTRUMENT				
MECHANICAL			FIRE PROTECT. WASTE MANAGE	
CHECKED	GEP		D.A.E.	
APPROVED	G.E. PAUL	4/29/91	SECURITY	

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

BLDG 45, SLUDGE PITS — YARD AREA

GRID 25
UNDERGROUND UTILITIES
SCALE 1"=20'

DATE 9-7-90
DRAWN J. KING

22D-5500-P-00684 | 28

FILE NAME: /UNDER/22DP0684.DGN

597

78s00167 OSDF3 lind8392 03/03/2005 02:06:13 PM

FOOTING SCHEDULE

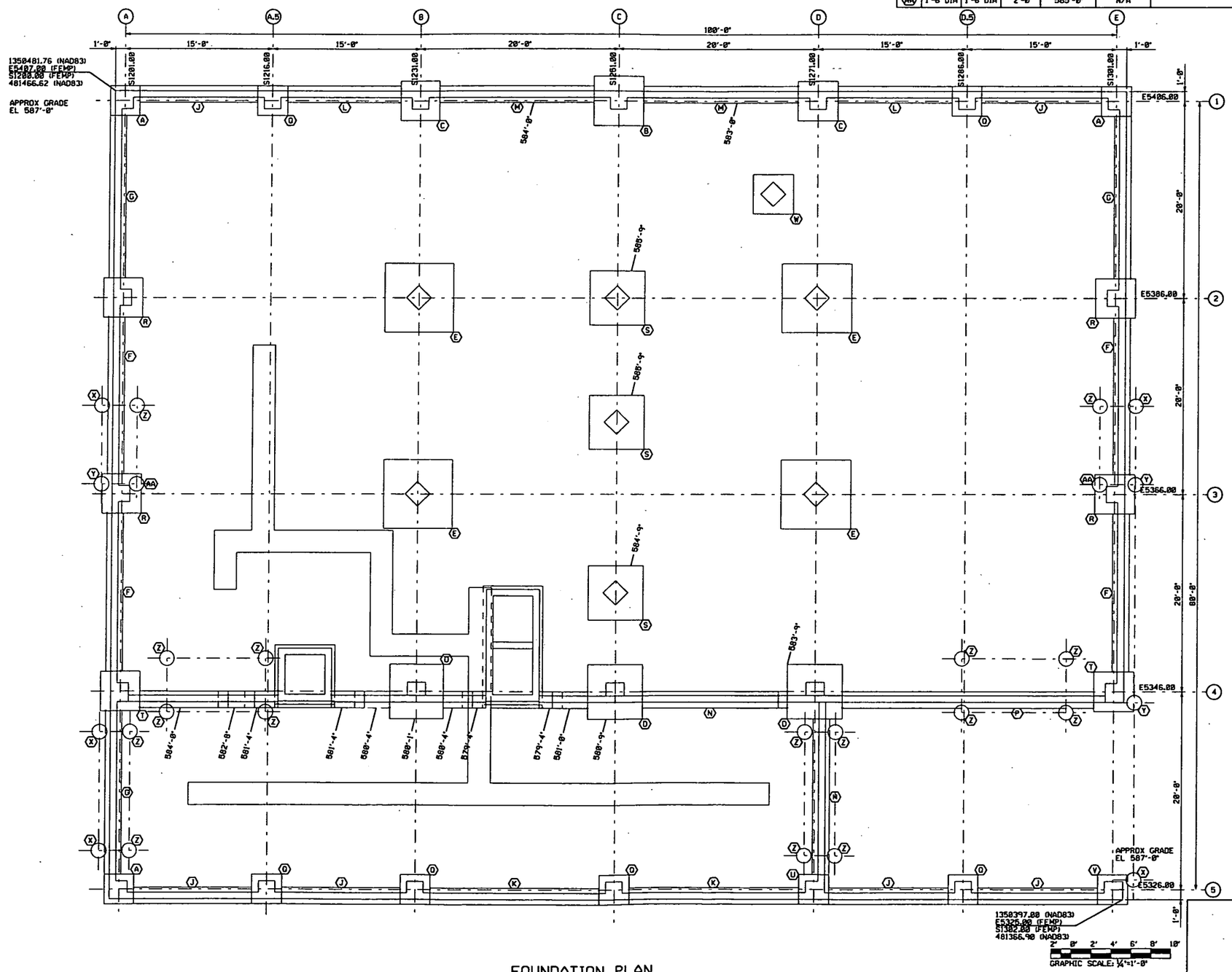
MARK	LENGTH N/S	WIDTH E/W	HEIGHT	B/FTG EL	COL PIER	REMARKS
A	3'-0"	3'-0"	1'-0"	584'-0"	1'-2" SQ	
B	5'-0"	5'-0"	1'-2"	583'-10"	1'-8"x1'-2"	
C	4'-0"	4'-0"	1'-0"	584'-0"	1'-8"x1'-2"	
D	5'-6"	5'-6"	1'-3"	SEE PLAN	1'-10"x1'-4"	
E	7'-0"	7'-0"	1'-7"	585'-5"	1'-9" SQ	
F	1'-8"	16'-0"	1'-0"	584'-0"	N/A	STRIP FOOTING
G	1'-8"	16'-6"	1'-0"	584'-0"	N/A	STRIP FOOTING
H	1'-8"	15'-9"	1'-0"	584'-0"	N/A	STRIP FOOTING

FOOTING SCHEDULE

MARK	LENGTH N/S	WIDTH E/W	HEIGHT	B/FTG EL	COL PIER	REMARKS
J	12'-0"	1'-8"	1'-0"	584'-0"	N/A	STRIP FOOTING
K	17'-0"	1'-8"	1'-0"	584'-0"	N/A	STRIP FOOTING
L	11'-6"	1'-8"	1'-0"	584'-0"	N/A	STRIP FOOTING
M	15'-6"	1'-8"	1'-0"	SEE PLAN	N/A	STRIP FOOTING
N	14'-6"	1'-8"	1'-0"	581'-0¾"	N/A	STRIP FOOTING
P	25'-3"	1'-8"	1'-0"	584'-0"	N/A	STRIP FOOTING
Q	3'-0"	3'-0"	1'-0"	584'-0"	1'-8"x1'-2"	
R	4'-0"	4'-0"	1'-0"	584'-0"	1'-2"x1'-8"	

FOOTING SCHEDULE

MARK	LENGTH N/S	WIDTH E/W	HEIGHT	B/FTG EL	COL PIER	REMARKS
S	5'-6"	5'-6"	1'-3"	SEE PLAN	1'-9" SQ	
T	4'-0"	4'-0"	1'-0"	584'-0"	1'-2"x1'-3"	
U	3'-0"	3'-0"	1'-0"	584'-0"	1'-2"x1'-3"	
V	3'-0"	3'-0"	1'-0"	584'-0"	1'-10"x1'-2"	
W	4'-0"	4'-0"	1'-3"	585'-9"	1'-9" SQ	
X	1'-6" DIA	1'-6" DIA	4'-0"	584'-0"	N/A	
Y	1'-6" DIA	1'-6" DIA	3'-0"	585'-0"	N/A	
Z	1'-6" DIA	1'-6" DIA	3'-0"	584'-0"	N/A	
AA	1'-6" DIA	1'-6" DIA	2'-0"	585'-0"	N/A	



FOUNDATION PLAN

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.

5970

REF DWG NO.	DRAWING TITLE
78X-4445-S-00011	FOUNDATION PLAN AND SCHEDULE
78X-4445-S-00012	STRUCTURAL SECTIONS AND DETAILS
78X-4445-S-00016	MISCELLANEOUS STEEL DETAILS
78X-5500-A-00145	FLOOR PLAN

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	TL	PM	REVD BY
0	ISSUED FOR TECHNICAL REFERENCE ONLY	N/A		

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 2 - TECHNICAL REFERENCE DRAWING

