5330

IMPLEMENTATION PLAN FOR AREA 3B/4B/5

FERNALD CLOSURE PROJECT
FERNALD, OHIO

FEBRUARY 2004

U.S. DEPARTMENT OF ENERGY

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Revision 0, Final

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TABLE OF CONTENTS

Page

List of Tables v
List of Figures v
List of Acronyms and Abbreviations vii

Executive Summary ES-1

1.0 Introduction 1-1
1.1 Exclusions 1-2
1.2 Remediation Area Background and Description 1-2
1.2.1 Area 3B 1-2
1.2.2 Area 4B 1-2
1.2.3 Area 5 1-2
1.2.4 Main Drainage Corridors 1-2
1.3 Scope and General Approach of the Implementation Plan 1-3
1.4 Programmatic Strategy 1-5
1.4.1 Predesign Investigation 1-5
1.4.2 Remedial Design 1-5
1.4.3 Remedial Action 1-6
1.4.4 Precertification 1-7
1.4.5 Certification 1-7
1.4.6 Post-Remedial Action 1-7
1.5 Summary of the Regulatory Drivers 1-7
1.5.1 ARARs and TBCs 1-7
1.5.2 Permits 1-7
1.5.3 Natural Resource Trusteeship and Related Natural and Cultural Resource Regulations 1-8
1.5.3.1 Threatened and Endangered Species 1-8
1.5.3.2 Wetlands/Floodplains 1-8
1.5.3.3 Resolution of DOE's Liability for Injuries to Natural Resources 1-9
1.5.3.4 Cultural Resource Management 1-9
1.6 Components of the Remedy 1-9
1.7 Lessons Learned 1-12

2.0 Predesign Investigations and Characterization Data 2-1
2.1 Summary of the RI/FS Investigation 2-1
2.1.1 Preliminary Constituents of Concern 2-1
2.1.2 On-Site Disposal Facility Waste Acceptance Criteria 2-1
2.1.3 Final Remediation Levels for Soil 2-1
2.1.4 Hazardous Waste Management Units 2-2
2.1.5 Underground Storage Tanks 2-3
2.1.6 Identification of Potentially Characteristic Areas 2-3
2.2 Summary of Surface and Subsurface Physical Conditions 2-4
2.3 Summary of Predesign Investigations 2-5
2.3.1 Potentially Characteristic Areas 2-7
2.3.2 WAC Exceedance Areas 2-9

TABLE OF CONTENTS
(Continued)

Page

2.3.3 FRL Exceedance Areas 2-17
2.3.3.1 FRL Exceedance Investigations in A5A 2-17
2.3.3.2 FRL Exceedance Investigations in Areas 3B, 4B and A5P 2-17
2.3.4 Real-Time Scanning Within Areas 3B/4B/5 2-19
2.4 High-Leachability Zones 2-20
2.5 Identification of Area-Specific Constituents of Concern 2-20
2.6 Excavation Boundaries 2-20
2.6.1 RCRA Material 2-21
2.6.2 Above-WAC Material 2-21
2.6.3 Above-FRL Material 2-27

3.0 Remedial Action Approach 3-1
3.1 Excavation Sequencing 3-1
3.1.1 Excavation Sequencing - Area 3B 3-2
3.1.2 Excavation Sequencing - Area 4B 3-2
3.1.3 Excavation Sequencing - Area 5 3-2
3.1.4 Excavation Sequencing - MDC 3-3
3.2 Excavation Dewatering 3-3
3.2.1 Excavation Dewatering - Area 3B 3-4
3.2.2 Excavation Dewatering - Area 4B 3-5
3.2.3 Excavation Dewatering - Area 5 3-8
3.2.4 Excavation Dewatering - MDC 3-9
3.3 Area Isolation Trenching 3-9
3.3.1 Area Isolation Trenching - Area 3B 3-11
3.3.2 Area Isolation Trenching - Area 4B 3-12
3.3.3 Area Isolation Trenching - Area 5 3-13
3.3.4 Area Isolation Trenching - MDC 3-13
3.4 Site Preparation 3-13
3.4.1 Site Boundaries and Controls 3-13
3.4.2 Surveying and Site Layout 3-14
3.4.3 Support Facilities 3-14
3.4.3.1 Change-Out Facility, Contractor Office Trailer, Break Trailer, and Cool-Down Trailer 3-14
3.4.3.2 Contractor Laydown Area 3-15
3.4.3.3 Water and Electrical Source 3-15
3.4.3.4 Fuel Transfer Point 3-15
3.4.3.5 Haul Routes 3-15
3.5 At- and Below-Grade Structure Demolition 3-15
3.5.1 Utility Lines 3-16
3.5.2 Concrete, Asphalt Pads, Roadways and Floors 3-17
3.5.3 Concrete Floors, Pilings, Sumps and Basements 3-18
3.6 Soil Excavation, Monitoring and Segregation 3-19
3.6.1 Above-WAC Excavations 3-19
3.6.1.1 Above-WAC Excavations - Area 3B 3-21
3.6.1.2 Above-WAC Excavations - Area 4B 3-21
3.6.1.3 Above-WAC Excavations - Area 5 3-22

TABLE OF CONTENTS
(Continued)

Page

3.6.1.4 Above-WAC Excavations - MDC 3-22
3.6.2 HWMUs and USTs 3-22
3.6.2.1 HWMUs and USTs - Area 3B 3-23
3.6.2.2 HWMUs and USTs - Area 4B 3-23
3.6.2.3 HWMUs and USTs - Area 5 3-24
3.6.2.4 HWMUs and USTs - MDC 3-24
3.6.3 General Excavation 3-25
3.6.3.1 General Excavation - Area 5 3-26
3.6.4 Utilities 3-26
3.6.5 Structures 3-27
3.7 Impacted Material Management 3-28
3.7.1 Excavation Water 3-28
3.7.2 Contaminated Soil and Debris 3-28
3.7.3 Other Materials 3-29
3.8 GMA and Trench Backfilling 3-30
3.9 Precertification and Interim Grading 3-31

4.0 Project-Specific Environmental Controls and Monitoring 4-1
4.1 Natural Resource Impacts 4-1
4.2 Air Pathway 4-2
4.2.1 Noise 4-2
4.2.2 Fugitive Emissions 4-3
4.2.3 Airborne Radiological Particulates 4-6
4.2.4 Radon 4-6
4.2.5 Direct Radiation 4-7
4.3 Surface Water Pathway 4-7
4.4 Groundwater Pathway 4-8

5.0 Project-Specific Health and Safety 5-1

6.0 Remedial Action Management Strategy 6-1
6.1 Organization and Responsibilities 6-1
6.1.1 Management 6-2
6.1.1.1 SDFP Project Director 6-2
6.1.1.2 Engineering/Planning Manager and Construction Manager 6-2
6.1.1.3 Records Management 6-4
6.1.1.4 Project Controls 6-4
6.1.2 Primary Technical Areas 6-5
6.1.2.1 Engineering 6-5
6.1.2.2 Construction 6-6
6.1.2.3 Characterization 6-7
6.1.3 Functional Support 6-7
6.1.3.1 Safety and Health 6-7
6.1.3.2 Radiological Control 6-8
6.1.3.3 Environmental Compliance 6-8
6.1.3.4 Quality Assurance/Quality Control 6-8

TABLE OF CONTENTS
(Continued)

Page

6.1.3.5 Waste Disposition 6-8
6.1.3.6 Natural Resources 6-9
6.1.3.7 Cultural Resources 6-9
6.1.3.8 Procurement 6-9
6.1.4 Coordination of Excavation Site Activities 6-10
6.1.4.1 Visual Observation 6-10
6.1.4.2 Sampling and Monitoring 6-10
6.1.4.3 Radiological Occupational Monitoring 6-11
6.1.4.4 Asbestos Monitoring 6-11
6.1.4.5 Material Documentation 6-11
6.1.4.6 Occupational Health and Safety 6-11
6.1.4.7 Construction Monitoring 6-11
6.1.4.8 Surveying 6-12
6.1.4.9 Visual Dust Monitoring 6-12
6.1.4.10 Environmental Monitoring 6-12
6.1.4.11 Safety Inspections 6-12
6.1.5 Field Team 6-12
6.1.6 Management of Field Personnel 6-13
6.2 Configuration Management 6-13
6.3 Construction Management 6-13
6.3.1 Status Meetings 6-13
6.3.2 Surveillance and Inspection 6-14
6.3.3 Safety and Health Oversight 6-14
6.3.4 Radiological Monitoring and Oversight 6-14
6.4 Impacted Material Management 6-14
6.5 Contingency Management 6-17
6.5.1 Materials Which Require Special Handling 6-17
6.5.2 Unexpected Contamination or Soil Conditions 6-17
6.5.3 Unexpected Discovery of Cultural or Historic Resources 6-18
6.6 Data and Records Management 6-18
6.7 QA/QC and Regulatory Audit 6-18
6.8 Integration of Area 3B/4B/5 Project with Other SDFP and FCP Activities 6-19
6.9 Remedial Action and Certification Schedule 6-20

References R-1

LIST OF APPENDICES

Appendix A Design Criteria Package
Appendix B Surface Water Calculations
Appendix C Characterization Data for Areas 3B/4B/5
Appendix D Excavation Volumes
Appendix E Geostatistical Modeling for Title II Excavation Design
Appendix F Facility Historical Information
Appendix G Areas 3B and 4B Geology
Appendix H List of Drawings and Technical Specifications

LIST OF TABLES

Table 2-1 Preliminary Area-Specific Constituents of Concern
Table 2-2 On-Site Disposal Facility Waste Acceptance Criteria
Table 2-3 Soil Final Remediation Levels
Table 2-4 HWMUs in Areas 3B/4B/5 for SDFP Closure
Table 2-5 USTs Formerly Located Within Areas 3B/4B/5 for SDFP Closure
Table 2-6 TCLP Results for Samples With Concentrations Above the RCRA 20-Times Level
Table 2-7 Above-WAC Data Summary
Table 2-8 Area 3B/4B/5 Revised List of Area-Specific Constituents of Concern
Table 2-9 Excavation Boundaries for Area 3B/4B/5 Above-WAC Areas
Table 6-1 Contingency Plans for Recognized but Unexpected Conditions
Table 6-2 Area 3B/4B/5 Primary Records and Associated Files
Table 6-3 Area 3B/4B/5 Soil Remediation and Certification Schedule
Table D-1 Area 3B/4B/5/MDC Excavation Volume Summary
Table D-2 Area 3B Above-WAC Volumes
Table D-3 Area 4B Above-WAC Volumes
Table D-4 Area 3B/4B/5/MDC Debris Quantities
Table G-1 Representative Grain-Size Curves

LIST OF FIGURES

Figure 1-1 Generalized Sitewide Remediation Areas
Figure 1-2 Area 3B
Figure 1-3 Area 4B
Figure 1-4 Area 5
Figure 1-5 Main Drainage Corridors
Figure 2-1 RI/FS Boring Locations in Area 3B
Figure 2-2 RI/FS Boring Locations in Area 4B
Figure 2-3 RI/FS Borings in Area 5
Figure 2-4 High Leachability Areas in 3B/4B/5 Where Total Uranium FRL of 20 mg/kg Applies
Figure 2-5 Hazardous Waste Management Units in Areas 3B/4B
Figure 2-6 USTs in Area 3B/4B
Figure 2-7 USTs in Area 5
Figure 2-8 Predesign Investigation Borings in Areas 3B/4B
Figure 2-9 Predesign Investigation Sampling Locations in Area 5
Figure 2-10 Area 3B/4B/5 WAC Exceedances
Figure 2-11 Area 3B/4B Real-Time Total Uranium Results
Figure 2-12 Area 5 Real-Time Total Uranium Results
Figure 2-13 Above-WAC Boundaries North of the Plant 1 Pad
Figure 2-14 Above-WAC Boundaries on the Plant 1 Pad
Figure 2-15 Above-WAC Boundaries in the Plant 2 Area
Figure 2-16 Above-WAC Areas in the Plant 8 Area
Figure 2-17 Above-WAC Areas in the Pilot Plant Area
Figure 2-18 Above-WAC Areas in the Lab Building Area
Figure 2-19 Variation of Excavation Depth with Sample Depth for Total Uranium in Areas 3B and 4B and Inside High Leachability Areas

LIST OF FIGURES
(Continued)

Figure 2-20 Variation of Excavation Depth with Sample Depth for Total Uranium in Areas 3B and 4B and Outside High Leachability Areas
Figure 2-21 Variation of Excavation Depth with Sample Depth for Radium-226 in Areas 3B and 4B
Figure 2-22 Variation of Excavation Depth with Sample Depth for Radium-228 in Areas 3B and 4B
Figure 2-23 Variation of Excavation Depth with Sample Depth for Thorium-228 in Areas 3B and 4B
Figure 2-24 Variation of Excavation Depth with Sample Depth for Thorium-232 in Areas 3B and 4B
Figure 2-25 Variation of Excavation Depth with Sample Depth for Technetium-99 in Areas 3B and 4B
Figure 2-26 Variation of Excavation Depth with Sample Depth for Aroclor-1254 in Areas 3B and 4B
Figure 2-27 Variation of Excavation Depth with Sample Depth for Aroclor-1260 in Areas 3B and 4B
Figure 2-28 Variation of Excavation Depth with Sample Depth for Arsenic in Areas 3B and 4B
Figure 2-29 Variation of Excavation Depth with Sample Depth for Beryllium in Areas 3B and 4B
Figure 2-30 Variation of Excavation Depth with Sample Depth for PCE in Areas 3B and 4B
Figure 2-31 Variation of Excavation Depth with Sample Depth for Total Uranium in Areas 5
Figure 2-32 Variation of Excavation Depth with Sample Depth for Radium-226 in Areas 5
Figure 2-33 Variation of Excavation Depth with Sample Depth for Thorium-228 in Areas 5
Figure 2-34 Variation of Excavation Depth with Sample Depth for Thorium-232 in Areas 5
Figure 2-35 Variation of Excavation Depth with Sample Depth for Arsenic in Areas 5
Figure 2-36 Variation of Excavation Depth with Sample Depth for Beryllium in Areas 5
Figure 6-1 Organization Chart for Area 3B/4B/5 Project
Figure B-1 Area 4B Drainage Sub Areas
Figure C-1 WAC Investigation Borings North of the Plant 1 Pad
Figure C-2 WAC Investigation Borings on the Plant 1 Pad
Figure C-3 WAC Investigation Borings in the Vicinity of Plant 2
Figure C-4 WAC Investigation Borings in the Vicinity of Plant 8
Figure C-5 WAC and RCRA Soil Investigation Borings in the Vicinity of the Pilot Plant
Figure C-6 WAC Investigation Borings in the Vicinity of the Lab Building
Figure E-1 Sample Mid-Point Depth (ft)
Figure E-2 Sample Concentration
Figure E-3 Area 3B/4B Total Uranium Sample Distribution (Easting '83, Northing '83)
Figure E-4 Area 3B/4B Total Uranium Sample Distribution (Northing '83, Depth AMSL)
Figure E-5 Area 3B/4B Total Uranium Sample Distribution (Easting '83, Depth AMSL)
Figure E-6 Rectangular Model Grid
Figure E-7 Model Layers
Figure E-8 Excavation Surface and Total Uranium Contamination
Figure F-1 Area 3B Excavation Area Facilities
Figure F-2 Area 4B Excavation Area Facilities
Figure F-3 Area 5 Excavation Area Facilities
Figure G-1 Conceptual Cross-Section of Soil Deposits at FPA
Figure G-2 Geologic Cross-Sections A-A' Through C-C'
Figure G-3 Geologic Cross-Sections D-D' and E-E'
Figure G-4 Geologic Cross-Sections F-F' and G-G'
Figure G-5 Location of Extent of Interpreted Deposits At or Below the Brown/Gray Glacial Overburden Interface
Figure G-6 Quadrant Map Used for the FPA Geotechnical Investigation
Figure G-7 Area 3B Boring Locations
Figure G-8 Area 4B Boring Locations

LIST OF ACRONYMS AND ABBREVIATIONS

3B/4B/5	Area 3B/4B/5
A5A	Area 5 Administration Area
A5P	Area 5 Production Area
ACGIH	American Conference of Governmental and Industrial Hygienists
ALARA	As Low As Reasonably Achievable
amsl	above mean sea level
ARAR	applicable or relevant and appropriate requirement
ASCOC	area-specific constituent of concern
AWWT	Advanced Wastewater Treatment (Facility)
BSL	Biodenitrification Surge Lagoon
CADD	Computer Assisted Design and Drafting
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFC	Certified for Construction
CFR	Code of Federal Regulations
CHP	Chemical Hazard Permit
CM	Construction Manager
COC	constituent of concern
COE	U.S. Army Corp of Engineers
CT	Construction Traveler
D&D	decontamination and dismantlement
DCE	dichloroethylene
dBA	decibels on A-weighted scale
DCN	Design Change Notice
DOE	U.S. Department of Energy
ECDC	Engineering/Construction Document Control
EPA	U.S. Environmental Protection Agency
FCP	Fernald Closure Project (formerly FEMP)
FEMP	Fernald Environmental Management Project
FPA	Former Production Area
FRL	final remediation level
FTL	Field Tracking Log
GC	gas chromatography
GIS	Geographical Information System
GMA	Great Miami Aquifer
HDPE	high-density polyethylene
HPGe	high-purity germanium (detector)
HWMU	hazardous waste management unit
IEMP	Integrated Environmental Monitoring Plan
IIMS	Integrated Information Management Systems
IMHR	Impacted Material Haul Road
IRDP	Integrated Remedial Design Package
IROD	Interim Record of Decision
MDC	Main Drainage Corridors
µg/L	micrograms per Liter
mg/kg	milligrams per kilogram

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

mg/L	milligrams per Liter
mph	miles per hour
MTL	Material Tracking Location
MVS	Mining Visualization Services
NaI	sodium iodide
NFS	Nuclear Fuel Services
NPDES	National Pollution Discharge Elimination System
NRRP	Natural Resource Restoration Plan
NRT	Natural Resource Trustee
OEPA	State of Ohio Environmental Protection Agency
OHPO	Ohio Historic Preservation Office
OMTA	OSDF Material Transfer Area
OSDF	On-Site Disposal Facility
OSHA	Occupational Safety and Health Administration
OU	operable unit
PAH	polyaromatic hydrocarbons
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
pCi/g	picoCuries per gram
PID	photoionization detector
ppm	parts per million
PSP	Project Specific Plan
PWID	Project Waste Identification and Disposition
QA/QC	Quality Assurance/Quality Control
RA	remedial action
RCI	Request for Clarification of Information
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
RD	remedial design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RSS	Radiation Scanning System
RTIMP	Real-Time Instrumentation Measurement Program
RTRAK	Radiation Tracking System
RWP	Radiological Work Permit
S&H	Safety and Health
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SDFP	Soil and Disposal Facility Project
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SMTA	Special Materials Transfer Area
SWIFTS	Sitewide Waste Information Forecasting and Tracking System
SWMP	Surface Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRB	Storm Water Retention Basin

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

TCE	trichloroethylene
TCLP	toxicity characteristic leachate procedure
TBC	to be considered criterion
TS-4	Tension Support Structure 4
UST	underground storage tank
VOC	volatile organic compound
WAC	waste acceptance criteria
WAO	Waste Acceptance Organization
WPRAP	Waste Pits Remedial Action Project
yd^3	cubic yards

EXECUTIVE SUMMARY

This Implementation Plan describes the remediation of soil, sediment, perched water, and at- and below-grade structures and debris in the Areas 3B, 4B, and 5 (3B/4B/5), and the Main Drainage Corridors (MDC) at the Fernald Closure Project (FCP), Fernald, Ohio. This Implementation 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, certification and restoration will be addressed in future and/or current documents [e.g., the Certification Design Letter and Natural Resources Restoration Plan (DOE 2002a)].

As an integrating document for the Integrated Remedial Design Package (IRDP), the Implementation Plan addresses the predesign investigation, remedial design, remedial actions and precertification activities for these areas. Additionally, the plan discusses the project-specific environmental controls and monitoring, and remedial action management strategy for 3B/4B/5 and MDC. The Design Criteria Package, predesign characterization data, surface water calculations, excavation volumes, geostatistical modeling of subsurface uranium concentrations, facility historical information, and a list of IRDP drawings and specifications are attached to the Implementation Plan as appendices.

Remediation Area 3B comprises approximately 23 acres and lies in the northwest quadrant of the Former Production Area (FPA). Remediation Area 4B comprises approximately 25 acres and lies in the southwest corner of the FPA. Remediation Area 5 comprises approximately 32 acres of the southern FPA and northern Administration Area. The MDC is comprised of two areas. The first area consists of the corridor that runs north and south along "B" Street and the area immediately west of the Services Building and the Main Parking Lot and comprises approximately 13 acres. The second area is the corridor that runs east and west along the eastern half of 1st Street, comprising approximately 4 acres.

The primary remedial actions addressed in this Implementation Plan include removal of soil in debris in the following quantities reported in bank cubic yards (bcy):

- Area 3B: Removal of approximately 152,252 cubic yards (yd^3) of above-final remediation level (FRL) soil and debris comprised of an estimated 251 yd^3 of known above-waste acceptance criteria (WAC) material, 127,032 yd^3 of above-FRL but below-WAC soil, and 24,969 yd^3 of debris

- Area 4B: Removal of approximately 540,415 yd^3 of above-FRL soil and debris comprised of an estimated 8,437 yd^3 of known above-WAC material, 504,454 yd^3 of above-FRL but below-WAC soil, and 27,524 yd^3 of debris

- Area 5: Removal of approximately 67,855 yd^3 of above-FRL soil and debris comprised of an estimated 39,343 yd^3 of above-FRL but below-WAC soil and 28,512 yd^3 of debris

- MDC: Removal of approximately 56,311 yd^3 of above-FRL soil and debris comprised of an estimated 47,793 yd^3 of above-FRL but below-WAC soil and 8,518 yd^3 of debris.

Following excavation, impacted material will be transported to either the On-Site Disposal Facility (OSDF) or staged for off-site shipment to a permitted disposal facility. The primary constituents of concern are radium-226, radium-228, thorium-228, and thorium-232, and total uranium.

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 Implementation Plan, as guided by the WAC Attainment Plan for the OSDF (DOE 1998b) and the SEP.

Section 1

1.0 INTRODUCTION

This Implementation Plan addresses the U.S. Department of Energy's (DOE's) remediation of soil, sediment, and at- and below-grade structures and debris in Areas 3B, 4B, and 5 (3B/4B/5) at the Fernald Closure Project (FCP) in southwestern Ohio (Figure 1-1).

Remedial activities in the 3B/4B/5 are planned in accordance with the Operable Unit (OU) 3 Interim Record of Decision (IROD) for Remedial Actions and Responsiveness Summary (DOE 1994) and Record of Decision (ROD) for Remedial Actions at OU3 (DOE 1996a), which address at- and below-grade structures and debris, as well as the ROD for Remedial Actions at OU5 (DOE 1996b), which addresses remediation of soil, sediment and environmental media.

This Implementation Plan and the Sitewide Excavation Plan (SEP; DOE 1998a) satisfy the Amended Consent Agreement [U.S. Environmental Protection Agency (EPA) 1991] requirement for a remedial action (RA) work plan. In addition, this Implementation Plan and the associated remedial design (RD) (construction drawings and technical specifications) constitute the Integrated Remedial Design Package (IRDP), as outlined in the Remedial Design Work Plan for Remedial Actions at OU5 (DOE 1996c). As the integrating document for the IRDP, this IRDP facilitates regulatory agency review of the remedial design and summarizes the remedial action scope of work. Remedial actions described in this plan are being conducted in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and corrective action requirements of the Resource Conservation and Recovery Act (RCRA). The Implementation Plan conforms to the general model outline for IRDPs provided in Section 7.0 of the SEP.

The FCP has been divided into nine remediation areas (Figure 1-1) that are organized around the Remedial Investigation/Feasibility Study (RI/FS) OUs and off-site locations. The FCP Sitewide Sequencing Plan, included as Appendix B of the FCP SEP, provided a generic planning remediation schedule for each area. An updated remediation schedule for the 3B/4B/5 are provided in Section 6.0 of this Implementation Plan.

Section 1.0 of this Implementation Plan describes the scope of work for the 3B/4B/5 Implementation Plan including the remedial background and description, scope and general approach of the Implementation Plan, programmatic strategy, summary of regulatory drivers, components of the remedy, and lessons learned.

1.1 EXCLUSIONS

The On-Site Disposal Facility (OSDF) Sedimentation Basin #2 has been certified as part of Area 5 and will be excluded from this document [see Project Specific Plan (PSP) for Predesign Investigation in Area 5 (DOE 2002b) and Certification Report for the Area 5 Eastern Field (DOE 2002c)].

1.2 REMEDIATION AREA BACKGROUND AND DESCRIPTION

1.2.1 Area 3B

Remediation Area 3B comprises approximately 23 acres and lies in the northwest quadrant of the Former Production Area (FPA). The area is bounded by the Impacted Material Haul Road (IMHR) to the north, Area 3A to the east, 2nd Street to the south, and the FPA fence line to the west (see Figure 1-2). Part of Area 3B will be included in the remediation of the Main Drainage Corridor (MDC). Refer to Appendix F for historical information of facilities located within Area 3B.

1.2.2 Area 4B

Remediation Area 4B comprises approximately 25 acres and lies in the southwest corner of the FPA. The area is bounded by 2nd Street to the north, Area 4A to the east, the FPA fence to the west and south, and the laboratory to the south (see Figure 1-3). Part of Area 4B will be included in the remediation of the MDC. Refer to Appendix F for historical information of facilities located within Area 4B.

1.2.3 Area 5

Remediation Area 5 comprises approximately 32 acres in the southern portion of the FPA and northern Administration Area. The area is bounded by 1st Street to the north, Areas 4B and 7 to the west, Area 7 to the south, Areas 6 and 7 to the east (see Figure 1-4). Part of Area 5 will be included in the remediation of the MDC. Refer to Appendix F for historical information of facilities located within Area 5.

1.2.4 Main Drainage Corridors

The Main Drainage Corridors (MDC) are not identified as a remediation area; rather, it is an area inclusive of portions of Areas 3A, 3B, 4A, 4B, and 5 (see Figure 1-5). The MDC is separated for purposes of excavation sequencing and as such will only be indicated on the construction drawings and addressed in Section 3, Subsection 1.2.4, and schedule included in Section 6.0 of this Implementation plan. In other sections of this Implementation Plan, the MDC will be included as part of the associated remediation area (Area 3B, 4B, or 5, respectively) and not referred to directly.

The MDC comprises two areas. The first MDC area runs north and south along "B" Street and the area immediately west of the Services Building (11) and the Main Parking Lot (89B), referred to here as the "B" Street Corridor, comprises an area of approximately 13 acres. The second MDC area runs east and west along the eastern half of 1st Street, referred to here as the 1st Street Corridor, comprises an area of approximately 4 acres. The existing storm sewer located within the "B" Street Corridor is needed to remain in service to route surface water from the Area 6 FPA (the Bulk Debris Storage Area) located north of the Impacted Material Haul Road until that area has been remediated.

The existing storm sewer located within the 1st Street Corridor is needed to remain in service to route surface water from the eastern portion of the FPA (Area 6) [OSDF Facility Material Transfer Area (OMTA), Building 77 and 79 warehouse area, and Building 82A] until an alternate stormwater control system can be established. The current plan for future drainage of the eastern FPA (not governed by this IRDP) is to extend the ditch cut through Area 5 (see drawing 99X-5500-G-00707) from just northwest of the Main Electrical Station into the eastern portion of the FPA. The certification of the ditch cut through Area 5 will be included in the certification of Area 6 (FPA).

The excavation area for MDC includes portions of Areas 3A, 3B, 4A, 4B, and 5.

1.3 SCOPE AND GENERAL APPROACH OF THE IMPLEMENTATION PLAN

The 3B/4B/5 Implementation Plan consists of the following sections:

- Section 1.0 - Introduction, which summarizes the purpose and scope of this Implementation Plan and describes programmatic strategies and requirements for this remedial action project.
- Section 2.0 - Predesign Investigations and Characterization Data for 3B/4B/5, which describes the constituents of concern (COCs) for 3B/4B/5, the surface and subsurface conditions, the nature and extent of contamination, and the anticipated excavation boundaries based on RI/FS data and other data collected to fill data gaps.
- Section 3.0 - Remedial Action Approach, which presents the work associated with site preparation, above-waste acceptance criteria (WAC) and 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.
- Section 4.0 - Project-Specific Environmental Controls and Monitoring, which discusses environmental controls and associated monitoring established with respect to natural resources and air, surface water and groundwater pathways.

- Section 5.0 - Project-Specific Health and Safety, which summarizes project-specific health and safety requirements and procedures.

- Section 6.0 - Remedial Action Management Strategy, which discusses the strategy for managing remediation activities, project organization and responsibilities, waste management activities, data and records management, quality assurance/quality control (QA/QC), and integration of 3B/4B/5 remediation with other FCP projects.

- Appendix A - Design Criteria Package, which summarizes design criteria, applicable or relevant and appropriate requirements (ARARs) and to be considered (TBC) items.

- Appendix B - Surface Water Calculations, which provides background for sizing culverts to be installed in support of 3B/4B/5 remediation.

- Appendix C - Characterization Data for 3B/4B/5, which tabulates all predesign characterization data used to develop the remedial design.

- Appendix D - Excavation Volumes, which summarizes the soil and debris volumes removed from 3B/4B/5 by type (e.g., concrete, above WAC, above FRL, etc.).

- Appendix E - Geostatistical Modeling for Title II Excavation Design, which summarizes the methods and results for the three-dimensional model of subsurface uranium contamination.

- Appendix F - Facility Historical Information, which includes a brief discussion of each major production and administration or facility within 3B/4B/5.

- Appendix G - Areas 3B and 4B Geology, which provides a summary of area-specific geology including glacial till/Great Miami Aquifer (GMA) interface depths, and coarse-grained and fine-grained subsurface soils.

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

The area-specific RD/RA 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.

1.4 PROGRAMMATIC STRATEGY

This Implementation 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 Design Criteria Package, technical specifications, construction drawings, and the Construction Traveler (CT). The CT will be reviewed and approved by the DOE and Fluor Femald.

1.4.1 Predesign Investigation

Predesign investigation activities are conducted with the goal of filling data gaps, confirming questionable analytical results, identifying the extent of above-WAC or above-FRL soil, investigating potentially RCRA characteristic areas and minimizing uncertainty in the three-dimensional computer model of total uranium contamination. This information, in conjunction with data collected during the RI/FS, is used in the remedial design to identify soil excavation boundaries and establish the volumes of soil requiring treatment and/or off-site disposal.

Predesign investigation sampling in Areas 3B and 4B began in July 2001. By September 2002, approximately 75 borings and nearly 200 samples have been collected. While many of the planned boring locations have not become accessible due to ongoing Decontamination and Dismantlement (D&D) activities, the sampling will continue as planned when boring locations become accessible. In Area 5, the predesign investigation began in July of 2002 with a dense sample collection effort in the Main Parking Lot and other portions of the Administrative Area. Through September 2002, samples have been collected from approximately 130 locations. Planned borings near the main electrical substation will be collected as soon as possible and other sampling efforts may be conducted on an as-needed basis. In addition to physical soil sampling, real-time scanning was also performed in all portions of 3B/4B/5 that were free of concrete pads, debris, rubble and gravel. All information necessary to meet the above-predesign goals in 3B/4B/5 will be collected and incorporated into the remedial design prior to implementation.

1.4.2 Remedial Design

The RD began in February 2002 and will continue through completion of the Certified-for-Construction (CFC) package. RD activities include the Advanced Conceptual Design and Title II design. Title I/II design for 3B/4B/5 began in February 2002, and the specifications and drawings submitted with this IRDP build upon the Area 3A/4A excavation 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, RCRA, and below-WAC zones
- Geostatistical modeling of uranium concentrations in soil in Areas 3B and 4B, supplemented by predesign investigation data on the other COCs [e.g., beryllium, thorium, tetrachloroethene (PCE), trichloroethylene (TCE), and dichloroethylene (DCE)]
- Three-dimensional models of the at- and below-grade structures (e.g., footers, basements, piers, and hydraulic rams)
- 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
- Stable excavation slopes required to excavate soil contaminated above the FRLs, below-grade structures and utilities, and dewatering structures. Area-specific geology for Areas 3B and 4B have been taken into account to determine stable slopes

1.4.3 Remedial Action

The remedial action for 3B/4B/5 will be performed in accordance with Section 3.0. A schedule is included in Section 6.0.

The final 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 3.6). After the remediation and certification of the immediately surrounding area (Area 6 General Area), the excavation slopes will be reduced to 5:1 and seeded in accordance with the NRRP (DOE 2002a).

Significant design changes will be documented through the DCN process, and all DCNs will be distributed to EPA and Ohio Environmental Protection Agency (OEPA) for approval.

Impacted material is defined as soil with above-FRL contamination or man-made materials. Additionally, all sediment collected in ditches and retention basins and on erosion control structures (e.g., silt fencing)

will be considered impacted. Impacted material will be hauled to the OSDF for disposal if 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.

1.4.4 Precertification

The precertification of 3B/4B/5 will be performed after excavation activities in accordance with Section 3.9.

1.4.5 Certification

As stated in the SEP, a Certification Design Letter (CDL) will be prepared and submitted to the regulatory agencies following completion of the precertification process. The CDL summarizes the area-specific remediation completed, results of the precertification activities, and design of the certification sampling and analysis program. Certification of the 3B/4B/5 will not be governed by this IRDP (refer to the schedule in Section 6.0 noted as Table 6-3).

1.4.6 Post-Remedial Action

Following completion of certification activities and agency approval, interim restoration will be completed. Final restoration and post-remedial action will follow interim restoration and be guided on a sitewide basis by the final version of the NRRP. Area 3B/4B/5 post-remedial actions are not addressed by this IRDP.

1.5 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 3B/4B/5 remediation are summarized in this section.

1.5.1 ARARs and TBCs

Appendix A includes the subset of ARARs and TBCs that will guide remedial actions in 3B/4B/5.

1.5.2 Permits

The National Pollutant Discharge Elimination System (NPDES) permit (Permit No. 1IO00004*FD), for storm water and wastewater discharges to Paddys Run and the Great Miami River, is the only permit that is pertinent to Area 3B/4B/5 remediation. Storm water discharges from 3B/4B/5 are sent to the Storm Water

Retention Basin (SWRB) or Biodenitrification Surge Lagoon (BSL), which are covered under the NPDES permit through the sitewide Storm Water Pollution Prevention Plan (SWPPP, RM-0039). All surface and perched water is treated at the Advanced Wastewater Treatment (AWWT) Facility prior to off-site discharge, in accordance with protocols listed in Section 3.2. Thus, no modifications to the permit are required for 3B/4B/5 remediation activities.

1.5.3 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 3B/4B/5 remedial designs.

A conceptual restoration design for the 3B/4B/5 areas has 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. 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.

1.5.3.1 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 3B/4B/5 remediation project. Therefore, no additional threatened or endangered species surveys are planned for the area.

1.5.3.2 Wetlands/Floodplains

Jurisdictional wetlands and waters of the U.S. that are identified on the FCP property are delineated in the 1993 FEMP Wetland Delineation Report (COE 1993), officially approved by the U.S. Army Corp of Engineers (COE) on August 19, 1993. There are no jurisdictional wetlands in the 3B/4B/5 area.

Area 3B/4B/5 is outside the 100-year floodplains of Paddys Run and the Great Miami River (DOE 1996b). Therefore, no floodplain impacts will result from remediation activities.

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

The Natural Resource Trustees (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 Femald 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 expected later in 2003.

1.5.3.4 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 Femald Environmental Management Project" (March 6, 1997), pursuant to 36 Code of Federal Regulations (CFR) Part 800.13. A Predictive Model for cultural resources was written that describes what cultural resources are expected to be present in the FPA based on research and knowledge of the area. The Unexpected Discovery procedure, EP-0003, will be adhered to in the event any cultural resource is discovered during remediation activities.

1.6 COMPONENTS OF THE REMEDY

Area 3B/4B/5 remediation activities address specific components of the selected remedies set forth in the OU3, and OU5 RODs for debris and environmental media, including Soil, sediment, perched water, storm water and wastewater. These activities are coordinated closely with OSDF construction (an OU2 ROD remedy component) and decontamination and dismantlement of above-grade structures (an OU3 IROD remedy component), which are being conducted under other FCP RA plans. A summary of OU3, and OU5 remedy components (in italics) that are particularly relevant to this plan, and an indication of specific actions that will be taken in 3B/4B/5, follows:

- OU3 IROD and ROD
  - *Remove gross contamination from material in facilities and dismantle facilities.* Gross contamination will be detected by visual inspection and radiological monitoring during excavation activities. This was performed through the D&D activities of the former facilities, and will be continued through the removal of the remaining utilities, slabs, foundations, etc.

- *Release materials (unrestricted/restricted release), as economically feasible, for recycling, reuse, or disposal.* At- and below-grade structures to be excavated generally will be processed (e.g., size reduced), if necessary, and dispositioned in the OSDF. None of these materials are considered to be economically feasible for recycling or reuse.

- *Dispose of process residues, waste product materials, and process-related metals off site.* These materials will be managed in accordance with established protocols as described in Sections 3.7 and 6.5.

- *Treat materials to meet OSDF and/or off-site disposal facility WAC.* No material in 3B/4B/5 has been identified as requiring treatment to meet OSDF WAC. Excavated materials that exceed OSDF chemical/radiological WAC will be handled as necessary by Fluor Fernald Waste Generator Services to meet the WAC of either the OSDF or an off-site facility, depending on the type of material.

- *Dispose of materials that exceed the OSDF WAC off site; dispose of remaining materials in the OSDF.* Sections 3.7 and 6.5 discuss material handling and treatment.

- *Establish administrative controls through deed restrictions and access controls.* Access controls will be maintained for 3B/4B/5 during and following remediation activities.

- OU5 ROD

  - *Perform verification sampling to establish horizontal and vertical boundaries of excavation required to attain FRLs for soil and sediment.* Predesign investigations were performed to augment historical data and refine excavation limits, as discussed in Section 2.0.

  - *Excavate contaminated soil and sediment as necessary to meet FRLs; use mitigation measures as necessary to minimize potential short-term impacts to human health and the environment.* Based on predesign investigations (Section 2.0), the material will be excavated as described in Section 3.0. Mitigation measures to minimize short term impacts will be taken with respect to natural and cultural resources (Sections 1.5.3 and 4.1), air pathway (Section 4.2), water pathways (Sections 4.3 and 4.4), and health and safety (Section 5.0).

  - *Perform certification sampling following excavation of contaminated soil and sediment to demonstrate that FRLs have been attained.* After excavation, real-time scanning will be performed to detect hot spots [3 times FRL for sodium iodide (NaI) scans]. Sampling and analysis in the excavated areas, will be conducted to confirm that material with COC levels above FRLs has been removed. As discussed in Section 7.2 of the SEP, a CDL will detail the proposed certification activities. If results of the certification sampling and analysis indicate that above-FRL contamination remains, supplemental excavation and certification sampling and analysis will be performed. The certification program is discussed in Section 3.4 of the SEP.

  - *Application of DOE's as low as reasonably achievable (ALARA) principles through the use of hand-held instruments to support verification sampling and excavation processes. To the extent economically practical, detection limits achievable with hand-held instruments will be used to reduce the final remediation level for on-property soil containing relatively nonleachable forms of uranium from 82 parts per million (ppm) to 50 ppm.* Excavation limits were established using the uranium FRLs of 82 and 20 milligrams per kilogram (mg/kg) (Section 2.1.3). Precertification (Section 3.6) and certification activities will be conducted to ensure that FRLs are achieved.

- *Dispose of contaminated soil and sediment that meets the on-site WAC in the OSDF. Where possible, treat soil and sediment that exceeds the OSDF WAC to meet the WAC or treat, if necessary, and dispose of such soil at an off-site facility.* Material in 3B/4B/5 that is known to be above FRLs, and meets the OSDF WAC, will be placed in the OSDF. Other materials that do not meet the WAC for the OSDF will be handled so that they either meet the WAC of either the OSDF or an off-site facility (includes size reduction or washing).

- *Excavate contaminated soil containing perched water that presents an unacceptable threat to the underlying aquifer through contaminant migration; dispose of this excavated soil in a manner consistent with methods indicated above for soil; treat the perched water and storm water collected during these excavation operations, as required (treatment in AWWT preceded, if necessary, by pretreatment to address any listed hazardous wastes).* In Area 4B, the excavation will be sequenced to remove soils around and underneath Plant 2A area that potentially contain organic contamination early in the remedation. Water collected from the Plant 2A excavation area will initially be routed to the BSL for subsequent AWWT Phase II treatment. Once it can be establish that potential source material for organic perched groundwater contamination has been excavated and removed from the project, the excavation water collected from the Plant 2A area will be routed to the SWRB for subsequent AWWT Phase I treatment. Likewise, storm water collected from other 3B/4B/5 areas will be routed to the SWRB for subsequent AWWT Phase I treatment.

- *Collect contaminated storm water; using the existing FCP retention basin, as necessary to minimize discharge of contaminants to Paddys Run; dewater sludges from the basin and dispose of them in the OSDF or, if they exceed OSDF WAC, in an appropriate off-site facility. Collect and treat contaminated storm water and wastewater as necessary to attain FRLs in Paddys Run and the Great Miami River and mass-based limits for discharges to the Great Miami River.* Storm water will be pumped from excavations and routed to the SWRB for subsequent treatment through the AWWT Phase I or Phase II systems.

- *Continue to employ institutional controls, including access controls and monitoring, to ensure continued protectiveness.* Access to the 3B/4B/5 will be restricted using barriers, warning signs, and procedural controls for the duration of remedial activities. Similarly, monitoring will continue to be conducted in accordance with the Integrated Environmental Monitoring Plan (IEMP, DOE 2001a). Long-term institutional controls necessary to implement restoration goals under the site's selected remedy are presented in the NRRP.

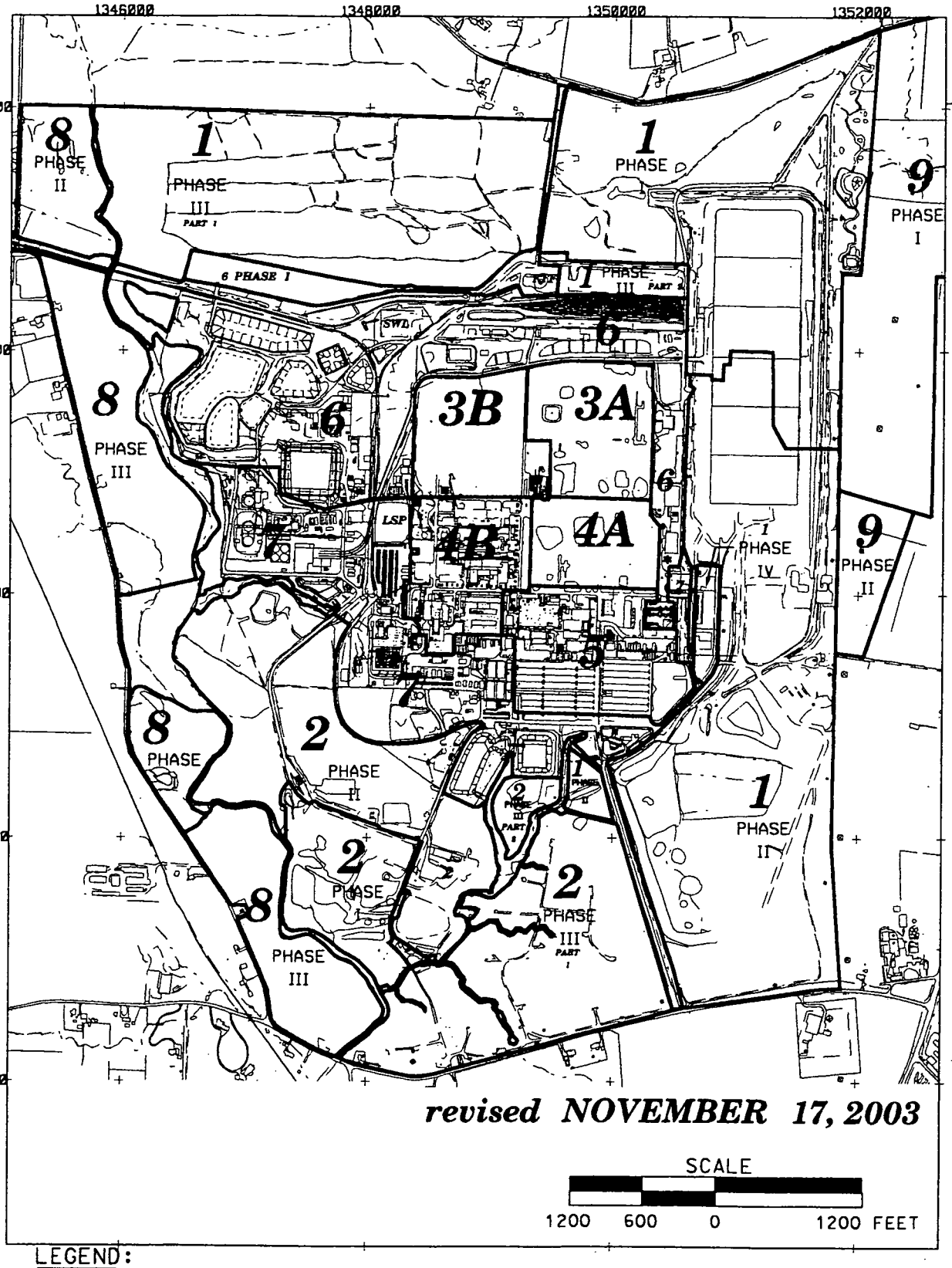
- *Restore the site.* Restoration of 3B/4B/5 will be conducted in a manner consistent with the NRRP, and will include select placement of compacted fill in the excavation, grading areas disturbed by excavation as necessary to restore positive drainage, and establishing interim vegetation cover to prevent erosion.

1.7 LESSONS LEARNED

A lessons learned program has been implemented to apply knowledge accumulated during successive remedial efforts conducted under the SEP. Lessons learned from past remedial activities in Area 1 Phase I, Area 1 Phase II, and Area 2 Phase I and Area 3A/4A have been incorporated into the Area 3B/4B/5 IRDP to ensure that remedial activities carried out under this plan meet all applicable requirements and achieve the highest quality level possible. Some of the most important lessons include:

- Establish a single project director that is responsible for the entire remedial effort in an area
- Obtain regulatory approval on PSPs prior to implementing the work
- Complete sampling and analysis activities before submitting IRDP (if possible), and include all data in the Implementation Plan
- Identify excavation depth and sample control points on figures
- Perform continuous visual observation of the excavation face to identify and segregate special material
- Design drawings and continuous visual observation of deep excavations will be used to identify the contact between the glacial overburden and GMA material
- *In situ* gamma spectroscopy will not be proposed as an analytical method for certification activities.

Because the general complexity of remedial activities varies from area to area, soil remediation approaches at the FCP will continue to evolve with each successive remedial effort.



LEGEND:

1 REMEDIATION AREA

——— REMEDIATION AREA BOUNDARIES

FIGURE 1-1.
GENERALIZED SITEWIDE
REMEDIATION AREAS

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STATE PLANAR COORDINATE SYSTEM 1983

23-JAN-2004

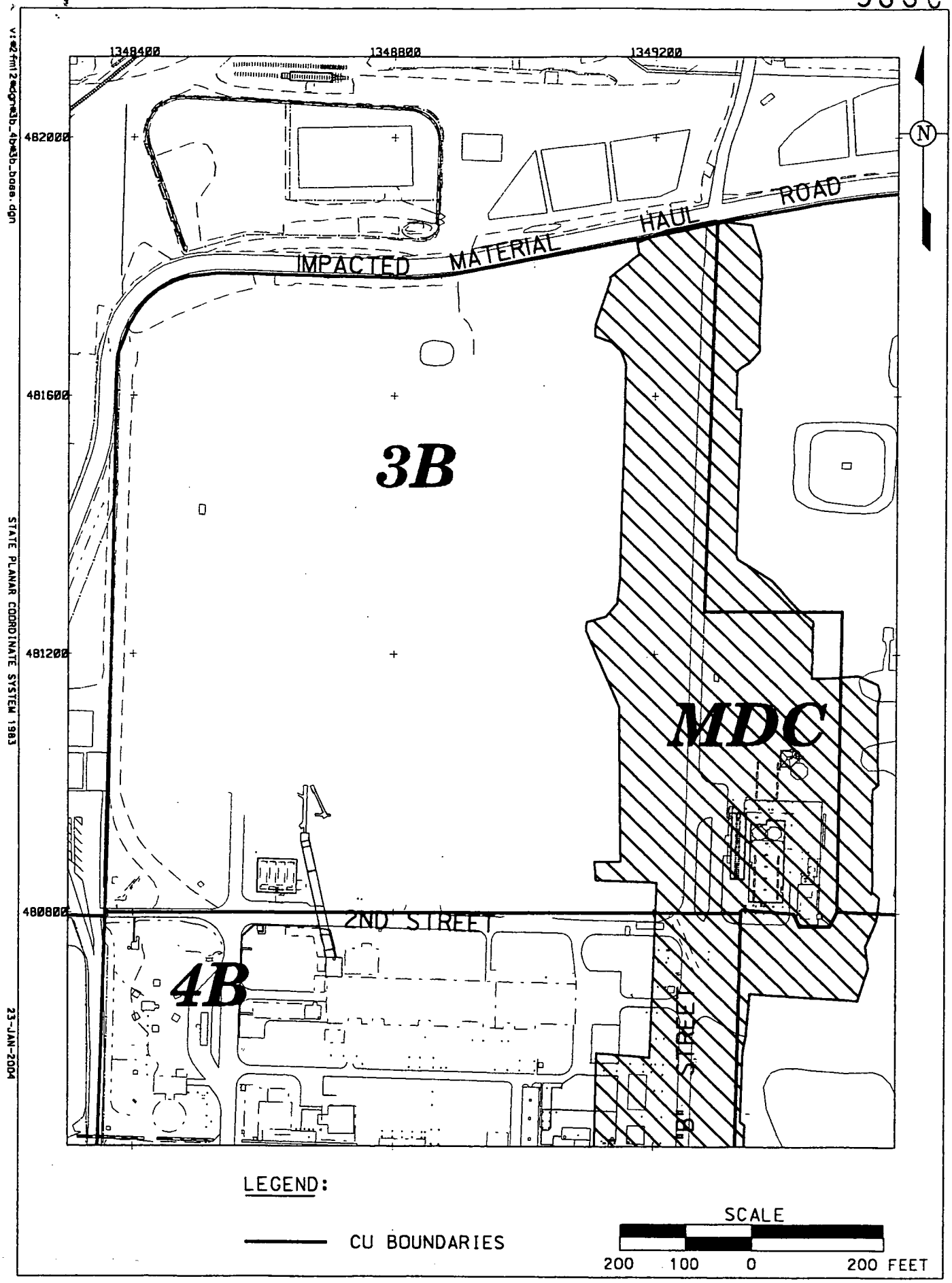

FIGURE 1-2. AREA 3B

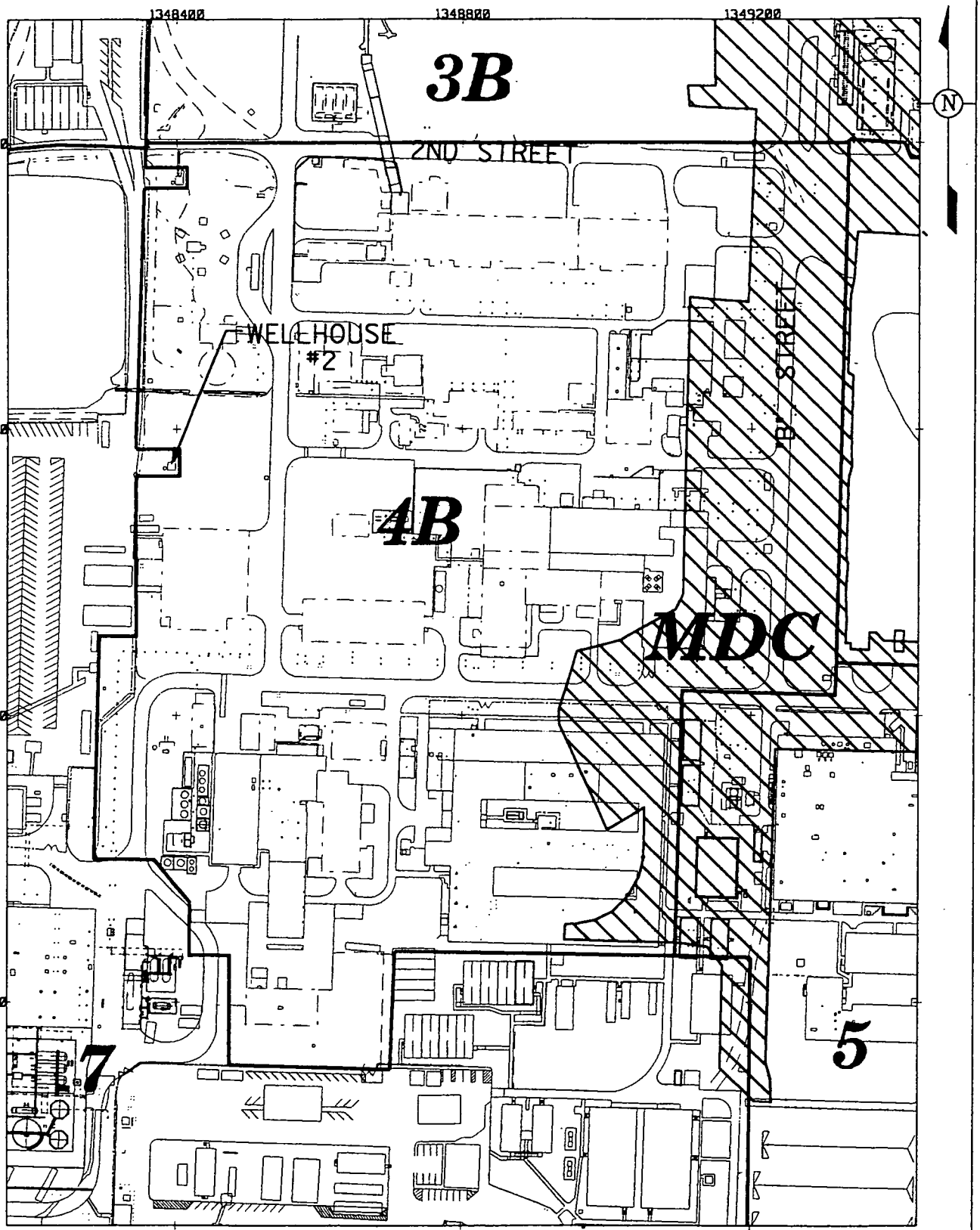

FIGURE 1-3. AREA 4B

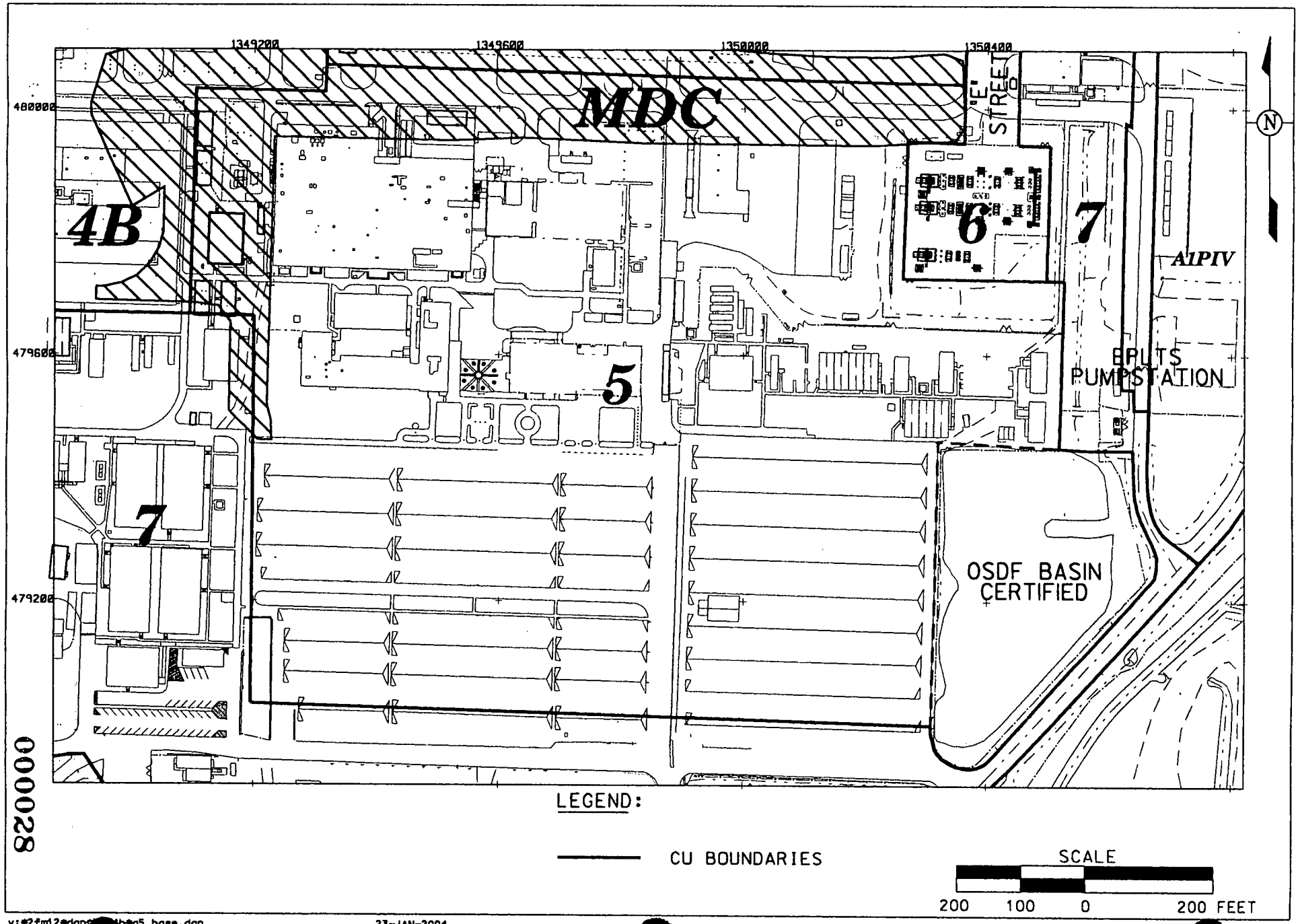

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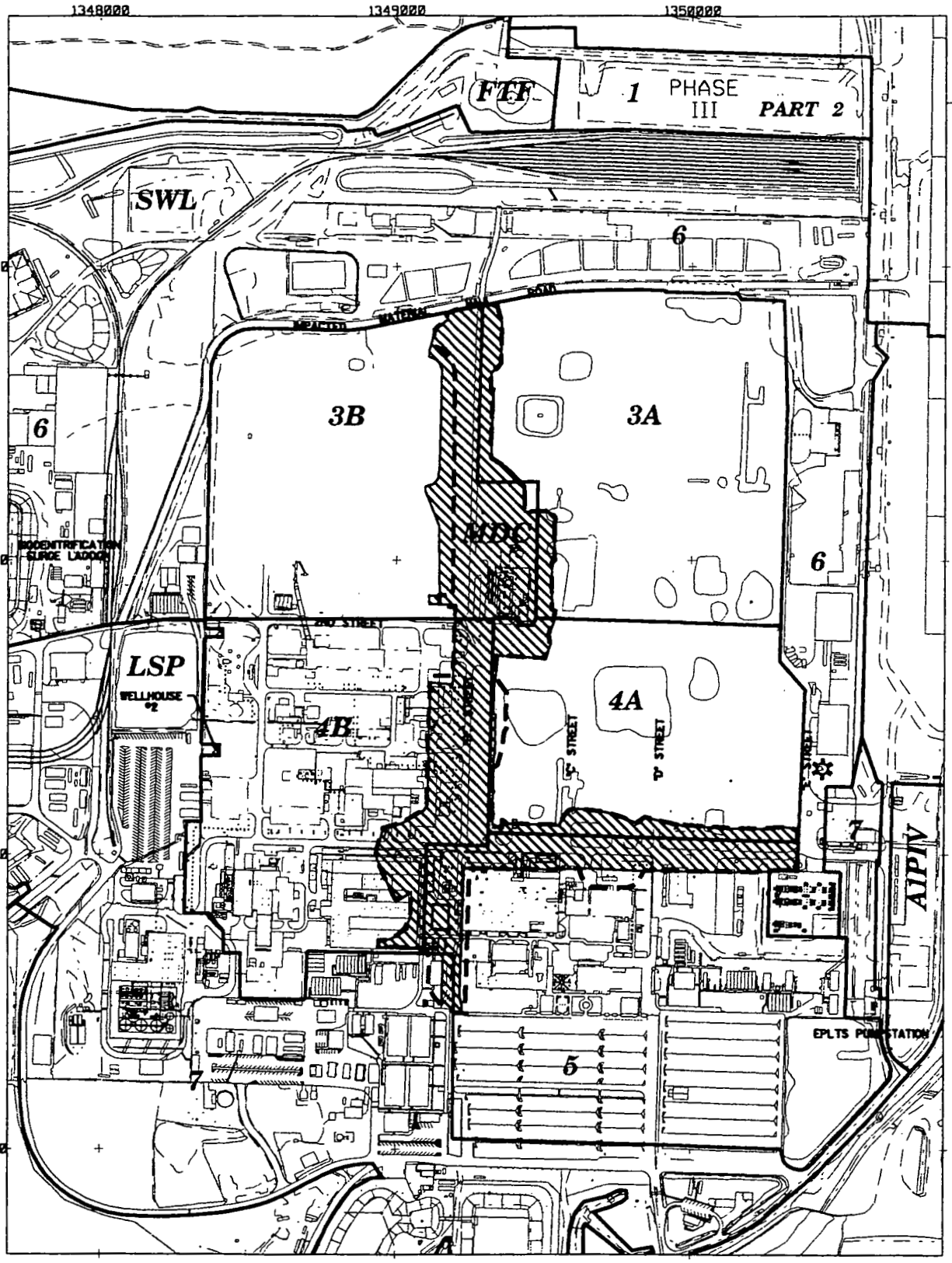
FIGURE [illegible]4. AREA 5



LEGEND:

CU BOUNDARIES

SCALE

500 250 0 500 FEET

FIGURE 1-5. MAIN DRAINAGE CORRIDORS

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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 RI/FS to characterize the nature and extent of contamination resulting from decades of uranium-metal production. Figures 2-1 through 2-3 present locations for RI/FS soil borings in Area 3B/4B/5. Most locations shown on the figures represent multiple samples collected at depths ranging from 0.5 to 25 feet below the surface (i.e., each boring location was used to collect multiple samples).

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 Areas 3, 4 and 5 (Table 2-1) and stated that a more thorough screening of ASCOCs would be performed for each remediation area during the design phase. The additional COC screening for Area 3B/4B/5 is discussed in Section 2.5.

2.1.2 On-Site Disposal Facility Waste Acceptance Criteria

The concentration-based OSDF WAC were established in the OU2 and OU5 RODs (Table 2-2). Soil excavated from Area 3B/4B/5 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 3B/4B/5 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 2.3.2.

2.1.3 Final Remediation Levels for Soil

Like the OSDF WAC, the OU5 ROD established the FRLs for soil remediation (Table 2-3). 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 3B/4B/5 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 mg/kg outside of the high-leachability areas and 20 mg/kg within the high-leachability areas (Figure 2-4 shows the high-leachability boundaries).

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 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 3B/4B/5, all uranium concentration data were pulled from the Sitewide Environmental Database (SED) and modeled against the above FRLs using a three-dimensional computer model (see Appendix E). 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 2.3.3.

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. Seven of these HWMUs are located within 3B/4B/5, as follows:

- HWMU 11: Tank Farm Sump (Area 3B; also within the Main Drainage Corridor excavation)
- HWMU 20: Plant 1 Storage Pad (Area 3B)
- HWMU 4: Drum Storage Area - near the laboratory building loading dock (Area 4B)
- HWMU 17: Plant 8 East Pad (Area 4B)
- HWMU 18: Plant 8 West Pad (Area 4B)
- HWMU 22: Abandoned Sump West of Pilot Plant (Area 4B)
- HWMU 5: Drum Storage Area South of W-26 (Area 4B).

HWMU 10 (Nitric Acid Recovery System Components) and HWMU 14 (Box Furnace) are not included in the list because they are to be completed as above grade closures via the submittal of the Multi-Complex Project Completion Report, which will be submitted later this year. Final closure of the remaining HWMUs will take place during the soil certification process after planned remedial excavations have been completed. The boundaries of these HWMUs will be established through field surveying, and the surveyed footprints will serve as starting points for sampling activities that will demonstrate verification of FRL attainment of identified COCs. More information on these HWMUs and their COCs is provided in Table 2-4, and their location is shown on Figure 2-5.

2.1.5 Underground Storage Tanks

There are 14 underground storage tanks (USTs) at the FCP that have been closed by removal or closed in place in accordance with RCRA requirements. 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. Ten of these USTs were located in Area 3B/4B/5, and all have been removed. UST-11, UST-12 and UST-13 were located near the Plant 1 Truck Dock in Area 3B; UST-1, UST-2, UST-5, UST-9, UST-10 and UST-17 were located near the Garage (Building 31) in Area 5; UST-8 was located north of the Garage (Building 31) in Area 5, but within the MDC excavation area. Area 4B contains one former UST footprint requiring excavation and demonstration of FRL attainment. This former UST footprint, shown in it's approximate location in the southern portion of Plant 8, is from a UST recently discovered and removed during D&D activities. Research of historical information pertaining to this UST is ongoing toward the development of pertinent COCs for FRL attainment and the establishment of footprint bounding coordinates.

The former locations of these USTs will be established through field surveying. The surveyed footprints will be the starting point for sampling activities that will demonstrate verification of FRL attainment of that UST's COCs. This sampling will be performed during certification activities. More information on these USTs is provided in Table 2-5, and the locations of the USTs are shown on Figure 2-6 (Area 3B/4B) and Figure 2-7 (Area 5).

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. One of these areas is located in Area 4B - the abandoned Pilot Plant Sump (also HWMU 22). The OU5 ROD stated that additional testing would be performed to determine if the soil from these areas demonstrates a RCRA characteristic. For this reason, a predesign investigation of this potentially characteristic area was undertaken. The results are summarized in Section 2.3.1.

2.2 SUMMARY OF SURFACE AND SUBSURFACE PHYSICAL CONDITIONS

Areas 3B and 4B are approximately 23 and 25 acres in size, respectively. The majority of both areas are paved (building pads, concrete pads, roadbeds, asphalt, and gravel). The grass-covered areas in 3B are limited to the small strips north and east of the Plant 1 Pad. Several small (<1 acre) areas of grass are present in Area 4B scattered among Plants 2, 3, 8, and the Laboratory Building. There is also a larger (>1 acre) grassy area surrounding the west water tower.

Area 5 is approximately 32 acres in size, and like Areas 3B/4B, a majority of this area is paved. The main parking area (i.e., the East and West Parking Lots), several roadways, sidewalks and building pads cover well over half of the area. There are several large grassy areas within Area 5, including the land surrounding the trailers on the north and south sides of the main parking area, the land along the perimeter of the Main Electrical Substation, and the Eastern Field located east of the main parking area. Note that this area was certified in the Fall of 2002, and is now the location of OSDF Sediment Basin #2.

The surface of Area 3B/4B/5 slopes gently to the south from an elevation of 590 feet above mean sea level (amsl) in the northern part of Area 3B to 580 feet amsl in Area 5. Surface water from 3B and 4B drains to the south and is captured by numerous catch basins that act as inlets to the storm sewer network, thus draining to the SWRB. Surface water from Area 5 is only controlled in such a manner on the production side. Drainage from the Administrative side is also captured in a storm sewer system; however, it is discharged in an uncontrolled manner into the Storm Sewer Outfall Ditch, and eventually drains into Paddys Run.

Subsurface conditions at the FCP, including Areas 3B/4B/5, have been described in detail in the OU5 RI/FS documents and in a geotechnical investigation report (DOE 1998c). This information is also provided in Appendix G of this Implementation Plan for Areas 3B/4B/5. Briefly, the stratigraphic column under Area 3B/4B/5 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 3B/4B/5 is expected to vary from 0 to 5 feet and to contain mostly gravel. Nearly all of Area 3B/4B is expected to have some fill material, while over 50 percent of Area 5 is expected to have some fill, primarily in the western portions.

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 3B/4B 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.

Perched groundwater is often present within the glacial overburden in the muddy stream deposits, and this water has been impacted by former production operations in Plants 2/3, 8 and the Pilot Plant. In general, groundwater is expected to be present in the muddy stream deposits, and excavation slopes have been designed to account for the presence of saturated silt and sand deposits. All encountered contaminated groundwater zones will be excavated with the impacted soil. Groundwater seeping into the excavations will be routed to the SWRB or the BSL and then treated at the AWWT Facility to remove contaminants.

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 3B/4B/5. 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. The following predesign investigations were completed to meet these goals:

- *PSP for Area 4B Potentially Characteristic Area and West of the Pilot Plant Predesign Investigation (DOE 2001b)*

  This PSP (referred to in this Implementation Plan as the Pilot Plant RCRA PSP) included 15 borings to depths of approximately 25 feet in the area south and west of the Pilot Plant to investigate the potentially RCRA characteristic abandoned Pilot Plant Sump. Additional sampling and analysis was also conducted to add to the data set for FRL attainment, provide some southern and western bounding for the technetium-99 WAC exceedance inside of the Pilot Plant (RI/FS boring 1248), and investigate COCs for this HWMU.

- *PSP for the Investigation of Known WAC Exceedances in Areas 3B/4B/5 (DOE 2002d)*

  This PSP (referred to in this Implementation Plan as the Known WAC Exceedances PSP) included 76 borings to investigate/delineate known (RI/FS) WAC exceedances in 3B/4B/5. Several more borings were also added to this scope to bound newly discovered above-WAC concentrations. The RI/FS WAC exceedances under investigation included 17 boring locations for two constituents, total uranium and technetium-99. The data collected under this PSP were used to confirm and delineate the extent of soil that required remedial excavation and segregation for off-site disposition. Additionally, ten borings were collected to investigate soil potentially contaminated with technetium-99 in the vicinity of sewage lines located in Areas 4B and 5. Finally, five borings were performed to confirm three RI/FS borings with non-uranium FRL exceedances located outside of the total uranium excavation footprint. The results of these analyses were used to determine if remedial excavations in the vicinity would need to be extended to capture additional above-FRL contamination.

- *PSP for Miscellaneous Areas WAC Investigation (DOE 2001c)*

  This PSP (referred to in this Implementation Plan as the Miscellaneous Areas WAC PSP) covers the investigation/delineation of several WAC exceedances located in various areas of the site. Specifically as related to Areas 3B/4B/5, two WAC exceedances just north of the Plant 1 Pad (Area 3B) were investigated and bound under this PSP. One of the WAC exceedances was from RI/FS boring Zone 1-273; the other was an area where process material was recently identified.

- *PSP for Area 5 Predesign Investigation (DOE 2002b)*

  This (referred to in this Implementation Plan as the Area 5 Predesign PSP) included sample collection at 142 locations throughout Area 5. The majority of these locations were collected from the Administrative Side of Area 5, since very little historical data is present in this area. Sample collection was focused on surface and immediate subsurface throughout the parking lots, trailer complexes, grassy fields. On the Production Side of Area 5, 12 borings were located in the vicinity of the electrical substation to investigate polychlorinated biphenyls (PCBs) and polyaromatic hydrocarbon (PAH) contamination, since little information is available. Finally, three deep borings were performed in the "Eastern Field" next to the east parking lot to evaluate potential impacts resulting from drainage in this area originating from the eastern Production Area boundary. Note that the electrical substation land to the east to "F" Street have been moved into Area 6, and therefore, now lie outside the scope of this Implementation Plan.

The sampling and analysis performed under each of these investigations is summarized and discussed in Sections 2.3.1 through 2.3.3. The predesign sampling locations in Area 3B/4B are shown in Figure 2-8; the predesign sampling locations in Area 5 are shown in Figure 2-9. Appendix C includes all available analytical results from the predesign investigations, and also includes seven additional figures (C-1 through C-6) to provide better detail of the 3B/4B predesign boring locations identified in Figure 2-8.

In addition to the physical sampling conducted under the above PSPs, real-time scanning was performed in unpaved and accessible areas of 3B/4B/5. 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 2.3.4.

2.3.1 Potentially Characteristic Areas

As identified in the OU5 ROD, Remediation Area 3B/4B/5 contained only one area with potentially RCRA characteristic soil requiring investigation: the Abandoned Sump west of the Pilot Plant (see Appendix C, Figure C-5). This potential RCRA area was defined based on RI/FS data, which indicated the presence of contamination levels in excess of the 20-times toxicity characteristic leaching procedure (TCLP) regulatory level, and a sufficient soil volume that presented an opportunity for cost effective treatment. The abandoned sump was designated as HWMU 22 in 1991, and removed in 1993 as part of Removal Action 24. Soil analytical data collected following the removal action (though not tied to coordinates and entered into the SED) were evaluated, and pursuant to the SEP, the abandoned sump area was designated a potentially characteristic area for barium and lead (SEP, Table 2-1). Review of RI/FS analytical data for that area also revealed a nearby boring (1411, as shown on Figure C-5) with barium and tetrachloroethene concentrations exceeding the 20-times the TCLP limit.

As part of the PSP for Area 4B Potentially Characteristic Area and West of Pilot Plant Predesign Investigation, and based on RI/FS information, nine borings were located in the vicinity of the temporary sump and completed to a depth of 25 feet. Boring 12861 was located beside RI/FS boring 1411; boring 12862 was located at the removed temporary sump, and boring 12863, was located at the pipe connection between the temporary sump and the Pilot Plant drain system. These three "interior" borings were encircled by another six borings (12864 through 12869), situated in a pattern to provide lateral and vertical bounding of the potentially characteristic area. Samples were collected from these borings and analyzed for total and TCLP barium, lead and tetrachloroethene to determine if the area was characteristic in accordance with RCRA. Samples were collected from numerous depth intervals per boring and analyzed for radiological, organic, and other inorganic constituents were also completed on many of the samples. All those results are considered in the discussion of above-WAC and above-FRL contamination.

At the three interior borings (12861 through 12863), soil samples were collected for TCLP metals at the 9 to 9.5-foot, 10 to 10.5-foot, and 11 to 11.5-foot intervals to target barium and tetrachloroethene results from RI/FS Boring 1411 that exceeded 20 times RCRA TCLP at the 10 to 10.5-foot interval. The highest of the nine barium TCLP results was 1.5 milligrams per liter (mg/L), less than 2 percent of the regulatory

limit of 100 mg/L. TCLP results for chromium and lead at the same nine locations were all less than 1 percent of the regulatory limits of 5 mg/L. Each of these three borings also had 14 samples analyzed for total barium, chromium, and lead. Of these results, one lead concentration (boring 12862 at 2 to 2.5 feet) exceeded the RCRA 20-times limit; though a subsequent analysis of the sample for TCLP lead showed results well below the RCRA limit of 5 mg/L (see Table 2-6). Analytical results for volatile organic compound (VOC) analysis from these three borings indicated the presence of trichloroethene at above the RCRA 20-times TCLP limit in boring 12863 at a depth of 3.5 to 4 feet. A sample for TCLP VOC analysis was collected at this location and was below the RCRA TCLP limit (see Table 2-6).

The outside six borings were sampled for the same constituents as the three interior borings. At two locations (borings 12866 and 12868), lead was detected in subsurface samples at greater than 20 times the RCRA TCLP limit. At a third location (boring 12864), both chromium and lead were detected in the surface sample at greater than 20 times the RCRA TCLP limit. Subsequent TCLP analysis was conducted on the samples from 12868 and 12864, and no results exceeded the RCRA TCLP limits (see Table 2-6). With regard to boring 12866, the sample material was consumed, and TCLP could not be performed on the sample with lead concentrations greater than the 20-times limit since it was consumed during the initial analysis. The same sample interval was re-collected at a later date immediately adjacent to the original boring 12866 location, then analyzed by TCLP. Results of this analysis demonstrated the lead concentrations to be below the RCRA TCLP limit (see Table 2-6).

In addition to the metals, there were also volatile organics that showed results above the 20-times level. Two of the outside six boring locations (12865 and 12866) showed analytical results for trichloroethene and tetrachloroethene at levels exceeding the RCRA 20-times TCLP limits. Since the hold-times for the volatile organics had expired when these results were evaluated, these locations were re-sampled in early 2003 and analyzed for TCLP organics. Results of these TCLP analyses also demonstrated these concentrations to be below the RCRA limit for leachability (see Table 2-6).

In summary, no analytical results of the TCLP analyses originally specified in the PSP exceeded the TCLP regulatory limits for barium, lead, or tetrachloroethene. All other potentially RCRA-characteristic concentrations identified under the PSP were later demonstrated to be within TCLP limits. Therefore, Abandoned Sump west of the Pilot Plant will be removed from the list of potentially characteristic areas, and soil in this area will not be regulated under RCRA.

2.3.2 WAC Exceedance Areas

A total of 16 separate areas showed at least one result exceeding the OSDF WAC within Areas 3B/4B/5. For the most part, these areas were identified by discrete borings (RI/FS or predesign), with the exception of a conglomerate of four RI/FS borings with WAC exceedances at the southwest corner of the Laboratory Building. Also, one WAC exceedance was recently identified visually during the predesign investigation when an area of process residue was discovered on the ground just north of the Plant 1 Pad. All 3B/4B/5 WAC exceedances are shown on Figure 2-10, and the above-WAC results are listed in Table 2-7. All 16 of these discrete above-WAC areas in 3B/4B/5 were investigated during the predesign phase.

The 3B/4B/5 WAC exceedances are grouped by general location (e.g., Plant 1 Pad area, Plant 8 area, etc.) and identified individually for purposes of discussion in this Implementation Plan. The majority of these WAC exceedances were investigated under the Known WAC Exceedances PSP; however one area was investigated (and another discovered) under the Pilot Plant Potentially Characteristic Area PSP. Finally, two others were investigated under the Miscellaneous Areas WAC Attainment PSP. The investigations included the collection of confirmatory and bounding borings.

In addition to the known WAC exceedances in 3B/4B/5, numerous other areas were investigated for above-WAC material based on process knowledge. This includes the "additional technetium-99" borings performed under the Known WAC Exceedances PSP in the vicinity of the sewage line. Sampling in close proximity to this line only recently became possible when the sewage lines were abandoned. The results of these investigations are also discussed below. Similarly, it may be beneficial to sample other portions of 3B/4B/5 undergoing D&D or where surface/subsurface obstacles currently prevent sample collection. Areas such as the Plant 2/3, Plant 8 and Pilot Plant footprints, as well as their associated sumps, process water lines and sewage lines, represent additional areas where potential above-WAC material may be present. Therefore, these areas may require additional investigation in order to accurately and comprehensively identify all above-WAC material for segregation and off-site disposition. This determination will be made based on conditions (i.e., the presence of process material or residue) after removal of the structures and acid brick from their floor.

Designed excavation boundaries for all identified above-WAC areas in 3B/4B/5 have been established based on available sampling data. A thorough discussion of the defined above-WAC excavation boundaries, as well as the defined boundary for each area, is provided in Section 2.6.2.

A discussion of the 3B/4B5 WAC exceedances, by general area and specific location, are provided below. The discussion also includes results of the recent predesign sampling to investigate WAC exceedances, as well as borings to investigate other portions of 3B/4B/5 with greater potential for above-WAC material.

PLANT 1 PAD AREA

There are four above-WAC areas identified in the vicinity of the Plant 1 Pad, as discussed below.