DRAWING TITLE
BUILDING 78
FOUNDATION PLAN

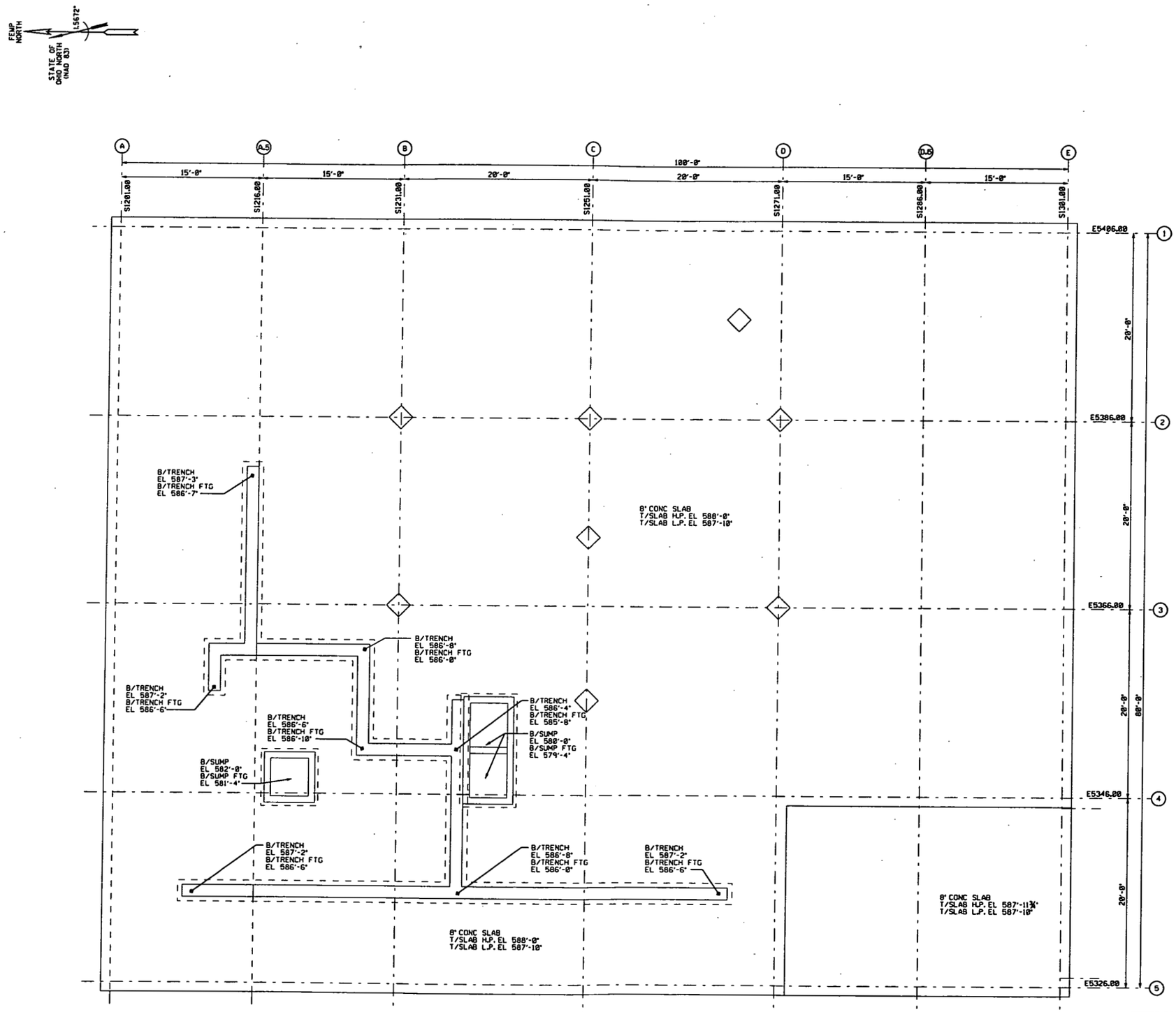
CONFIGURATION MANAGEMENT DRAWING

TASK ORDER NO.	OPTIONAL NO.	SCALE	
025	N/A	¼" = 1'-0"	
		DRAWN BY: HAGAMAN/WHITTLE	DATE: 05/03/99
JES NO. 3769	FGF PROJECT NO. N/A	TECHNICAL LEAD: N/A	DATE: N/A
		CHECKED BY: R. B. JADHAV	DATE: 07/26/99
DRAWING INDEX CODE NO. 78X-5900-S-00167		SHEET NO. S0001	REV. NO. 0

COGNIZANT ENGINEER DATE

SEAL

78s00168 OSDF3 lind8392 03/03/2005 02:02:07 PM



SLAB PLAN

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.

5970

REF DWG NO.	DRAWING TITLE
78X-4445-S-00011	FOUNDATION PLAN AND SCHEDULE
78X-4445-S-00012	STRUCTURAL SECTIONS AND DETAILS
78X-4445-S-00016	MISCELLANEOUS STEEL DETAILS
78X-5500-A-00145	FLOOR PLAN

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	TL	PM	MCHD BY
0	ISSUED FOR TECHNICAL REFERENCE ONLY	N/A		

INITIALS AND DATE

UNITED STATES
DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 2 - TECHNICAL REFERENCE DRAWING

DRAWING TITLE
BUILDING 78
SLAB PLAN

CONFIGURATION MANAGEMENT DRAWING
EXISTING ATTACHED AS CONTROLLED COPIES ARE RELEASED FOR USE BY CONFIGURATION MANAGEMENT CONTROL, EXF OFFICE.

COGNIZANT ENGINEER DATE

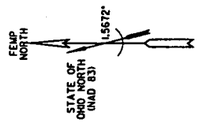
TASK ORDER NO.	OPTIONAL NO.	SCALE
0251	N/A	¼" = 1'-0"
DRAWN BY: HAGAMAN/WHITTLE		DATE: 05/03/99
RES NO. 3769	FOR PROJECT NO. N/A	TECHNICAL LEAD: N/A — DATE: N/A
CHECKED BY: R. B. JADHAV		DATE: 07/25/99
DRAWING INDEX CODE NO. 78X-5900-S-00168	SHEET NO. S0002	REV. NO. 0

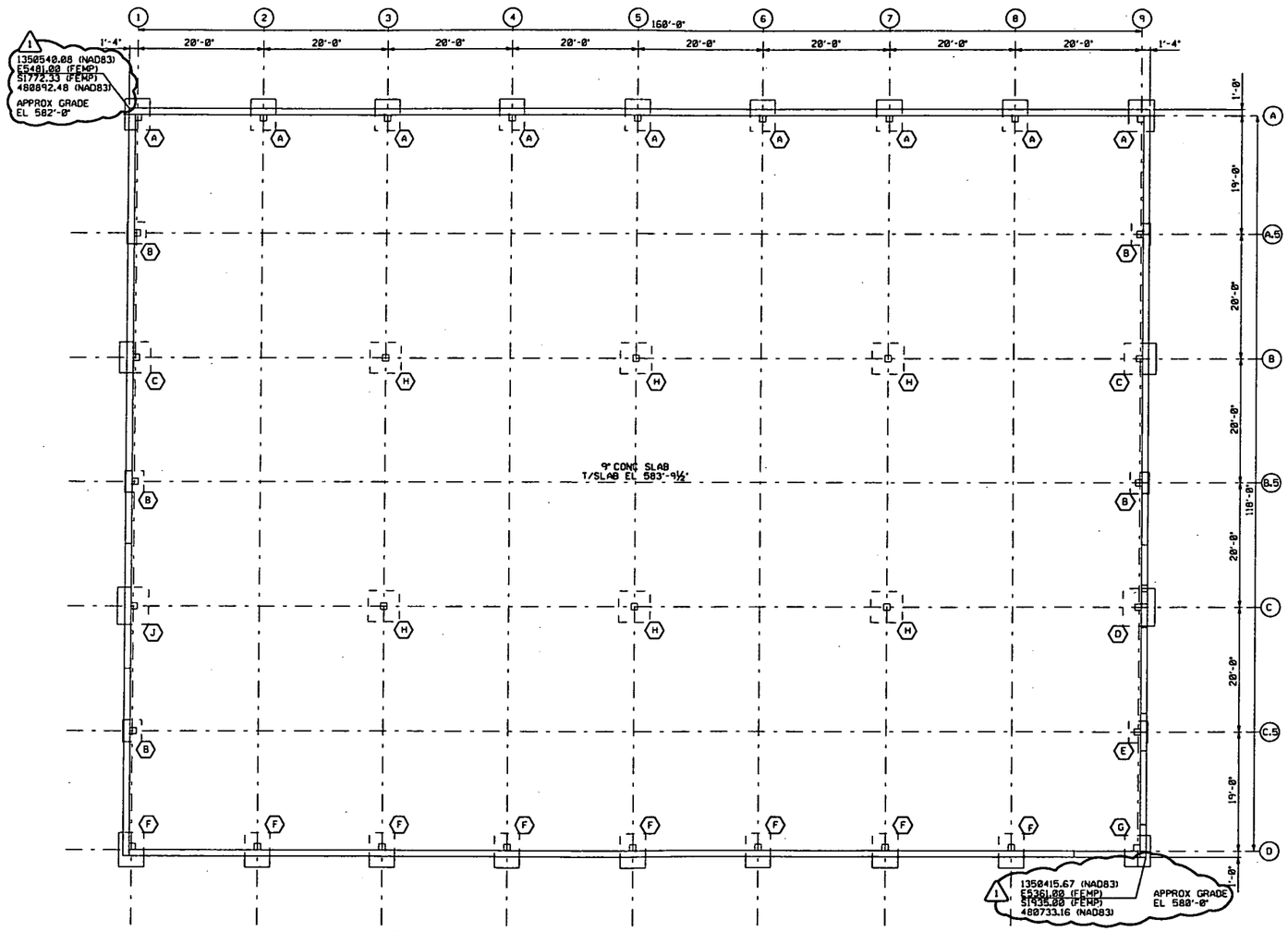
SEAL

77s00014 OSDF3 lind8392 03/03/2005 02:02:46 PM

FOOTING SCHEDULE

MARK	LENGTH N/S	WIDTH E/W	HEIGHT	B/FTG EL	COL PIER	REMARKS
A	4'-0"	5'-0"	1'-0"	580'-3½"	1'-0"X1'-0"	
B	3'-0"	3'-6"	1'-0"	580'-3½"	1'-0"X1'-0"	
C	5'-0"	5'-0"	1'-0"	580'-3½"	1'-0"X1'-0"	
D	4'-0"	5'-6"	1'-0"	576'-11½"	1'-0"X1'-0"	
E	3'-0"	3'-6"	1'-0"	576'-11½"	1'-0"X1'-0"	
F	4'-0"	5'-6"	1'-0"	580'-3½"	1'-0"X1'-0"	
D	4'-0"	5'-0"	1'-0"	576'-11½"	1'-0"X1'-0"	
H	5'-0"	5'-0"	1'-0"	581'-7½"	1'-0"X1'-0"	
J	4'-0"	5'-6"	1'-0"	580'-3½"	1'-0"X1'-0"	





FOUNDATION AND SLAB PLAN

GRAPHIC SCALE: ⅛"=1'-0"

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.