Plant 1 Pad Northwest

RI/FS boring Zone 1-273 at the northwest end of the Plant 1 Pad showed total uranium concentrations above the WAC at the 0 to 0.5 and 0.5 to 1-foot intervals. Under the Miscellaneous Areas WAC Attainment PSP, five borings (A6-18 through 22, as shown on Figure 2-8 and C-1) were conducted to delineate the extent of above-WAC soil. Boring A6-18 confirmed the above-WAC soil at 1-273 to a depth of 1-foot (concentrations of 3820 and 1160 mg/kg at 0 to 0.5 feet and 0.5 to 1 feet, respectively). The contamination was bound at 1 to 1.5 feet (total uranium concentration = 56.9 mg/kg). Lateral bounding was provided by A6-19, 20, 21 and 22, all of which showed all results below the total uranium WAC. The excavation boundary is discussed in Section 2.6.2.

Plant 1 Pad North Central

This above-WAC area was identified during the predesign investigation phase when an area of process residue was found on the north side of the Plant 1 Pad near the center of the Pad. This area was investigated under the Miscellaneous Areas WAC Attainment PSP. Physical samples were collected from borings A6-23 through A6-35 (refer to Figure 2-8 and C-1) to delineate the extent of the above-WAC soil. Analytical results indicate above-WAC total uranium contamination present in this area, however, all technetium-99 result were below the WAC. The above-WAC results were detected at the 4.5 to 5-foot interval in one location (A6-25; 1330 mg/kg). The above-WAC contamination is bounded in all directions by these borings, as discussed in Section 2.6.2.

Plant 1 Pad - Beneath TS-4

RI/FS Boring PLANT1PAD-21D, a Removal Action 17 verification sample located beneath the Pad and Tension Support Structure 4 (TS-4), showed a surface (0 to 0.5 feet) WAC exceedance for technetium-99. This area was investigated under the Known WAC Exceedances PSP through the collection of confirmatory boring A3B-P1P-01 and bounding borings A3B-P1P-02 through 09 (refer to Figure 2-8).

Analytical results of all samples collected from these borings showed technetium-99 and uranium concentrations below the WAC. The RI/FS above-WAC concentration will still be honored and an above-WAC excavation has been designed for its removal. The excavation boundaries are discussed further in Section 2.6.2.

Plant 1 Pad - Southwest

RI/FS Boring PLANT1PAD-86, also a Removal Action 17 Verification sample collected just off the southwestern corner of the Pad, also showed a surface WAC exceedance for technetium-99. This area was also investigated under the Known WAC Exceedances PSP, through collection of borings A3B-P1P-10 through 15. Results of the samples collected from these borings showed below-WAC concentrations (technetium-99 and total uranium) in all borings except for the northern bounding boring, A3B-P1P-11, which showed a technetium-99 result of 74.4 pCi/g just beneath the Pad. A3B-P1P-15 was later collected to provide northern bounding for the above-WAC material at A3B-P1P-11, and all concentrations were below the WAC. The above-WAC excavation boundary was established to account for the predesign (A3B-P1P-11) and RI/FS (PLANT1PAD-86) WAC exceedances, as discussed in Section 2.6.2.

PLANT 2 AREA

Three RI/FS borings in the vicinity of Plant 2 showed above-WAC results, as discussed below.

Plant 2 - Northwest

RI/FS boring 1179, just north of the Metal Dissolver Building (Building 2D), showed above-WAC total uranium concentrations to a depth of 1.5 feet, bound at 4 to 4.5 feet. Under the Known WAC Exceedances PSP, borings A4B-P2-01 through 05 were collected to delineate the extent of above-WAC material (refer to Figures 2-8 and C-3). The original WAC exceedance was not confirmed (boring A4B-P2-01, maximum total uranium = 234 mg/kg at 2 to 2.5 feet). However, total uranium concentrations in the northern and eastern bounding borings (A4B-P2-02 and -03) showed concentrations slightly above the WAC (1,420 mg/kg in P2-02 at 1 to 1.5 feet below surface and 1,350 mg/kg in P2-03 at 1.5 to 2 feet below surface). In addition, above-WAC technetium-99 concentrations were found at A4B-P2-03 [36 picoCuries per gram (pCi/g) at 1 to 1.5 feet below surface], and at southern bounding boring A4B-P2-04 (60.9 pCi/g at 0.5 to 1 feet below surface). These concentrations were all bound at depth. Based on the additional above-WAC concentrations, three bounding borings were collected, A4B-P2-24, 25, and 26, to bound the contamination to the north, east and south, respectively. All samples collected from these three borings showed concentrations below the WAC for both total uranium and

technetium-99. The above-WAC excavation boundary was established to account for all predesign and RI/FS WAC exceedances, as discussed in Section 2.6.2.

Plant 2 - Northeast

RI/FS boring 1183 on the northeast side of Plant 2 showed above-WAC total uranium concentrations at surface (0 to 0.5 feet), bound at 0.5 to 1 feet. Predesign investigation borings A4B-P2-11 through 14 were collected to bound the above-WAC material (refer to Figures 2-8 and C-3); bounding borings A4B-P2-7 through 10 were not collected due to demolition activities in the building. Results of the samples analyzed from borings A4B-P2-11 through 14 were all below the WAC levels. Thus the excavation boundaries for this above-WAC area were designed to remove the RI/FS WAC exceedance, as discussed in Section 2.6.2.

Plant 2 - Southwest

RI/FS Boring 1199, collected near the southwest corner of Plant 2, also showed a surface above-WAC concentration for total uranium, which is bound at 2 to 2.5 feet. During the predesign investigation, confirmatory boring A4B-P2-15 and bounding borings A4B-P2-16 through 23 (refer to Figures 2-8 and C-3) were collected to delineate the extent of above-WAC uranium material as well as investigate technetium-99. Results of confirmation boring A4B-P2-15 did confirm the above-WAC total uranium contamination at surface, and bound this contamination below WAC at 1 foot (in the 1 to 1.5-foot interval). The data from bounding boring A4B-P2-16 showed concentrations below the WAC levels for total uranium. Bounding boring A4B-P2-23, located 10 feet north of A4B-P2-16, was below WAC for total uranium but showed above-WAC concentrations for technetium-99 (352 pCi/g at 2 to 2.5 feet below surface). The above-WAC concentration was bound at depth but three additional borings are planned to delineate the extent of above-WAC soil. Due to their locations inside the building, these borings could not be accessed for sampling. Therefore, the boundaries of this WAC excavation have been conservatively established, as discussed in Section 2.6.2

PLANT 8

Two RI/FS borings in the vicinity of Plant 8 showed above-WAC results for technetium-99, as discussed below.

Plant 8 - North

RI/FS boring 1236, located about 50 feet north of Plant 8, showed an above-WAC technetium-99 concentration at a depth of 6.5 feet. Shallower samples were below the WAC, and deeper samples were

not collected. During the predesign investigation, confirmatory and bounding borings were performed to delineate the extent of this above-WAC material. The confirmatory boring (A4B-P8-01) showed an above-WAC total uranium concentration of 3,344 mg/kg at 7 to 7.5 feet, bound at 8 to 8.5 feet. All bounding borings (A4B-P8-02 through 09) showed total uranium concentrations below the WAC, thus bounding the above-WAC uranium soil. However, above-WAC technetium-99 results ranging from 32 to 94.1 pCi/g were identified in borings A4B-P8-01, 04 (5 feet south of 1236), 07 (15 feet east of 1236) and 09 (15 feet west of 1236) at the 7.5 to 8.5-foot depth below surface. The contamination in boring 04 was bound to the north by below-WAC concentrations in bounding boring 06, located 15 feet north of boring 1236. To provide east and west bounding, additional borings (A4B-P8-15 and 16) were added 10 feet away from the previous WAC exceedances, and all samples showed below-WAC concentrations. The boundaries of this above-WAC excavation are discussed further in Section 2.6.2.

Plant 8 - Central

RI/FS boring 1798, collected beneath the floor near the center of Plant 8, showed techentium-99 concentrations exceeding the WAC in the top 6 inches of underlying soil. This WAC exceedance is also unbound at depth. Under the Known WAC Exceedances PSP, confirmatory boring and four bounding borings were located around this WAC exceedance (refer to Figures 2-8 and C-4) to delineate the extent of above-WAC soil. Due to their location inside the building, these borings could not be accessed for sampling. Therefore, the boundaries of this WAC excavation have been conservatively established at RI/FS borings in the vicinity that show below-WAC concentrations for technetium-99, as discussed in Section 2.6.2.

PILOT PLANT AREA

Two RI/FS borings showed above-WAC technetium-99 concentrations; while a third above-WAC area (total uranium) was identified in a predesign boring.

Pilot Plant - Northwest Central

RI/FS boring 1248, collected beneath the floor at the western end of the Pilot Plant, showed technetium-99 concentrations above the WAC at 1 to 1.5 feet; bound at 1.5 to 2 feet. Under the Known WAC Exceedances PSP, confirmatory boring and four bounding borings were planned inside of the Pilot Plant as part of the predesign phase (refer to Figures 2-8 and C-5). Due to their location inside the building, these borings could not be accessed for sampling. Therefore, the boundaries of this WAC excavation have been conservatively established, as discussed in Section 2.6.2.

Pilot Plant - Southwest

Predesign investigation boring 12863 (see Figure C-5), collected as part of the Pilot Plant Sump RCRA Investigation, included several samples with the total uranium concentrations above the WAC. This includes results of 2,390 mg/kg at 2.5 to 3 feet below surface; 5,310 mg/kg at 3 to 3.5 feet; 39,140 mg/kg at 3.5 to 4 feet; 22,000 mg/kg at 4 to 4.5 feet; and 1,430 mg/kg at 4.5 to 5 feet). The soil was below WAC in the next interval (5 to 5.5 feet) with a total uranium concentration of 1,009 mg/kg. Deeper samples showed total uranium concentrations continuing to decrease with depth. Therefore, this above-WAC soil is bound at a depth of 5 feet. Nearby, adjacent borings (12862, 12865, 12866 and 12867) all showed concentrations below the WAC in all sample intervals analyzed, effectively bounding this above-WAC soil laterally, as well. The excavation boundaries for this above-WAC area are discussed in Section 2.6.2.

Pilot Plant - South

Another RI/FS boring, 1258, located near the southwest corner of the Pilot Plant, showed a technetium-99 WAC exceedance (78.8 pCi/g). The confirmatory boring (12870) plus all bounding borings (12871 through 12874; refer to Figure C-5) showed technetium-99 results well below WAC at all depths (maximum technetium-99 result = 2.6 pCi/g, boring 12873). However, the RI/FS WAC exceedance will still be accounted for in an above-WAC area excavation, the boundaries of which are discussed in Section 2.6.2.

LABORATORY BUILDING AREA

Three separate areas of above-WAC soil contamination were identified during RI/FS sampling. This includes six individual borings with above-WAC results (Zone 1-30, Zone 1-32, 1-33, 1-38, Zone 1-65 and Zone 1-66); the first four of which form a contiguous above-WAC area. All borings showed above-WAC total uranium concentrations, while two (1-38 and 1-66) also showed above-WAC techentium-99.

Laboratory Loading Dock

RI/FS boring Zone 1-66 showed total uranium and technetium-99 WAC exceedances to 1 foot below surface (both constituents are bound at 1 to 1.5 feet). It was collected from what is now beneath the Laboratory Loading Dock. During the predesign investigation, confirmation and bounding borings were collected to delineate the extent of above-WAC material. Analytical results from these borings showed no concentrations above the WAC in all of the borings, including the confirmatory boring. However, the

RI/FS above-WAC concentration will still be honored and excavated as above-WAC. The boundaries of this above-WAC excavation are discussed further in Section 2.6.2.

Laboratory Building North Courtyard

RI/FS boring Zone 1-65 showed a total uranium WAC exceedance at surface, and is bound at 0.5 to 1 feet. The confirmatory boring (A4B-LAB-06), which had to be moved several feet west of the RI/FS borings due to utilities, along with the bounding borings (A4B-LAB-07 through 10) around Zone 1-65, all showed total uranium and technetium-99 concentrations well below the WAC. As a result above-WAC material is bound in this area. The above-WAC excavation boundaries are discussed further in Section 2.6.2.

Laboratory Building - Southwest

As mentioned above, RI/FS borings Zone 1-30, 1-32, 1-33 and 1-38 showed concentrations above the WAC for total uranium, while 1-38 also showed a concentration above the technetium-99 WAC. These borings form a contiguous WAC area at the southwestern corner of the Laboratory Building. The technetium-99 WAC exceedance is at surface (Zone 1-38), and is bound at 0.5 to 1 feet; while the deepest total uranium WAC exceedance is at 1 to 1.5 feet, and is not bound at depth.

Under the Known WAC Exceedances PSP, seven bounding borings (A4B-LAB-11 through 18) were located approximately 10 feet outside of the line of RI/FS borings with above-WAC concentrations (refer to Figures 2-8 and C-6). Two additional borings (A4B-LAB-19 and 20) were placed in close proximity to RI/FS borings Zone 1-32 and 1-38 to bound this above-WAC contamination at depth. All seven perimeter-bounding borings showed results below the total uranium and technetium-99 WAC in all depth increments analyzed, thus providing lateral bounding for this above-WAC area. All samples analyzed in the depth-bounding borings also showed concentrations below the WAC (uranium and technetium-99), thus bounding this contamination at three feet below surface, the top depth of the shallowest interval analyzed. The above-WAC excavation boundaries are discussed further in Section 2.6.2.

K-65 Trench

The K-65 trench has been identified as above-WAC for technetium-99 based on process knowledge and characterization data collected in support of the Area 4B Silos Utility Trench Excavation Plan Phase I (DOE 2003). The above-WAC excavation boundaries are discussed further in Section 2.6.2.

Health and Safety Building Area

Two RI/FS borings showed exceedances of the total uranium WAC in the vicinity of the Health and Safety Building. Both were surface samples (0 to 0.5 feet). Zone 1-79 was bound at a depth of 1 to 1.5 feet; while no samples were collected deeper than surface in Zone 1-55. Both of these borings were collected prior to 1989, when the soil in and around the area of these two above-WAC results was removed during construction of the building addition. The soil around boring Zone 1-55 was removed to approximately 12 feet below grade to construct the Health and Safety Building Basement. At least 1.5 feet of soil in the vicinity of RI/FS boring Zone 1-79 was removed to construct a small parking area on the north side of the building. As a result, this soil has been excavated to below the depth of the confirmed WAC (1 foot).

During the predesign phase, borings were planned at or as near as possible to the former locations of both of these borings to verify that the above-WAC soil was removed. Boring A5-HSB-01 was located at Zone 1-79; boring A5-HSB-02 was located just west of Zone 1-55 west of the Health and Safety Building and just outside the basement.

A5-HSB-01 was collected, and results were below WAC (121 mg/kg was the maximum result identified in the first interval beneath the pavement). Therefore, the IRDP does not include an above-WAC excavation at this location. A5-HSB-02 cannot be collected due to the presence of active utilities in the area. However, it is highly unlikely that above-WAC soil is still present at this location given the large volume of soil already removed from this area. As a result, it is highly anticipated that the A5-HSB-02 samples will show concentrations below the WAC, and an above-WAC excavation for this area has not been designed. However, the area will still be sampled to confirm this prior to the remedial excavation.

Additional Technetium Investigation

During predesign investigation and remedial excavation at the old Sewage Treatment Plant, large areas of soil exceeding the technetium-99 WAC were discovered. As a result, it became prudent to investigate potential technetium-99 contamination in the vicinity of the sewage lines leading from the FPA out to the old Sewage Treatment Plant as soon as these lines were abandoned. This sampling could most ideally be performed after abandonment so the samples could be collected in very close proximity to the lines where contamination is most likely.

In total ten borings (identified as AT-1 through AT-10) were located at various points along the sewage line in Areas 4B and 5, and samples collected at the same depth below surface as the sewage line. Due to the presence of other active utilities, boring AT-9 cannot be collected at this time; however these borings are still planned for collection after the utilities are abandoned. With regard to samples collected at AT-1 through AT-8 and AT-10, all technetium-99 results were well below the WAC with a maximum result of 4.97 pCi/g at AT-4.

2.3.3 FRL Exceedance Areas

An extensive FRL investigation took place in the administrative side of Area 5 (A5A, i.e., the portion of Area 5 located outside of the Production Area exclusion fence). However, there was a more limited need for FRL investigation data in Areas 3B, 4B and the production side of Area 5 (A5P) due to the abundance of RI/FS data collected in these areas. All Area 5 sampling was performed under the PSP for Predesign Investigation in Area 5; while the Area 3B and 4B FRL sampling was added to the scope of the PSP for the Investigation of Known WAC Exceedances in Areas 3B/4B/5.

2.3.3.1 FRL Exceedance Investigations in A5A

Because very little historical soil COC concentration data were collected from A5A, an extensive sampling effort was undertaken during the Area 5 predesign investigation to fill data gaps and establish is planned excavations needed to be extended to capture above-FRL contamination. Surface and immediate subsurface sampling was performed throughout A5A to investigate concentrations of primary radiological COCs, plus selected metals, PCBs and PAHs.

As of the end of September 2002, a majority of these sample results were available (see Appendix C) and evaluated against the FRL. Two total uranium results were slightly higher than the FRL (A5A-1 in the high-leachability zone and A5A-3). These FRL exceedances are isolated and will be captured by the planned excavation, and therefore, will not drive additional remedial excavations.

2.3.3.2 FRL Exceedance Investigations in Areas 3B, 4B and A5P

During the RI/FS, a large quantity of data was collected in Areas 3B, 4B and A5P that can be used for FRL attainment purposes. To add to the FRL attainment data set, all aforementioned WAC attainment data collected from these areas were analyzed to levels below the FRLs to add to this data set. In addition, some sampling was conducted in these areas specifically for the purpose of FRL attainment. The need for this sampling was established by identifying all non-uranium FRL exceedances located outside of the

planned total uranium remedial excavation footprint. Further consideration was made for excavations necessary to remove building foundations and underground utilities. Any non-uranium FRL exceedance identified as not being excavated was sampled to determine if excavations would need to be extended to capture this contamination.

Within Areas 3B and 4B, three RI/FS borings showed non-uranium FRL exceedances outside of the planned remedial excavation footprint. A confirmatory boring (A4B-FRL-1) was located near RI/FS boring 11095, where beryllium concentrations exceeded the FRL at depth of 9.5 feet. A bounding boring (A4B-FRL-2) was placed 5 feet to the northeast (the direction away from where the nearest remedial excavation was identified). Similarly, a confirmatory boring (A4B-FRL-3) and a bounding boring (A4B-FRL-4) were located where RI/FS boring 11101 showed beryllium FRL exceedances to a depth of 16 feet, plus an arsenic FRL exceedance at 6.5 feet. Finally, a confirmatory boring was placed near 11074 (just east of "B" Street near the General Sump), to confirm that suspect thorium-232 exceedances were not real.

Analytical results from the samples collected from the above borings showed only one FRL exceedance - a beryllium concentration of 1.7 mg/kg at the surface in A4B-FRL-1. This sample is bound at depth (9.5 to 10 feet), and this will not extend the excavation, as the planned excavation is now planned to a depth of over 12 feet at this point. All other results were below the FRL, and all technetium-99 results were below the WAC. As a result, the deepest FRL exceedances at 11095 (beryllium), 11101 (beryllium and arsenic), and 11074 (thorium-232) are not considered to be real, and will not be accounted for in the remedial excavation.

Another FRL investigation was planned for Area 5 within the Main Electrical Substation. The substation no longer falls under the scope of 3B/4B/5, and will now be included with Area 6 since the substation will need to remain active for several more years. As a result, these borings will not be collected under the Area 5 Predesign PSP.

2.3.4 Real-Time Scanning Within Areas 3B/4B/5

Very little area was accessible for real-time scanning in Areas 3B/4B/5 since a large majority of these parts of the site are paved. Portions of these areas that were accessible to real-time scanning include the following:

- East of the Plant 1 Pad (Area 3B)
- Vicinity of the West Water Tower (4B)
- North of the Laboratory Building (4B)
- The Eastern Field (East of the East Parking Lot in Area 5)
- Between the North Access Road and "F" Street near RIMIA (Area 5).

Because excavation is planned for the entire 3B/4B surface, the purpose of the real-time scanning in these areas is strictly for the purpose of WAC attainment. Results of the mobile NaI scan in 3B and 4B showed no potential WAC areas, with the exception of some high total uranium results in the north end of the area around the West Water Tower near the Plant 1 Pad. Due to the location and pattern of the results, it is suspected that these are the result of "shine" from nuclear materials stored on the Plant 1 Pad. Phase 2 HPGe readings could not be collected to confirm this due to the more urgent need for these instruments to support the Area 3A/4A remedial excavation. Of note, several samples collected from this same area show total uranium concentrations below the WAC. The real-time scan total uranium results for 3B/4B are provided on Figure 2-11.

In Area 5, results of the real-time scan were also collected primarily for WAC attainment purposes, with the exception of the "Eastern Field" (refer to the Certification Report for the Area 5 Eastern Field, DOE 2002c). Results indicated no potential WAC exceedances in the scanned portions of Area 5. Overall, results of the real-time scan indicate no clear total uranium contamination patterns with an exception of elevated readings due east of Building 82 (total uranium = 448 mg/kg); however, a truck in the vicinity with a "Class 7" placard was believed to be causing a false positive. Follow-up readings with the high purity germanium (HPGe) detectors at areas of highest activity, including the high readings near Building 82, confirmed that total uranium concentrations were well below the FRL (total uranium = 74.4 mg/kg east of Building 82). Based on this information, no additional scanning was necessary to confirm or delineate any "hot spots" in Area 5. The real-time scan total uranium results in Area 5 are provided on Figure 2-12.

2.4 HIGH-LEACHABILITY ZONES

The OU5 FS Report identified two uranium contamination zones in Area 3B/4B/5 with the potential for leaching. As shown on Figure 2-4, one of these high-leachability zones encompasses a large portion of the Plant 1 Pad in Area 3B. The other spans the entire portion of 4B south of 2nd Street, along with the extreme northwestern corner of Area 5. As committed in the SEP, soil within these two high-leachability zones will be excavated to the uranium FRL of 20 mg/kg.

2.5 IDENTIFICATION OF AREA-SPECIFIC CONSTITUENTS OF CONCERN

Section 2.1.6 identified the preliminary list of COCs for Area 3B/4B/5, which was based on the results of sampling and analysis performed during the RI/FS investigation. All RI/FS data and the available results of predesign investigations were evaluated based on the following:

- The constituent is widespread in Area 3B/4B or 5 and is commonly found at above-FRL concentrations (i.e., the primary COCs); or
- The constituent is present at above-FRL concentrations at depths that drive the design excavation contours in those areas.

In addition to the above, any other constituents that were determined to be widespread in 3A/4A were also retained as ASCOCs in 3B/4B for remedial excavation due to the similarities among these remediation areas. Table 2-8 presents the modified list of COCs for Areas 3B/4B, and a separate list for Area 5. This modified list will be used to verify that the planned remedial excavation limits are sufficient to capture above-FRL contamination. Note that the ASCOC Lists will again be reevaluated during the certification design process to determine which of the preliminary COCs identified in the SEP will be carried into certification.

2.6 EXCAVATION BOUNDARIES

Excavation boundaries for Area 3B/4B/5 are established based on the following information:

- Above-FRL uranium contamination contours generated by the three-dimensional computer model
- 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.

All of this information is combined to form a complete picture of the volume of material that should be excavated from Area 3B/4B/5. Excavation volumes for soil and debris are provided in Appendix D. Additional discussion on the RCRA, above-WAC, and above-FRL excavation boundaries is provided below.

2.6.1 RCRA Material

As discussed in Section 2.3.1, the recent predesign investigation of the abandoned Pilot Plant Sump revealed that there were no TCLP analytical results exceeding the RCRA characteristic levels for constituents found to exceed the 20-times rule. As a result, this area is no longer considered to be a RCRA characteristic area, and no excavations need to be performed in 3B/4B/5 for RCRA characteristic soil.

2.6.2 Above-WAC Material

The approach for defining remediation boundaries for above-WAC excavations in 3B/4B was similar to the approach used in Area 3A/4A. To be conservative, above-WAC boundaries were extended to the bounding borings where all samples showed results below the WAC for all pertinent COCs. When available, the recently collected predesign investigation data (see Section 2.3.2) were used due to the closer proximity to WAC exceedances. Northing and/or Easting coordinates of the bounding points were used to define the excavation area. The depth of the WAC area excavation was established at the top depth of the first sample interval with below-WAC results deeper than the identified WAC concentration. Also, the deepest WAC exceedance was used to define the excavation depth of the entire above-WAC area. In addition, WAC excavations identified in this IRDP are not designed to segregate any imbedded pockets of below-WAC material.

In some instances, the predesign data could not be collected due to ongoing building demolition work, so boundaries were based on RI/FS borings. If no RI/FS data were present anywhere near the WAC exceedance, the boundaries were designed to structures that would logically prevent or hinder the source or spread of the above-WAC contamination. Again, this above-WAC area bounding strategy is consistent with that of Area 3A/4A, as identified in the Implementation Plan for Area 3A/4A (DOE 2001d).

Following excavation to design grade, excavation controls (i.e., real-time scanning and/or physical sampling) will be used to verify the removal of all WAC materials after designed excavations are completed. A case-by-case discussion of the delineation of above-WAC areas for excavation design is provided in the text below. This information is also summarized in Table 2-9.

Above-WAC Area North of Plant 1 Pad (RI/FS Boring Zone 1-273)

The above-WAC total uranium area resulting from RI/FS boring Zone 1-273, located just north of the Plant 1 Pad, has been completely bound by predesign data. Borings A6-19, A6-20, A6-21 and A6-22 all showed below-WAC concentrations, thus bounding this area laterally, and the coordinates of these samples are used to define the excavation boundary. The deepest above-WAC result in this area was in the 0.5 to 1 foot interval in boring A6-18; and the 1 to 1.5-foot interval was well below the WAC (total uranium = 56.9 mg/kg). Therefore, the depth of this above-WAC excavation is defined at 1-foot below surface. The excavation boundaries for this above-WAC area are shown on Figure 2-13.

Plant 1 Pad Northwest Above-WAC Area (Process Material on Ground)

The total uranium above-WAC area located north of the Plant 1 Pad where process material was identified on the soil has also been completely bound by predesign data. Borings A6-30, 34, 35 and 33 all showed below-WAC concentrations, thus bounding the north, south, east and west sides of this area, respectively. The deepest above-WAC result was identified 4.5 to 5 feet below surface in boring A6-25, and all 5 to 5.5-foot sample increments (including location A6-25) were below the WAC. Therefore, this above-WAC excavation will extend to 5 feet below surface. The boundaries of this above-WAC excavation are also shown on Figure 2-13.

Plant 1 Pad TS-4 Above-WAC Area (RI/FS Boring PLANT1PAD-21D)

This technetium-99 above-WAC area beneath the Plant 1 Pad and TS-4 has also been completely bound by predesign borings collected in a 5-foot radius around the RI/FS WAC exceedance. Borings A3B-P1P-02, 03, 04, and 05 bound this area to the north, east, south and west, respectively. The deepest (and only) above-WAC concentration was identified at 0 to 0.5 feet beneath the pad, bound at the 1 to 1.5-foot interval. Therefore, the depth of the above-WAC excavation will be established at 1 foot beneath the pad. The boundaries of this above-WAC excavation are also shown on Figure 2-14.

Plant 1 Pad Southwest Above-WAC Area (RI/FS Boring PLANT1PAD-86)

This above-WAC technetium-99 area is completely bound by predesign investigation data, and the boundaries have been established to account for the original RI/FS WAC exceedance, as well as the exceedance identified in A3B-P1P-10. Borings A3B-P1P-15, 12, 13, and 14 all showed below-WAC concentrations, thus bounding the area to the north, south, east and west, respectively. The

excavation depth has been established at 2.5 feet below the pad, as the deepest above-WAC concentration was identified at 1.5 to 2 feet, bound at the 2 to 2.5-foot interval. The boundaries for this above-WAC area are shown on Figure 2-14.

Plant 2 Northwest Above-WAC Area (RI/FS Boring 1179)

This above-WAC uranium and technetium-99 area is completely bound by predesign investigation data, and the boundaries have been established to account for the RI/FS WAC exceedance, as well as WAC exceedances identified in borings A4B-P2-02, -03, and -04. Borings A4B-P2-24, 25, 26 and 05 all showed below-WAC concentrations, and thus bound the area to the north, east, south, and west, respectively. The excavation depth has been established at 3 feet, as all 3 to 3.5-foot intervals (and deeper) show uranium and technetium-99 concentrations below the WAC. Excavation boundaries for this above-WAC area are shown on Figure 2-15.

Plant 2 Northeast Above-WAC Area (RI/FS Boring 1183)

This above-WAC uranium area is completely bound by predesign investigation data, as predesign borings A4B-P2-11, 12, 13 and 14 all showed concentrations below the WAC, thus bounding the area to the north, east, south, and west, respectively. The excavation depth has been established at 0.5 feet, as the RI/FS WAC exceedance was bound at the 0.5 to 1-foot interval. Excavation boundaries for this above-WAC area have been established to remove the RI/FS WAC exceedance, as shown on Figure 2-15.

Plant 2 Southwest Above-WAC Area (RI/FS Boring 1199)

This above-WAC uranium and technetium-99 area is bound to the south with predesign boring A4B-P2-18. The confirmatory boring (A4B-P2-15) showed an above-WAC total uranium concentration of 1600 mg/kg in the surface interval but below the WAC in the 1 to 1.5-foot and all deeper intervals. The confirmatory boring was below WAC for technetium-99 at all intervals as well. Additional predesign bounding borings (A4B-P2-16, 17 and 19 through 22) were below WAC for total uranium and technetium-99. Boring A4B-P2-23 was also below WAC for total uranium but was above-WAC for technetium-99 with a concentration 352 pCi/g at the 2 to 2.5-foot interval. The next sample interval (4 to 4.5-foot) was below WAC for technetium-99. Because no RI/FS or predesign data were available anywhere remotely close to the north, east, or west of the technetium-99 WAC area, the excavation boundaries have been conservatively established on the structures that form logical boundaries for WAC contamination. The north boundary is at the wall that separates the "hot" side (ore digestion) and the "cold" side (ore digestates) processes; the east boundary is where the acid brick stops; and the west

boundary is an exterior wall located 44 feet to the west of boring A4B-P2-23. The excavation boundaries are shown on Figure 2-15. The excavation depth will extend to 4.5 feet below the concrete pad.

Plant 8 North Above-WAC Area (RI/FS Boring 1236)

This above-WAC technetium-99 area is completely bound by predesign investigation data, and the boundaries have been established to account for the original RI/FS WAC exceedance, as well as the exceedance identified in A4B-P8-01, 04, 07, and 09. Borings A4B-P8-02, 15, 08, and 16 all showed below-WAC concentrations, thus bounding the area to the north, south, east and west, respectively. The depth of this above-WAC excavation has been established at 10 feet, as all WAC exceedances were identified at depths of 6 to 9 feet below surface, and the deepest above-WAC results are bound at 10 to 10.5-foot intervals. The above-WAC excavation boundaries for this area are shown on Figure 2-16.

Plant 8 Central Above-WAC Area (RI/FS Boring 1798)

Excavation boundaries for this above-WAC technetium-99 area are based on nearby RI/FS borings that showed results below the WAC for technetium-99 at the same depths as the WAC exceedances. Boring A4B-AT-6, 1238, and 1807 all met these requirements, and conservatively form excavation boundaries for this above-WAC excavation, as shown on Figure 2-16. The excavation depth will extend to 3 feet below the concrete pad, sufficient to capture the RI/FS WAC exceedance identified at the surface (0 to 0.5-foot) interval beneath the pad.

Pilot Plant Northwest Above-WAC Area (RI/FS Boring 1248)

Excavation boundaries for this above-WAC technetium-99 area are based on nearby RI/FS borings that showed results below the WAC for technetium-99 at the same depths as the WAC exceedances. RI/FS borings 1247, 1251 and predesign boring 12860 all met these requirements, and conservatively form the north, south and west, respectively, excavation boundaries. Because no RI/FS or predesign data were available anywhere remotely close to the east of the WAC exceedance, the wall separating the wet and dry process sides of the Pilot Plant forms a very logical boundary for WAC contamination, and therefore, forms the eastern boundary of this WAC area. The excavation boundaries are shown on Figure 2-17. The excavation depth will extend to 2.5 feet below the concrete pad, sufficient to capture the RI/FS WAC exceedance identified at 1 to 1.5 feet (bound at 1.5 to 2 feet) beneath the pad.

Pilot Plant Southwest Above-WAC Area (Predesign Boring 12863)

The total uranium WAC exceedances identified during the predesign investigation in the vicinity of the Abandoned Pilot Plant Sump have been completely bound by predesign data. Nearby predesign borings 12862, 12865, 12866 and 12867 all showed below-WAC total uranium, bounding the above-WAC area to the north, east, south and west, respectively. The depth of this above-WAC excavation will extend to the 5 feet below surface. The deepest WAC exceedance was identified in the 4.5 to 5-foot interval, and the 5 to 5.5-foot interval shows concentrations below WAC (1,009 mg/kg), and steadily decreasing with depth. Final above-WAC excavation boundaries for this area are shown on Figure 2-17.

Pilot Plant South Above-WAC Area (RI/FS Boring 1258)

The technetium-99 WAC exceedance was identified just west of the drive leading to the south side of the Plant, and has been completely bound by predesign data. Predesign borings 12871, 2872, 12873 and 12874 all showed below-WAC technetium-99, thus bounding the above-WAC area to the north, east, south and west, respectively. Confirmatory boring 12870 also showed below-WAC technetium-99 concentrations in all samples. The depth of the deepest (and only) WAC exceedance was 1.5 to 2 feet, while the 2 to 2.5-foot intervals were all below WAC in all predesign borings. Therefore this bottom depth of this above WAC excavation will be 2 feet. Final above-WAC excavation boundaries for this area are shown on Figure 2-17.

Lab Loading Dock Above-WAC Area (RI/FS Boring Zone 1-66)

This total uranium WAC area has been completely bound by predesign analytical data, and the excavation boundaries have been established to account for the RI/FS WAC exceedance. Borings A4B-LAB-02, 03, 04 and 05 all showed below-WAC concentrations (total uranium and technetium-99), and thus form the north, east, south and west excavation boundaries, respectively. The confirmation boring (A4B-LAB-01) also showed below-WAC concentrations (total uranium and technetium-99). The depth of this excavation is 1 foot, as the only WAC exceedance was in the RI/FS boring at 0.5 to 1 feet, and the 1 to 1.5-foot interval showed concentrations well below the WAC. The final excavation boundaries for this above-WAC area are shown on Figure 2-18.

Lab North Courtyard Above-WAC Area (RI/FS Boring Zone 1-65)

This total uranium WAC area has been completely bound by predesign analytical data, as all bounding samples showed below-WAC concentrations for total uranium. Borings A4B-LAB-06, 07, 08, 09 form the east, north, west, and south above-WAC excavation boundaries, respectively. The excavation depth has been established at 0.5 feet, and the excavation boundaries for this above-WAC area are shown on Figure 2-18.

Lab Southwest Above-WAC Area (4 RI/FS Borings)

This total uranium and technetium-99 WAC area has been completely bound by predesign analytical data, as all bounding samples showed below-WAC concentrations for total uranium and technetium-99. Borings A4B-LAB-11, 13, 17 and 15 all showed below-WAC concentrations, and form the north, south, east and west above-WAC excavation boundaries, respectively. The excavation depth has been established at 3 feet, since borings A4B-LAB-19 and 20 showed concentrations below the WAC in the 3 to 3.5-foot sample intervals. The excavation boundaries for this above-WAC area are shown on Figure 2-18.

K-65 Trench

The excavation for this technetium-99 WAC area is based upon process knowledge and characterization data. Physical data from soil-like/sediment residues collected from the bottom of the trench are above-WAC but the data does not indicate the presence of above-WAC contamination beneath the concrete of the trench. However, it is assumed that there are cracks in the concrete that would allow for the mobile technetium-99 contamination to migrate beneath the trench itself. Excavation of the trench has been conservatively established with removal of the soil-like/sediment material and concrete removal as well as removal of 2-feet of soil underlying the concrete and from north/south walls.

RI/FS WAC Exceedances Near Health and Safety Building (RI/FS Borings 1-79 and 1-55)

As discussed in Section 2.3.2, two above-WAC uranium results were identified near the Health and Safety Building. However, the soil where both these exceedances were identified was removed during construction of the 1989 addition to the building. Zone 1-55 was collected at what is now the basement of the building. Confirmation borings were planned at the most ideal location near both of the original RI/FS borings to confirm that no above-WAC material remains.

As discussed in Section 2.3.2, the results from predesign sample A5-HSB-01 (the former location of boring Zone 1-79) showed that the above-WAC soil was indeed removed in 1989. Unfortunately, boring A5-HSB-02 (near RI/FS boring Zone 1-55) could not be collected, but is highly unlikely that above-WAC material remains, as discussed in Section 2.3.2. Therefore, neither of these locations will be treated as above-WAC areas; and no above-WAC excavation have been designed. However, if samples collected at location A5-HSB-02 do reveal results above the WAC, the above-WAC soil will be bound by additional physical sample collection, and an above-WAC excavation will be designed and added to the scope of the 3B/4B/5 remediation and to this IRDP.

2.6.3 Above-FRL Material

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). These excavation boundaries are discussed further in Appendix D of this Implementation Plan.

To ensure that planned remedial investigations are sufficient to capture the identified FRL exceedances, the average depth of all available 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 lie above and to the left of this line represent FRL exceedances that will not be captured under the planned remedial excavation for 3B/4B/5 (i.e., the depth of the sample with an FRL exceedance is greater than the planned excavation depth. The scatter plots for each 3B/4B ASCOC are shown in Figures 2-19 through 2-30. The scatter plots for each Area 5 ASCOC are show in Figures 2-31 through 2-36.

In several cases, these scatter plots indicate that some FRL exceedances will not be removed based on the planned excavation boundaries. Discussion of these "uncaptured" FRL exceedances is as follows:

- Borings 1210 in 4B (total uranium): The FRL exceedance is located and surface (0 to 0.5 feet) near the boundary of the remediation area and will be removed with a 6-inch scrape of this area.
- Boring A5A-10 (total uranium): The boring is located in an area that is not planned for excavation, and the result is less than the FRL but is greater than the ALARA Goal of 50 mg/kg, therefore, the excavation does not need to be extended to capture the boring.
- Boring 11074 in Area 3B (thorium-232): There were four FRL exceedances identified at this boring ranging from 0 to 0.5 feet to 10 to 10.5 feet below surface, and the deepest two exceedances (5 to 5.5 and 10 to 10.5 feet) are not captured by the planned excavation. However, these thorium-232 results are suspect. All were calculated from total thorium, and all five results were the same (18 mg/kg; thorium-232 = 1.97 pCi/g). It is highly unlikely that four results were detected at the same concentration, and also unlikely that another result of the same value at the 15 to 15.5-foot interval) was a non-detect. Thus it appears that the results were actually reported at the laboratory minimum detection level, but the "U" qualifier did not make it into the database. Regardless, confirmation samples were collected at the same location and depth intervals of the detected and uncaptured results (5 to 5.5 feet and 10 to 10.5 feet). These analyses showed thorium-232 results below the FRL, and therefore, the excavation does not need to be extended to capture additional contamination.

TABLE 2-1
PRELIMINARY AREA-SPECIFIC CONSTITUENTS OF CONCERN

Primary COCs (all Areas)	Secondary COCs for Area 3B	Secondary COCs for Area 4B	Secondary COCs for Area 5
Radium-226	Aroclor-1254	Aroclor-1254	Aroclor-1254
Radium-228	Aroclor-1260	Aroclor-1260	Aroclor-1260
Thorium-228	Arsenic	Arsenic	Arsenic
Thorium-232	Benzo(a)anthracene	Benzo(a)pyrene	Beryllium
Total Uranium	Benzo(a)pyrene	Beryllium	Dieldrin
	Benzo(b)fluoranthene	Bromodichloromethane	
	Beryllium	Cesium-137	
	Bromodichloromethane	Dieldrin	
	Cesium-137	Fluoride	
	Dibenzo(a,h)anthracene	Lead	
	1,1-Dichloroethene	Plutonium-238	
	Dieldrin	Strontium-90	
	Fluoride	Technetium-99	
	Indeno(1,2,3-cd)pyrene	Tetrachloroethene	
	Lead	Thorium-230	
	Technetium-99		
	Tetrachloroethene		
	Thorium-230		
	Trichloroethene		

TABLE 2-2
ON-SITE DISPOSAL FACILITY WASTE ACCEPTANCE CRITERIA

WAC Constituent	Maximum Concentration
Neptunium-237	3.12×10^{9} pCi/g
Strontium-90	5.67×10^{10} pCi/g
Technetium-99	29.1 pCi/g
Total Uranium	1030 mg/kg
Alpha-chlordane	2.89 mg/kg
Bis(2-chloroisopropyl)ether	2.44×10^{-2} mg/kg
Bromodichloromethane	9.03×10^{-1} mg/kg
Carbazole	7.27×10^{4} mg/kg
Chloroethane	3.92×10^{5} mg/kg
1,1-Dichloroethene	11.4 mg/kg
1,2-Dichloroethene	11.4 mg/kg
4-Nitroaniline	4.42×10^{-2} mg/kg
Tetrachloroethene	128 mg/kg
Toxaphene	1.06×10^{5} mg/kg
Trichloroethene	128 mg/kg
Vinyl chloride	1.51 mg/kg
Boron	1.04×10^{3} mg/kg
Mercury	5.66×10^{4} mg/kg

TABLE 2-3
SOIL FINAL REMEDIATION LEVELS

Constituent	Final Remediation Level
Radionuclides	
Cesium-137	1.4 pCi/g
Plutonium-238	78 pCi/g
Radium-226	1.7 pCi/g
Radium-228	1.8 pCi/g
Strontium-90	14 pCi/g
Technetium-99	30 pCi/g
Thorium-228	1.7 pCi/g
Thorium-230	280 pCi/g
Thorium-232	1.5 pCi/g
Uranium, Total (outside a high-leachability area)	82 mg/kg
Uranium, Total (inside a high-leachability area)	20 mg/kg
Inorganics	
Arsenic	12 mg/kg
Beryllium	1.5 mg/kg
Fluoride	78,000 mg/kg
Lead	400 mg/kg
Organics	
Aroclor-1254	0.13 mg/kg
Aroclor-1260	0.13 mg/kg
Benzo(a)anthracene	20 mg/kg
Benzo(a)pyrene	2 mg/kg
Benzo(b)fluoranthene	20 mg/kg
Bromodichloromethane	4 mg/kg
Dibenzo(a,h)anthracene	2 mg/kg
1,1-Dichloroethene	0.41 mg/kg
Dieldrin	0.015 mg/kg
Indeno(1,2,3-cd)pyrene	20 mg/kg
Tetrachloroethene	3.6 mg/kg
Trichloroethene	25 mg/kg

TABLE 2-4
HWMUs IN AREAS 3B/4B/5 FOR SDFP CLOSURE[a]

HWMU	Area	Description	COCs
11 Tank Farm Sump	3B	Inactive land-based surface impoundment unit. Sump was used to collect and neutralize waste acid. No soil was identified to indicate pH <2. Spills (from leaking drums stored in area) are recorded.	None
20 Plant 1 Storage Pad	3B	Active outdoor and indoor container storage area. Paved outdoor portion with partial secondary containment berm system presently only manages containers without free liquids; indoor portion with secondary containment system manages containers with free liquids. Spills are recorded.	Methylene Chloride Tetrachloroethene 1,1,1-Trichloroethane Xylene Barium Lead TBD
4 Lab Loading Dock Storage Area	4B	Inactive outdoor unpaved (during active life) container storage area without secondary containment system. Managed containers with free liquids. No spills are recorded. Unit has documented soil contamination from roofing tar. Area is presently overlain by concrete due to loading dock expansion.	Benzene Tetrachloroethene Toluene
17 Plant 8 East Pad	4B	Inactive outdoor paved container storage area with secondary containment system. Managed containers with free liquids. Spills are recorded.	Xylene Lead Methyl Ethyl Ketone (no FRL)
18 Plant 8 West Pad	4B	Inactive outdoor paved container storage area with secondary containment system. Managed containers with free liquids. Spills are recorded.	Xylene Lead Methyl Ethyl Ketone (no FRL)
22 Pilot Plant Sump	4B	Inactive tank system. Sump contents failed TCLP for metals. Spills (leakage from the sump) are recorded. Note: Also identified as an area where the soils might be RCRA toxicity characteristic hazardous for barium and lead.	Benzene Tetrachloroethene Barium Chromium VI Lead Mercury
5 Lab Drum Storage Area	4B	Inactive outdoor unpaved container storage area without secondary containment system. Managed containers with free liquids. No spills are recorded. Unit has documented soil contamination from roofing tar.	Lead Mercury

[a] Based on chemicals stored on Pad.

SDFP - Soil and Disposal Facility Project

TABLE 2-5
USTs FORMERLY LOCATED WITHIN AREAS 3B/4B/5 FOR SDFP CLOSURE[a]

UST	Area	Pertinent Information	COCs
11	3B	**Former Location:** Buried under gravel approximately 6 feet E of Plant 1 Truck Dock and S of Bldg. 1. Also 2 feet N of UST-12 and 2 feet S of Plant 1 cyclone fence. **Former Volume:** 3,000 gallons **Material:** Kerosene, Gasoline **Former Size:** 52 foot diameter x 18 foot length; steel **Former Accessories:** Tank piping ran N under cyclone fence, then approximately 10 feet to gas pump.	Benzene Ethylbenzene Methyl Isobutyl Ketone Toluene 1,1,1-Trichloroethane Xylene Arsenic Barium Chromium Lead Mercury Selenium
12	3B	**Former Location:** Approximately 6 feet E of Plant 1 Truck Dock and S of Bldg. 1. Also 2 feet S of UST-11. **Former Volume:** 3,000 gallons **Material:** Gasoline **Former Size:** 52 foot diameter x 18 foot length; steel **Former Accessories:** Tank piping ran across UST-11, under cyclone fence, then approximately 10 feet to gas pump.	Benzene Lead
13	3B	**Former Location:** Approximately 25 feet E of Plant 1 Truck Dock and 40 feet S of Bldg. 1 cyclone fence. **Former Volume:** 3,000 gallons **Material:** Kerosene, Gasoline **Former Size:** 52 foot diameter x 18 foot length; steel **Former Accessories:** Pump and remote fill at N end of paved road S of tank	Benzene Ethylbenzene Methyl Isobutyl Ketone Toluene 1,1,1-Trichloroethane Xylene Arsenic Barium Chromium Lead Mercury Selenium
1	5	**Former Location:** Centerline approximately 51 feet E of Garage (Bldg. 31). Tank was buried approximately 12 feet beneath a 2-foot concrete slab. **Former Volume:** 1,500 gallons **Material:** Unleaded Gasoline **Former Size:** 8 foot diameter spherical tank; fiberglass **Former Accessories:** Piping from top of UST-1 to aboveground gasoline pumps and a 2-inch vent line from UST-1 to UST-2 and to Bldg. 31.	Benzene Ethylbenzene Toluene Xylene Barium Lead Mercury

TABLE 2-5
(Continued)

UST	Area	Pertinent Information	COCs
2	5	**Former Location:** Centerline approximately 51 feet E of Garage (Bldg. 31) **Former Volume:** 1,050 gallons **Material:** Unleaded Gasoline **Former Size:** 8 foot diameter spherical tank, fiberglass **Former Accessories:** Piping from tank to above-ground gasoline pumps and 2-inch vent line form UST-2 to UST-1	Benzene Ethylbenzene Toluene Xylene Barium Lead Mercury
8	5	**Former Location:** 12 feet NE of Garage (Bldg. 31). Tank was buried under 8 inch concrete slab with 2 foot x 2 foot 8 inch concrete dispensing pump foundation extending above pavement at N end of tank. **Former Volume:** 1,000 gallons **Material:** Leaded Gasoline **Former Size:** 4 foot diameter x 12 foot length; steel **Former Accessories:** Remote fill line ran from tank to 10 feet W of tank	Acetone Benzene Ethylbenzene Methyl Ethyl Ketone (no FRL) Toluene Xylene Arsenic Selenium
9	5	**Former Location:** 82 feet from NE corner of Garage (Bldg. 31). Three-fourths of tank was buried under an 8 inch concrete pad. **Former Volume:** 1,000 gallons **Material:** Diesel Fuel **Former Size:** 4 foot diameter x 12 foot length; steel **Former Accessories:** Remote fill line - tank to E wall of garage	Acetone Benzene Ethylbenzene Methyl Ethyl Ketone (no FRL) Toluene Xylene Arsenic Selenium
10	5	**Former Location:** Centerline approx. 432 feet E of Garage (Bldg. 31). Tank was buried beneath 2 gas pumps on concrete pad. **Former Volume:** 3,000 gallons **Material:** Leaded Gasoline **Former Size:** 52 foot diameter x 18 foot length; steel **Former Accessories:** Concrete pump island with 2 pumps over tank	Acetone Methylene Chloride Trichlorofluoromethane (no FRL) Barium Lead
17	5	**Former Location:** Approximately 10 feet N of Heavy Equipment Building (Bldg. 46). **Former Volume:** 200 gallons **Material:** Waste oil from Oil/Water Separator **Former Size:** 22 foot diameter x 6 foot length; steel **Note: UST-17 is not regulated under BUSTR**	Acetone 1,1,1-Trichloroethene Barium Selenium

TABLE 2-5
(Continued)

UST	Area	Pertinent Information	COCs
5	5	**Former Location:** Approximately 10 feet E of Garage (Bldg. 31) **Former Volume:** 200 gallons **Material:** Wastewater from Oil/Water Separator -contained hydraulic oil, motor oil, gasoline, diesel fuel and cleaning solvents (such as 1,1,1-Trichloroethane at 6.3-6.9 mg/kg) **Former Size:** 22 foot diameter x 6 foot length; steel	Acetone Aroclors/PCBs Benzene Carbon Tetrachloride Cyclohexanone (no FRL) 1,2-Dichloroethane 1,1-Dichloroethene Ethylbenzene Ethyl Ether (no FRL) Methylene Chloride Methyl Ethyl Ketone Methyl Isobutyl Ketone (no FRL) Tetrachloroethene Toluene 1,1,1-Trichloroethane (no FRL) Trichloroethene Trifluorochloromethane (no FRL) Xylene Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver

[a]From the SEP, Table 2-2.

TABLE 2-6
TCLP RESULTS FOR SAMPLES WITH CONCENTRATIONS ABOVE THE RCRA 20-TIMES LEVEL

Boring	Depth below Surface	Constituent	Totals Result (mg/kg)	TCLP Result (mg/L)	TCLP Regulatory Level (mg/L)
12862	2-2.5 feet	Lead	141	0.014	5.0
12863	3.5-4 feet	Trichloroethene	12,300	0.055 [a]	0.5
12864	0-0.5 feet	Chromium	140	0.0202	5.0
12864	0-0.5 feet	Lead	12,000	1.20	5.0
12865	8-8.5 feet	Perchloroethene	20,100	0.16 [a]	0.7
12865	8.5-9 feet	Perchloroethene	20,900	0.23 [a]	0.7
12865	10-10.5 feet	Trichloroethene	24,700	0.11 [a]	0.5
12865	10-10.5 feet	Perchloroethene	34,700	0.18 [a]	0.7
12865	10.5-11 feet	Trichloroethene	25,400	0.12 [a]	0.5
12865	10.5-11 feet	Perchloroethene	20,200	0.044 [a]	0.7
12866	4-4.5 feet	Lead	241	0.043 [b] (non-detect)	5.0
12866	10.5-11 feet	Trichloroethene	27,500	0.13	0.5
12866	10.5-11 feet	Perchloroethene	50,400	0.51	0.7
12866	11-11.5 feet	Trichloroethene	29,700	0.31	0.5
12866	11.5-12 feet	Trichloroethene	26,300	0.44	0.5
12868	0.5-1 feet	Lead	111	0.0321	5.0

[a]TCLP result was from re-sampled soil collected at the same location and depth below surface due to expired hold time for original sample.
[b]TCLP result was from re-sampled soil collected at the same location and depth below surface, due to consumption of the original sample during the totals analysis.

TABLE 2-7
ABOVE-WAC DATA SUMMARY

Boring ID	Depth (feet)	Analyte	Above-WAC Value	WAC Limit
Area 3B				
A3B-P1P-11	1.5-2	Technetium-99	74.4 pCi/g	29.1 pCi/g
A6-18	0-0.5	Total Uranium	3820 mg/kg	1030 mg/kg
	0.5-1	Total Uranium	1160 mg/kg	1030 mg/kg
A6-23	0-0.5	Total Uranium	56700 mg/kg	1030 mg/kg
	0.5-1	Total Uranium	1820 mg/kg	1030 mg/kg
	1-1.5	Total Uranium	2480 mg/kg	1030 mg/kg
	1.5-2	Total Uranium	2880 mg/kg	1030 mg/kg
	2-2.5	Total Uranium	2980 mg/kg	1030 mg/kg
	2.5-3	Total Uranium	3290 mg/kg	1030 mg/kg
	3-3.5	Total Uranium	1630 mg/kg	1030 mg/kg
	3.5-4	Total Uranium	2000 mg/kg	1030 mg/kg
A6-24	0-0.5	Total Uranium	1140 mg/kg	1030 mg/kg
	0.5-1	Total Uranium	1400 mg/kg	1030 mg/kg
	2.5-3	Total Uranium	2560 mg/kg	1030 mg/kg
A6-25	0-0.5	Total Uranium	14900 mg/kg	1030 mg/kg
	1-1.5	Total Uranium	1530 mg/kg	1030 mg/kg
	4-4.5	Total Uranium	2720 mg/kg	1030 mg/kg
	4.5-5	Total Uranium	1330 mg/kg	1030 mg/kg
A6-26	0-0.5	Total Uranium	3490 mg/kg	1030 mg/kg
	2-2.5	Total Uranium	1580 mg/kg	1030 mg/kg
	2.5-3	Total Uranium	2630 mg/kg	1030 mg/kg
	4-4.5	Total Uranium	2500 mg/kg	1030 mg/kg
A6-28	1.5-2	Total Uranium	2240 mg/kg	1030 mg/kg
A6-29	0-0.5	Total Uranium	2970 mg/kg	1030 mg/kg
PLANT1PAD-21D	0-0.5	Technetium-99	118.2 pCi/g	29.1 pCi/g
PLANT1PAD-86	0-0.5	Technetium-99	53.7 pCi/g	29.1 pCi/g
ZONE 1-273	0-0.5	Total Uranium	12321 mg/kg	1030 mg/kg
	0.5-1	Total Uranium	4921 mg/kg	1030 mg/kg

TABLE 2-7
(Continued)

Boring ID	Depth (feet)	Analyte	Above-WAC Value	WAC Limit
Area 4B				
1179	1-1.5	Total Uranium	1916 mg/kg	1030 mg/kg
1183	0-0.5	Total Uranium	5310 mg/kg	1030 mg/kg
1199	0-0.5	Total Uranium	5685 mg/kg	1030 mg/kg
1236	6-6.5	Technetium-99	205 pCi/g	29.1 pCi/g
1248	1-1.5	Technetium-99	55.3 pCi/g	29.1 pCi/g
1258	1.5-2	Technetium-99	78.8 pCi/g	29.1 pCi/g
1798	0-0.5	Technetium-99	37.4 pCi/g	29.1 pCi/g
12863	2.5-3	Total Uranium	2390 mg/kg	1030 mg/kg
	3-3.5	Total Uranium	5310 mg/kg	1030 mg/kg
	3.5-4	Total Uranium	1050 mg/kg	1030 mg/kg
	4.5-5	Total Uranium	1430 mg/kg	1030 mg/kg
A4B-P2-23	2-2.5	Technetium-99	352 pCi/g	29.1 pCi/g
ZONE 1-30	0-0.5	Total Uranium	4315 mg/kg	1030 mg/kg
ZONE 1-32	1-1.5	Total Uranium	1356 mg/kg	1030 mg/kg
ZONE 1-33	0-0.5	Total Uranium	23726 mg/kg	1030 mg/kg
	0.5-1	Total Uranium	1185 mg/kg	1030 mg/kg
	1-1.5	Total Uranium	2952 mg/kg	1030 mg/kg
ZONE 1-38	0-0.5	Technetium-99	320 pCi/g	29.1 pCi/g
	0-0.5	Total Uranium	43064 mg/kg	1030 mg/kg
	0.5-1	Total Uranium	2243 mg/kg	1030 mg/kg
	1-1.5	Total Uranium	2816 mg/kg	1030 mg/kg
ZONE 1-65	0-0.5	Total Uranium	1239 mg/kg	1030 mg/kg
ZONE 1-66	0-0.167	Total Uranium	7077 mg/kg	1030 mg/kg
	0-0.5	Total Uranium	7013 mg/kg	1030 mg/kg
	0-0.5	Technetium-99	35 pCi/g	29.1 pCi/g
	0.5-1	Total Uranium	1235 mg/kg	1030 mg/kg

TABLE 2-8
AREA 3B/4B/5 REVISED LIST OF AREA-SPECIFIC CONSTITUENTS OF CONCERN

Area 3B/4B	Area 5
Primary COCs	*Primary COCs*
Radium-226	Radium-226
Radium-228	Radium-228
Thorium-228	Thorium-228
Thorium-232	Thorium-232
Total Uranium	Total Uranium
Secondary COCs	*Secondary COCs*
Aroclor-1254	Aroclor-1254
Arsenic	Arsenic
Beryllium	Beryllium
1,1-Dichloroethene	
1,2-Dichloroethene	
Technetium-99	
Tetrachloroethene	
Trichloroethene	

TABLE 2-9
EXCAVATION BOUNDARIES FOR AREA 3B/4B/5 ABOVE-WAC AREAS

WAC Area and Defining Boring		WAC COCs	Above-WAC Area Boundary				Depth (feet)
			North	East	South	West	
1	Plant 1 Pad - Northwest RI/FS boring Zone 1-273	U	A6-19 and 20	A6-20 and 22	A6-21 and 22	A6-19 and 21	0-1
2	Plant 1 Pad - North Central Area of process material	U	A6-30	A6-34	A6-34 and 35	A6-32 and 33	0-6
3	Plant 1 Pad - TS 4 RI/FS boring PLANT1PAD-21D	Tc	A3B-P1P-02	A3B-P1P-03	A3B-P1P-04	A3B-P1P-05	0-3
4	Plant 1 Pad - Southwest RI/FS boring PLANT1PAD-86	Tc	A3B-P1P-15	A3B-P1P-12	A3B-P1P-3	A3B-P1P-14	0-2
5	Plant 2 - Northwest RI/FS boring 1179	Tc, U	A4B-P2-24	A4B-P2-25	A4B-P2-26	A4B-P2-05	0-3.5
6	Plant 2 - Northeast RI/FS boring 1183	U	A4B-P2-34	A4B-P2-37	A4B-P2-35	A4B-P2-36	0-1
7	Plant 2 - Southwest RI/FS boring 1199	Tc, U	A4B-P2-28	A4B-P2-31	A4B-P2-18	A4B-P2-27	0-3
8	Plant 8 - North RI/FS boring 1236	Tc, U	A4B-P8-02	A4B-P8-15	A4B-P8-08	A4B-P8-16	0-10
9	Plant 8 - Central RI/FS boring 1798	Tc	A4B-AT-6	1238	1807	1807	0-10.5
10	Pilot Plant - Northwest RI/FS boring 1248	Tc, U	1247	Pilot Plant - Wet Side Wall	A4B-PP-04	A4B-PP-05	0-6.5
11	Pilot Plant - Southwest Predesign boring 12863	U	12862	12865	12866	12867	0-5
12	Pilot Plant - South RI/FS boring 1258	Tc, U	12871	12872	12873	12874	0-3
13	Lab Building - Loading Dock RI/FS boring Zone 1-66	Tc, U	A4B-LAB-02	A4B-LAB-03	A4B-LAB-04	A4B-LAB-05	0-1.5
14	Lab Building - North Courtyard RI/FS boring Zone 1-65	U	A4B-LAB-07	A4B-LAB-08	A4B-LAB-09	A4B-LAB-06	0-1
15	Lab Building - Southwest corner 4 RI/FS Borings	Tc, U	A4B-LAB-11	A4B-LAB-13	A4B-LAB-21	A4B-LAB-15	0-3
16	K-65 Trench	Tc-99	Soil-like/sediment residues in the bottom of the trench, along with the concrete and 2-feet of side wall and underlying soil will be excavated from the portion of K65 trench that remains in Area 4B.				

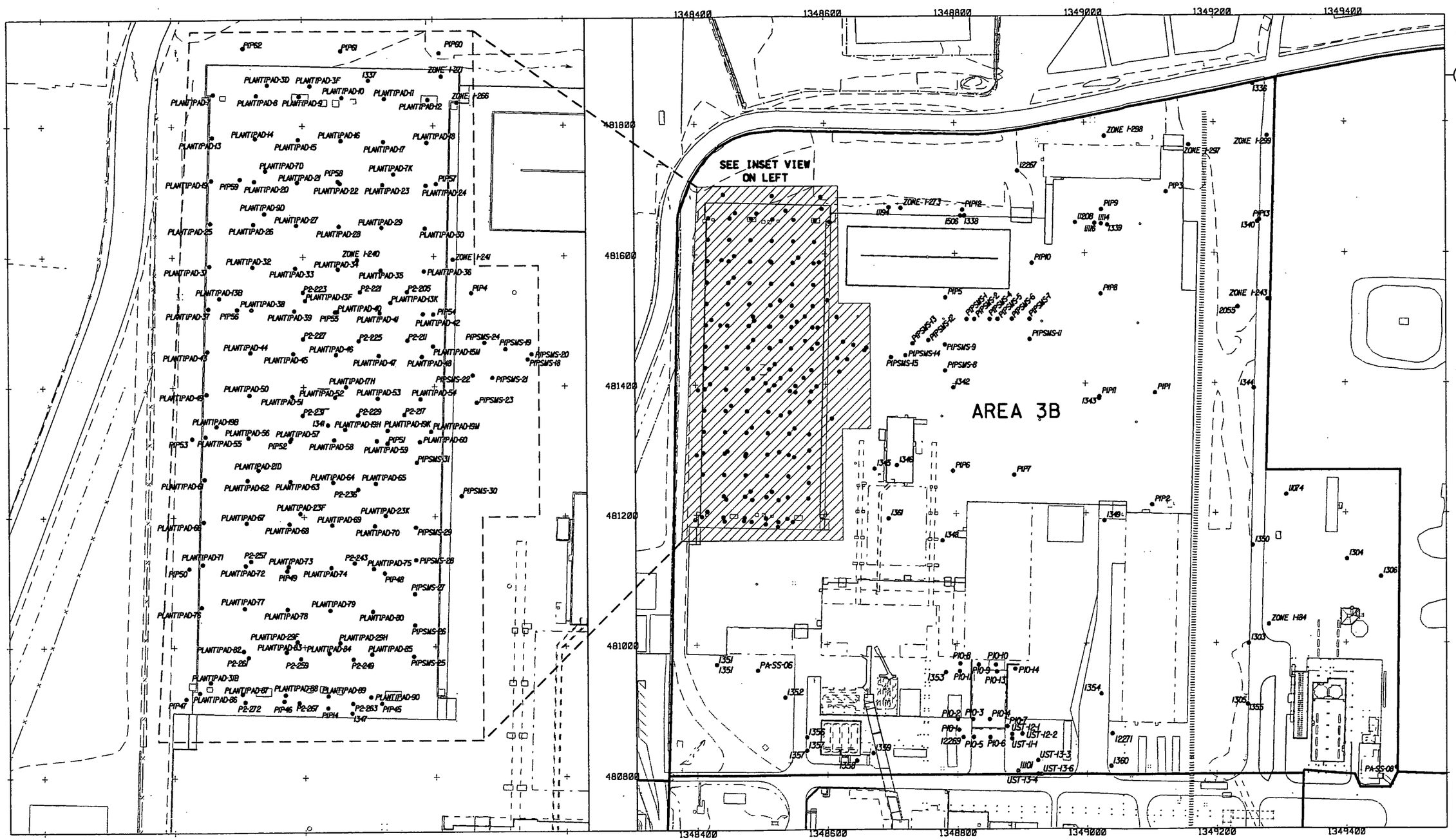

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FIGURE 2-1. RI/FS BORING LOCATIONS IN AREA 3B

FIGURE 2-2. RI/FS BORING LOCATIONS IN AREA 4B

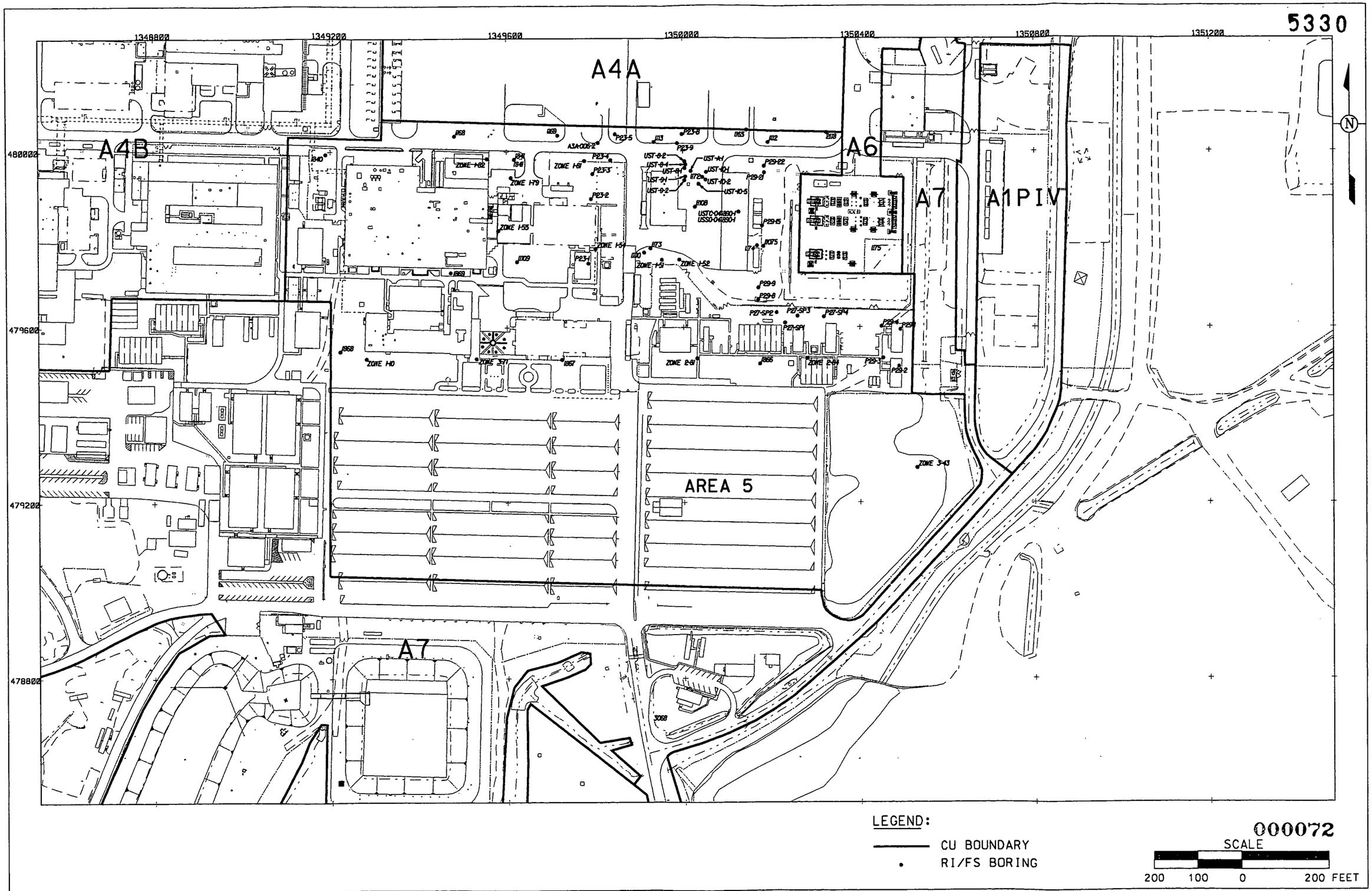

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FIGURE 2-3. RI/FS BORINGS IN AREA 5

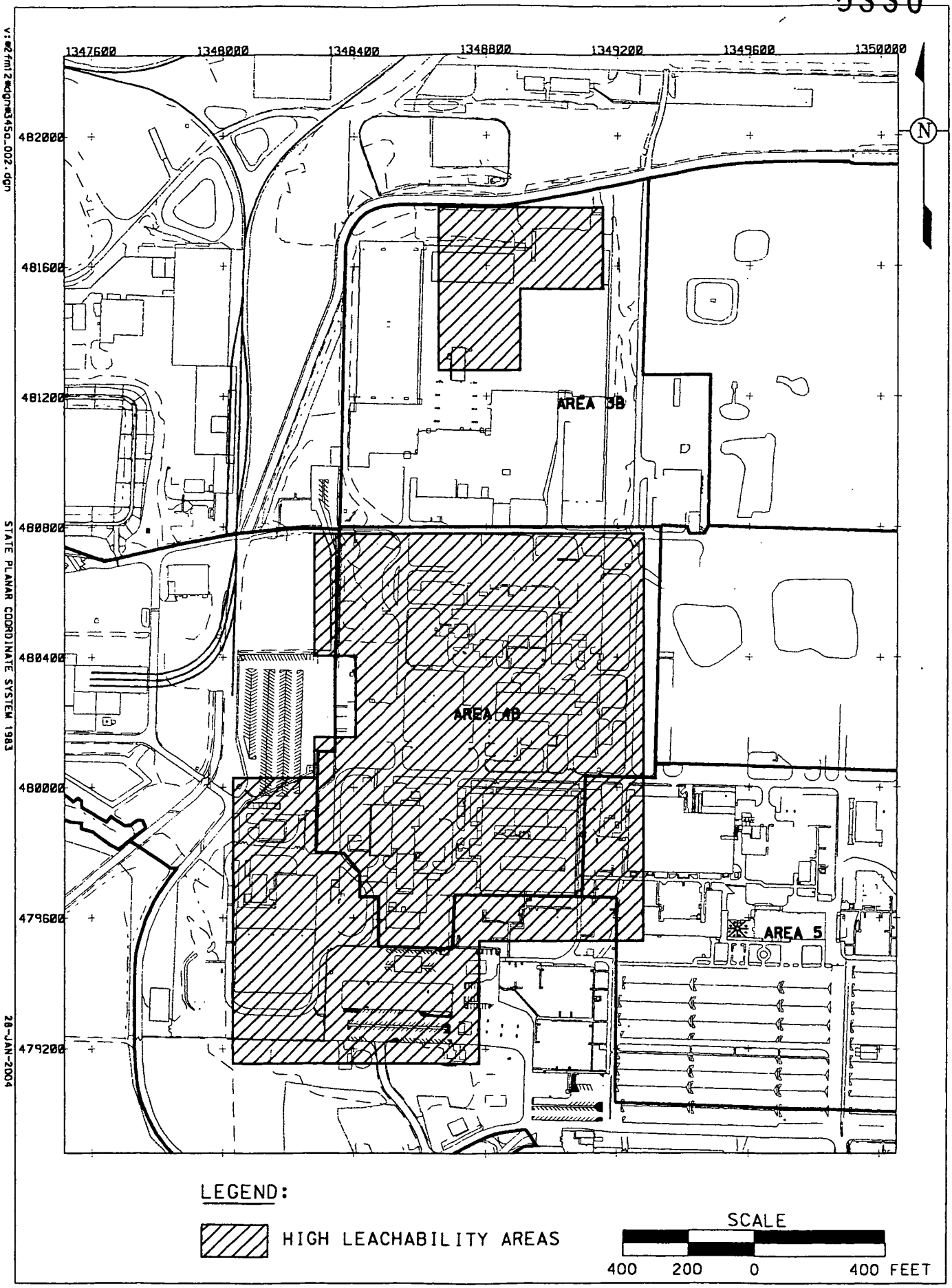
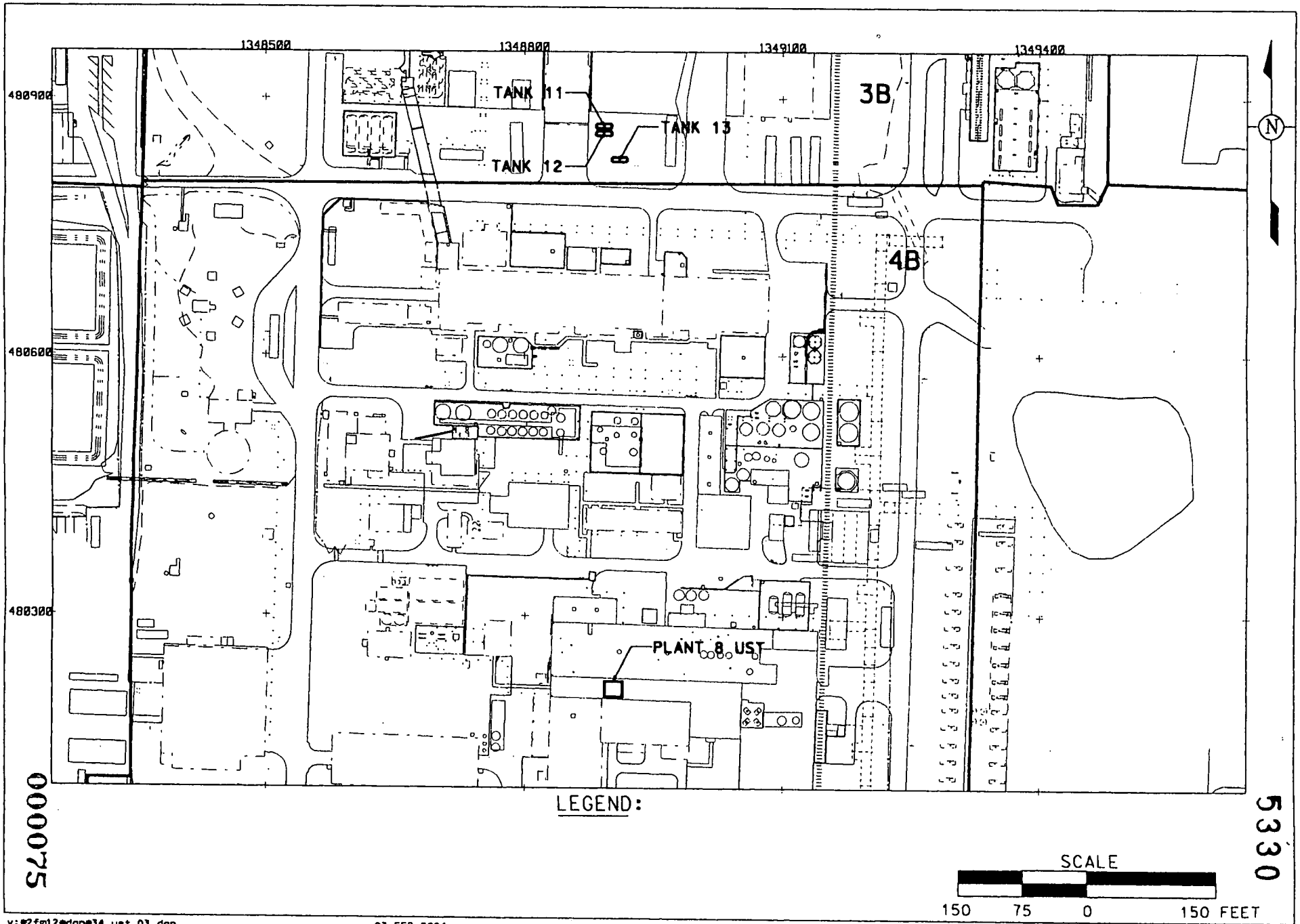


FIGURE 2-4. HIGH LEACHABILITY AREAS IN 3B/4B/5 WHERE TOTAL URANIUM FRL OF 20mg/kg APPLIES.