L 5970

REF DWG NO.	DRAWING TITLE
77X-5500-G-00002	SITE PLAN
77X-5500-S-00003	FOUNDATION PLANS & DETAILS
77X-5500-A-00004	FLOOR PLAN & ELEVATIONS
77X-5500-A-00011	FINISHED PRODUCT WAREHOUSE FLOOR PLAN

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	TL	PM	REVIS BY
1	ISSUED FOR TECHNICAL REFERENCE ONLY. ADDED NAD83/FEMP COORDINATES & APPROX GRADES.	N/A		
0	ISSUED FOR TECHNICAL REFERENCE ONLY.	N/A	JJG 05/13/99	LNH 05/13/99

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 3 - TECHNICAL REFERENCE DRAWING

DRAWING TITLE
BUILDING 77
FOUNDATION AND SLAB PLAN

CONFIGURATION MANAGEMENT DRAWING

TASK ORDER NO.	OPTIONAL NO.	SCALE ⅛" = 1'-0"	
025	N/A	DRAWN BY L. M. HAGAMAN	DATE 04/02/99
AES NO. 3769	FOP PROJECT NO. N/A	TECHNICAL LEAD N/A	DATE N/A
		CHECKED BY D. REED	DATE 04/22/99
DRAWING INDEX CODE NO. 77X-5900-S-00014		SHEET NO. S0001	REV. NO. 1

COGNIZANT ENGINEER DATE

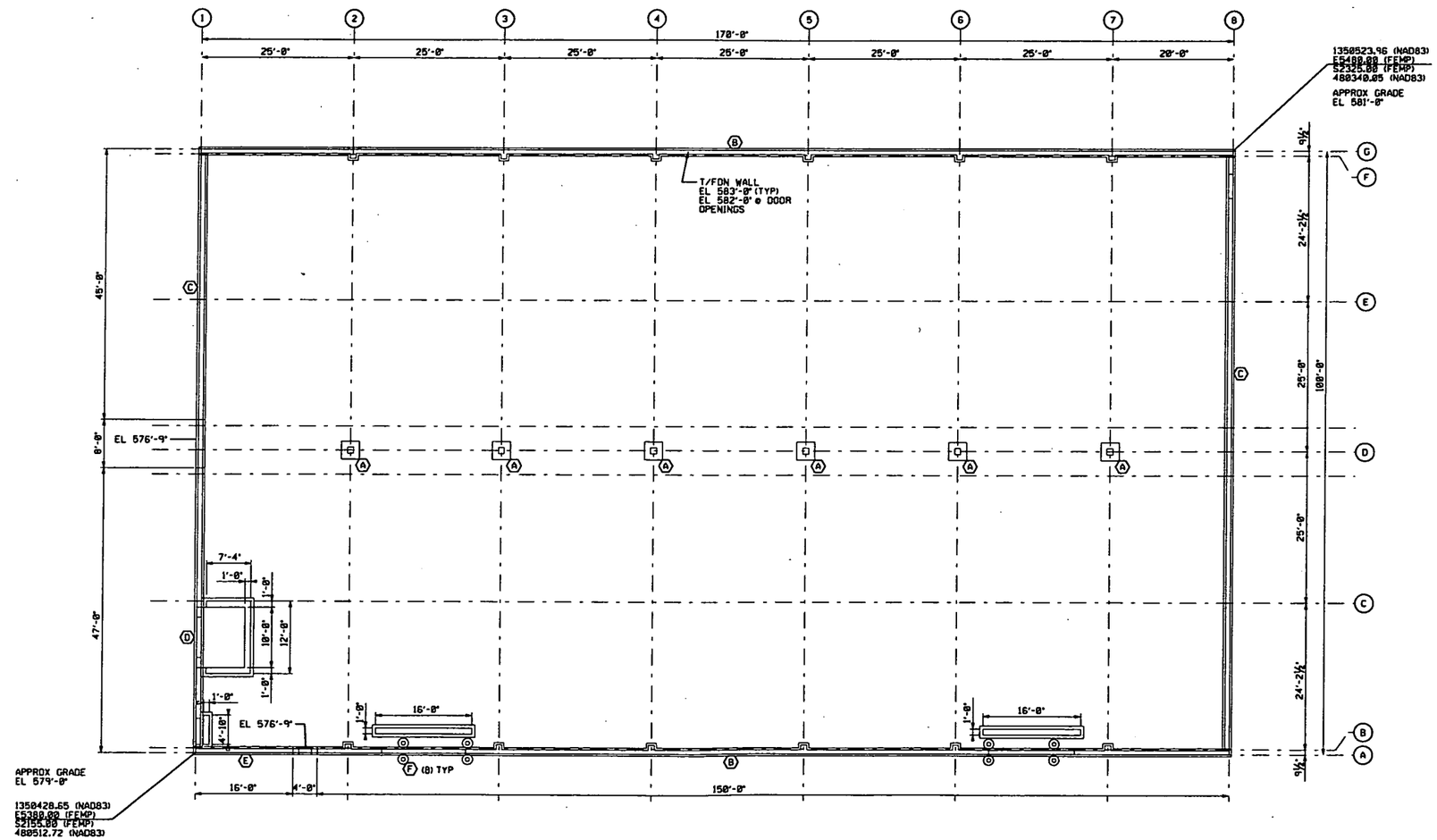
SEAL

79s00042 OSDF3 lind8392 03/03/2005 02:03:16 PM

FEMP NORTH
STATE OF OHIO NORTH (NAD 83)
15°72'

FOOTING SCHEDULE

MARK	LENGTH N/S	WIDTH E/W	HEIGHT	B/FTG EL	COL PIER	REMARKS
A	3'-0"	3'-0"	1'-0"	580'-0"	1'-0" SQ	
B	SEE PLAN	1'-4"	1'-0"	578'-0"	N/A	STRIP FOOTING
C	1'-4"	SEE PLAN	1'-0"	577'-0"	N/A	STRIP FOOTING
D	1'-4"	SEE PLAN	1'-0"	575'-6"	N/A	STRIP FOOTING
E	SEE PLAN	1'-4"	1'-0"	575'-6"	N/A	STRIP FOOTING
F	1'-0" DIA	1'-0" DIA	3'-6"	578'-6"	N/A	8" DIA GUARD POST FOOTER AND PIPE FILL



FOUNDATION PLAN

GRAPHIC SCALE: 1/8"=1'-0"

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.

5970

REF DWG NO.	DRAWING TITLE
79X-4445-S-00005	FOUNDATION PLAN & DETAILS
79X-5500-A-00041	FLOOR PLAN

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION			REVD BY
0	ISSUED FOR TECHNICAL REFERENCE ONLY	N/A		
		TL	PM	
		INITIALS AND DATE		

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 4 - TECHNICAL REFERENCE DRAWING

DRAWING TITLE
BUILDING 79
FOUNDATION PLAN

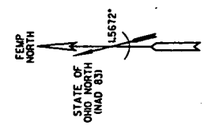
CONFIGURATION MANAGEMENT DRAWING — YES / NO
TURNING STRUCTURES AS COMPONENTS CONTROL ALL THE CHANGES TO THE CONFIGURATION MANAGEMENT CONTROL SYSTEMS.

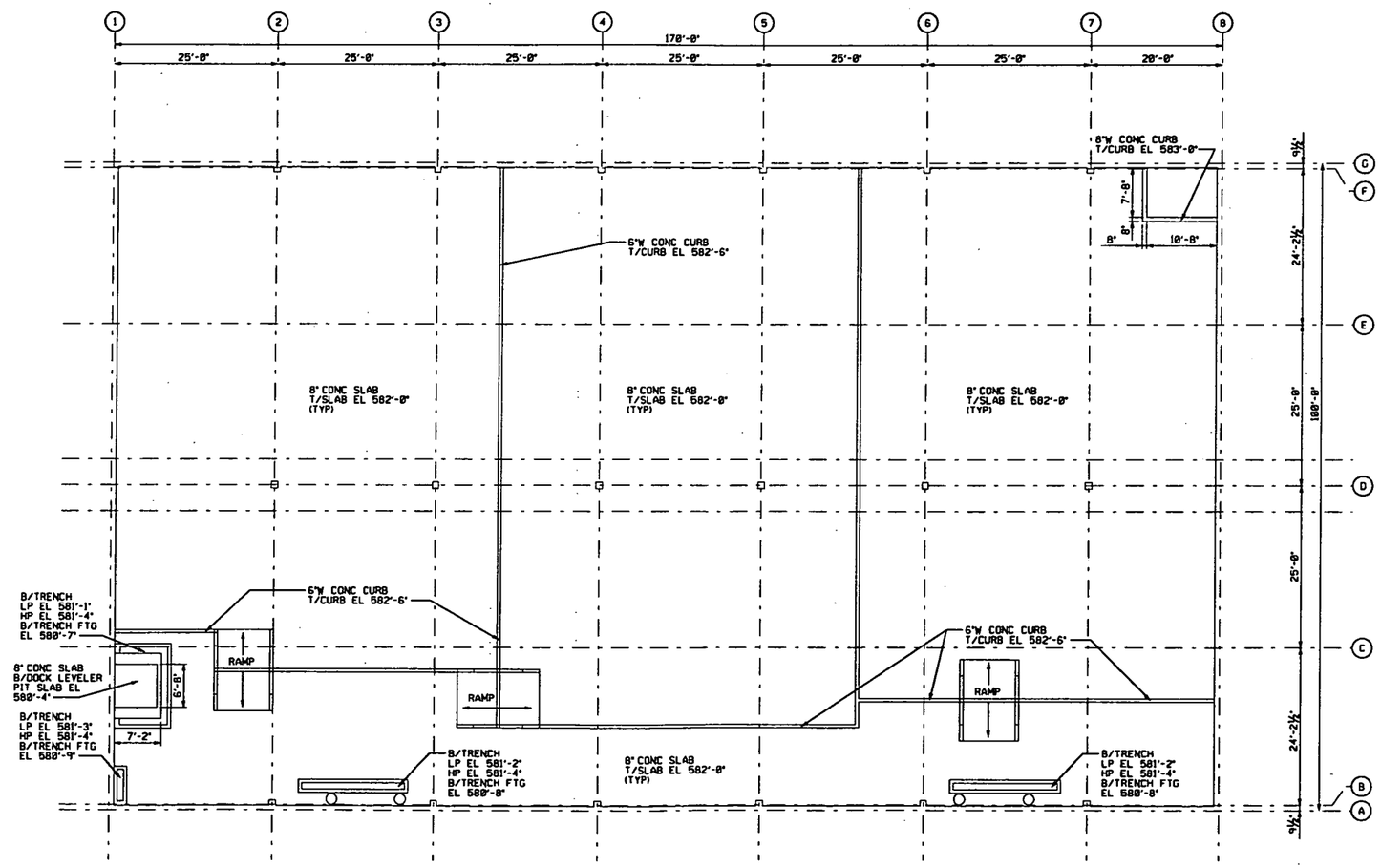
TASK ORDER NO.	OPTIONAL NO.	SCALE	
025	N/A	1/8" = 1'-0"	
		DRAWN BY: HAGAMAN/ASHWORTH	DATE: 08/05/99
RES NO. 3769	FOR PROJECT NO. N/A	TECHNICAL LEAD: N/A	DATE: N/A
		CHECKED BY: R. B. JADHAV	DATE: 08/23/99
DRAWING INDEX CODE NO. 79X-5900-S-00042		SHEET NO. S0001	REV. NO. 0

COGNIZANT ENGINEER — DATE

SEAL

79s00043 OSDF3 lind8392 03/03/2005 02:03:58 PM





SLAB PLAN

GRAPHIC SCALE: ⅛"=1'-0"

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.