FIGURE 2-5. HAZARDOUS WASTE MANAGEMENT UNITS IN AREAS 3B/4B



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STATE PLANAR COORDINATE SYSTEM 1983

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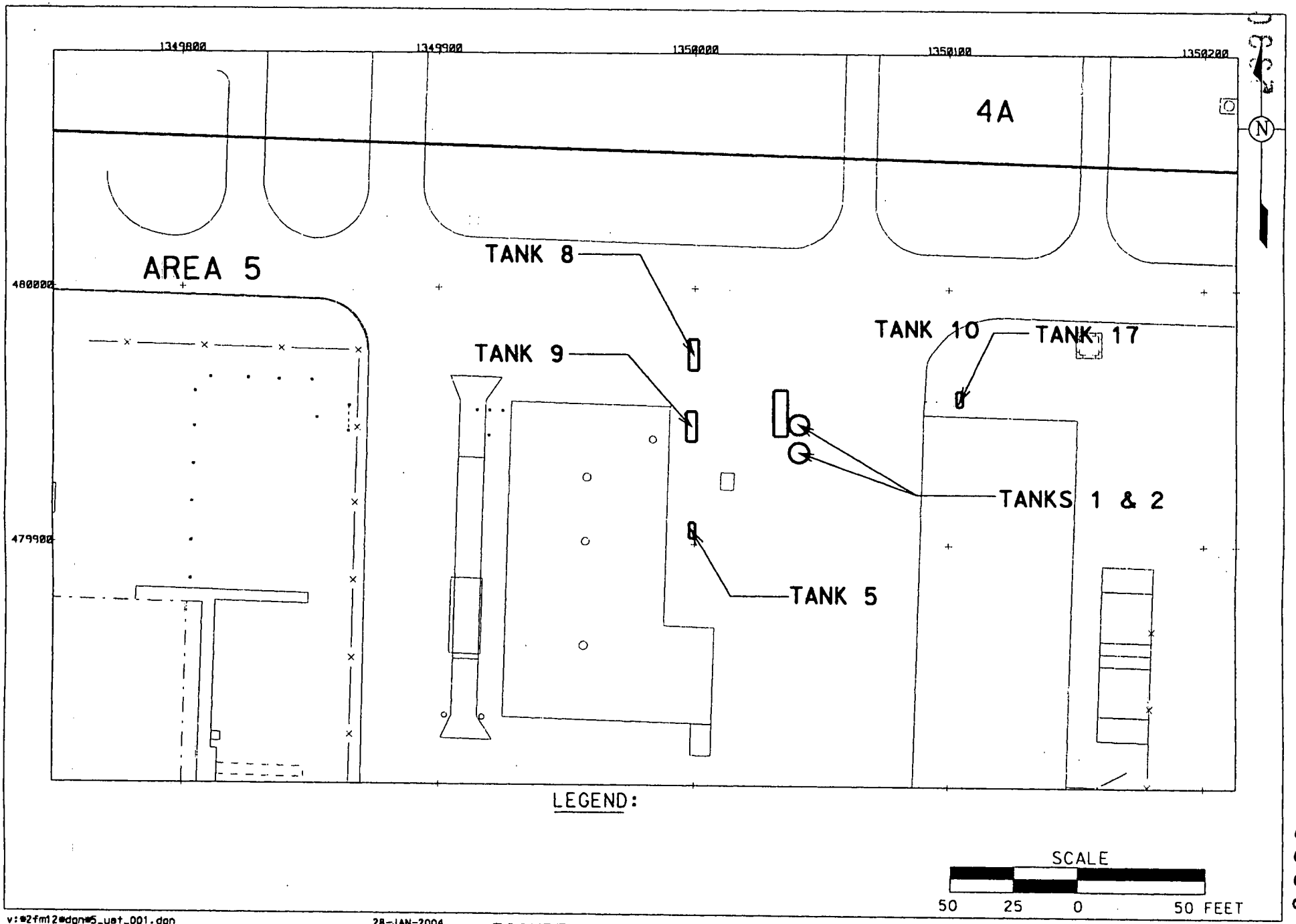
FIGURE 2-6. USTs IN AREA 3B/4B

000075

5330



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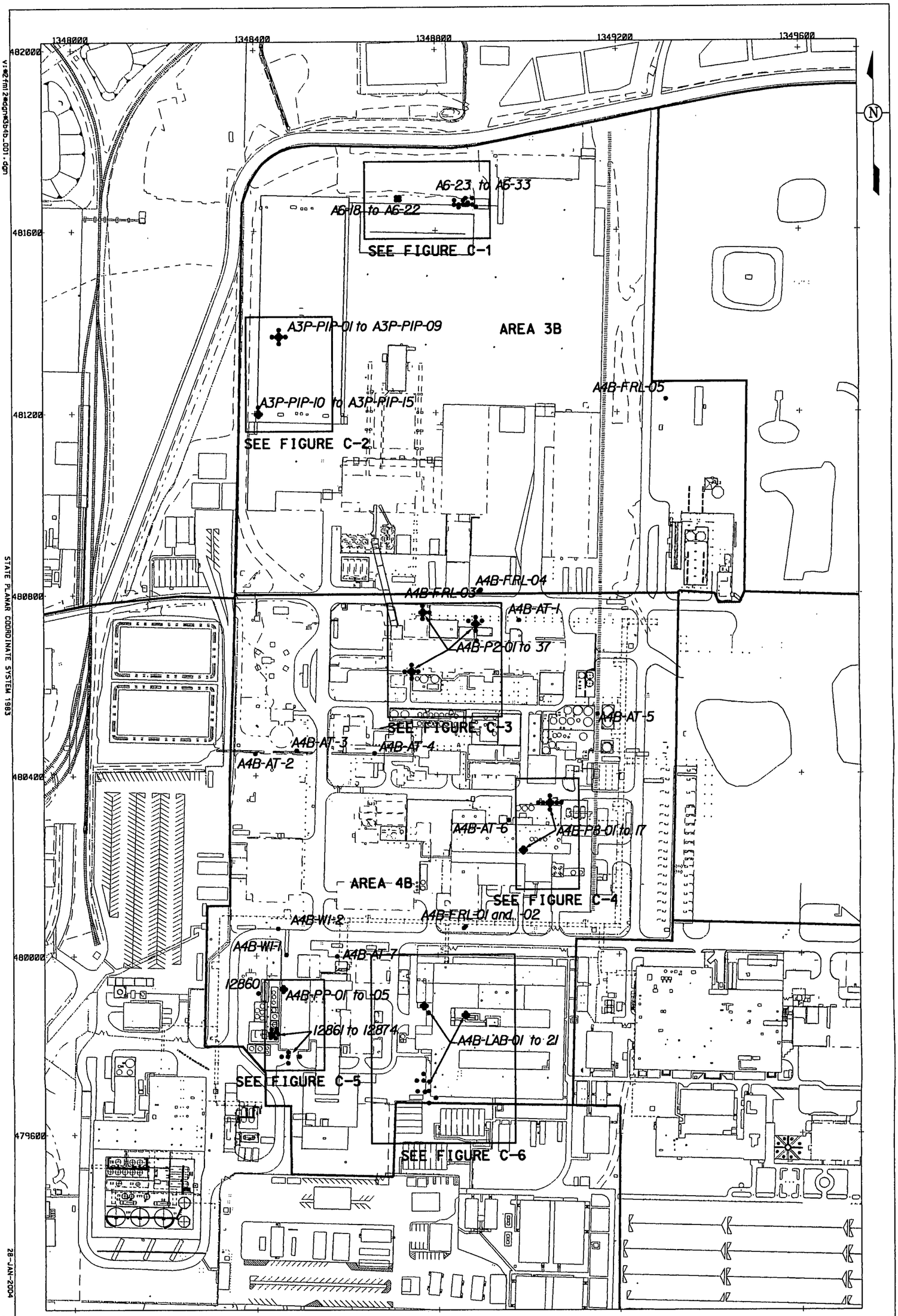
STATE PLANAR COORDINATE SYSTEM 1983

28-JAN-2004

FIGURE 2-7 USTs IN AREA 5



LEGEND:

CU BOUNDARY

• AREA 3B/4B PREDESIGN SAMPLING LOCATION

SCALE

200 100 0 200 FEET

FIGURE 2-8. PREDESIGN INVESTIGATION BORINGS IN AREAS 3B/4B

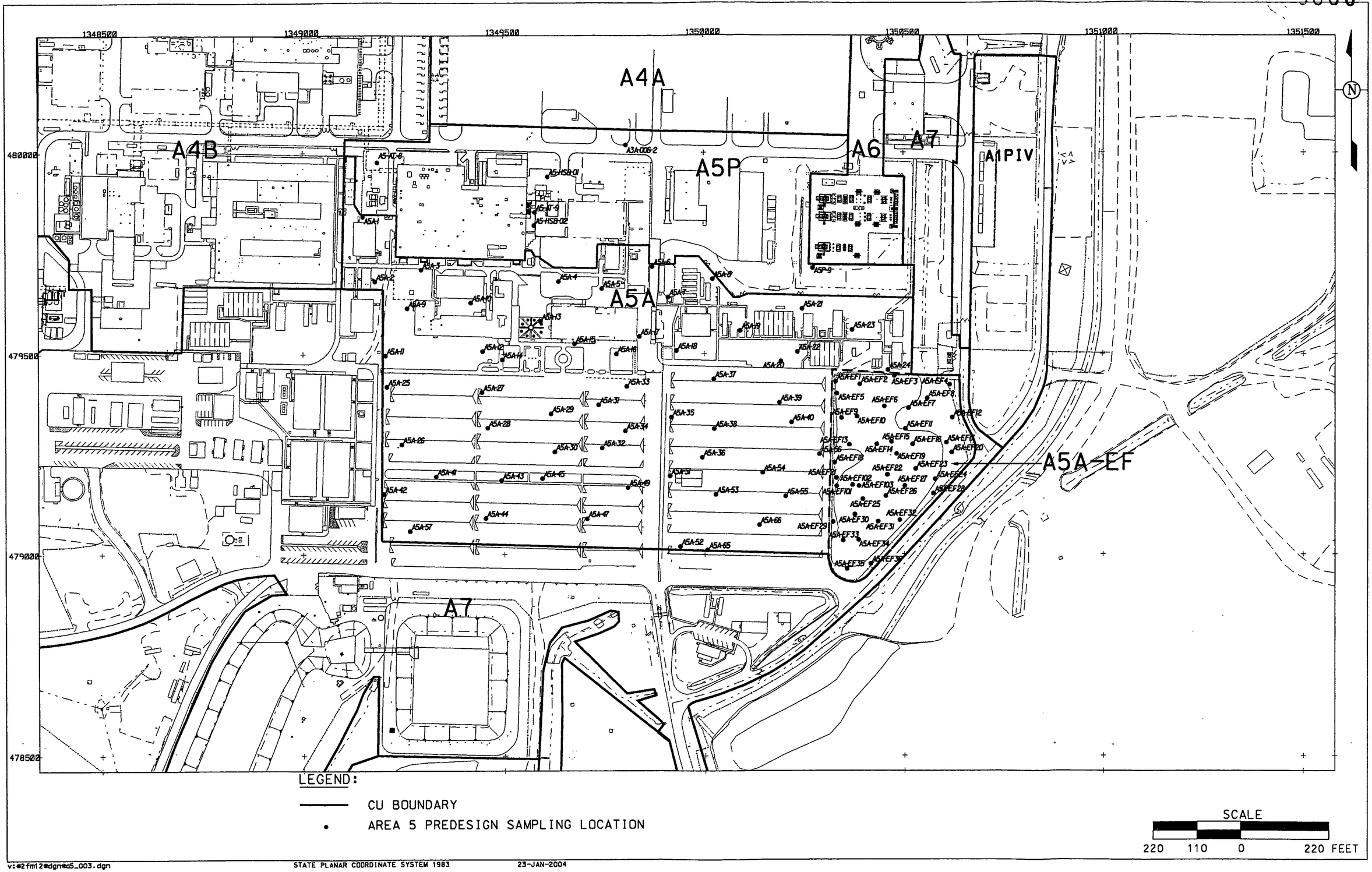


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FIGURE 2-9. PREDESIGN INVESTIGATION SAMPLING LOCATIONS IN AREA 5

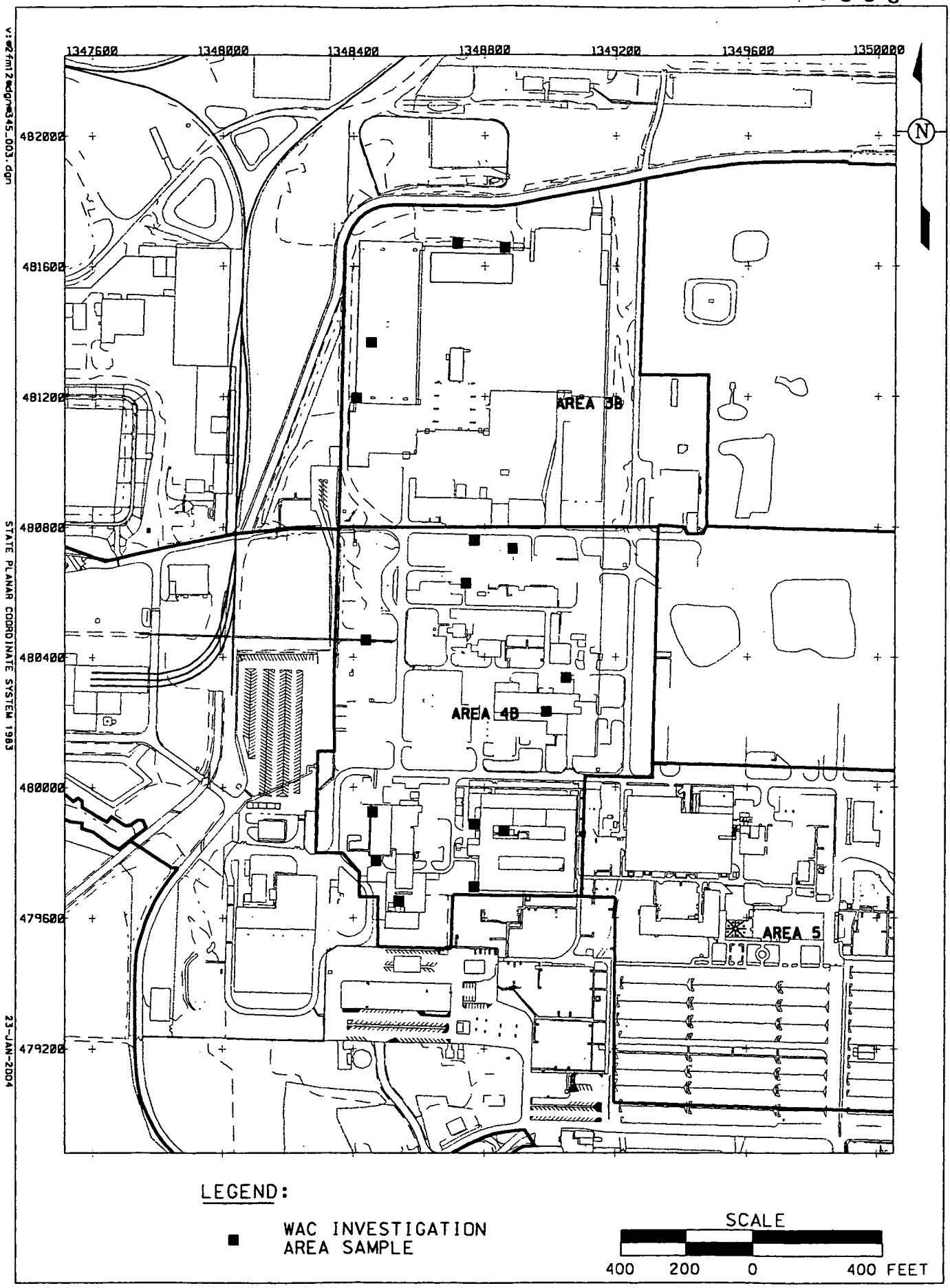
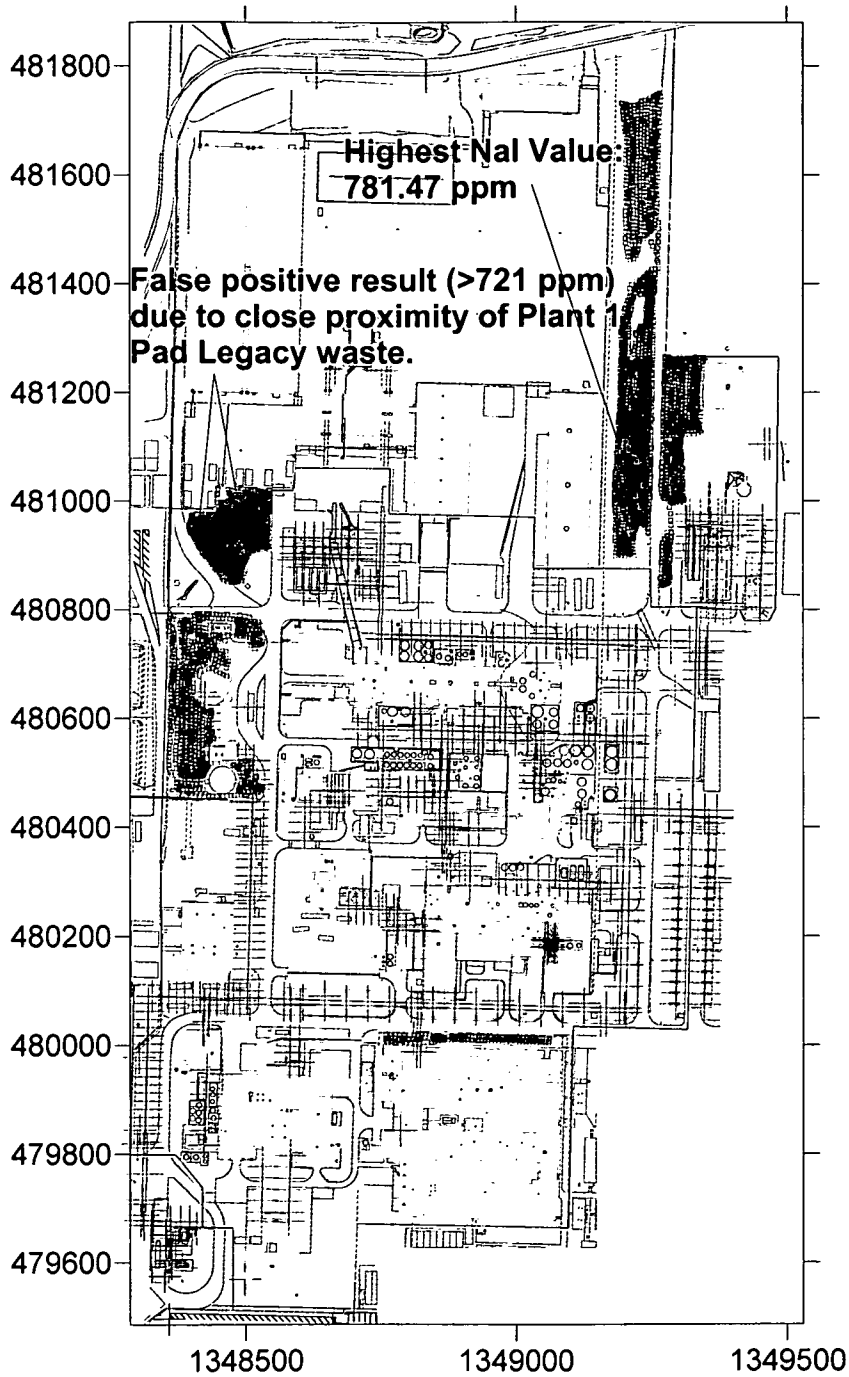


FIGURE 2-10. 3B/4B/5 WAC EXCEEDANCES

Figure 2-11. Area3B/4B Real-Time Total Uranium Results

Moisture Corrected Total Uranium
Field of View to Scale
NaI Batch#: RSS2- 244,356,358-359,363,370
Measurement Dates: 04/03/02 - 09/11/02

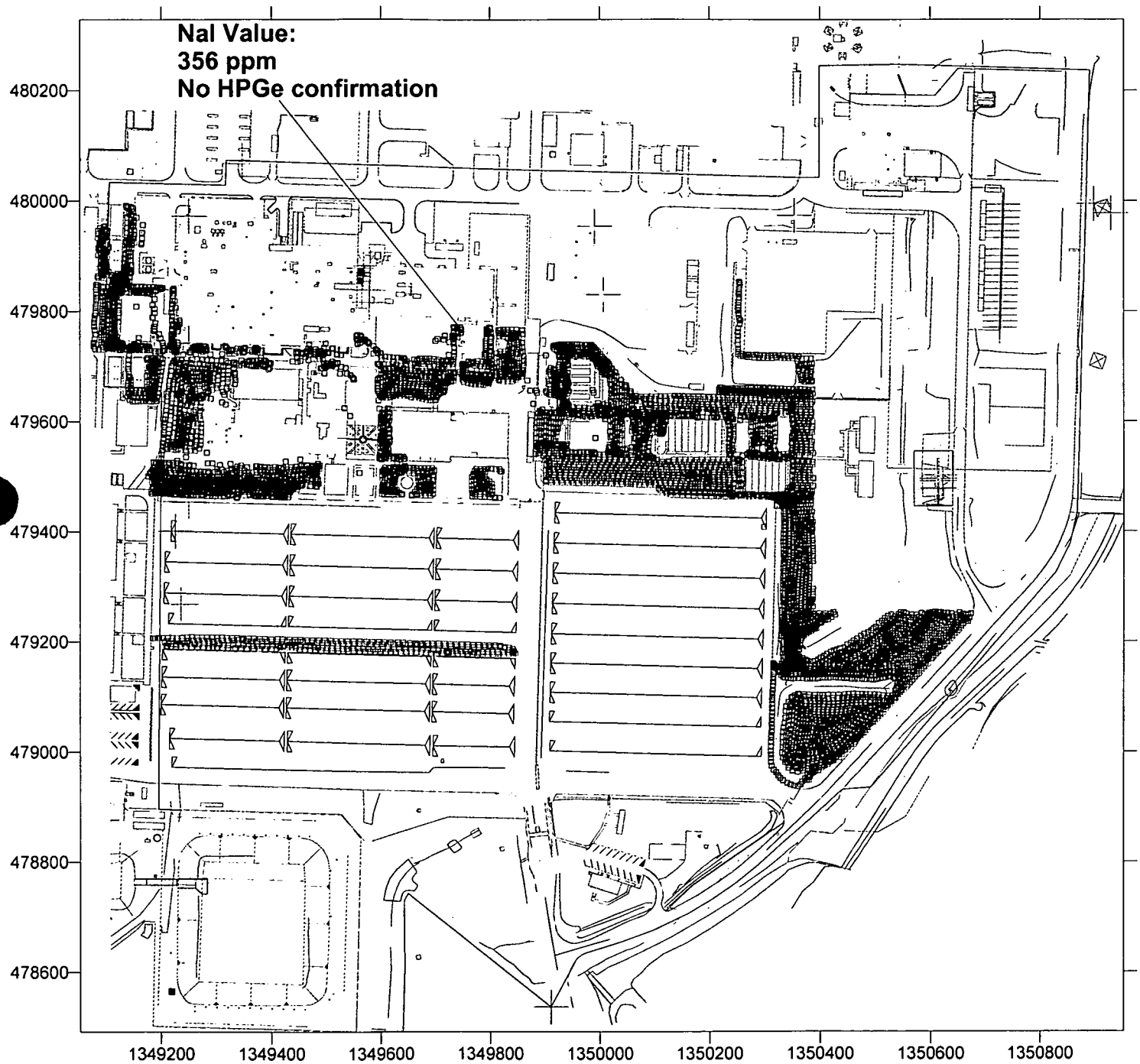


NaI
Total U (ppm)
- -243 to 246
- 246 to 721
- 721 to 9999

RTIMP DWG Title: A3B4B_FIG_2-8_TU.srf
Project Name: A3A/4A Surface PreDesign
Project #: 20200-PSP-0004, Var.7
Prepared By: B. McDaniel/11058
Date Prepared: 09/20/02
Support Data: A3B4B_SF_NaI.xls

Figure 2-12. Area 5 Real-Time Total Uranium Results

Moisture Corrected Total Uranium
Field of View to Scale
NaI Batch#: RSS1- 762; RSS2-284-286,303,437,440,443; RSS3- 44
Measurement Dates: 05/21/02 - 03/27/03



NaI
Total U (ppm)

- -214.00 to 246.00
- 246.00 to 721.00
- 721.00 to 9999.00

RTIMP DWG Title: A5_SF_FIG2-12_TU.srf
Project Name: Area 5 Precertification
Project#: 20810-PSP-0005
Prepared By: Brian McDaniel/11058
Date Prepared: 12/15/03
Support Data: A5_SF_NaI.xls
A5_SF_NaI_V2.0.xls

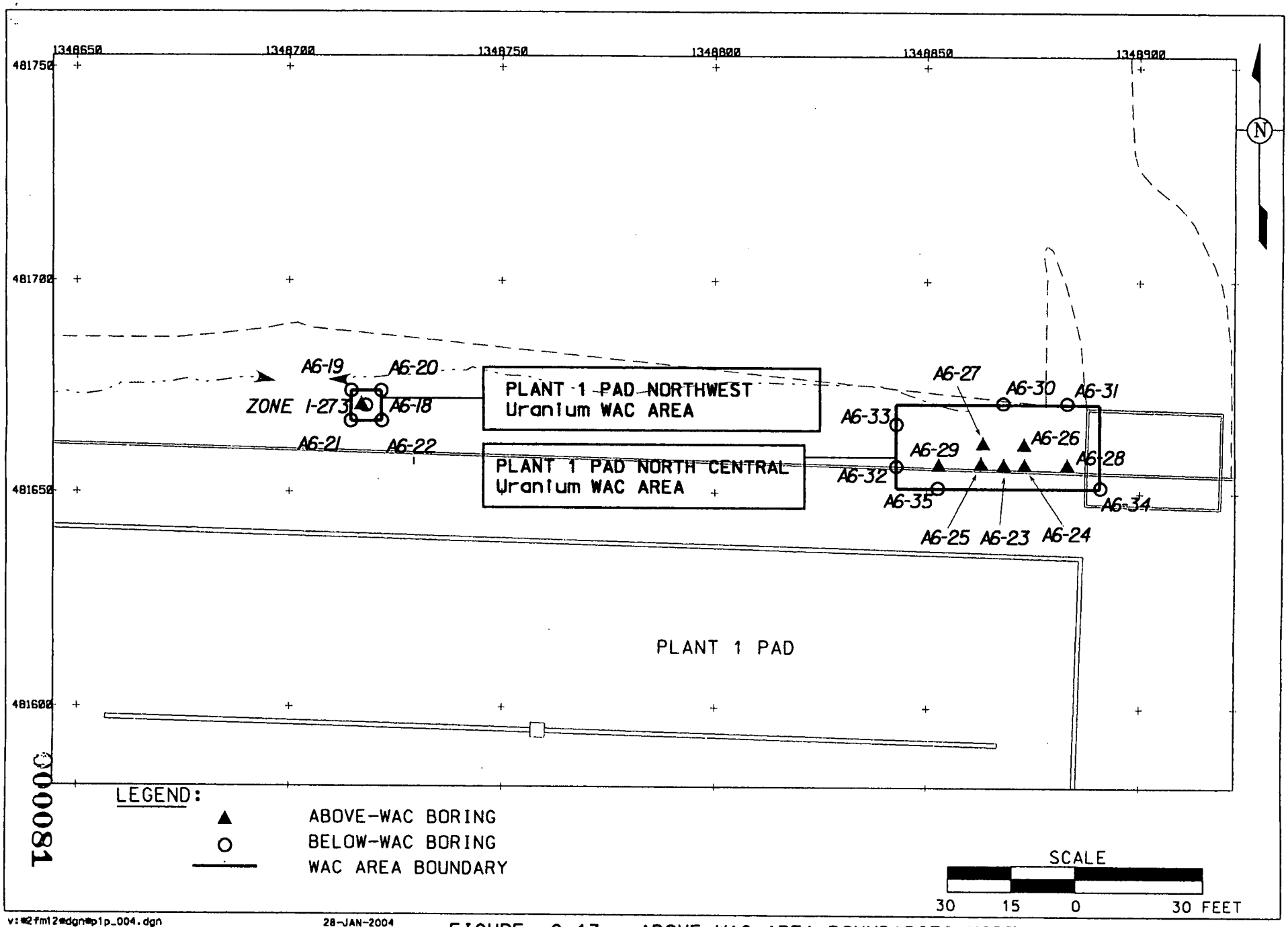


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FIGURE 2-13. ABOVE-WAC AREA BOUNDARIES NORTH OF THE PLANT 1 PAD

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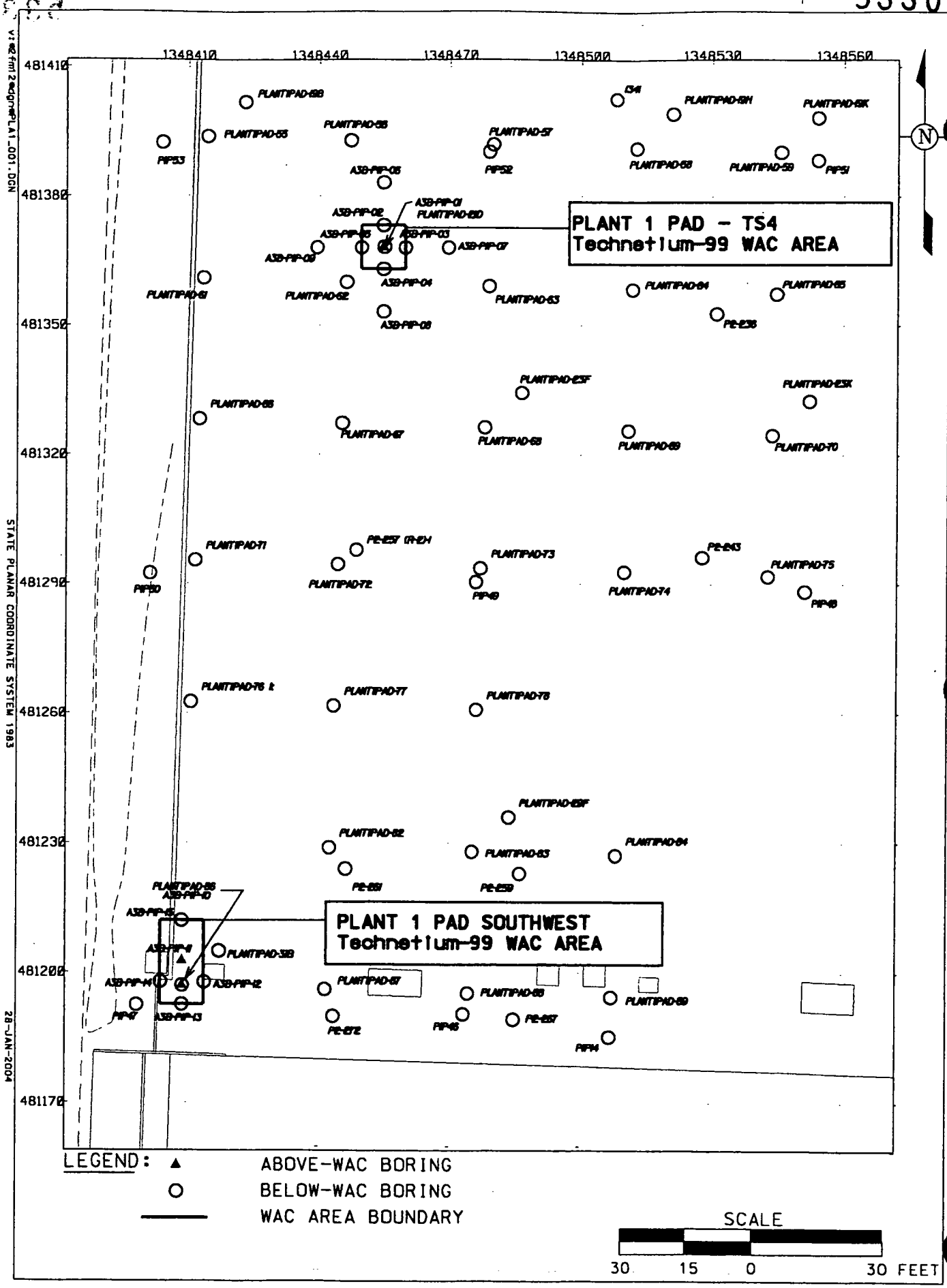