5970

REF DWG NO.	DRAWING TITLE
79X-4445-S-00005	FOUNDATION PLAN & DETAILS
79X-5500-A-00041	FLOOR PLAN

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	INITIALS AND DATE
0	ISSUED FOR TECHNICAL REFERENCE ONLY	N/A

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 4 - TECHNICAL REFERENCE DRAWING

DRAWING TITLE
BUILDING 79
SLAB PLAN

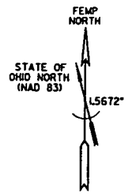
CONFIGURATION MANAGEMENT DRAWING

TASK ORDER NO.	OPTIONAL NO.	SCALE ⅛" = 1'-0"
025	N/A	DRAWN BY HAGAMANN/ASHWORTH — DATE 08/05/99
AES NO. 3769	FOF PROJECT NO. N/A	TECHNICAL LEAD N/A — DATE N/A; CHECKED BY R. B. JADHAV — DATE 08/23/99
DRAWING INDEX CODE NO. 79X-5900-S-00043		SHEET NO. S0002 — REV. NO. 0

COGNIZANT ENGINEER — DATE

SEAL

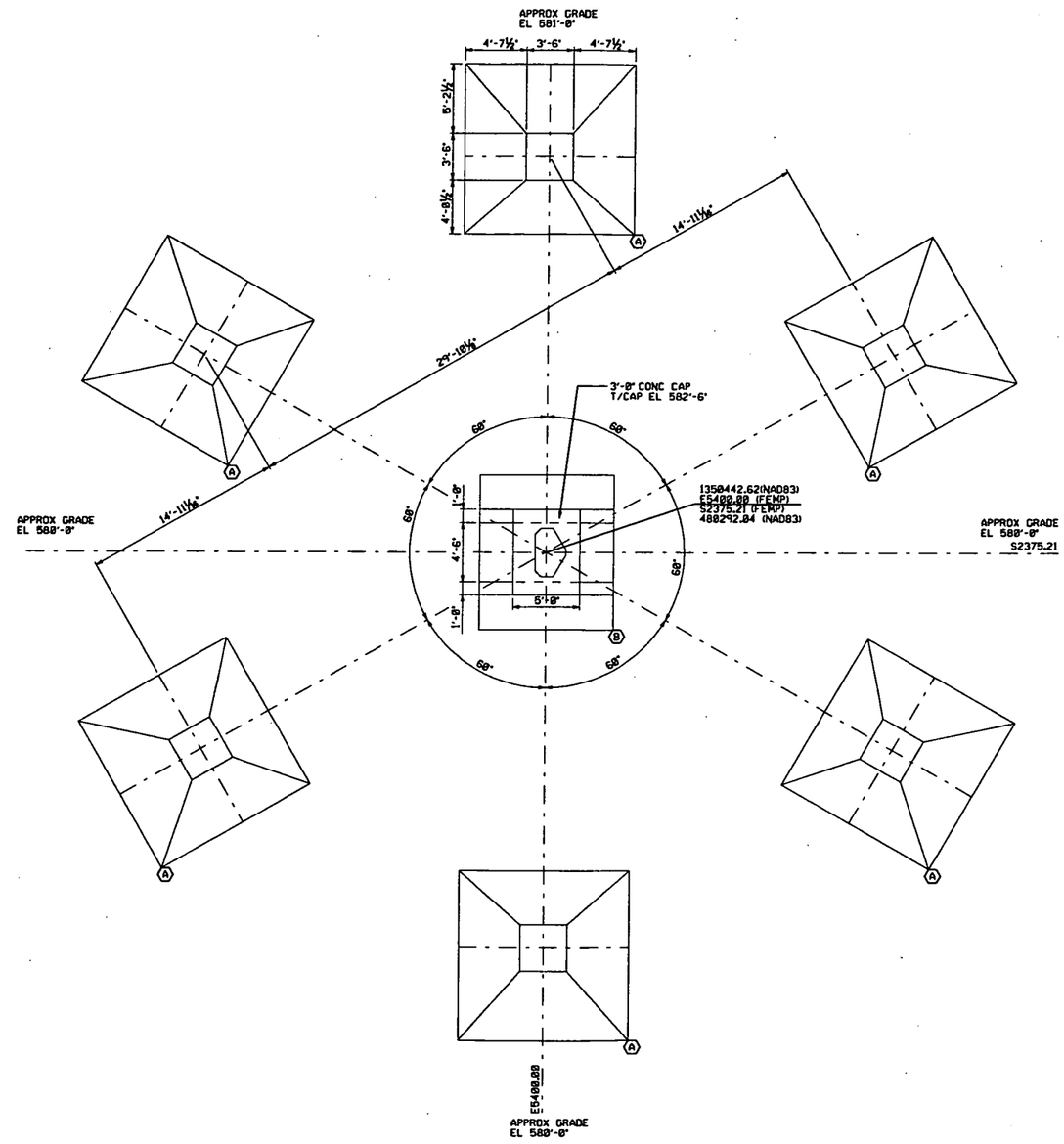
20s00459 OSDF3 lind8392 03/03/2005 02:25:12 PM



FOOTING SCHEDULE

MARK	LENGTH N/S	WIDTH E/W	HEIGHT	B/FTG EL	COL PIER	REMARKS
(A)	SEE NOTE 2		0'-8" *	568'-5"	BOTTOM 12'-9" SQ. TOP 3'-6" SQ.	T/PIER 581'-0"
(B)	11'-9"	10'-0"	1'-4"	568'-5"	BOTTOM 1'-0"x10'-0"x18'-3" TOP 1'-0"x2'-0"	T/PIER 580'-0" (2) TYP

* BASE FOOTING OF STRUCTURE ONLY.



FOUNDATION PLAN

GRAPHIC SCALE: ¼"=1'-0"

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.
2. 12'-9" BASE FOOTING MAY NOT BE PLACED IN N/S, E/W ORIENTATION.

5970

REF DWG NO.	DRAWING TITLE
20D-3115-S-00164	TANK & TOWER CONCRETE FOUNDATION PLAN & PIER DETAILS

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	TL	PM	REVD BY
0	ISSUED FOR TECHNICAL REFERENCE ONLY	N/A		

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 4 - TECHNICAL REFERENCE DRAWING

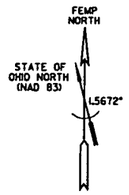
DRAWING TITLE
EAST WATER TOWER 20D
FOUNDATION PLAN

CONFIGURATION MANAGEMENT DRAWING

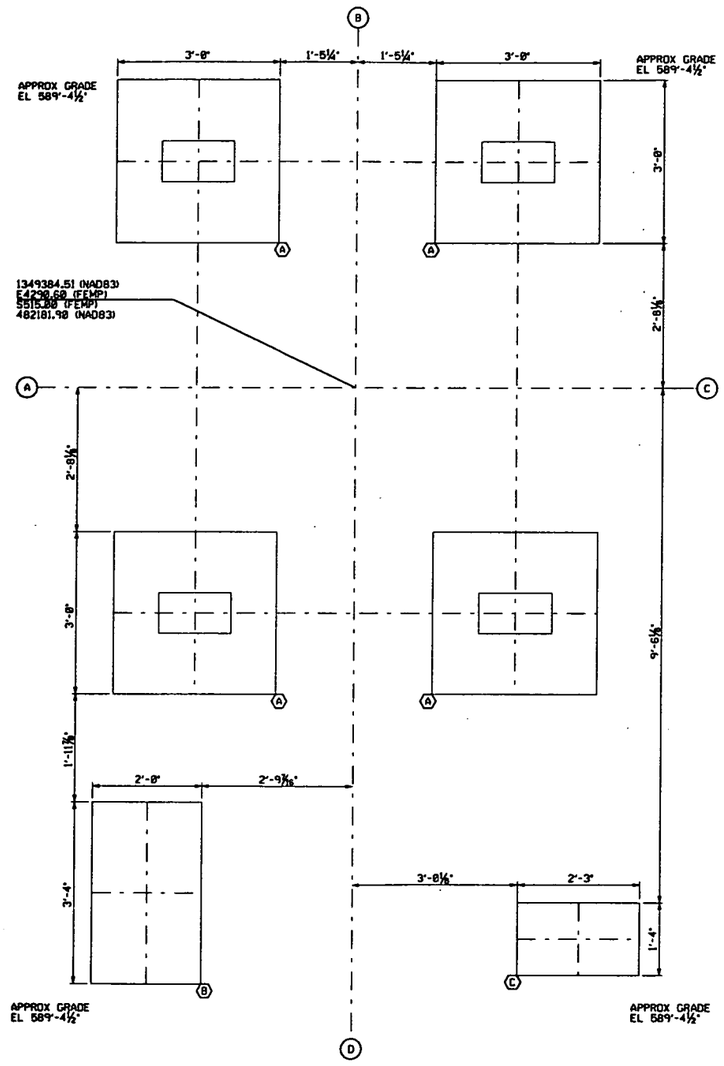
TASK ORDER NO.	OPTIONAL NO.	SCALE ¼" = 1'-0"	
025	N/A	DRAWN BY HAGAMAN/YANNELLI	DATE 08/05/99
AES NO. 3769	FOR PROJECT NO. N/A	TECHNICAL LEAD N/A	DATE N/A
		CHECKED BY R. B. JACHAV	DATE 08/23/99
COGNIZANT ENGINEER	DATE	DRAWING BOOK CODE NO. 20D-5900-S-00459	SHEET NO. S0001 / REV. NO. 0

SEAL

28s00333 OSDF3 lind8392 03/03/2005 02:26:36 PM



FOOTING SCHEDULE						
MARK	LENGTH N/S	WIDTH E/W	HEIGHT	B/FTG EL	COL PIER	REMARKS
(A)	3'-0"	3'-0"	1'-0"	585'-0"	0'-9"x1'-4"	T/PIER EL 590'-0 3/8"
(B)	3'-4"	2'-0"	3'-9"	586'-3 3/8"	N/A	T/PIER EL 590'-0 3/8"
(C)	1'-4"	2'-3"	3'-9"	586'-3 3/8"	N/A	T/PIER EL 590'-0 3/8"



FOUNDATION PLAN

GRAPHIC SCALE: 1'=1'-0"

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.

L 5970

REF DWG NO.	DRAWING TITLE
28X-3115-S-00048	GUARD TOWER FOUNDATIONS
22C-5500-P-00668	UNDERGROUND UTILITIES

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	INITIALS AND DATE		
0	ISSUED FOR TECHNICAL REFERENCE ONLY	N/A		

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 9 - TECHNICAL REFERENCE DRAWING

DRAWING TITLE
GUARD TOWER #4
FOUNDATION PLAN

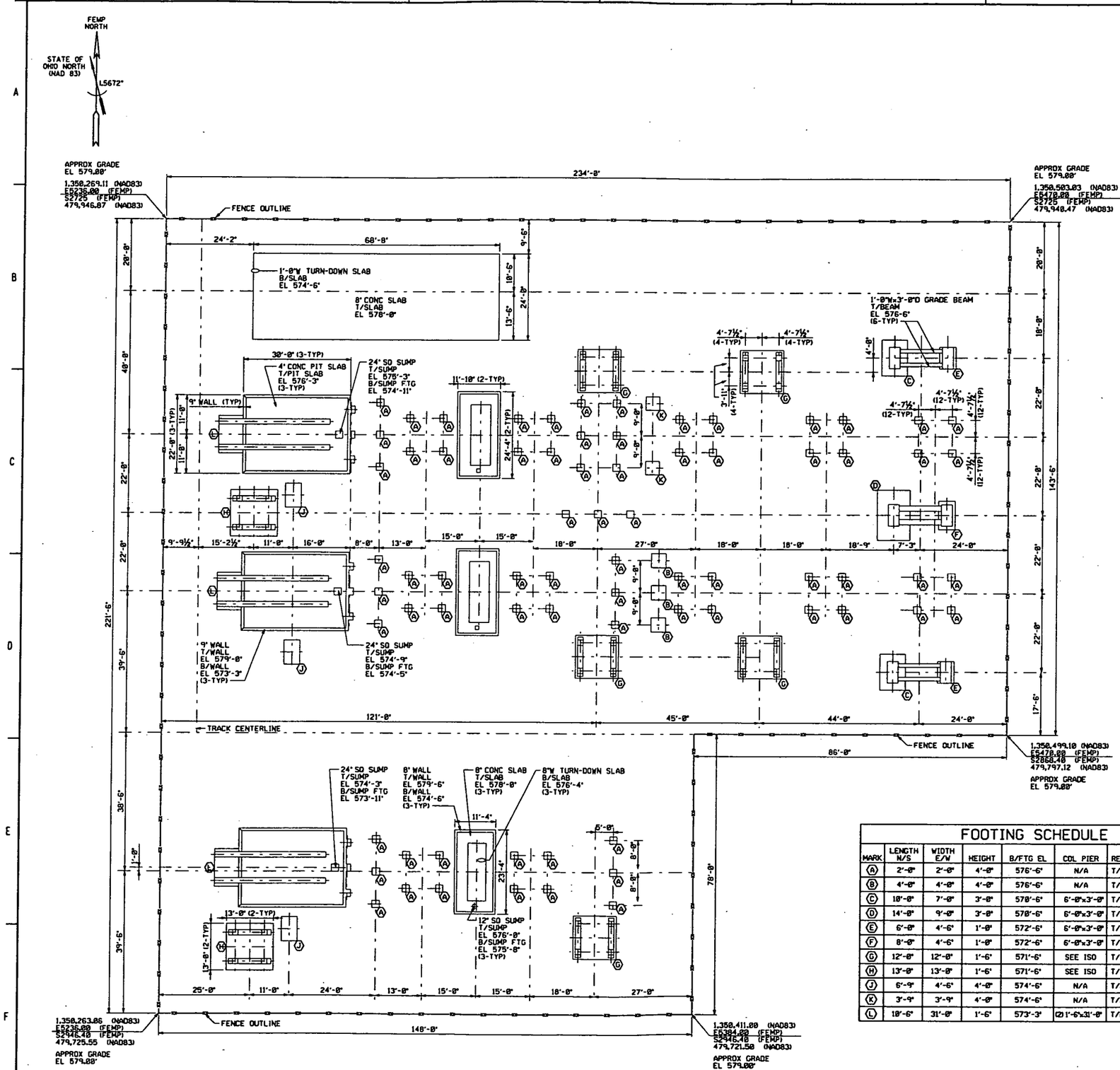
CONFIGURATION MANAGEMENT DRAWING

TASK ORDER NO.	OPTIONAL NO.	SCALE 1" = 1'-0"	
025	N/A	DRAWN BY HAGAMAN/WHITTLE	DATE 08/04/99
RES NO. 3769	PDF PROJECT NO. N/A	TECHNICAL LEAD N/A	DATE N/A
		CHECKED BY R. B. JACHAY	DATE 08/23/99
DRAWING INDEX CODE NO. 28C-5900-S-00333		SHEET NO. S0001	REV. NO. 0

CONCURRENT ENGINEER DATE

SEAL

16s00116 OSDF3 lind8392 03/03/2005 02:30:46 PM



FOUNDATION AND SLAB PLAN

FOOTING SCHEDULE

MARK	LENGTH N/S	WIDTH E/W	HEIGHT	B/FTG EL	COL PIER	REMARKS
A	2'-0"	2'-0"	4'-0"	576'-6"	N/A	T/FTG EL 580'-6"
B	4'-0"	4'-0"	4'-0"	576'-6"	N/A	T/FTG EL 580'-6"
C	18'-0"	7'-0"	3'-0"	578'-6"	6'-0"x3'-0"	T/PIER EL 578'-6"
D	14'-0"	9'-0"	3'-0"	578'-6"	6'-0"x3'-0"	T/PIER EL 578'-6"
E	6'-0"	4'-6"	1'-0"	572'-6"	6'-0"x3'-0"	T/PIER EL 578'-6"
F	8'-0"	4'-6"	1'-0"	572'-6"	6'-0"x3'-0"	T/PIER EL 578'-6"
G	12'-0"	12'-0"	1'-6"	571'-6"	SEE ISO	T/PIER EL 578'-6"
H	13'-0"	13'-0"	1'-6"	571'-6"	SEE ISO	T/PIER EL 578'-6"
J	6'-9"	4'-6"	4'-0"	574'-6"	N/A	T/FTG EL 578'-6"
K	3'-9"	3'-9"	4'-0"	574'-6"	N/A	T/FTG EL 578'-6"
L	18'-6"	31'-0"	1'-6"	573'-3"	(2) 1'-6"x31'-0"	T/PIER EL 581'-4"

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.
2. SEE EXISTING REFERENCED DRAWINGS FOR CONSTRUCTION DETAILS AND/OR ISOMETRIC DRAWING SK16A-1.
3. ALL TOP OF PIER & FOOTING ELEVATION GIVEN, 1" OF GROUT.

5970

REF DWG NO.	DRAWING TITLE
16X-1450-S-00001	CONCRETE - FOUNDATION KEY PLAN
16X-1450-S-00002	FOUNDATION DETAILS
16X-1450-S-00021	CONCRETE FOUNDATION PLAN - TRANSFORMER NO. 3
16X-5500-S-00085	SUBSTATION SECONDARY CONTAINMENT
75H-5500-G-00026	GRID 7 - EXISTING SITE PLAN

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	TL	PM	ROG BY
1	REVISED BLDG 16B TO 16D IN TITLE BLOCK	N/A	KG 04/04/02	LNH 04/04/02
0	ISSUED FOR TECHNICAL REFERENCE ONLY.	N/A	KG 03/28/02	LNH 03/28/02

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 7 - TECHNICAL REFERENCE DRAWING

DRAWING TITLE
STATION 16A & BLDG. 16D (1)
FOUNDATION AND SLAB PLAN
WITH HIDDEN LINES

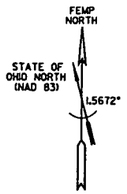
CONFIGURATION MANAGEMENT DRAWING

TASK ORDER NO.	OPTIONAL NO.	SCALE	
060	N/A	3/32" = 1'-0"	
		DRAWN BY K. L. RABBITT	DATE 10/18/02
RCS NO. 4327	FOF PROJECT NO. 20810	TECHNICAL LEAD N/A	DATE N/A
		CHECKED BY DOREEN REED	DATE 01/24/02
DRAWING INDEX CODE NO. 16X-5900-S-00116		SHEET NO. S0001	REV. NO. 1