FIGURE 2-14. ABOVE-WAC AREA BOUNDARIES ON THE PLANT 1 PAD

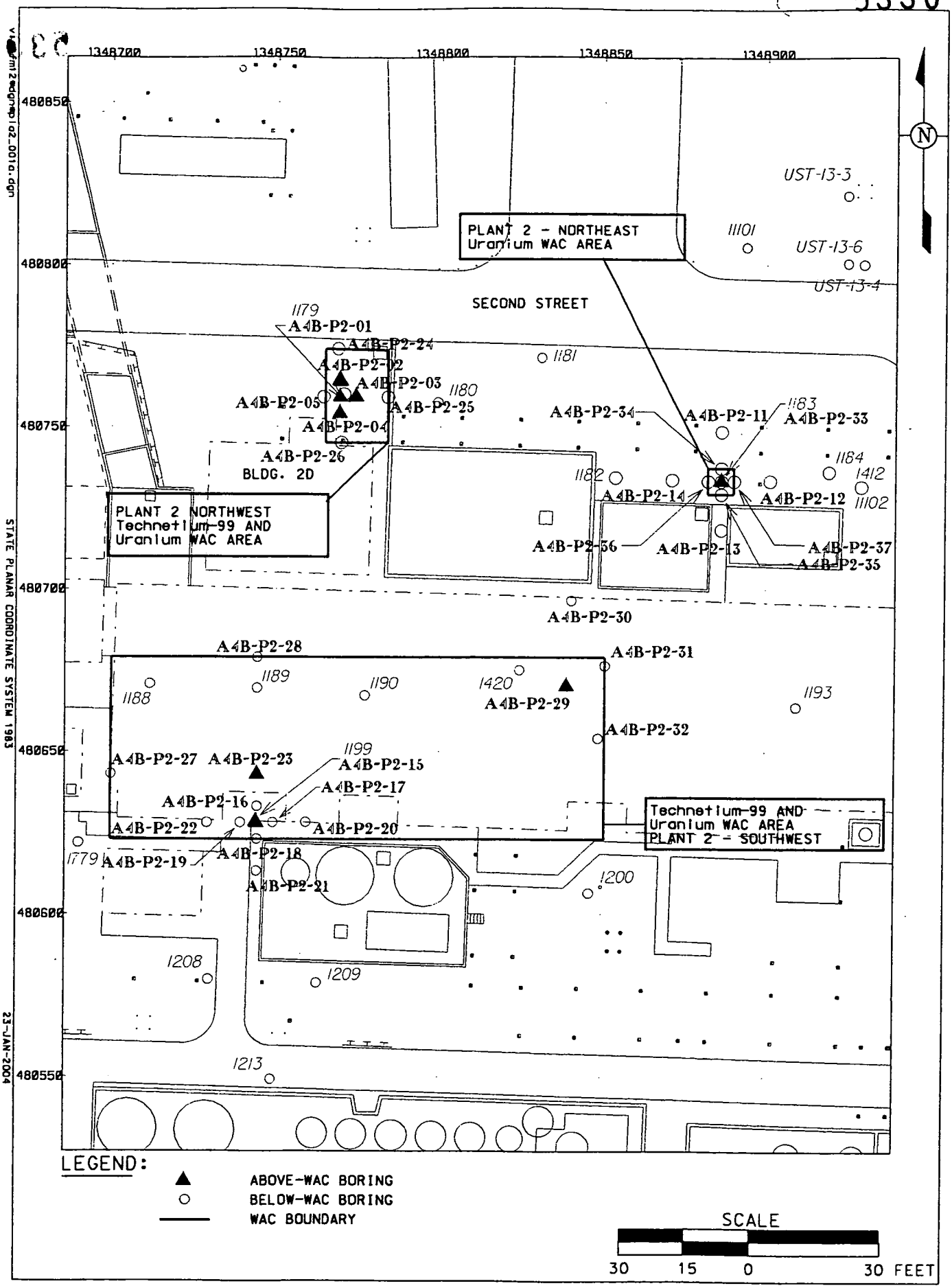

FIGURE 2-15. ABOVE-WAC AREAS IN THE PLANT 2 AREA

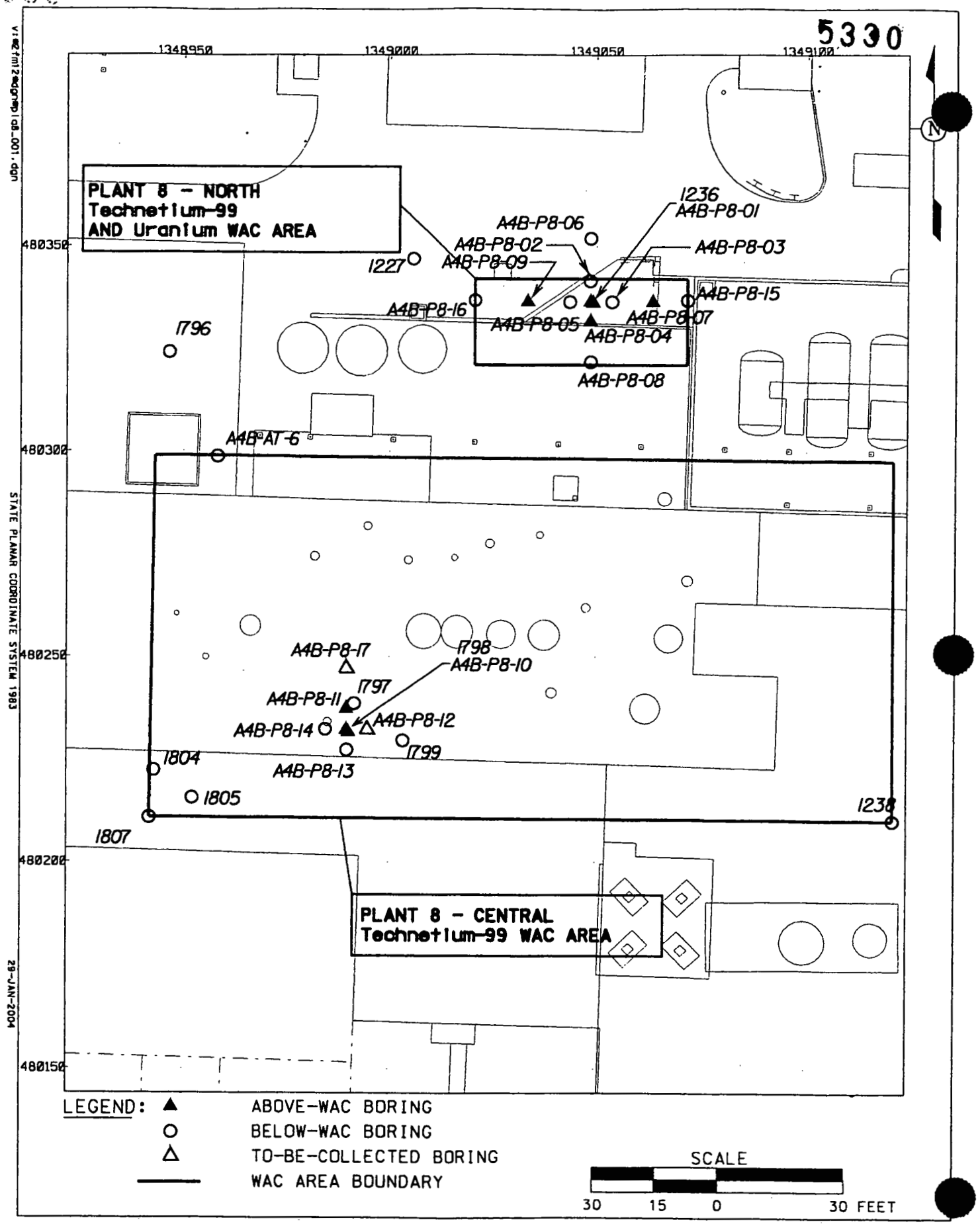

FIGURE 2-16. ABOVE-WAC AREAS IN THE PLANT 8 AREA

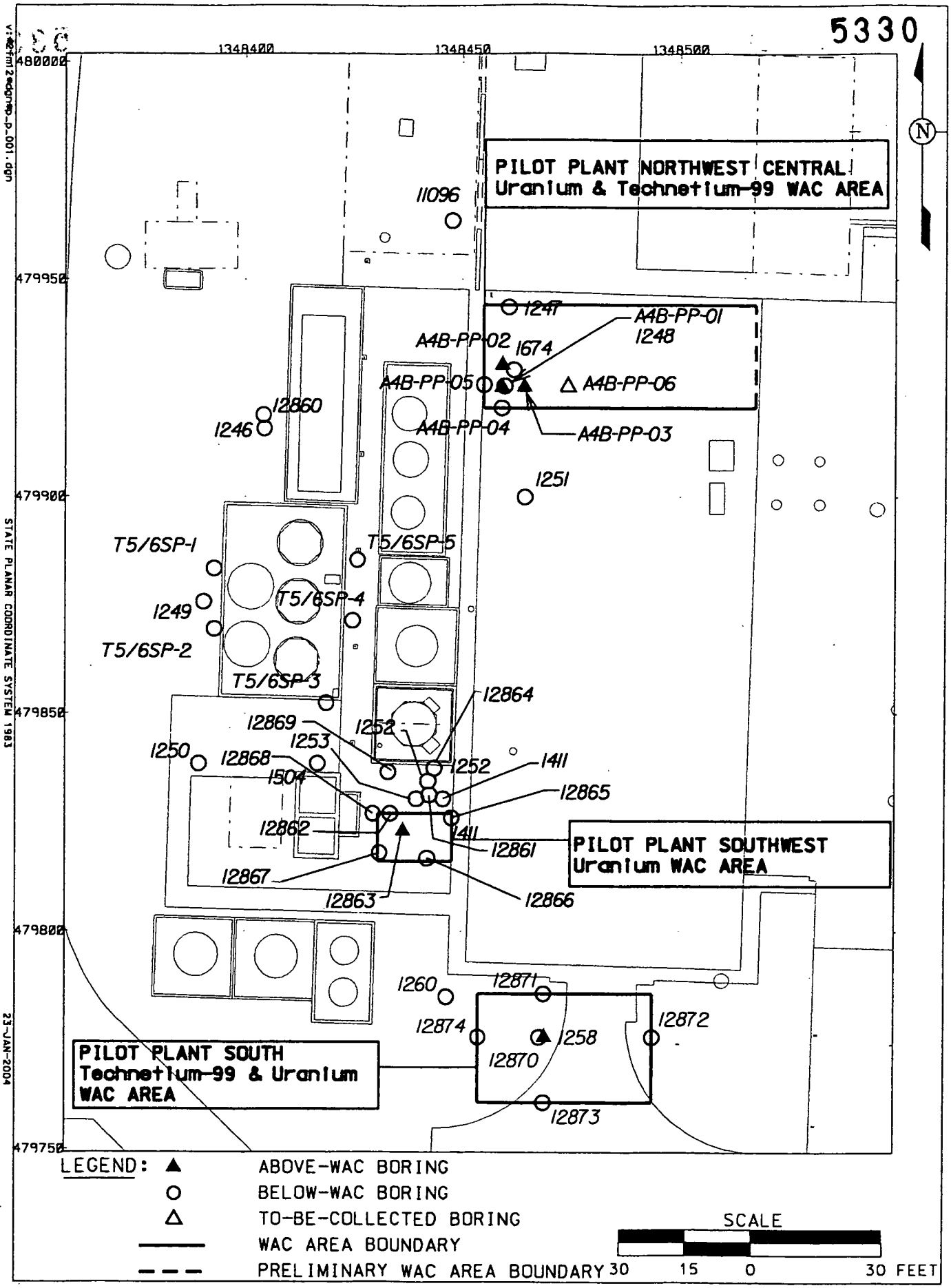

FIGURE 2-17. ABOVE-WAC AREAS IN THE PILOT PLANT AREA

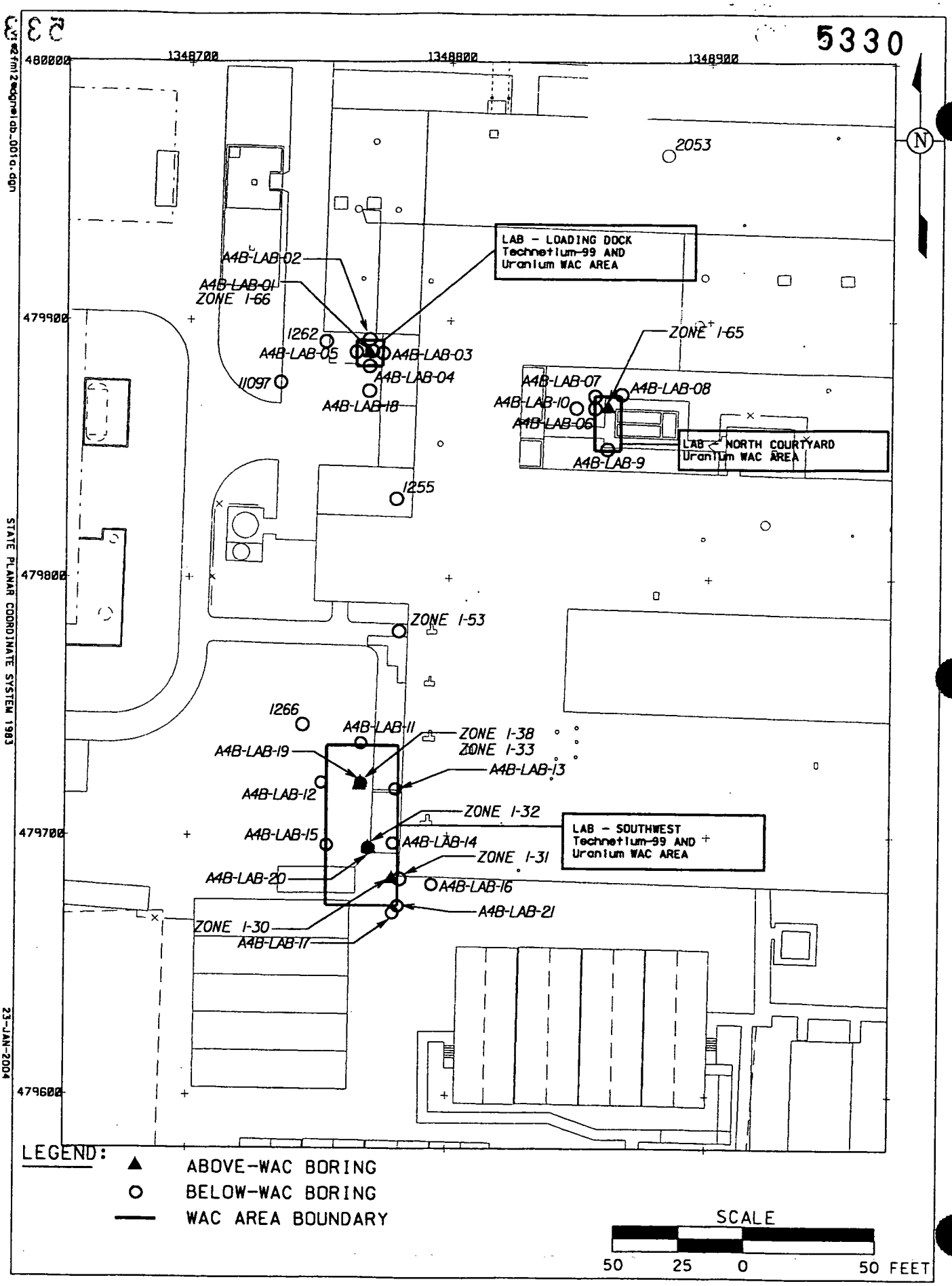

FIGURE 2-18. ABOVE-WAC AREAS IN THE LAB BUILDING AREA

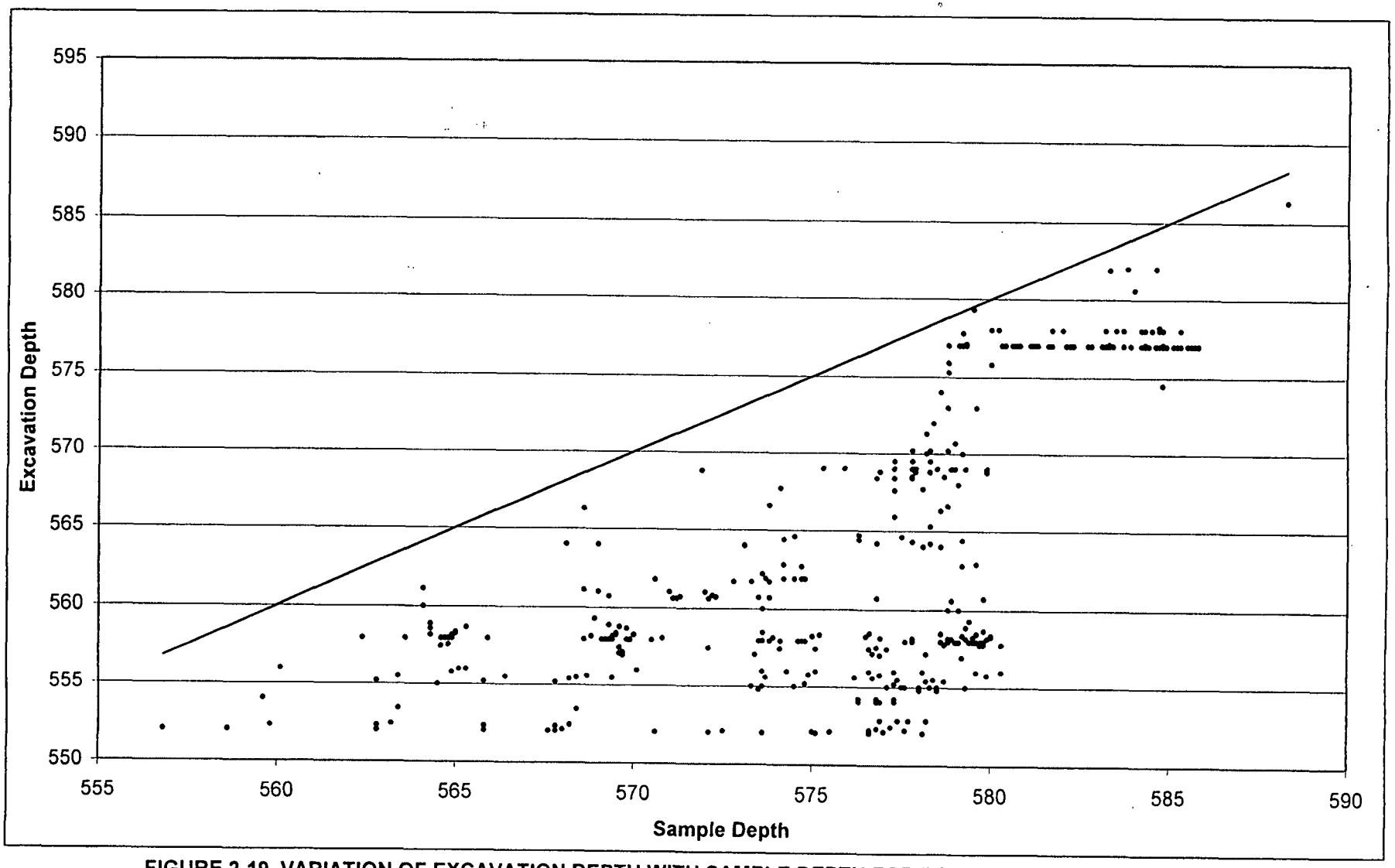

FIGURE 2-19. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR TOTAL URANIUM IN AREAS 3B AND 4B AND INSIDE HIGH LEACHABILITY AREAS

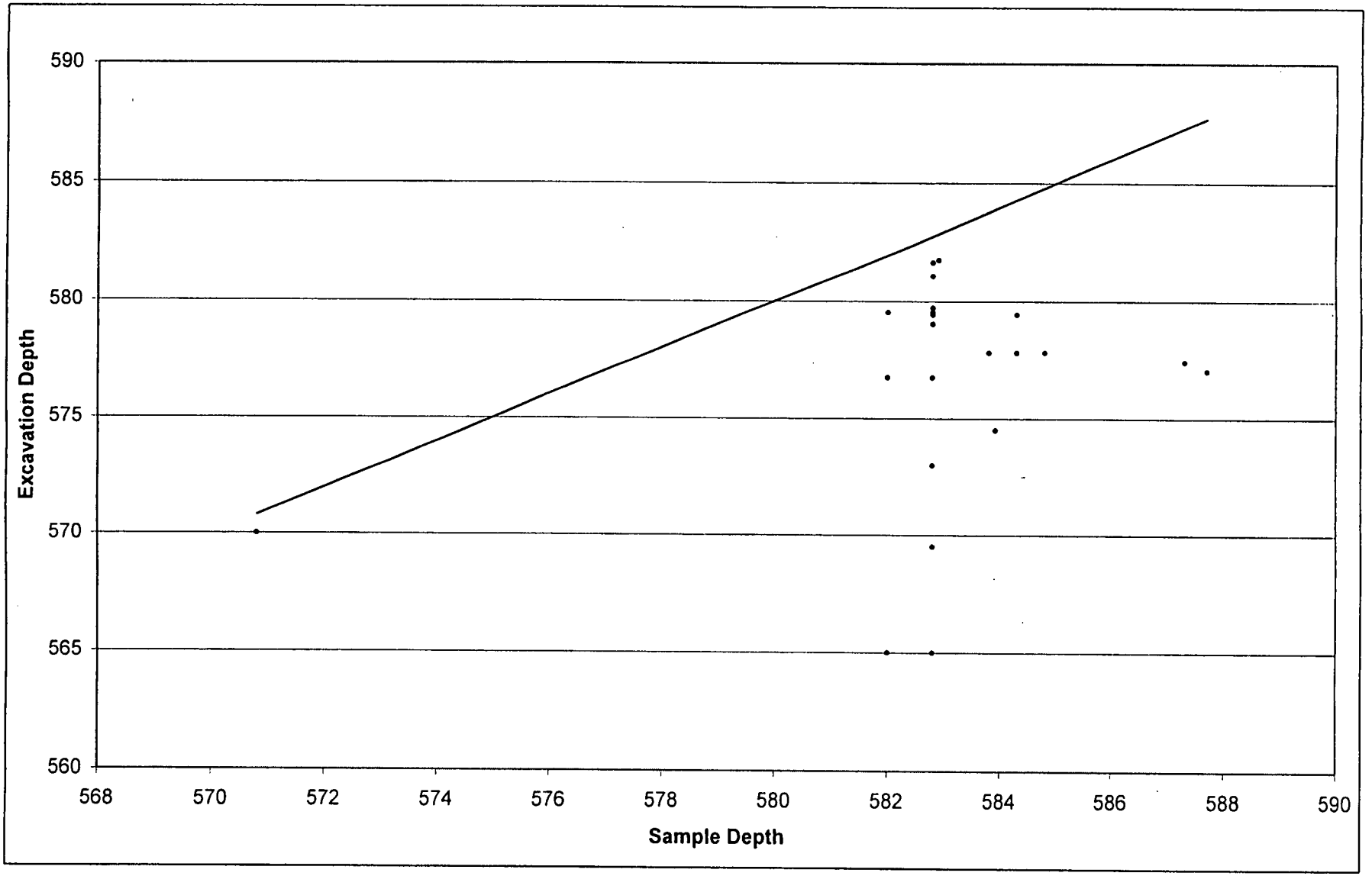

FIGURE 2-20. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR TOTAL URANIUM IN AREAS 3B AND 4B AND OUTSIDE HIGH LEACHABILITY AREAS

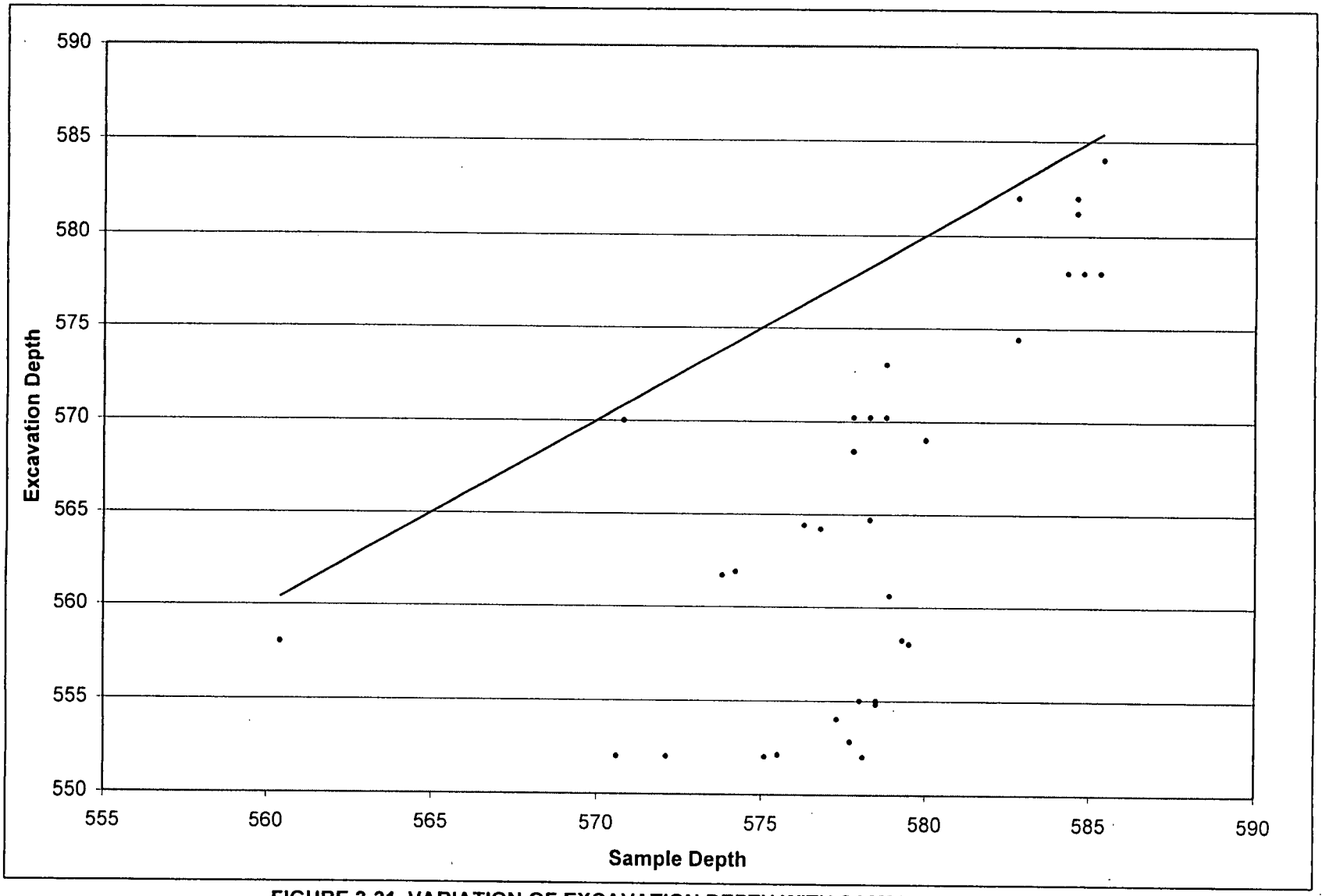

FIGURE 2-21. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR RADIUM-226 IN AREAS 3B AND 4B

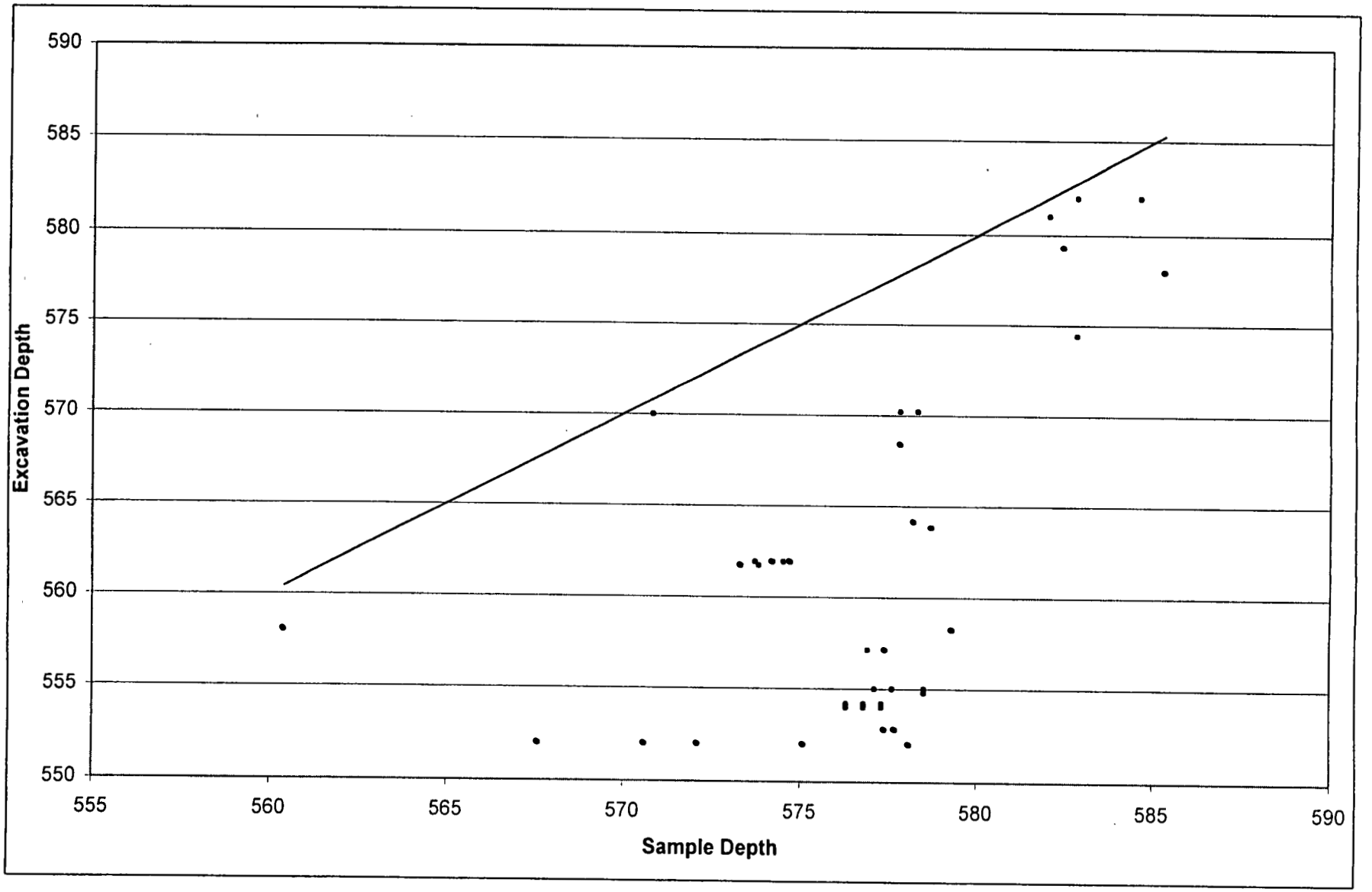

FIGURE 2-22. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR RADIUM-228 IN AREAS 3B AND 4B

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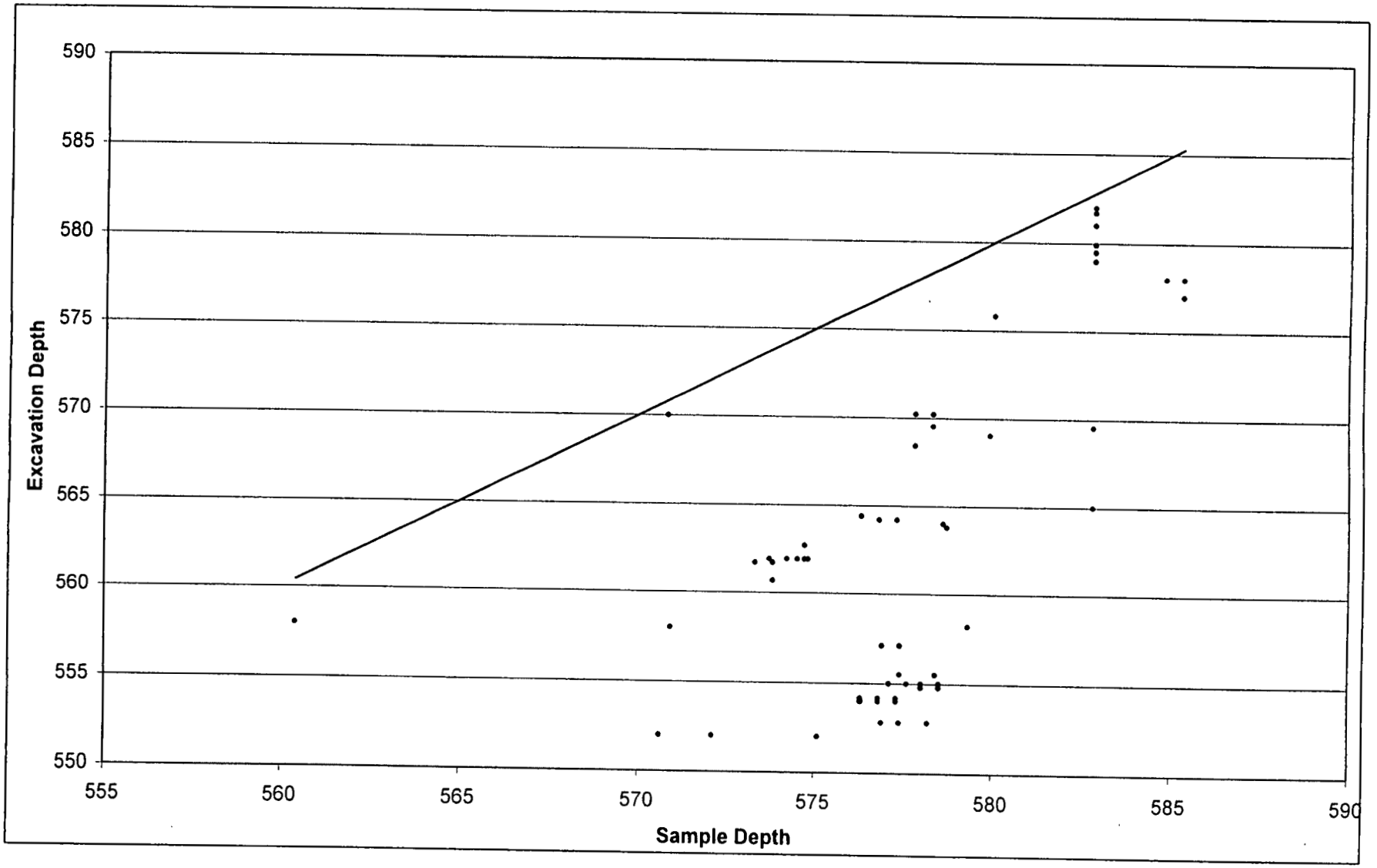

FIGURE 2-23. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR THORIUM-228 IN AREAS 3B AND 4B

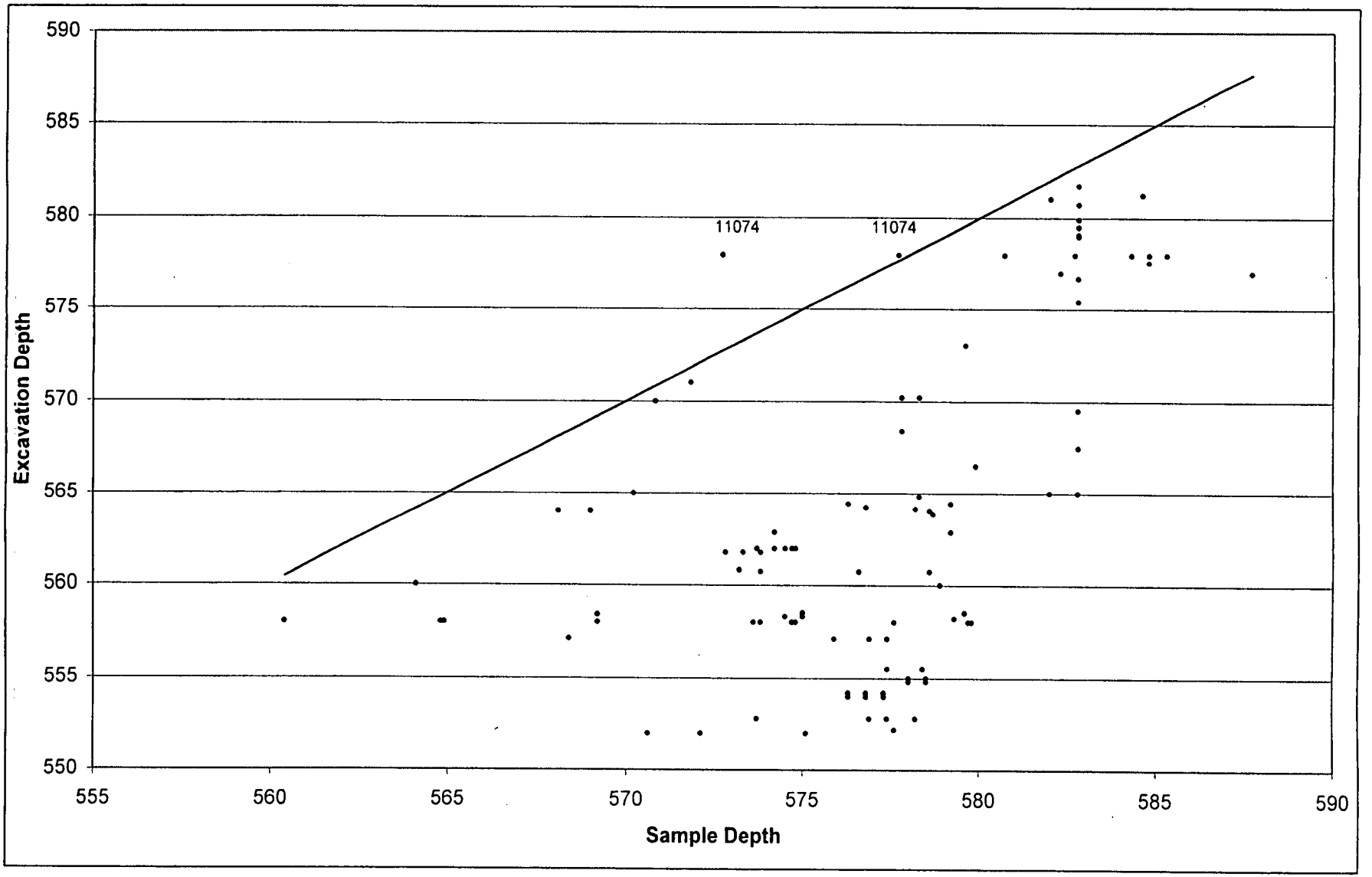

FIGURE 2-24. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR THORIUM-232 IN AREAS 3B AND 4B

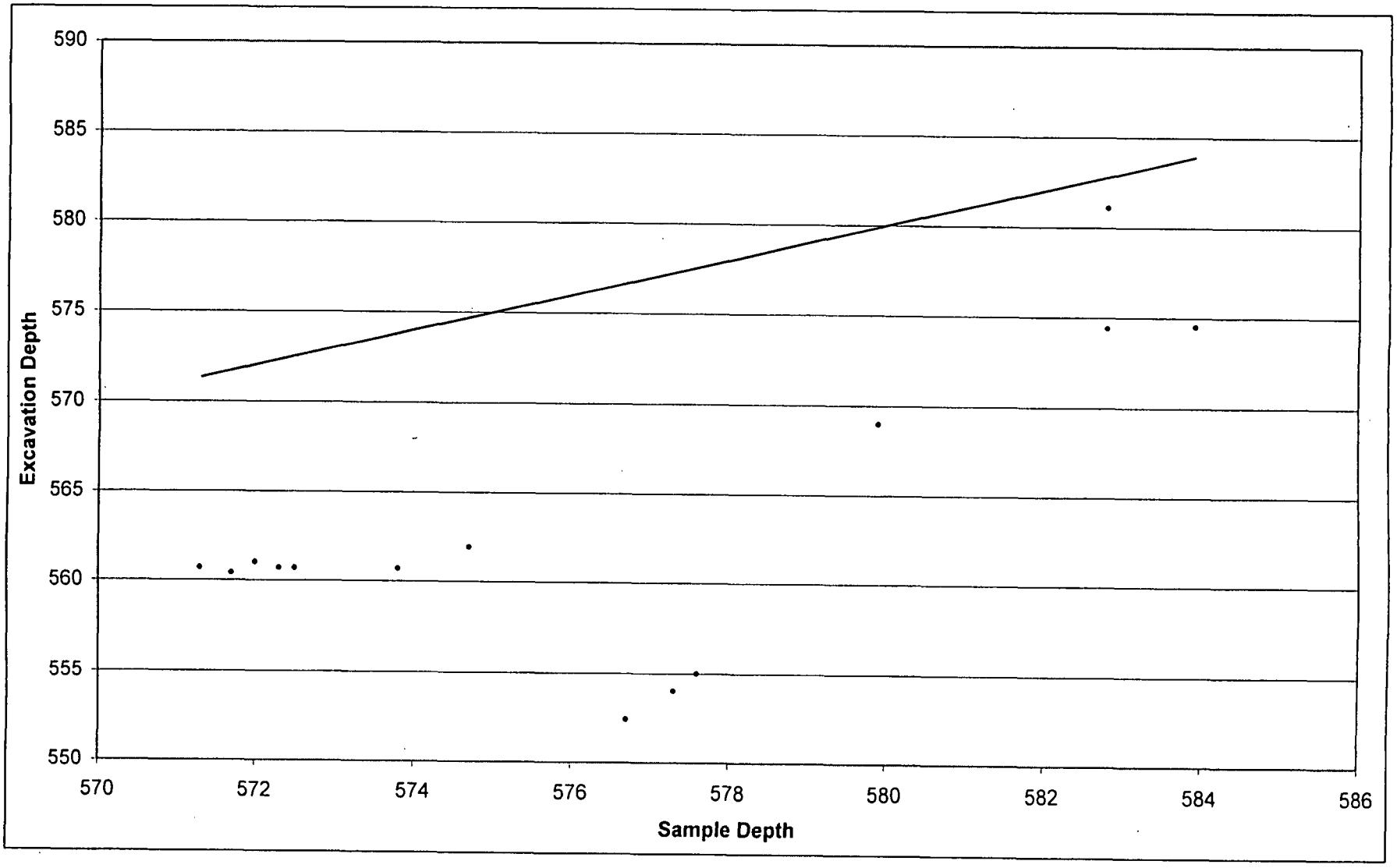

FIGURE 2-25. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR TECHNETIUM-99 IN AREAS 3B AND 4B

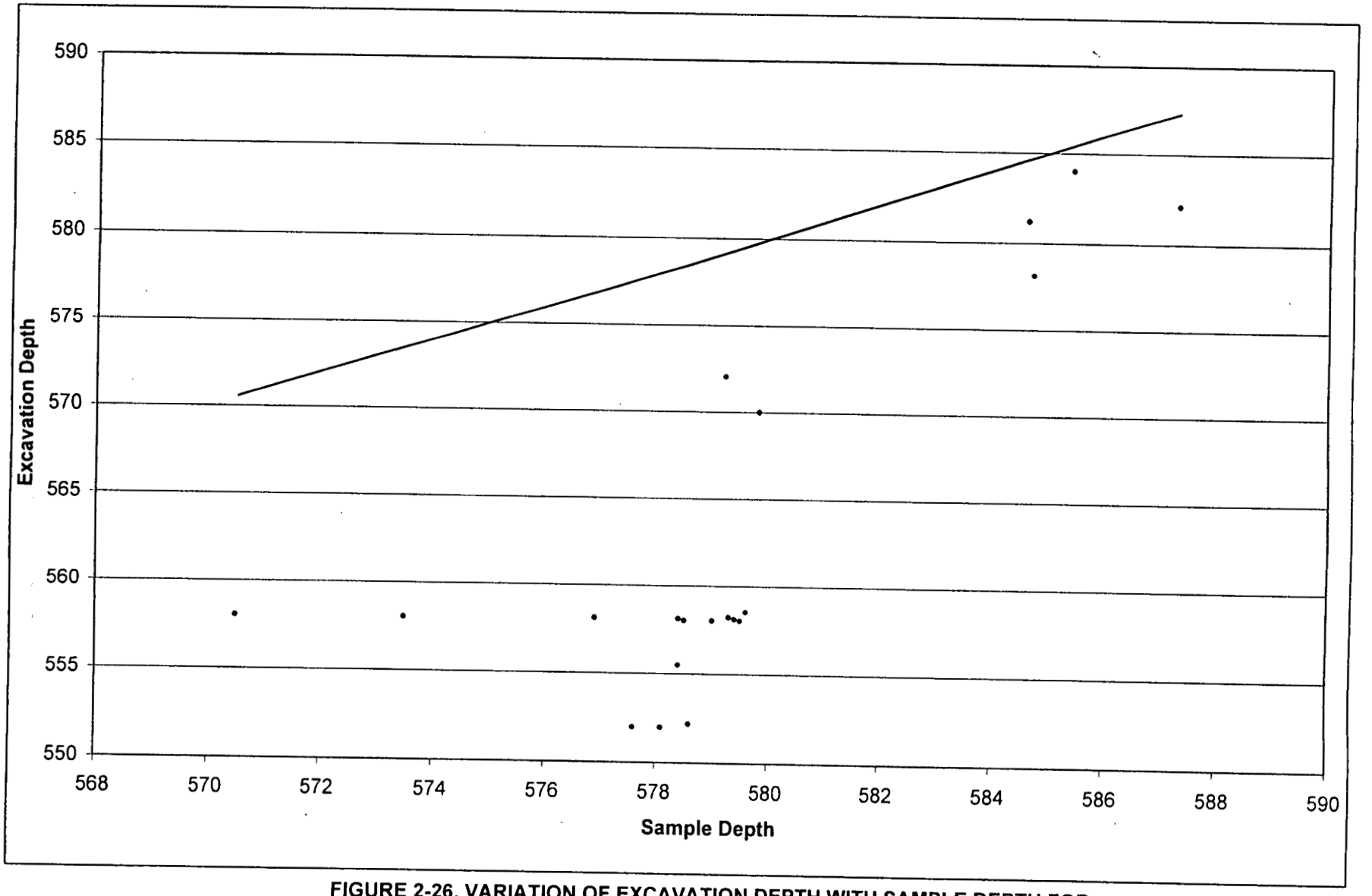

FIGURE 2-26. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR AROCLOR-1254 IN AREAS 3B AND 4B

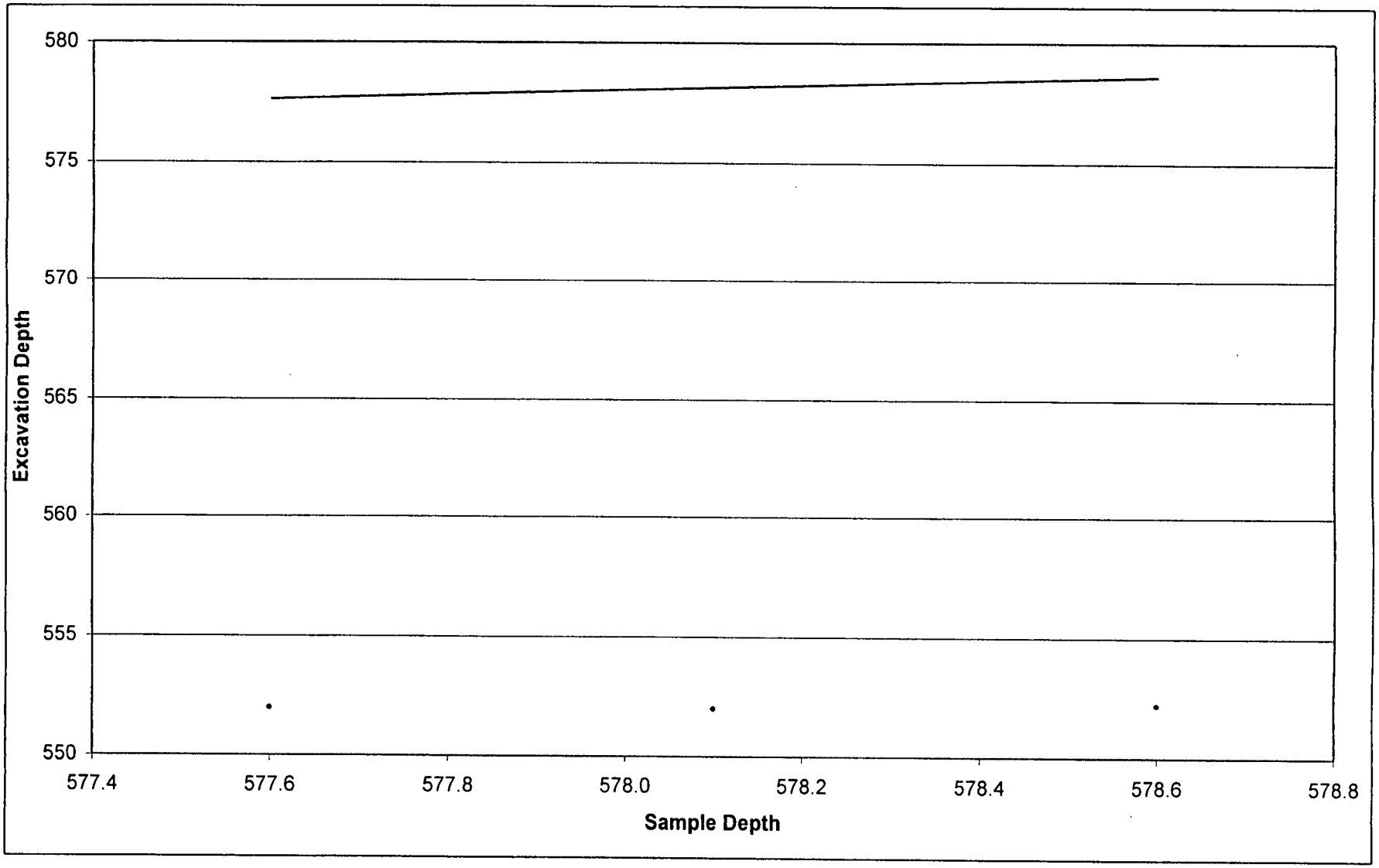

FIGURE 2-27. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR AROCLOR-1260 IN AREAS 3B AND 4B