COGNIZANT ENGINEER DATE

SEAL

63s00038 OSDF3 lind8392 03/03/2005 02:27:28 PM



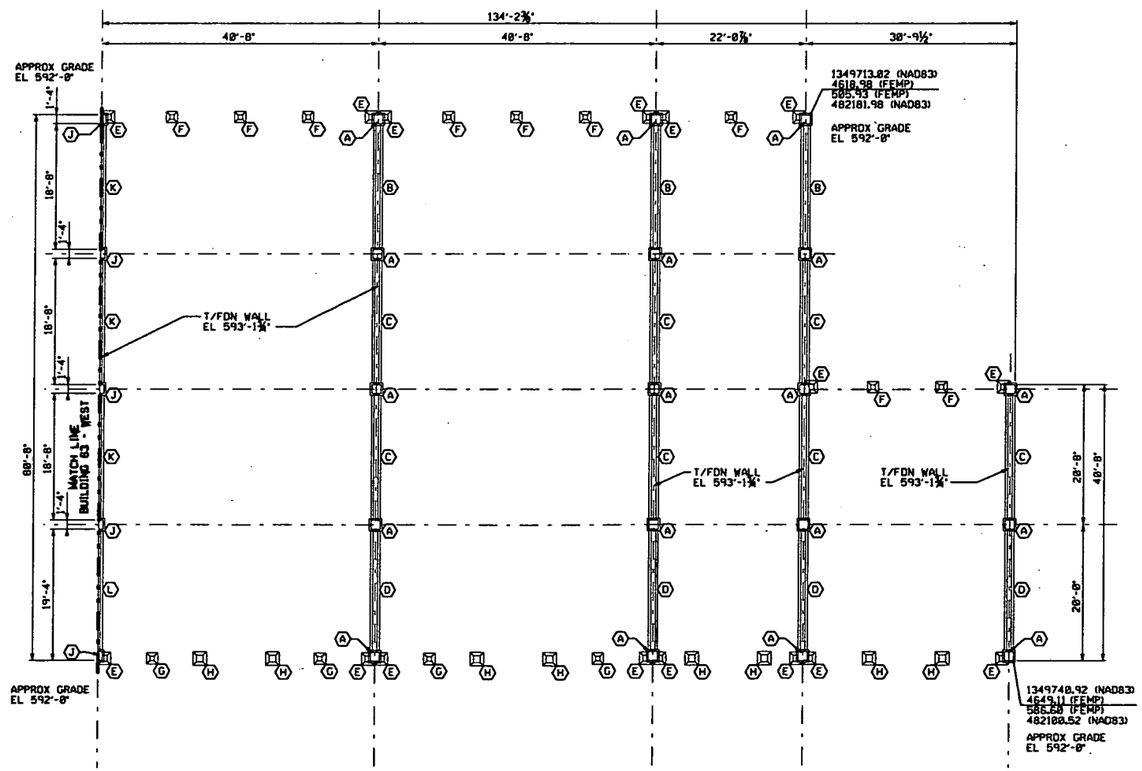
FOOTING SCHEDULE

MARK	LENGTH N/S	WIDTH E/W	HEIGHT	B/FTG EL	COL PIER	REMARKS
A	1'-10"	1'-10"	1'-0"	589'-7¾"	1'-4" SQ	
B	18'-2"	1'-4"	1'-0"	589'-7¾"	N/A	
C	18'-2"	1'-4"	1'-0"	589'-7¾"	N/A	
D	17'-6"	1'-4"	1'-0"	589'-7¾"	N/A	
E	8'-10" TOP 1'-10" BOTTOM	8'-10" TOP 1'-10" BOTTOM	2" ABOVE ADJ SLAB	589'-7¾"	N/A	
F	8'-8" TOP 1'-8" BOTTOM	8'-8" TOP 1'-8" BOTTOM	2" ABOVE ADJ SLAB	589'-2½"	N/A	
G	8'-8" TOP 1'-8" BOTTOM	8'-8" TOP 1'-8" BOTTOM	2" ABOVE ADJ SLAB	589'-6½"	N/A	
H	1'-8" TOP 2'-8" BOTTOM	1'-8" TOP 2'-8" BOTTOM	2" ABOVE ADJ SLAB	589'-2¼"	N/A	
J	1'-10"	8'-11"	1'-0"	589'-7¾"	1'-4"x8'-8"	
K	18'-2"	8'-8"	1'-8"	589'-7¾"	N/A	
L	17'-6"	8'-8"	1'-8"	589'-7¾"	N/A	

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.

5970



FOUNDATION PLAN

GRAPHIC SCALE: 1/8"=1'-0"

REF DWG NO.	DRAWING TITLE
63X-3115-A-00001	PROPOSED STORAGE SHEDS
63X-5500-S-00002	PROPOSED FOOTING CHANGES
63X-5500-C-00005	PLOT PLAN
63X-5500-S-00007	FLOOR PLAN - EAST HALF
63X-5500-A-00008	ELEVATIONS
63X-5500-A-00009	TYPICAL DETAILS
63X-5500-S-00010	TYPICAL DETAILS OF FENCE ENCLOSED BAYS OF SOUTH WALL
63X-5500-A-00011	NORTH ELEV OF FENCE ENCLOSED BAYS & VALVE PIT & VALVE STA DETAILS
63X-5500-A-00025	FLOOR PLAN

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	EL	PM	REVD BY
0	ISSUED FOR TECHNICAL REFERENCE ONLY	N/A		

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 9 - TECHNICAL REFERENCE DRAWING

DRAWING TITLE
BUILDING 63 - EAST
FOUNDATION PLAN

CONFIGURATION MANAGEMENT DRAWING

EXISTING ATTRIBUTES OR CONTENTS CONFIRMED AS THE LATEST UNDER CONFIGURATION MANAGEMENT CONTROL. SEE NOTES.

COGNIZANT ENGINEER DATE

TASK ORDER NO.	OPTIONAL NO.	SCALE
025	N/A	1/8" = 1'-0"

DRAWN BY HAGAMAN/WHITTLE	DATE 08/04/99		
AES NO. 3769	FOF PROJECT NO. N/A	TECHNICAL LEAD N/A	DATE N/A
		CHECKED BY R. B. JADHAV	DATE 08/23/99

DRAWING INDEX CODE NO. 63X-5900-S-00038 | SHEET NO. S0001 | REV. NO. 0

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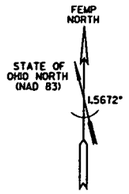
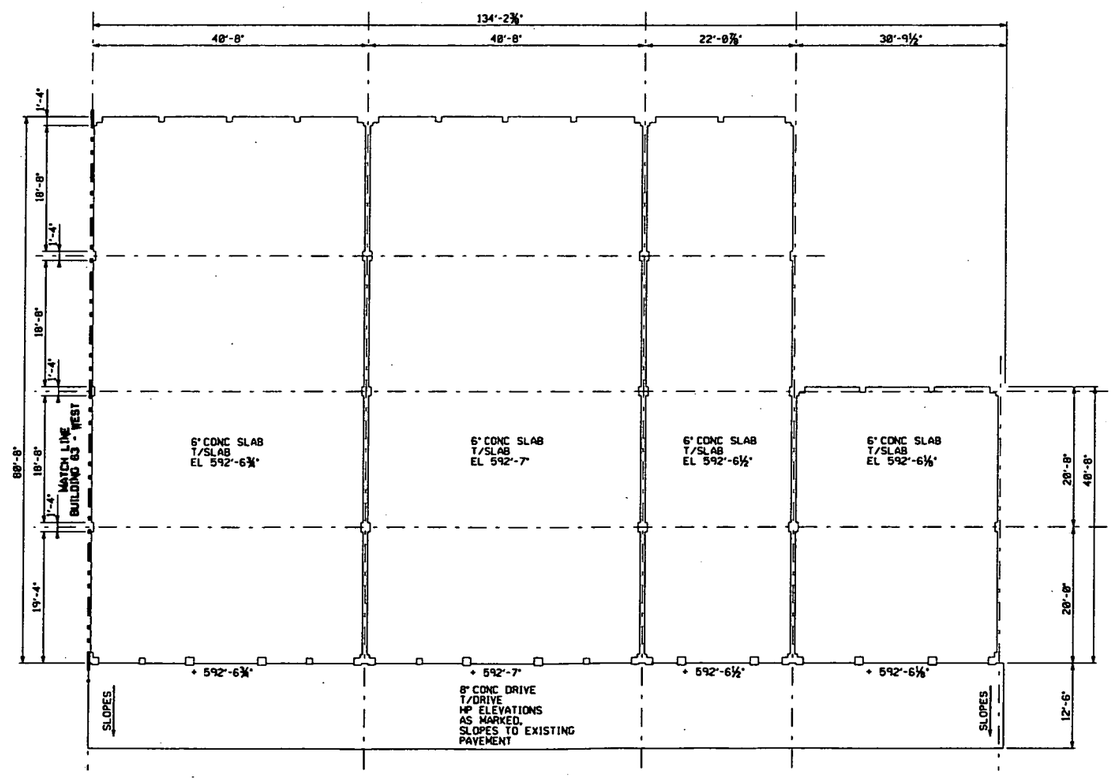
63s00039 OSDF3 lind8392 03/03/2005 02:27:55 PM





SLAB PLAN

4' 0' 4' 8' 12' 16' 20'
GRAPHIC SCALE: ⅛"=1'-0"

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.

5970

REF DWG NO.	DRAWING TITLE
63X-3115-A-00001	PROPOSED STORAGE SHEDS
63X-5500-S-00002	PROPOSED FOOTING CHANGES
63X-5500-G-00005	PLOT PLAN
63X-5500-S-00007	FLOOR PLAN - EAST HALF
63X-5500-A-00008	ELEVATIONS
63X-5500-A-00009	TYPICAL DETAILS
63X-5500-S-00010	TYPICAL DETAILS OF FENCE ENCLOSED BAYS OF SOUTH WALL
63X-5500-A-00011	NORTH ELEV OF FENCE ENCLOSED BAYS & VALVE PIT & VALVE STA DETAILS
63X-5500-A-00025	FLOOR PLAN

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	TL	PM	REVD BY
0	ISSUED FOR TECHNICAL REFERENCE ONLY	N/A		

DETAILS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 9 - TECHNICAL REFERENCE DRAWING

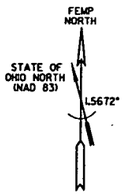
DRAWING TITLE
BUILDING 63 - EAST
SLAB PLAN

CONFIGURATION MANAGEMENT DRAWING

TASK ORDER NO.	OPTIONAL NO.	SCALE ⅛" = 1'-0"	
025	N/A	DRAWN BY HAGAMAN/WHITTLE	DATE 08/24/99
AES NO. 3769	FOR PROJECT NO. N/A	TECHNICAL LEAD N/A	DATE N/A
		CHECKED BY R. B. JADHAV	DATE 08/23/99
COGNIZANT ENGINEER	DATE	DRAWING INDEX CODE NO. 63X-5900-S-00039	SHEET NO. S0002 / REV. NO. 0

SEAL

63s00040 OSDF3 lind8392 03/03/2005 02:28:19 PM



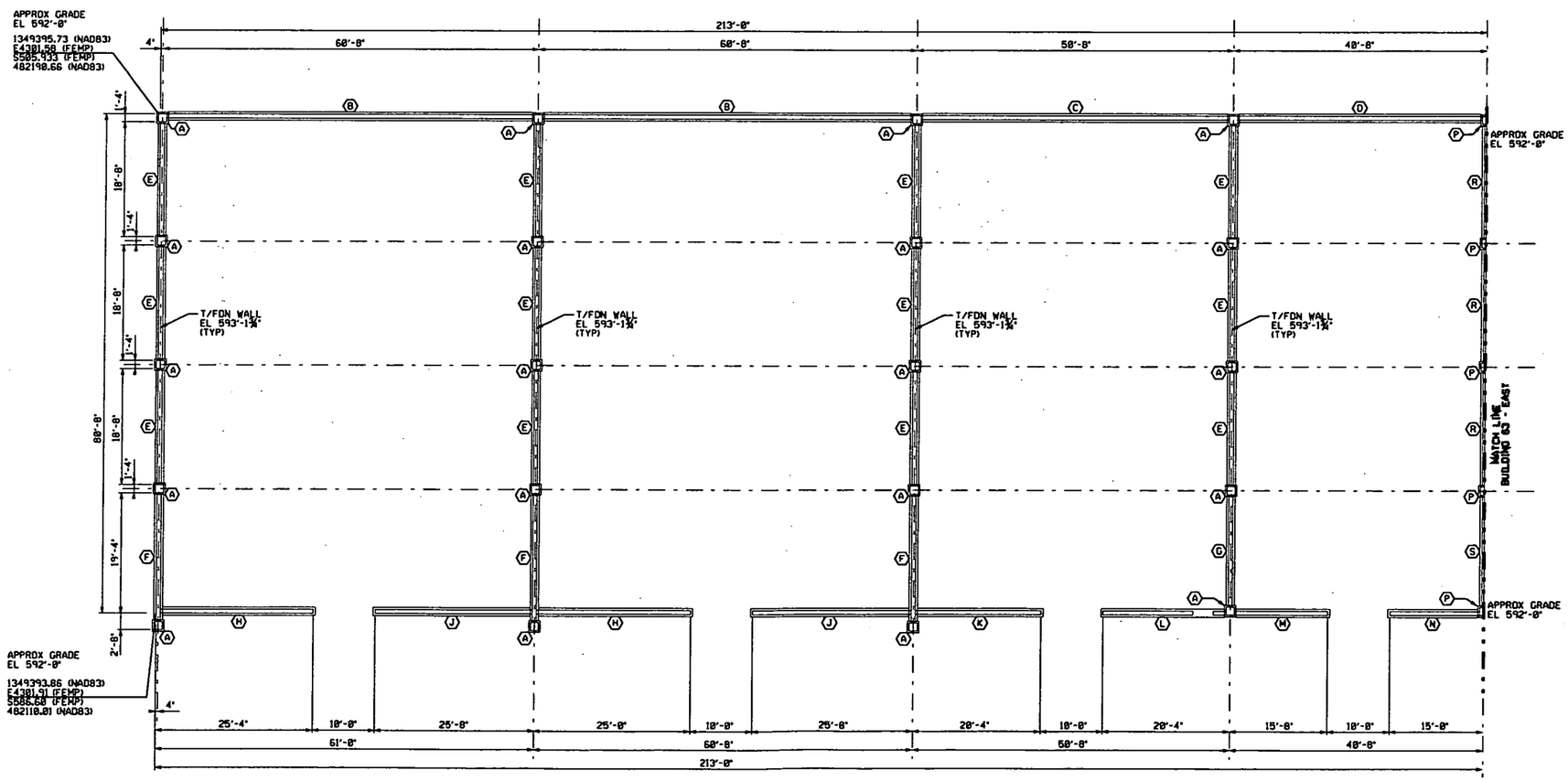
FOOTING SCHEDULE

MARK	LENGTH N/S	WIDTH E/W	HEIGHT	B/FTG EL	COL PIER	REMARKS
A	1'-10"	1'-10"	1'-0"	589'-7¾"	1'-4"x1'-4"	
B	1'-4"	58'-10"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
C	1'-4"	48'-10"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
D	1'-4"	38'-10"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
E	18'-2"	1'-4"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
F	20'-2"	1'-4"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
G	17'-6"	1'-4"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
H	1'-4"	24'-8"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
J	1'-4"	25'-4"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
K	1'-4"	20'-0"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
L	1'-4"	19'-9"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
M	1'-4"	15'-1"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
N	1'-4"	14'-5"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
P	1'-10"	0'-11"	1'-0"	589'-7¾"	1'-4"x0'-8"	
R	18'-2"	0'-8"	1'-0"	589'-7¾"	N/A	STRIP FOOTING
S	17'-6"	0'-8"	1'-0"	589'-7¾"	N/A	STRIP FOOTING

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.

L 5970



FOUNDATION PLAN

GRAPHIC SCALE: 1/8"=1'-0"

REF DWG NO.	DRAWING TITLE
63X-3115-A-00001	PROPOSED STORAGE SHEDS
63X-5500-S-00002	PROPOSED FOOTING CHANGES
63X-5500-C-00005	PLOT PLAN
63X-5900-A-00006	FLOOR PLAN - WEST HALF
63X-5500-A-00008	ELEVATIONS
63X-5500-A-00009	TYPICAL DETAILS
63X-5500-S-00010	TYPICAL DETAILS OF FENCE ENCLOSED BAYS OF SOUTH WALL
63X-5500-A-00011	NORTH ELEV OF FENCE ENCLOSED BAYS & VALVE PIT & VALVE STA DETAILS
63X-5500-A-00025	FLOOR PLAN

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	TL	PM	REVD BY
0	ISSUED FOR TECHNICAL REFERENCE ONLY	N/A		

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 9 - TECHNICAL REFERENCE DRAWING

DRAWING TITLE
BUILDING 63 - WEST
FOUNDATION PLAN

CONFIGURATION MANAGEMENT DRAWING — LEVEL / NEW

DATING ATTACHED SEL OR CONTROLS CONTROL ON THIS DRAWING. FOR CHANGES SEE CONFIGURATION MANAGEMENT CONTROL, SEE NOTES.

COGNIZANT ENGINEER — DATE

TASK ORDER NO.	OPTIONAL NO.	SCALE	
025	N/A	1/8" = 1'-0"	
		DRAWN BY: HAGAMAN/WHITTLE	DATE: 08/04/99
REV NO. 3769	FDF PROJECT NO. N/A	TECHNICAL LEAD: N/A	DATE: N/A
		CHECKED BY: R. B. JADHAV	DATE: 08/23/99
DRAWING INDEX CODE NO. 63X-5900-S-00040		SHEET NO. S0001	REV. NO. 0

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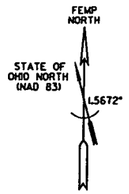
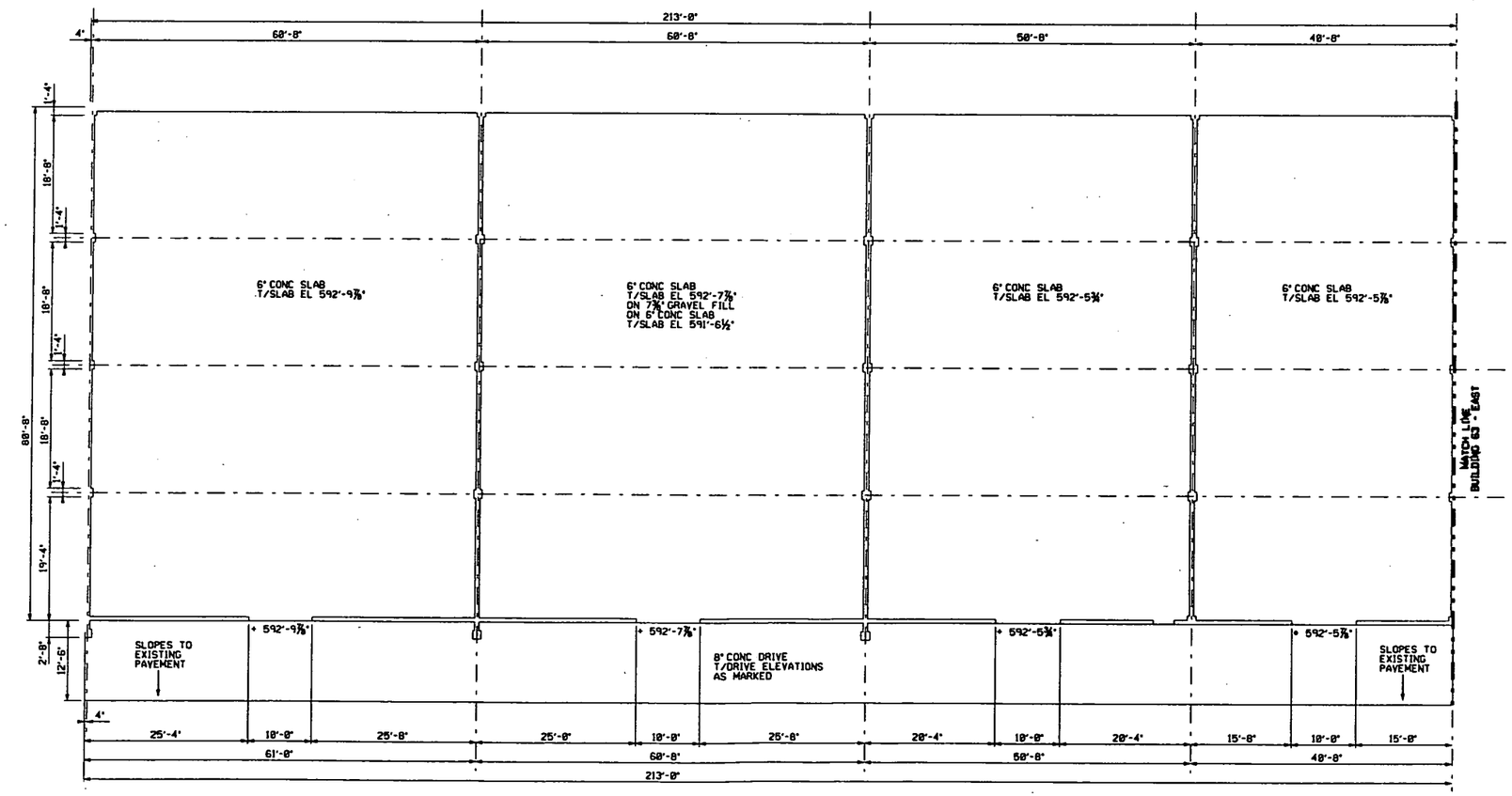
63s00041 OSDF3 lind8392 03/03/2005 02:28:46 PM





SLAB PLAN

GRAPHIC SCALE: 1/8"=1'-0"

NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING WAS COMPILED FROM EXISTING CONSTRUCTION DRAWINGS AND MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.