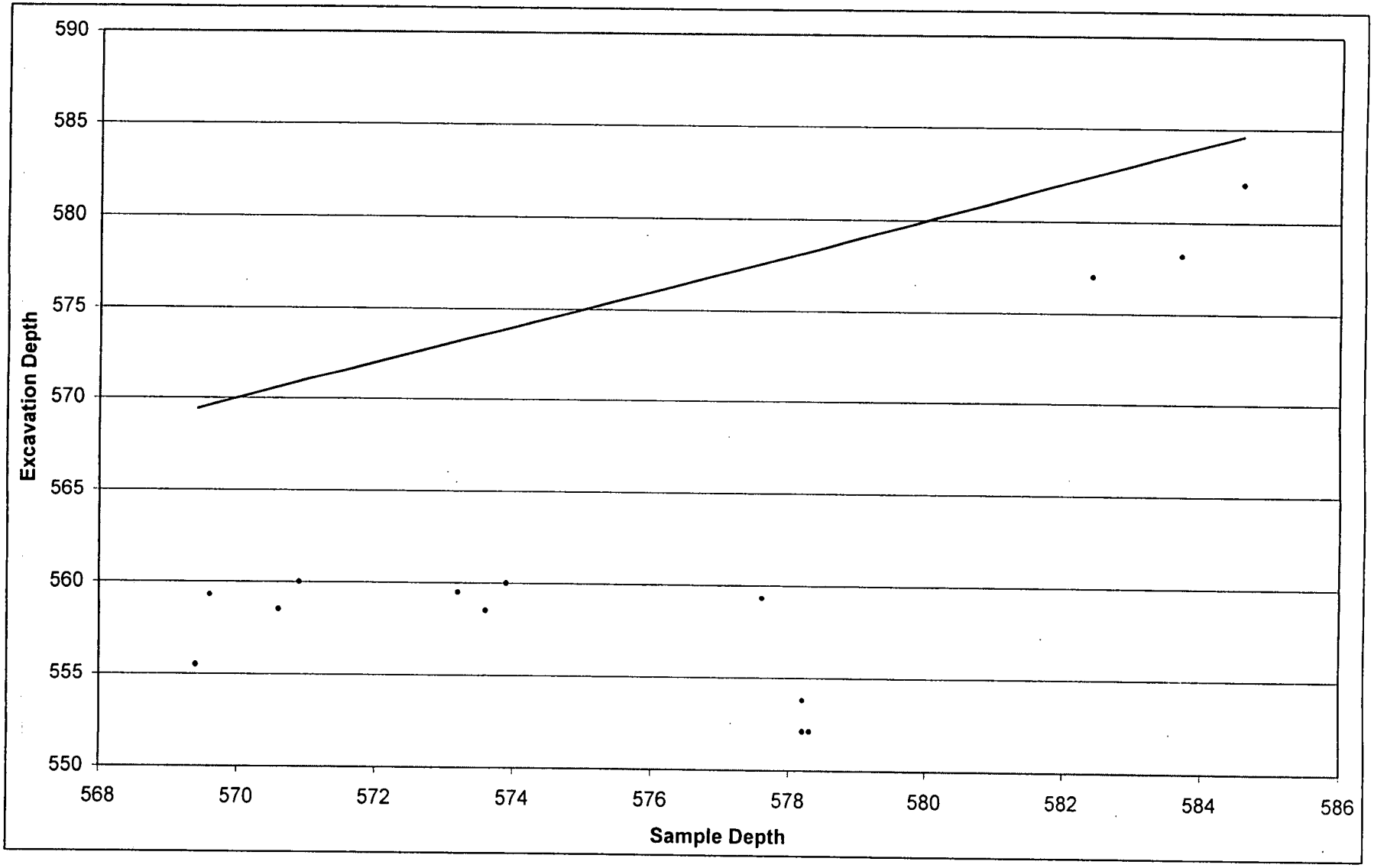

FIGURE 2-28. VARIATION OF EXCAVATION DEPTH WTH SAMPLE DEPTH FOR ARSENIC IN AREAS 3B AND 4B

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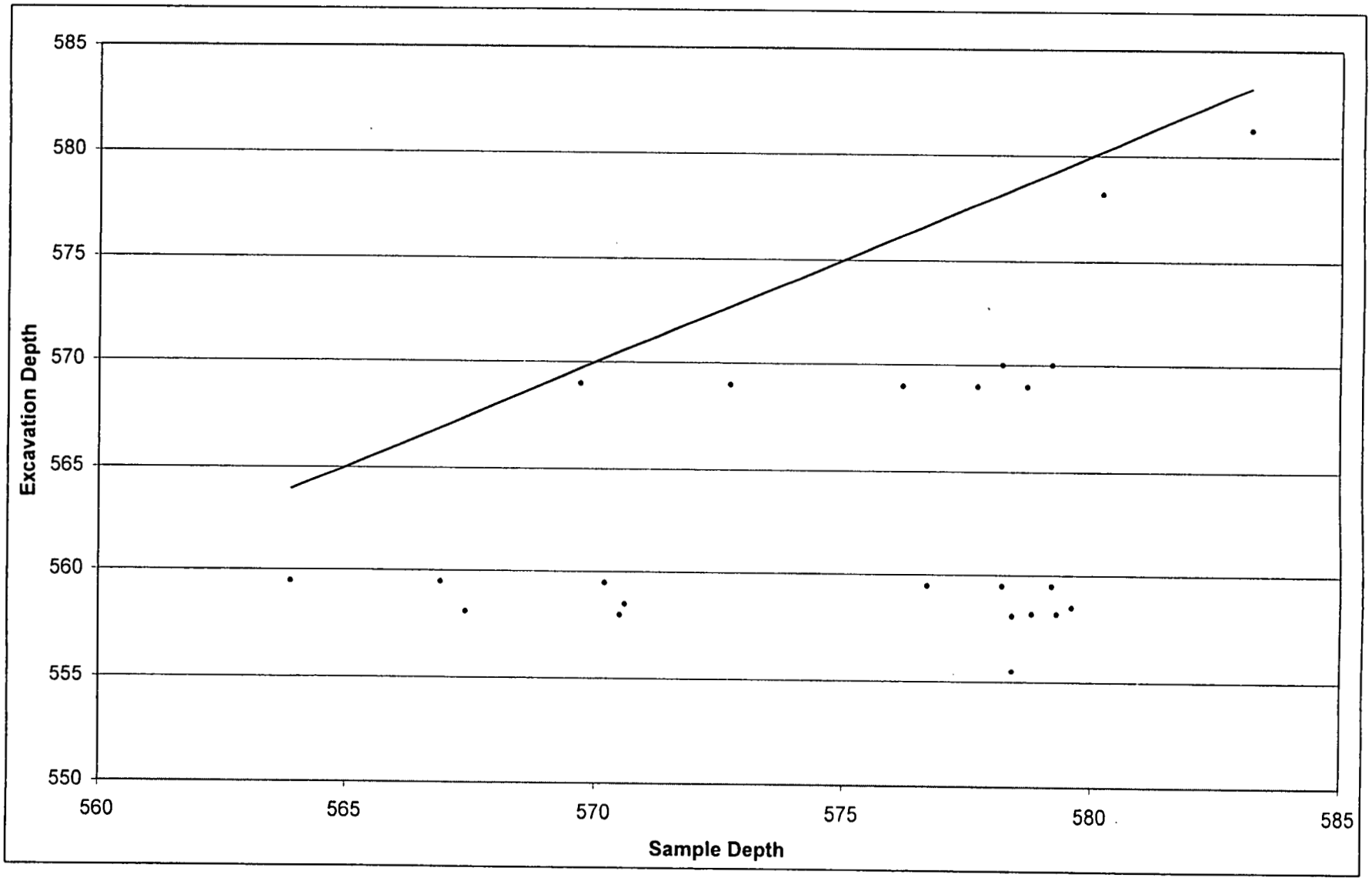

FIGURE 2-29. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR BERYLLIUM IN AREAS 3B AND 4B

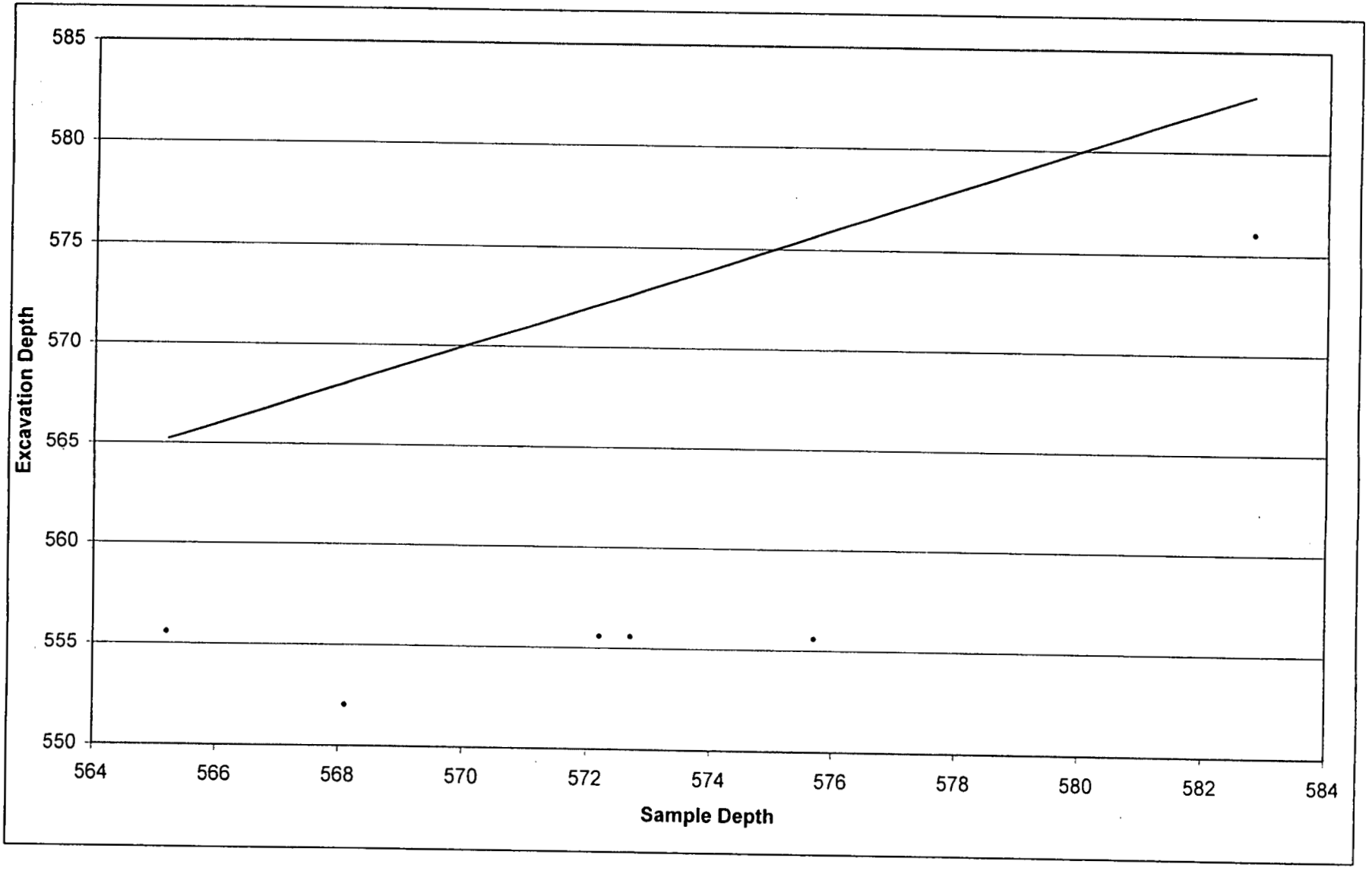

FIGURE 2-30. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR PCE IN AREAS 3B AND 4B

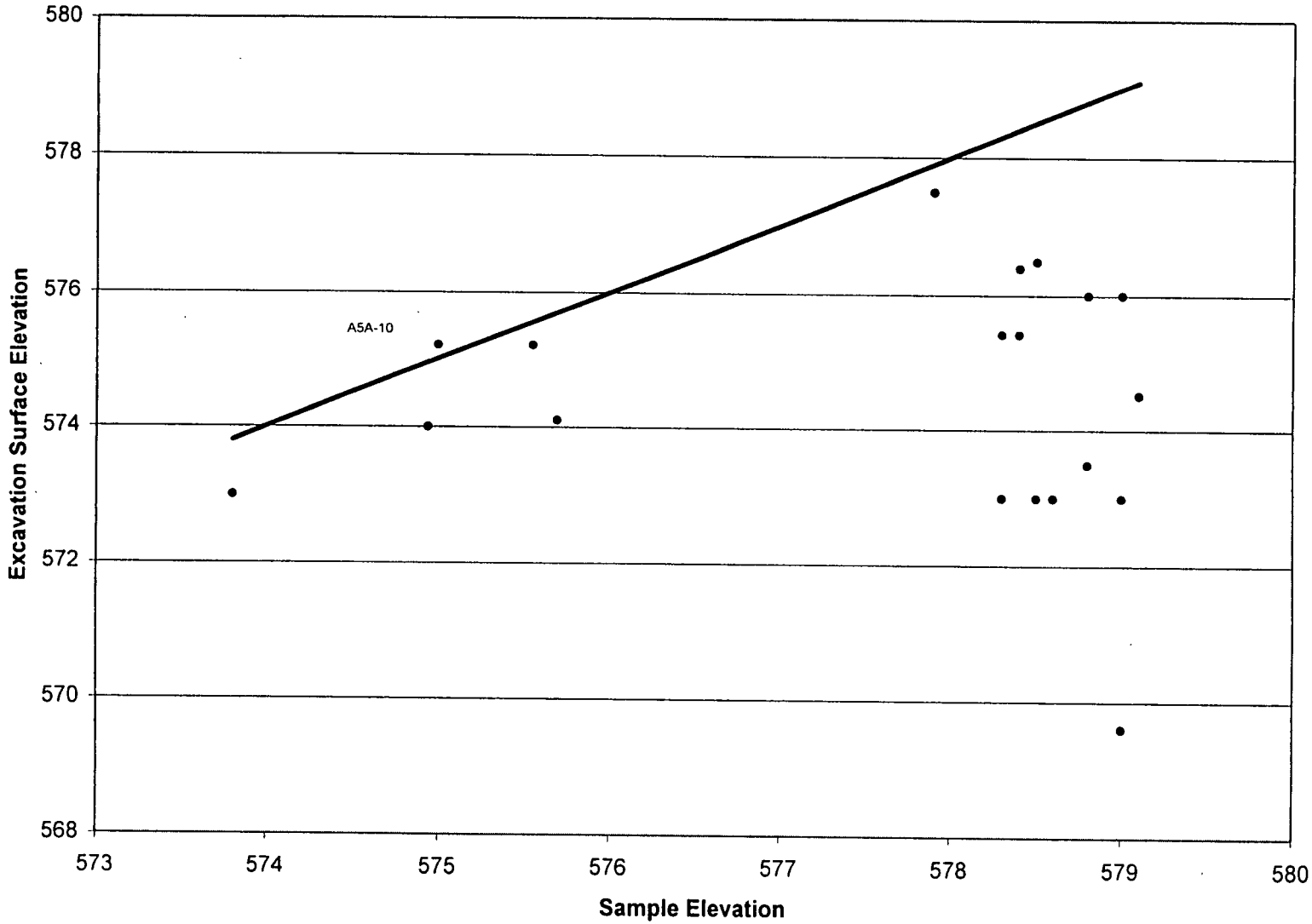

FIGURE 2-31. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR TOTAL URANIUM IN AREA 5

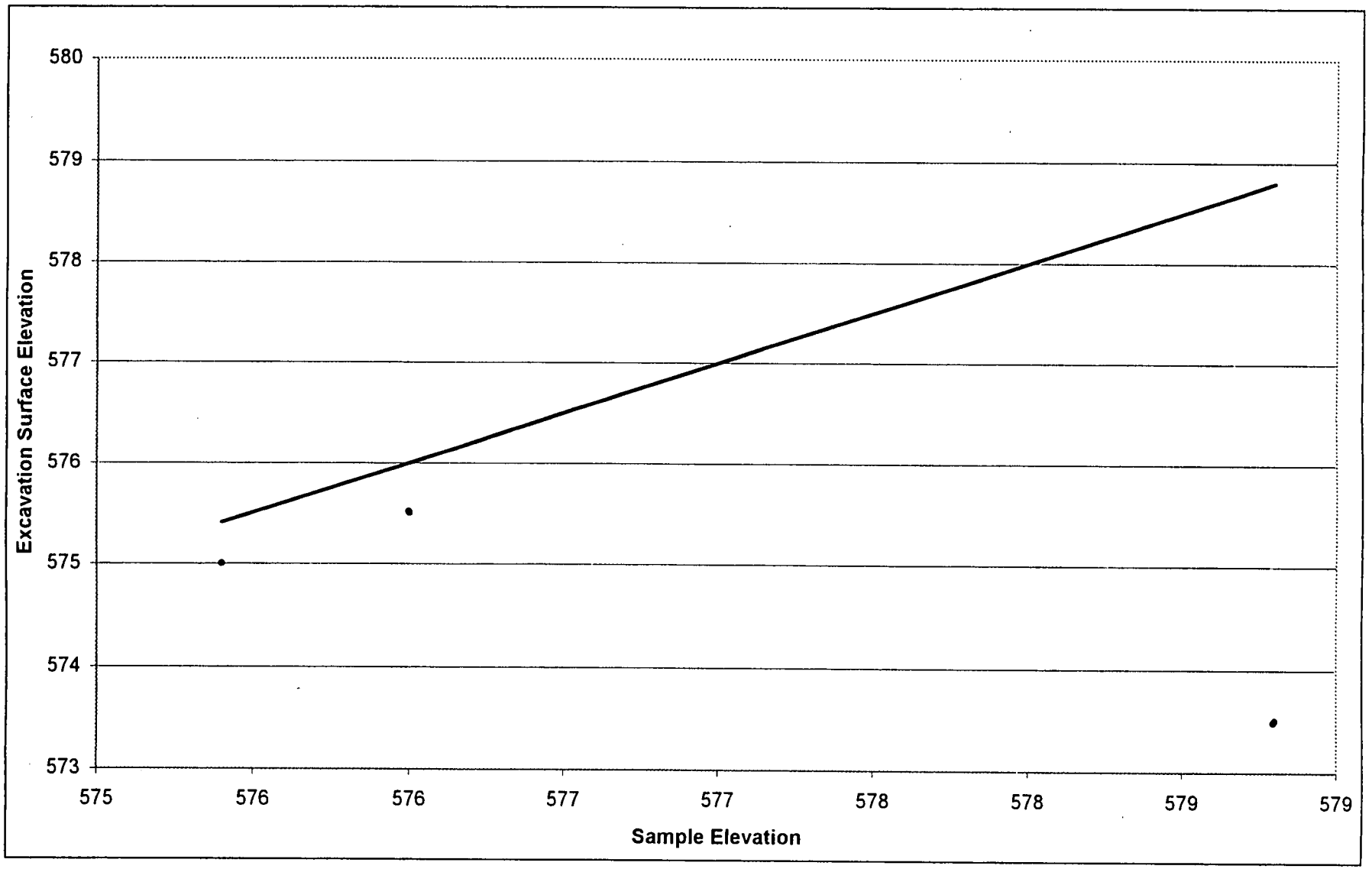

FIGURE 2-32. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR RADIUM 226 IN AREA 5

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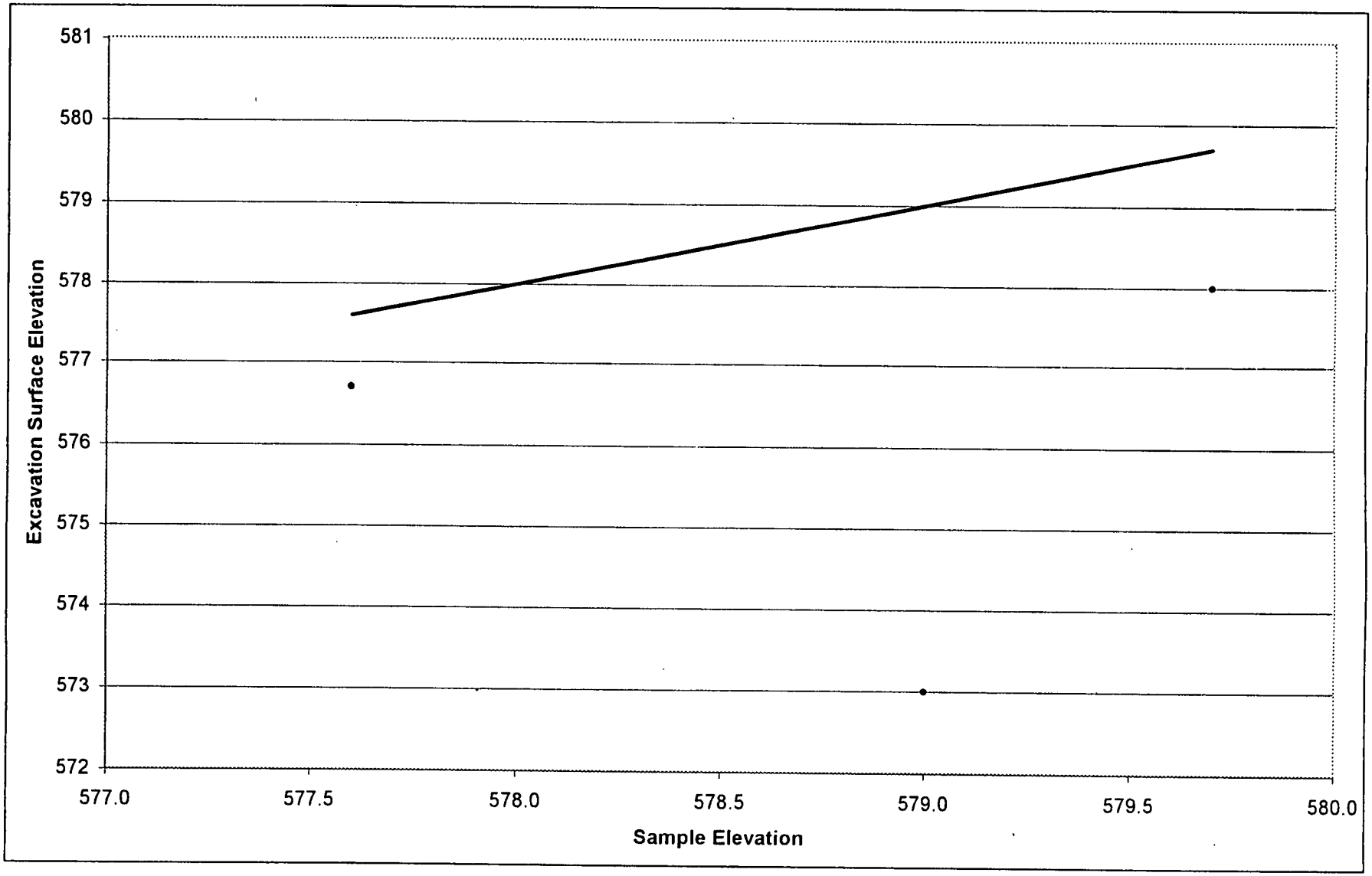


FIGURE 2-33. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR THORIUM 228 IN AREA 5

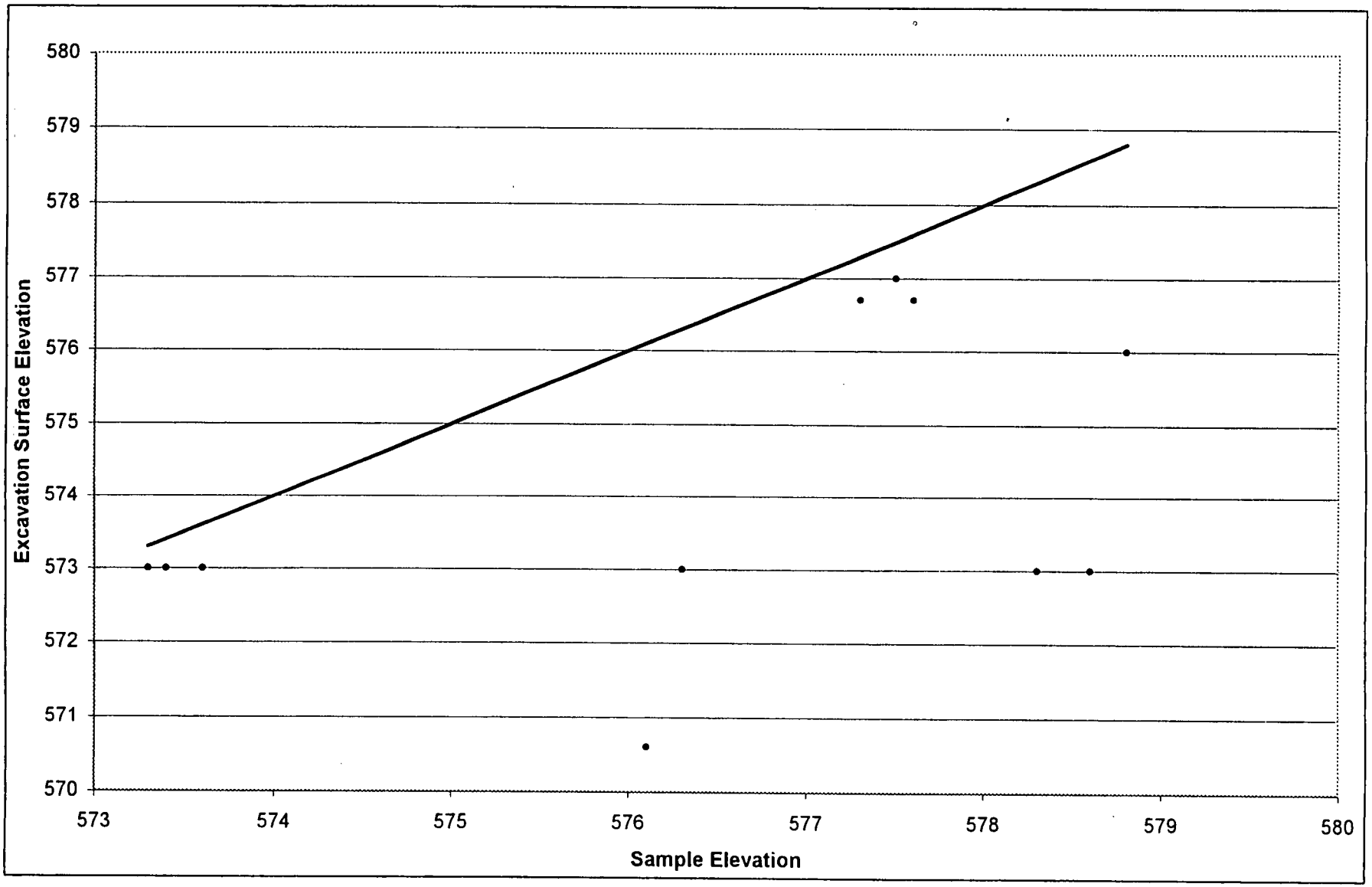


FIGURE 2-34. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR THORIUM 232 IN AREA 5

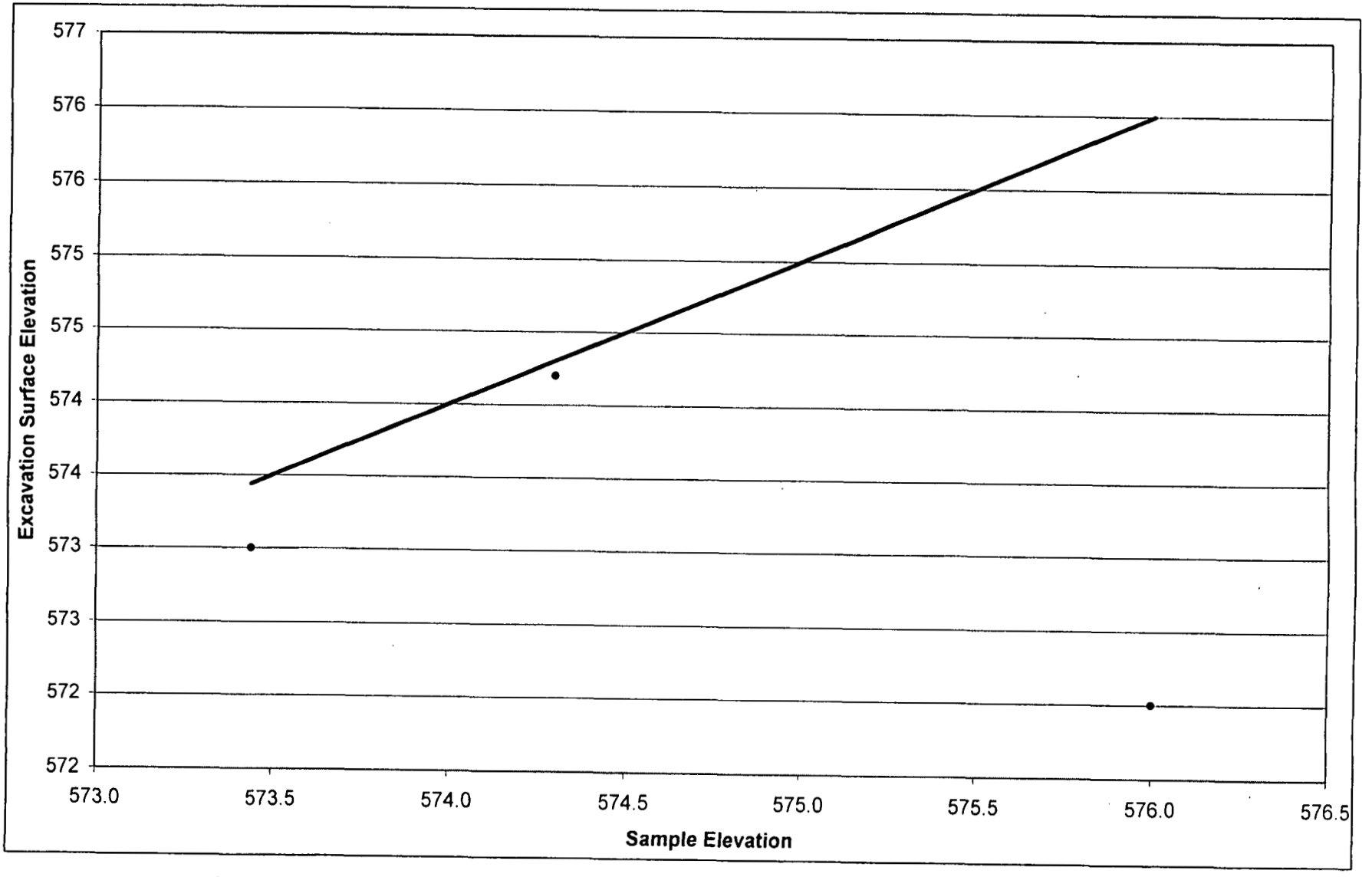


FIGURE 2-35. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR ARSENIC IN AREA 5

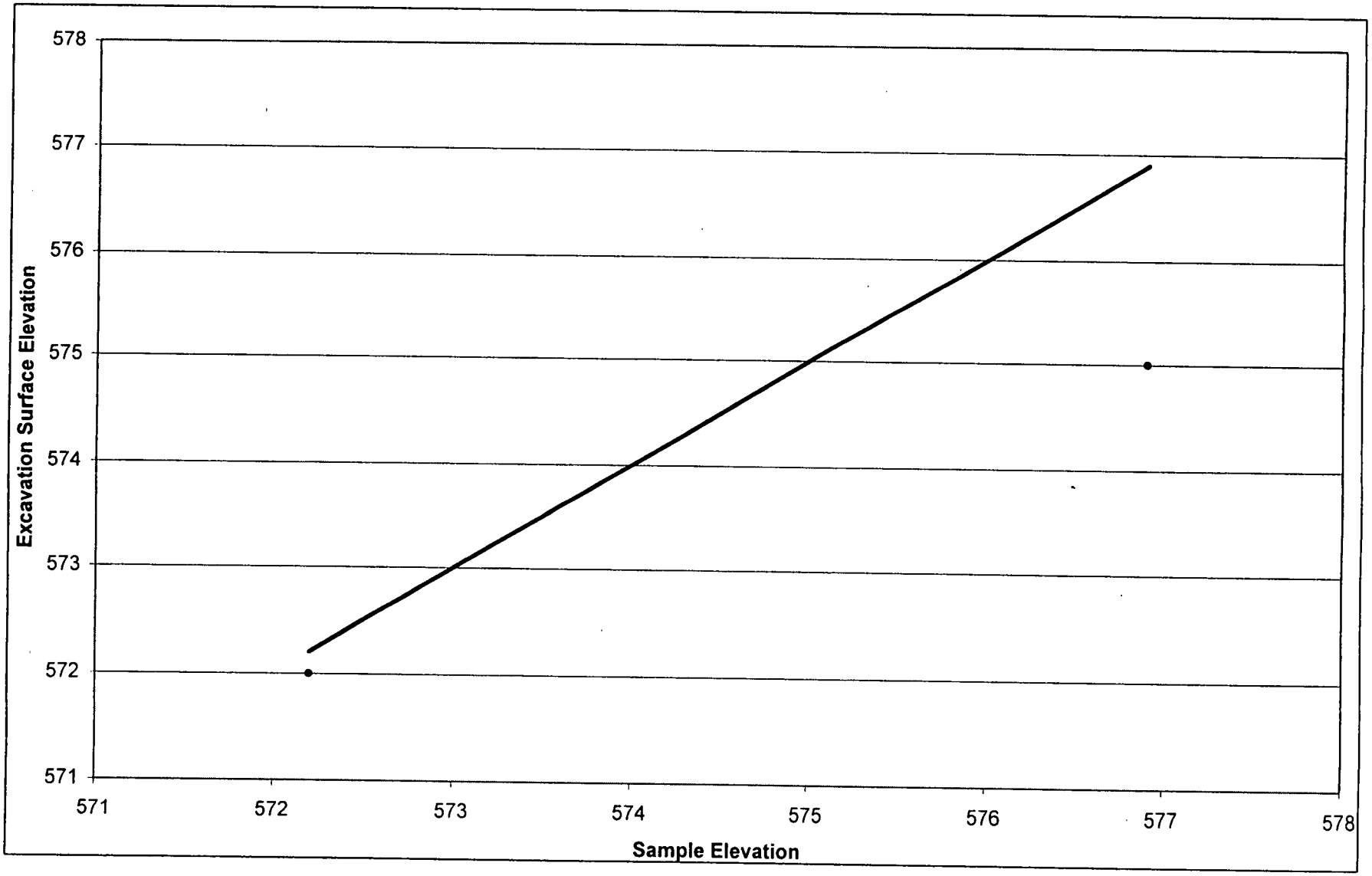


FIGURE 2-36. VARIATION OF EXCAVATION DEPTH WITH SAMPLE DEPTH FOR BERYLLIUM IN AREA 5

Section 3

3.0 REMEDIAL ACTION APPROACH

This section describes the technical approach to Area 3B/4B/5 remediation. The remedial actions discussed in this Implementation Plan follow the general guidance provided in Sections 3.0 and 4.0 and Appendix F of the SEP. Construction drawings and technical specifications direct the remedial actions to be implemented, and comprise part of the documentation governing construction activities. Construction activities will be further governed by 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 3B/4B/5 will begin with site preparation activities, progress into debris removal and soil excavation in above-WAC and organic contamination areas, and finish with large-scale excavation and removal of man-made structures and soil exceeding the established FRLs. For purposes of discussing excavation sequence, components of the main storm sewer system within Area 3B/4B/5 have been separated from Area 3B/4B/5, as shown on 3B/4B/5 Master Plan (drawing 99X-5500-G-00640). MDC will be excavated at the end of Area 3B/4B/5 excavation. This is required to allow storm water drainage to the SWRB from portions of Area 6 that remain in the FPA until those areas can be remediated. Remediation of these remaining storm sewer components will be presented under the heading of MDCs.

The following discussion of remedial actions is applicable to all remediation areas covered under this plan, unless otherwise noted. As necessary, subsections have been further divided into appropriately titled paragraphs specific to Area 3B, 4B, 5 or the MDC. Paragraphs are presented in order of excavation sequence as detailed in the following section.

Quantities reported in this Section are in bank cubic yards (bcy).

3.1 EXCAVATION SEQUENCING

Excavation of 3B/4B/5 will follow the general sequence of D&D activities in these areas. Therefore, excavation will begin in Area 3B, followed subsequently by excavation in Area 4B and 5. Activities will conclude with excavation of the MDC following excavation of Area 6 within the FPA. Following D&D activities in an area and turnover to SDFP, site preparation activities will begin for excavation of the area. Due to the forecasted duration of some excavations, excavation activities will ultimately overlap in various remediation areas. Where critical to the remedial action, sequencing of a remediation area excavation is detailed on the associated construction drawings. An overview of excavation sequencing throughout 3B/4B/5 is presented in the following sections.

3.1.1 Excavation Sequencing - Area 3B

Area 3B excavation removes Plant 1 Pad and surrounding areas south of the IMHR, connecting to 4B excavation north of 2nd Street. General 3B excavation sequencing is not dictated by remedial action requirements, and will be directed by the Construction Manager (CM) in the field. However, initial activities will begin breaking up Plant 1 Pad and excavating in the area of former Plant 1. Prior to foundation removal, underground process, sanitary, and storm lines and sumps will be excavated to remove potential above-WAC material sources. Mass excavation of soil and debris will then proceed to the contamination grades illustrated on contamination grading drawings. Upon completion of precertification activities at the contamination grade, excavation will proceed to the design grade.

3.1.2 Excavation Sequencing - Area 4B

Area 4B excavation begins with excavation of above-WAC areas in the path of isolation trenching. Following isolation trenching, additional above-WAC areas will be performed, in addition to breaking of pads and slabs, to opening up larger areas for mass excavation. Prior to foundation removal, underground process, sanitary, and storm lines and sumps will be excavated to remove potential above-WAC material sources. Mass excavation of soil and debris will then proceed to the contamination grades illustrated on contamination grading drawings. Upon completion of precertification activities at the contamination grade, excavation will proceed toward completion of Basins 4B1 and 4B2 and subsequent achievement of the design grade.

3.1.3 Excavation Sequencing - Area 5

Area 5 excavation removes the former Administration Area and parking lots and portions of the FPA south of 1st Street. Area 5 excavation will begin with the removal of spot above-FRL soil areas and 2 feet scraping in areas of the FPA. This will remove impacted soil from the area. Excavation will then focus on removal of at- and below-grade structures throughout the area. General sequencing of debris excavation will be directed by the CM in the field.

3.1.4 Excavation Sequencing - MDC

MDC excavation removes the remaining storm sewer corridors in 3B/4B/5, adjacent isolation trench corridors, and at- and below-grade structures and utilities. This excavation is performed last to maintain storm sewer service to portions of Area 6 remaining in the FPA. Therefore, MDC excavation will be sequenced as follows:

- "B" Street Corridor – excavation of "B" Street drainage corridor from the IMHR to north of 1st Street
- 1st Street Corridor – excavation of the 1st Street drainage corridor from "E" Street to "B" Street
- 60-inch Storm Sewer Corridor – excavation of the remaining 60-inch storm sewer from 1st Street to immediately north of manhole 75.

3.2 EXCAVATION DEWATERING

A Surface Water Management Plan (SWMP) will not be written for these activities. The following paragraphs, combined with the Surface Water Calculations provided in Appendix B, which provide calculations for removal of excavation water from the project, serve as the 3B/4B/5 SWMP. Excavation water, the combination of surface water and perched groundwater, will be collected within settling basins constructed in various locations throughout 3B/4B/5 as shown on associated dewatering plan drawings and as discussed below.

To help minimize surface water entering the excavation, a diversion berm will be constructed on the centerline of the backfilled isolation trench and the topographic surface outside excavations will be sloped away from the excavation area. Excavation water will be processed through either the Phase I or Phase II treatment at the AWWT Facility, with the SWRB serving as the headwater for AWWT Phase I treatment and the BSL serving as the headwater for AWWT Phase II treatment. Water will be sampled and analyzed for VOCs on a portable gas chromatography (GC) unit for organic compound COCs based on the affected area prior to a discharge event. A portable GC unit is proposed to allow the determination of contamination to be made as soon as possible. If any of the analytes (e.g., for PCE, TCE, and DCE) exceed AWWT VOC acceptance criteria, the water will be pumped or otherwise transported to the AWWT Facility for Phase II treatment. When each individual analyte level is below AWWT VOC acceptance criteria, the water will be pumped for discharge to the SWRB and subsequent Phase I treatment.

In general, excavation water should be removed from excavations within three days following a 10-year, 24-hour event. Pumping should be performed at a rate that removes water within three-days, yet not so rapid that slopes fail due to rapid draw-down. A possible contingency for this protocol may arise if a large storm event overwhelms the holding capacity of the Storm Water Retention Basins (SWRB). 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 or overflowing. These actions will be taken consistent with the bypassing provisions included in the NPDES permit.