5970

REF DWG NO.	DRAWING TITLE
63X-3115-A-00001	PROPOSED STORAGE SHEDS
63X-5500-S-00002	PROPOSED FOOTING CHANGES
63X-5500-C-00005	PLOT PLAN
63X-5900-A-00006	FLOOR PLAN - WEST HALF
63X-5500-A-00008	ELEVATIONS
63X-5500-A-00009	TYPICAL DETAILS
63X-5500-S-00010	TYPICAL DETAILS OF FENCE ENCLOSED BAYS OF SOUTH WALL
63X-5500-A-00011	NORTH ELEV OF FENCE ENCLOSED BAYS & VALVE PIT & VALVE STA DETAILS
63X-5500-A-00025	FLOOR PLAN

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	TL	PM	REVD BY
0	ISSUED FOR TECHNICAL REFERENCE ONLY	N/A		

INITIALS AND DATE

UNITED STATES
DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS I & T GROUP
CINCINNATI, OHIO

PROJECT NAME
LOCATION OF BELOW GRADE STRUCTURES
GRID 9 - TECHNICAL REFERENCE DRAWING

DRAWING TITLE
BUILDING 63 - WEST
SLAB PLAN

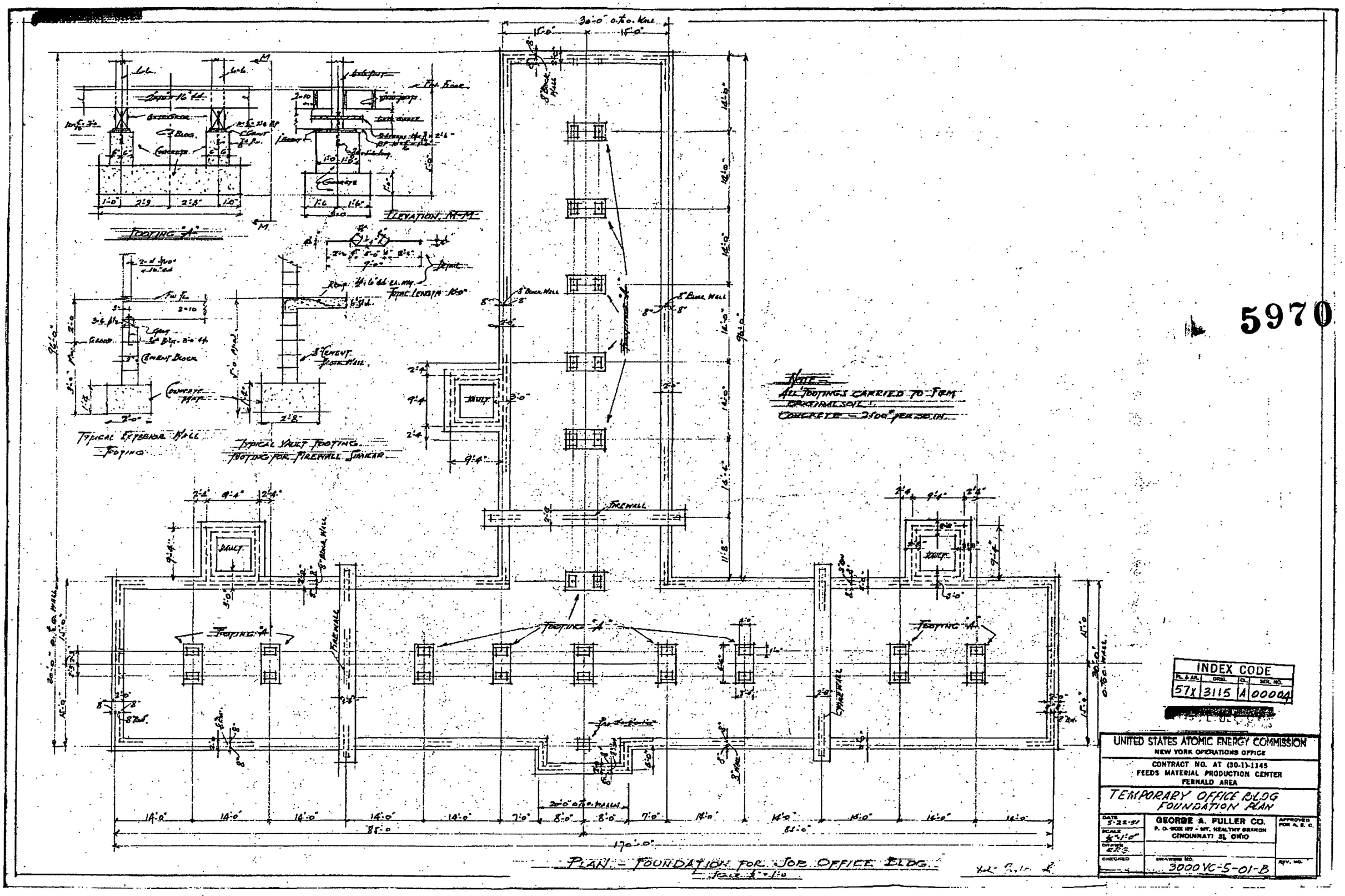
CONFIGURATION MANAGEMENT DRAWING

EXISTING STRUCTURES AS CONTAINED HEREIN, IS THE DRAWING REFERENCE CONFIGURATION MANAGEMENT CONTROL, AS NOTED.

COGNIZANT ENGINEER DATE

TASK ORDER NO.	OPTIONAL NO.	SCALE	
025	N/A	1/8" = 1'-0"	
		DRAWN BY HAGAMAN/WHITTLE	DATE 08/04/99
ACS NO.	FDF PROJECT NO.	TECHNICAL LEAD N/A	DATE N/A
3769	N/A	CHECKED BY R. B. JADHAV	DATE 08/23/99
DRAWING BOOK CODE NO.		SHEET NO.	REV. NO.
63X-5900-S-00041		S0002	0

SEAL



5970

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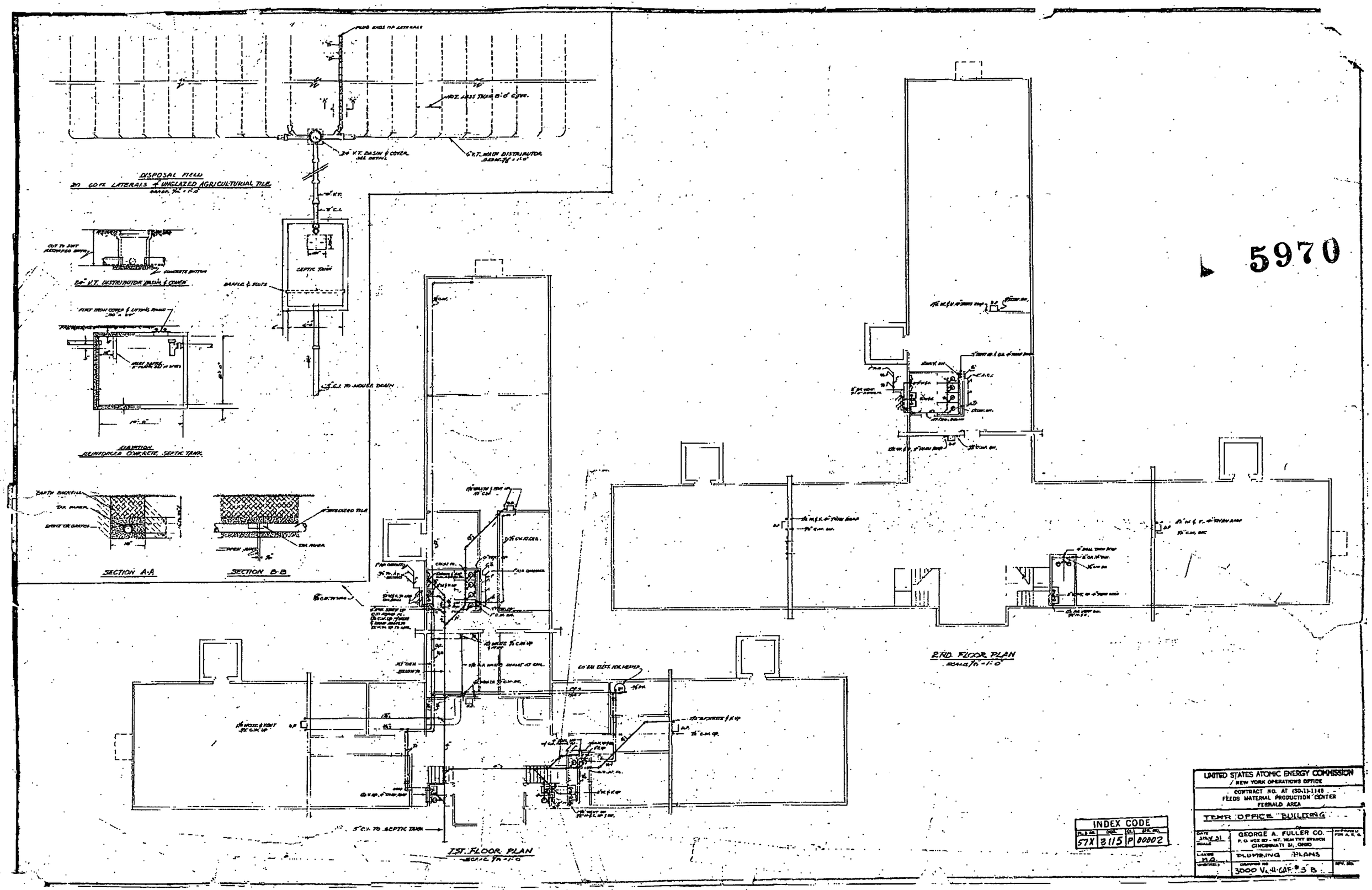
5970


DISPOSAL FIELD
ELEVATION
REINFORCED CONCRETE SEPTIC TANK
SECTION A-A
SECTION B-B
1ST. FLOOR PLAN
2ND. FLOOR PLAN
INDEX CODE
57X 3115 P 00002
UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
CONTRACT NO. AT (30-1)-1140
FEED MATERIAL PRODUCTION CENTER
FERNALD AREA
TEMP OFFICE BUILDING
GEORGE A. FULLER CO.
P. O. BOX 80 - ST. WALTHY BRANCH
CINCINNATI 31, OHIO
PLUMBING PLANS
3000 V.4.4-CAF.#3 B