In addition to the screening of excavation water in known contamination zones, soil forming the walls and floors of the excavations will be investigated for VOC contamination by performing photoionization detector (PID) screening. If a PID reading exceeds 10 ppm, water will be sampled and analyzed for VOCs on a portable GC unit for organic compound COCs. Based on the analytical results and protocol noted above, water will be discharged to the SWRB or BSL.

3.2.1 Excavation Dewatering - Area 3B

Area 3B excavation dewatering general sequencing is detailed on drawing 99X-5500-G-00687, Area 3B Dewatering and Excavation Plan. Area 3B excavation will be performed in parallel with excavation in Area 4B and will eventually make use of Area 4B dewatering systems. During initial Area 3B excavation, excavation water will be discharged through various catch basins into the existing storm sewer system. These catch basins will be modified to reduce gross sediment loading from entering the storm sewer system and reduce the likelihood of plugging storm sewers or greatly reducing the storm sewer. Inlet protection will consist of filter fabric placed underneath the grating and bags filled with stone placed around catch basin inlets. Area 3B may be excavated to drain towards the 4B1 Temporary Lift Station (see drawing 99X-5500-G-00646), as detailed in Section 3.2.2. In addition, the previously constructed 3A/4A Tank Farm Settling Basin located at the northeast corner of 2nd and "B" Streets will remain available for use during 3B excavation. Upon confirmation that water collected in the 4B1 Lift Station does not require AWWT Phase II treatment for organics and metals, Area 3B will be excavated so that surface water in 3B drains into Basin 4B1.

3.2.2 Excavation Dewatering - Area 4B

Area 4B excavation dewatering general sequencing is detailed on drawing 99X-5500-G-00646, Area 4B Dewatering Plan. Prior to excavation in Area 4B, site preparation activities will be performed which include: installing a transfer line from the excavation area to the BSL, establishing a temporary sump near Plant 2A, and providing inlet protection to various catch basins.

A high-density polyethylene (HDPE) transfer line (4B1 Transfer Line) will be installed from approximately 30 feet west of Well House #1 to discharge in the east side of the Biodenitrification Surge Lagoon that will also tie into an existing 10-inch storm sewer line near Well House #1 (see drawing 99X-5500-G-00681 for piping and 99X-5500-G-00683 for transfer line plan, profile, and details). Valves will be installed so that water can be directed through the transfer line to the BSL for subsequent AWWT Phase II treatment, or through the storm sewer to the SWRB for subsequent AWWT Phase I treatment. The transfer line will be routed north of the former Lime Sludge Ponds, south of 2nd Street, and east of the BSL. The line will be placed under 2nd Street and under a railroad spur west of the former Lime Sludge Ponds. Prior to the installation of a rail spur leading to the K-65 Stabilization Facility, an HDPE sleeve was installed at the location where the transfer line runs underneath the rail spur. This sleeve was installed with sufficient length and depth to facilitate the future installation of the HDPE transfer line without disturbing Silos Project rail operations. A second sleeve was installed adjacent to the first sleeve to facilitate future installation of utilities that need to transverse under this rail spur.

The Plant 2 West Elevator Pit located on the Plant 2 West Pad (74B) will be established as a temporary excavation water collection sump. This pit is approximately 15 feet deep and has a storage capacity of approximately 40,000 gallons. A submersible pump will be installed in the elevator pit and a pipeline will be installed from the elevator pit pump to the 4B1 Transfer Line. A temporary portable generator will be positioned adjacent to the elevator pit for manual operation of the submersible pump whenever pumping is required. No known underground lines penetrate the foundation walls or slab of the elevator pit, and no modification should be required to use the elevator pit as a common excavation sump.

Various catch basins in and around the Area 4B excavation will be modified to reduce gross sediment loading from entering the storm sewer system and reduce the likelihood of plugging storm sewers or greatly reducing the storm sewer. Inlet protection will consist of filter fabric placed underneath the grating and bags filled with stone placed around catch basin inlets.

During initial dewatering, surface water collected within the area bounded by 2nd Street, 101st Street, "A" Street, and "B" Street (see Drawing 99X-5500-G-00646) will be pumped to the Plant 2A West Elevator Pit where the water will be tested for organics prior to discharge. This is the area where AWWT Phase II treatment of excavation waters is most likely (Plant 2/3, general sump, and nitric acid recovery areas). Based on the sampling results, water will be pumped through the transfer line and directed to either the SWRB for AWWT Phase I treatment or the BSL for AWWT Phase II treatment.

Excavation water collected within Area 4B but outside the area bounded by 2nd Street, 101st Street, "A" Street, and "B" Street will also be tested for organics prior to discharge. Water requiring AWWT Phase I treatment will be discharged into one of the catch basins modified to reduce sediment form entering the storm sewer system. Water requiring AWWT Phase II treatment will either be trucked from the excavation or pumped to the Plant 2A West Elevator Pit if water in the pit is being pumped to the BSL.

As excavation proceeds, Temporary Lift Stations 4B1 and 4B2 will be installed to dewater Areas 4B, as well as runoff from Area 3B excavations. Each temporary lift station will consist of a 24-inch diameter schedule 40 carbon steel 0.200 slotted screen casing placed in the 36-inch diameter boring and packed with pea gravel on the outside of the screen casing. No. 2 stone will be mounded around the exposed portion of the screen casing. As the excavation proceeds downward around each lift station, the No. 2 stone will be removed, the casing will be cut to a lower elevation, and new No. 2 stone will be mounded around the exposed portion of the screen casing. The flexible discharge line will be routed from the submersible pump through the 24-inch screen casing and across the excavation to the associated discharge location (4B1 Transfer Line for the 4B1 Temporary Lift Station and MH100 for the 4B2 Temporary Lift Station).

The excavation associated with the 4B1 Temporary Lift Station will focus on removing soils underneath Plant 2/3, Combined Raffinate Tanks (3J), NAR Towers (3D), the General Sump (18B), and the Refinery Sump (3H) to remove the most like potential source materials of metal and organic contamination into perched ground water that requires AWWT Phase II treatment.

The 4B1 transfer line will be rerouted via installed gate valves and post indicator valves through a 10-inch storm sewer line near Well House #1, to discharge into the SWRB for AWWT Phase I treatment. Once this has occurred, the excavation can proceed outward into Area 3B so that surface water in 3B drains into Basin 4B1.

The 4B2 Temporary Lift Station will pump water collected from the Old Pilot Plant, Laboratory, Building 80 and Building 45A excavation areas to Manhole MH100 (located at the northeast corner of the AWWT Facility) for subsequent AWWT Phase I treatment via the storm sewer system and the SWRB. If VOC contamination is detected, flow will be rerouted via installed gate valves and post indicator valves through above-grade field-routed HDPE pipe to discharge into Basin 4B1. This water will be pumped to the BSL as previously detailed.

As the excavation proceeds outward from the two temporary lift stations, an increasingly larger area will drain into the lift stations. This will in turn reduce the areas that will require pumping from localized excavation sumps. However, portable pumps will still be required to lift water in low lying excavations.

As the excavations at the two temporary lift stations reach design grade, permanent lift stations will be installed. At Basin 4B1 the bottom segment of slotted screen will be left in place and used as a permanent riser. Geotextile fabric will be placed on the ground around the riser and No. 2 stone will be against the riser to filter sediments. A transfer line will be installed from the pump to approximately two feet below grade for freeze protection. The same pump will be used in both the 4B1 Temporary and Permanent Lift Station.

Permanent electrical power will be supplied to the 4B1 Permanent Lift Station from pole SW128 located near Well House #1. A service panel rack installed adjacent to the pole with power routed underground in protective conduit to the 4B1 Basin pump.

Due to poor soil conditions at the bottom of the Basin 4B2 excavation and the relative proximity to the GMA, clay will be placed along the bottom and sides of Basin 4B2. This will require the complete removal of the 4B2 Temporary Lift Station. Therefore, a permanent lift station will be installed after Basin 4B2 has been lined with clay. A 24-inch carbon steel slotted screen riser pipe on a concrete foundation will be installed in the Basin 4B2 clay bottom. Geotextile fabric will be placed on the ground around the riser and No. 2 stone will be against the riser to filter sediments. A 30-mil geomembrane will be placed over the clay sides slopes to reduce erosion of the underlying clay. A transfer line will be installed from the pump to approximately 2 feet below grade for freeze protection.

Permanent electrical power will be supplied to the 4B2 Permanent Lift Station from pole SW124 located west of Building 45A. A service panel rack installed adjacent to the pole with power routed underground in protective conduit to the 4B2 Basin pump.

Eventually, perimeter ditches will be established that will drain runoff from adjacent non-certified areas into Basins 4B2 or 4B3 for subsequent AWWT Phase I treatment. Basin 4B3 will not be established until near the end of the Area 4B excavation. Water collected in Basin 4B3 will be lifted using a temporary portable pump for discharge into the existing storm sewer system.

3.2.3 Excavation Dewatering - Area 5

Area 5 excavation dewatering general sequencing is detailed on drawing 99X-5500-G-00704, Area 5 Dewatering Plan. Excavation water collected in the Former Administration Area (north of the parking lot) will be discharged into the existing storm sewer system at various catch basins modified for inlet protection to reduce the sediment loading. Excavation water will pass through inlet protection constructed around the catch basin consisting of filter fabric and bags filled with stone, in accordance with construction drawing detail, to further remove suspended solids. Area 5 excavation water collected within the Former Administration Area is not expected to contain organic contamination. Upon confirmation of this, Area 5 excavation water collected within the Former Administration Area will undergo AWWT Phase I treatment via the SWRB.

Since water currently collected in the main parking lot drains to Paddy's Run through the parking lot drainage system, excavation water from the parking lot area will also be released to Paddy' Run during remediation via the storm sewer outfall ditch; however, steps will be taken to reduce sediment loading in the discharge. Prior to removing the asphaltic pavement in the Main and Southeast parking Lots, a settling basin will be established in the southern portion of the parking lot. The settling basin will drain through an existing 30-inch storm sewer line that runs southward and discharges into the storm water outfall ditch. The storm sewer will be modified by installing a standpipe that will pond water prior to discharge. Excavation water collected within the parking lot area will either be pumped or drained to this settling basin prior to discharge.

3.2.4 Excavation Dewatering - MDC

MDC excavation dewatering general sequencing is detailed on drawing 99X-5500-G-00714, MDC Dewatering and Excavation Plan. Dewatering will follow MDC excavation sequencing, which will begin with excavation of the "B" Street corridor from the IMHR to a location immediately north of 1st Street. This excavation will be dewatered to various catch basins along the path of the excavation, pumped to the remaining Tank Farm Settling Basin, or be allowed to drain directly into the exposed end of the storm sewer. This stage of excavation will ultimately remove the Tank Farm Settling Basin and the remaining 2nd Street corridor east of "B" Street. MDC excavation to remove 1st Street corridor from "E" Street to "B" Street will be dewatered to various catch basins along the path of the excavation, or be allowed to drain directly into the exposed end of the storm sewer. The last stage of MDC excavation, removal of the remaining 60-inch storm sewer corridor between 1st Street and manhole 75, will be dewatered to catch basin 54 or manhole 75, or be allowed to drain directly into the exposed end of the storm sewer. At the end of the MDC excavation, the 60-inch storm sewer will be plugged immediately north of manhole 75 and a temporary sediment basin will be established in that location. Until certification of the MDC is obtained, water collected in this temporary sediment basin will be pumped into manhole 75. In all cases, where discharging to a manhole or catch basin, excavation water will pass through inlet protection constructed around the catch basin consisting of filter fabric and bags filled with stone, in accordance with construction drawing detail, to further remove suspended solids.

3.3 AREA ISOLATION TRENCHING

Area isolation trenching will cut a trench approximately 26 inches wide by 12 feet deep around the perimeter of full-scale excavation areas prior to initiation of full-scale excavation activities as necessary to ensure isolation of the area from underground utilities. Isolation trenches will be cut only after Facilities Shutdown has isolated the proposed excavation area from all know utilities. The rationale for the 12-foot trench depth lies with providing additional assurance that potential unknown utilities existing within and below the typical utility depth of 6 to 8 feet will be severed by cutting to the maximum depth achievable by the equipment.

Based on lessons learned from slope stability concerns in 3A/4A, isolation trench alignment will consider a balance between maximizing the area trenched within the limit of excavation, while minimizing the length of trench remaining adjacent to deep excavations. Preference will be to cut the trench at a location where at least a portion of the trench will be excavated with the adjacent deep excavation. This will avoid scenarios where an isolation trench remains at the top of a deep excavation slope, thus creating a potentially unstable slope condition. As in 3A/4A, areas within the limit of excavation, but outside of the

isolation trench, will be excavated using a penetration permit, to ensure utility isolation in the area. Isolation trenching requirements are detailed in Technical Specification Section 02207 and summarized below.

Known active utilities other than storm sewers shown on FCP grid plans will be isolated by Facilities Shutdown before performing isolation trenching. Documentation of utility isolations will be filed for access by the CM and will be as-built on the master FCP underground utility grid drawings for reference during trenching and excavation. There is a small probability that the master utility grid plans do not capture each low-voltage line (i.e., 220V) placed during the operating history of the site. Given the noise of the machine and the speed at which the cutting saw operates, the severing of a 220V line will not likely be noticeable to field personnel. The trencher operator will be insulated from electrical hazards. Although the trench will not remain open for a significant period of time, there are instances when the trench may need to be sloped back and accessed to plug a storm sewer line. For these special cases, a trench may remain open for over 24 hours, and Occupational Safety and Health Administration (OSHA) regulations for excavating and trenching (20 CFR 1926.650) will apply.

A sequence for maintaining, using and/or abandoning existing storm sewer lines within the excavation area may be proposed by the CM prior to isolation trenching. Storm sewer lines selected for use will be protected during trenching by leaving a 20-feet wide gap in the trench above the storm sewer. The CM will then excavate the gap around the protected storm sewer lines using a backhoe to isolate utilities not cut by the trencher. Gaps will be excavated to the 12 feet deep isolation trench design depth under the same penetration permit as the trenching activity. Prior to cutting storm sewer lines that are to be abandoned, lines will be plugged outside of the excavation area to prevent the introduction of sediments into the remaining storm sewer system.

Trenching activities will be observed at all times by the CM and Waste Acceptance Organization (WAO). Dust control will be provided, as needed, to prevent the spread of airborne contamination. The trencher operator will be inside an enclosed cab that provides ventilation through a particulate air filter. Trenching will be stopped if there is evidence of draining sanitary sewer or process lines, special materials, unknown electrical utilities, or cultural resources. When observed, leaking sanitary sewer or process lines will be plugged if the seepage has not stopped before backfilling the trench. Backfilling will occur daily using the material excavated from the trench, with the top 2 feet of backfill compacted to minimize infiltration. A diversion berm will be installed on the backfilled isolation trench for control of run-on into the excavation area. If the trench needs to be kept open, it will be barricaded and shored in accordance with

applicable OSHA regulations. When observed, the locations where sanitary sewer or process lines drained into the trench will be recorded on redline drawings of the completed trench. Material released from a leaking sanitary sewer or process line will be excavated along with the trench backfill during remediation of the trench with the adjacent remediation area. HPGe detector shots will be done in areas where draining sanitary sewer or process lines were noted on redline drawings to monitor for elevated levels of contamination.

3.3.1 Area Isolation Trenching – Area 3B

Area 3B will be trenched for isolation around the approximate perimeter of the proposed excavation area, tying into existing Area 3A isolation trench performed east of "B" Street. An overview of Area 3B and 4B isolation trenching is presented on drawing 99X-500-G-00674, Utility Isolation Overview Plan. The drawing presents general sequencing for isolation trenching and summarizes individual storm sewer isolations required by the trenching crew, as well as, isolation trench gaps required to protect storm sewers proposed for temporary use during excavation. Subsequent utility isolation plan drawings (99X-5500-G-00648, 99X-5500-G-00649, 99X-5500-G-00647, and 99X-5500-G-00686) present the summarized Area 3B trenching information in detail. Drawing 99X-5500-G-00648, Utility Isolation Plan (3B North), shows 3B trench originating from the existing Area 3A isolation trench, and shows trench gaps required to protect storm sewers that continue to convey drainage from north of the IMHR to the storm sewer system within the FPA. As with all other utility isolation plans, this drawing also summarizes information regarding utility type, potential hazard, and location for all utilities expected to be encountered along the trench centerline. Drawing 99X-5500-G-00649, Utility Isolation Plan (3B Central), and drawing 99X-5500-G-00647, Utility Isolation Plan (3B SW), show 3B trenching west and southwest of the excavation area, where utilities are less dense. Drawing 99X-5500-G-00686, Utility Isolation Plan (3B SW), shows 3B trench connecting to existing Area 4A isolation trench, and shows trench gaps required for temporary protection of storm sewers that continue to convey drainage from the northwestern FPA. Construction will excavate the trench gaps using a hoe to isolate utilities remaining in the gap, while protecting the storm sewer trunk. In some cases, the invert elevation of the storm sewer trunk is more shallow than the isolation trench design depth of 12 feet. Due to the relatively low risk of an unknown, energized utility entering the excavation below a protected storm sewer, excavation below the protected storm sewer will not be necessary.

Prior to Area 3B excavation removing the storm sewers that convey storm water from north of the IMHR to the main storm sewer system within the FPA, storm water north of the IMHR will be ditched and diverted into a catch basin that will direct the water into the main storm sewer trunk that runs on the west

side of "B" Street. In addition, storm sewers excavated within 3B will require plugging beyond the limit of 3B excavation to prohibit infiltration of sediment into portion of the storm sewer that remains active. See Section 3.2 for a detailed description of dewatering requirements.

3.3.2 Area Isolation Trenching - Area 4B

Area 4B will be trenched for isolation in two phases. Area 4B Phase I isolation trench will be performed around the approximate limit of proposed 4B excavation around Plant 2/3 and Plan 8 complexes, tying into existing Area 4A isolation trench. Area 4B Phase II isolation trench will be performed around the approximate limit of proposed 4B excavation around the Pilot Plant and Laboratory building, tying into existing Area 4B Phase I isolation trench. An overview of Area 3B and 4B isolation trenching is presented on drawing 99X-500-G-00674, Utility Isolation Overview Plan. The drawing presents general sequencing for isolation trenching and summarizes individual storm sewer isolations required by the trenching crew, as well as, isolation trench gaps required to protect storm sewers proposed for temporary use during excavation. Subsequent utility isolation plan drawings (99X-5500-G-00786, 99X-5500-G-00650, 99X-5500-G-00651, and 99X-5500-G-00652) present the summarized Area 4B trenching information in detail. Drawing 99X-5500-G-00786, Utility Isolation Plan (4B NW), shows 4B trench originating from the existing Area 3B isolation trench. As with all other utility isolation plans, this drawing also summarizes information regarding utility type, potential hazard, and locations of utilities expected to be encountered along the trench centerline. Drawings 99X-5500-G-00650, Utility Isolation Plan (4B CW), and Drawing 99X-5500-G-00651, Utility Isolation Plan (4B SW), show 4B trenching west and southwest of the excavation area, where utility concentration is less dense. Drawing 99X-5500-G-00652, Utility Isolation Plan (4B SE), shows 4B trench connecting to existing Area 4A isolation trench, and shows trench gaps required for temporary protection of storm sewers that continue to convey drainage from the excavation area. This is necessary to support on-going D&D activities, as well as initial excavation activities. Construction will excavate the trench gaps using a hoe to isolate utilities remaining in the gap, while protecting the storm sewer trunk. In some cases, the invert elevation of the storm sewer trunk is shallower than the isolation trench design depth of 12 feet. Due to the relatively low risk of an unknown, energized utility entering the excavation below a protected storm sewer, excavation below the protected storm sewer will not be necessary. As 4B excavation begins to impact portions of the protected storm sewers within 4B, plugs will be installed in the storm sewers beyond the limit of excavation to prohibit infiltration of sediment into portion of the storm sewer that remains active. See Section 3.2 for a detailed description of dewatering requirements.

3.3.3 Area Isolation Trenching - Area 5

Area 5 does not require isolation trenching because the majority of utility feeds into this area will have been isolated during previous Area 3A, 4A and 4B isolation trenching. Individual utilities may require isolation at the limit of excavation as identified during design and required for penetration permitting. Penetration permitting will focus on ensuring isolation of Area 5 excavation from the Main Electrical Substation in the northeast corner of Area 5.

3.3.4 Area Isolation Trenching - MDC

No additional isolation trenching will be necessary prior to MDC excavation. Individual utilities may require isolation at the limit of excavation as identified during design and required for penetration permitting.

3.4 SITE PREPARATION

Site preparation activities associated with this work include establishing site boundaries and controls, surveying and site layout, area isolation trenching, establishing support facilities, surface water management, and performing real-time scanning. Site preparation activities are scheduled to begin Spring 2003 in Area 3B. Real-time scanning may be required if site preparation activities involve soil disturbance below a depth of 6 inches. Additional details are provided in the following text and in referenced construction drawings and technical specifications.

3.4.1 Site Boundaries and Controls

Existing radiological control barriers and fencing will remain intact until project boundary fence is established during site preparation activities. Project boundary fence will be posted as a contamination area, and personnel entering and leaving the area will pass through a radiological checkpoint located in the change-out trailers. Vehicle entry points will be controlled with gates, and exiting vehicles will use contaminated haul routes to reach the decontamination and free-release station located northeast of Building 82A.

Area 3B/4B/5 and the MDC are layed out as pictured in Figure 1-2. When initial activity begins with Area 3B site preparation, the project will be confined to Plant 1 and Plant 1 Pad areas. The project will expand as D&D activities are completed in the surrounding areas, thus allowing expansion of site preparation activities.

3.4.2 Surveying and Site Layout

Surveys will be performed to layout each area isolation trench centerline, to establish excavation boundaries for above-WAC, HWMU, UST, and FRL areas and to determine soil volumes hauled to the OSDF. Site layout plans illustrate locations of above-WAC, HWMU, UST, and general FRL excavation areas, as well as, some support facilities. The Fluor Fernald Executive Manager or his designated representative (CM) will field locate many of the support facilities, such as laydown areas, cool-down trailers, soil dewatering areas, secondary haul routes, fuel transfer points, and Special Materials Transfer Areas (SMTAs). The CM may propose multiple locations for the SMTA, in accordance with technical Specification Section 02205.

3.4.3 Support Facilities

Personnel performing and managing the remedial actions will require change-out facilities, office space, a break trailer, a cool-down trailer, and a laydown area. These facilities will make use of existing support facilities established for OSDF and FPA remediation, or will be field located by the CM in coordination with surrounding projects. Surface water and perched groundwater encountered during excavation activities will be managed using settling basins and the existing SWRB. Water will be needed for dust control, and electrical tie-ins will be required for the cool-down trailer, water pumps, break trailer, and contractor office space. A fuel transfer point will be designated at the contaminated/controlled interface marked by the project boundary. Haul routes will be identified to the OSDF, OMTA areas, SMTA, and Waste Pits Remedial Action Project (WPRAP). The following discussion provides additional details on the support facilities, referencing relevant construction drawings and/or technical specifications.

3.4.3.1 Change-Out Facility, Contractor Office Trailer, Break Trailer, and Cool-Down Trailer

Short-term change-out, office and break trailer facilities for site preparation activities will be the trailer complex located in the northeast corner of the OMTA Bulk Debris Storage area, in the northeast corner of the FPA. Long-term support facilities for Areas 3B/4B/5 are proposed to be located southwest of the Lab (Building 15A). Trailers that comprise this facility will act as the radiological control point for personnel entering and leaving the project area. The office and break trailers will be located outside of the excavation boundary, and workers must pass through the radiological control point before entering the trailers for lunch or other business. A cool-down trailer will be located within the excavation area so workers do not have to pass through the radiological control point to obtain heat relief.

3.4.3.2 Contractor Laydown Area

Laydown areas for construction materials and equipment will be field located in accessible zones that are free of above-WAC contamination, and lie outside of areas designated for deep excavation.

3.4.3.3 Water and Electrical Source

Water will be provided by production wells located on the east side of the Lime Sludge Ponds and east of the OSDF Contractor Administration Area. However, adequate above-grade storage of water must be considered to support rapid filling of tanker trucks when dust suppression operations are needed.

Building 20A is the source for the electric feed to the Plant 1 Pad, and this substation may be used by the contractor to feed the cool-down hut, pumps, and other needed electrical utilities in Area 3B and 4B. Electrical needs in Area 5 will be fed directly from the remaining electrical substation.

3.4.3.4 Fuel Transfer Point

Fuel will be brought into the active remediation area to refuel equipment. A transfer point at the contaminated/controlled project boundary will be identified to allow off-site vendors to transfer fuel into the working area without contaminating their equipment, thus avoiding delays at the equipment wash facility by remaining outside the contaminated area.

3.4.3.5 Haul Routes

Haul routes to the OSDF, OMTAs and WPRAP for 3B/4B/5 will be as shown on the associated Traffic Control and Material Tracking Plan drawings. Haul routes to the OSDF will be from approved access points at the perimeter of the excavation. The existing IMHR will be the controlled but uncontaminated haul route to WPRAP, as accessed by "B" Street. Using controlled haul routes necessitates wheel washing when accessing the existing haul road from the excavation.

3.5 AT- AND BELOW-GRADE STRUCTURE DEMOLITION

Removal of utility lines, concrete and asphalt pads, building footers, and basement walls will be initiated early to prepare the area for general soil excavation activities. High priority will be given to the removal of concrete pads and sumps within above-WAC areas. Area 3B/4B/5 contains numerous concrete and asphalt surfaces, primarily associated with floors and perimeter storage areas of Plants 1, 2/3, 8, Pilot Plant, the Lab and Administration Buildings, and miscellaneous buildings. The deepest excavations will be associated with removal of floor footers associated with Plant 2/3, Plant 8, and the Pilot Plant. Volume estimates for at- and below-grade debris are provided in Appendix D.

3.5.1 Utility Lines

The principal utility corridors lie along 1st Street, 2nd Street, "A" Street, "B" Street, and 101st Street. However, "B" Street corridor will be preserved for remediation during MDC excavation to coordinate removal of the main storm sewer trunk with portions of Area 6 that drain through the trunk. Abandoned utilities to be removed include domestic and fire water, electrical (potential for asbestos material), communication, process lines (potential for production materials or waste), gas, oil, sanitary sewer, and storm sewers and drains. Utility lines will be terminated by area isolation trenching performed during Area 3B and 4B site preparation activities and additional spot isolations, except for storm sewers selected by the CM for use during excavation.

Most utility lines are buried within 8 feet of the surface, except for the gravity lines associated with the sanitary and storm sewers. Approximately 50 percent of utility lines lie below the initial excavation design grade in Area 3B/4B/5 and about 70 percent utility lines are located in the principal utility corridors running parallel to 1st, 2nd, 101st, and "A" Streets. Materials that may be encountered during utility line excavation include: concrete encasing aluminum ducts that hold electrical lines (some containing asbestos), copper in the electrical and communication lines, steel pipes that have transported gas and fuel oil, concrete and clay pipe associated with sanitary and storm sewers, and polyethylene and steel water lines. Debris generated from utility removal will be placed in the OSDF if it meets physical WAC and passes visual inspection. Soil and bedding material associated with utility removal will be managed in accordance with Specification Section 02205.

Oversight by Fluor Fernald Construction, WAO, Health and Safety, and Radiological Control personnel will determine the most effective method for removal of utilities. In general, a backhoe and shear will be used to excavate and size reduce the utility lines and associated debris. Approximately 50 percent of the utility lines will be captured by excavation needed to remove man-made structures and contamination. The remaining utility lines lie below the designed excavation grade and will be removed by trenching. Utility trenching activities will be monitored by health and safety, radiological control, and WAO personnel if unsafe conditions (e.g., high organic-vapor readings, elevated radioactivity, visual observation of pipe interior) or special materials.

Area 4B excavation will remove the remaining portion of K-65 Trench extending into Area 7. K-65 Trench was previously excavated from the silos area to immediately west of the WPRAP trailer complex access road during preliminary excavation activities in Area 7. The remaining K-65 Trench will be excavated as an above-WAC excavation as described in Section 4.6.1.2.

Throughout the Administration Area (Area 5 and MDC), prefabricated insulated piping units (known as

Ric-Wil) were installed underground during the early years of plant operations. Ric-Wil was generally installed outside of buildings and contained a stream and condensate line housed within an outer conduit or pipe having a diameter of 18 to 20 inches. According to Catalytic Construction Company specifications, the annular space within the conduit between the pipes and inside conduit walls was packed with insulation at a uniform density that consisted of not less than 75% long fiber asbestos and shredded sponge. Due to the internal presence of asbestos, the outer conduit will not be cut longitudinally as is otherwise required for pipe with diameters greater than 12 inches prior to OSDF disposal. Rather, Ric-Wil pipe will be excavated in sections and sealed at the ends to prevent loss of insulation and internal piping during transport and disposal. Ric-Wil piping is shown in its approximate location on design drawings. In addition, a set of technical reference drawings has been assembled showing more precise historical locations of Ric-Wil piping units. These drawings are included in the technical reference drawing package and indexed in the design package.

3.5.2 Concrete, Asphalt Pads, Roadways and Floors

Approximately 60 percent of the ground surface in Area 3B/4B/5 is covered with concrete and asphalt. Estimates are based on aerial photos and include pads, roadways, and concrete floors remaining from the demolition of buildings and warehouses. Pads and roadways generally consist of 4 to 8 inches of concrete that may be reinforced and/or covered with asphalt. Warehouse and plant floors generally consist of 6 to 12 inches of reinforced concrete. Structural details are provided on the construction drawings and references therein.

A sequenced schedule for removal of structures will be developed to determine the most efficient methods and equipment for removing, sizing, and transporting the concrete and asphalt. Where necessary, portions of the floors will be removed first to excavate above-WAC soil contamination below the floors. Visible soil on concrete debris generated within above-WAC areas must be removed from the debris prior to loading and hauling the debris to the OSDF. All concrete and asphalt debris transported to the OSDF must be sized to meet physical WAC for the OSDF (DOE 1998b). A limited volume of concrete may be selected for size reduction to meet OSDF Category 1 criterion or to provide aggregate for roads and ramps constructed in impacted areas.

3.5.3 Concrete Footers, Pilings, Sumps and Basements

Removal of concrete and metal debris will be performed in accordance with Specification Section 02205. Concrete debris transported to the OSDF must be sized to meet physical WAC for the OSDF (DOE 1998b). A limited volume of concrete may be selected for crushing to provide aggregate for roads and ramps constructed in impacted areas. The OMTA Bulk Debris area may be used for temporary storage of debris prior to placement in the OSDF.

Reinforced concrete building footers generally range in size from 3 by 3 by 1 (all cited dimensions are length, width and height in feet) to 25 by 21 by 2, with correspondingly smaller ranges for warehouse structures. Reference drawings listed on 3B/4B/5 Drawing Index (drawing 99X-5500-G-00642) detail slab and foundation plans for the various plants, buildings, pads and miscellaneous structures throughout 3B/4B/5. Lessons learned from 3A/4A would indicate isolated instances where 3B/4B/5 will contain footers of alternate sizes and locations than those shown on technical references drawings. However the reference drawings represent a summary of the most reliable historical information regarding facility slabs and foundations. In addition, Appendix F contains a historical summary of Area 3B/4B/5 facilities, with brief physical and process descriptions of the various facilities located within each remediation area.

Excavation that encroaches within the five feet protected cover over, or breaches, the unsaturated sand and gravel of the GMA, must be backfilled in accordance with Specification Section 02206. There are a number of existing structures in Area 4B that either penetrate into the GMA or are located within 5 feet of the GMA. All of these structures except for 26B (Elevated Water Storage Tank) will be removed during remedial excavation.

The Elevated Water Storage Tank located near the northwest corner of Area 4B has seven footers and one below-grade water storage pit, which will be removed during remedial excavation. However, the Elevated Water Storage Tank also has 53 pilings installed underneath the Elevated Water Storage Tank foundations that are assumed to penetrate the GMA. The only known contamination to exist within the immediate area of the Elevated Water Storage Tank is located at or near the existing surface. The existing surface around the Elevated Water Storage Tank is at approximately elevation 580 feet MSL. The glacial till/GMA interface in this area is at approximate elevation 548 feet MSL. The bottom of the seven tower foundations and the below-grade water storage pit are at approximate elevation 571 feet MSL. Excavation of the footers and water storage pit will remove known contamination located at or near the surface. In order to completely remove the 53 pilings assuming they stop at the GMA interface (elevation 548 feet MSL), an additional 17,300 cubic yards of below-FRL soil would have to be excavated with no

known benefit to contaminant removal or GMA protection. The excavated below-FRL soil would have to be stockpiled in the area already congested due to remedial and certification activities. This soil may subsequently become contaminated in the process and require disposal in the OSDF. Complete removal of the pilings would create a substantial disruption to surface features in the general area of the Elevated Water Storage Tank due to the requirement of laying back the excavation slopes. The impacted area would include portions of the non-certified Lime Sludge Ponds area, the road just to the East of the Lime Sludge Ponds that services the trailer complex known as Hooperville, and the Area 4B perimeter runon ditch required for remedial excavation of Area 4B. In addition, the GMA would be temporarily exposed creating a potential pathway for surface contaminants from adjacent areas to enter the GMA before a clay plug can be installed. Also without completely backfilling the excavated area, a long-term risk also exists for impacted stormwater to infiltrate the GMA. After exposing the tower pilings at design grade, an evaluation will be performed on the pilings to determine the environmental impacts. The decision to leave or remove the pilings will be made based on this evaluation, as concurred by both the USEPA and OEPA.

3.6 SOIL EXCAVATION, MONITORING AND SEGREGATION

Excavation to remove impacted material will follow the general guidance of Excavation Approach D, as discussed in the SEP. Soil and material associated with and above-WAC area, HWMU, or contaminated with organics will be targeted for early removal to minimize cross contamination. At a minimum, general excavation activities will remove the top 2 feet of gravel and soil cover that extends over the area. Approximately 60 percent of the Area 3B/4B/5 surface is covered by asphalt and concrete. The soil surface under the asphalt and concrete will be scanned with *in situ* gamma spectroscopy techniques to determine if excavation is required outside the established limits of known contamination.

3.6.1 Above-WAC Excavations

As discussed in the following sections, sixteen above-WAC areas have currently been identified in 3B/4B/5 excavation areas, accounting for an estimated 8,688 cubic yards (yd^3) of above-WAC soil and debris. Bounding above-WAC areas has been completed to the extent possible, based on area accessibility due to ongoing activities in the area. Where bounding borings were not possible, landmarks (i.e. edge of building, etc.) were used to conservatively bound the areas. Characterization will be ongoing to bound and quantify known above-WAC areas, as well as, identify and bound additional above-WAC excavations. If found during excavation, real-time monitoring and/or physical sampling will be used, depending on COC, to establish the limits of above-WAC areas. Once identified, an above-WAC area

will be staked and a buffer area will be established adjacent to the excavation in accordance with Specification Section 02205 to control the spread of contamination.

Above-WAC areas will be excavated in nominal 3 feet ± 1 foot lifts. Lifts may be reduced if the opportunity exists to reduce above-WAC soil volumes through more frequent scanning or sampling. Excavated material containing only above-WAC levels of radiological constituents (uranium and/or technetium-99) will be hauled directly to the WPRAP. Excavated material containing above-WAC levels of organic constituents (i.e., PCE) will be hauled to an appropriate stockpile, such as AR6-003 generated during 3A site preparation activities, for future treatment. Side slopes will be excavated to 2:1 and monitored to determine material disposition and lateral excavation as necessary to verify that all above-WAC contamination has been removed. Equipment used to excavate, load, haul and place above-WAC material will be decontaminated by rinsing until no visible material is present on exterior surfaces prior to use elsewhere.

The CM will direct the use of working stockpiles for materials removed from side slopes of excavations designated as above-WAC for radiological constituents. 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. Upon completion of sampling or real-time scanning, this material will be transported from the working stockpile(s) to WPRAP or the OSDF.

Above-WAC excavation monitoring will consist of monitoring the excavation side slopes to determine if the contamination zone has been captured laterally. 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.

Construction drawings detail coordinates, excavation elevations and sequencing requirements for excavating known above-WAC areas. As in recent excavation packages, the approach presented in this IRDP has been broken down and simplified on the construction drawings based on known excavations having specific COCs. However, due to the complexity of above-WAC excavations, and the importance of minimizing the volume of materials requiring potential treatment and/or off-site disposal, the CM and WAO will provide field oversight during execution of this work.

3.6.1.1 Above-WAC Excavations - Area 3B

Excavation of known above-WAC material in Area 3B involves excavation of approximately 251 bank cubic yards from four uranium and/or technetium-99 above-WAC areas in the vicinity of Plant 1 Pad, as shown on the Area 3B Layout Plan (drawing 99X-5500-G-00685). Excavation of these areas will be performed in accordance with Area 3B Above-WAC Excavation Details and Limits (drawing 99X-5500-G-00700) and Specification Section 02205. Known Area 3B above-WAC areas and their associated COCs are as follows:

- Plant 1 Pad Northwest – uranium
- Plant 1 Pad North – uranium
- Plant 1 Pad TS-4 – technetium-99
- Plant 1 Pad Southwest – technetium-99

3.6.1.2 Above-WAC Excavations – Area 4B

Excavation of known above-WAC material in area 4B involves excavation of approximately 8,437 bank cubic yards from twelve above-WAC areas located as shown on Area 4B Layout Plant (drawing 99X-5500-G-00644). Excavation of these areas will be performed in accordance with Area 4B Above-WAC Excavation Details and Limits (Drawing 99X-5500-G-00677) and Specification Section 02205. Known above-WAC areas within Area 4B and their associated COCs are as follows:

- Plant 8 North – uranium/technetium-99
- Plant 8 Central –technetium-99
- Plant 2 Northwest – uranium/technetium-99
- Plant 2 Northeast – uranium
- Plant 2 Southwest – uranium/technetium-99
- Pilot Plant South – uranum/technetium-99
- Pilot Plant Northwest – uranium/technetium-99
- Pilot Plant Southwest – uranium
- Lab Dock – uranium/technetium-99
- Lab North Courtyard – uranium
- Lab Southwest – uranium/technetium-99
- K-65 Trench – technetium-99

Excavation of K-65 trench is an above-WAC excavation because sediment in the bottom of the trench is above-WAC for technetium-99. However, the excavation is a special case in that it represents an above-WAC excavation based on a landmark rather than a bounded area of soil contamination. The remaining K-65 Trench, including the portion of the trench that extends into Area 7, will be removed as noted on Area 4B Excavation/Drainage Plan (CW) (drawing 99X-5500-G-00657). Phase I of K-65 Trench removal will be performed prior to Area 4B isolation trenching in accordance with drawing

99X-5500-G-00767, Silos Utility Trench Excavation Plan Phase I. This phase will remove the sediment from the K-65 Trench between "A" Street and Hooperville Road and excavate a 20-feet long portion of the former utility trench itself in the path of 4B isolation trenching, to avoid spread of above-WAC contamination associated with the K-65 trench. Phase II of K-65 trench removal will excavate the remaining utility trench east of Hooperville Road. Phase III of K-65 trench removal will excavate the portion of the former utility trench beneath Hooperville Road to the same requirements as previous trench excavations, and restore Hooperville Road for traffic.

In addition to K-65 Trench excavation Phase I, the Lab Southwest above-WAC area also requires excavation prior to isolation trenching, to avoid spread of above-WAC contamination in the path of the isolation trench.

3.6.1.3 Above-WAC Excavations - Area 5

There are no known above-WAC areas in Area 5.

3.6.1.4 Above-WAC Excavations - MDC

There are no known above-WAC areas in the MDC.

3.6.2 HWMUs and USTs

There are a total of seven HWMUs in 3B/4B/5 requiring excavation, demonstration of FRL attainment for specific HWMU COCs and closure under CERCLA, as identified on layout plan drawings for each remediation area. HWMU footprints will be flagged in the field to maintain a record of the volume of soil removed from each footprint. This volume record is required to close the HWMUs and USTs. Sampling and analysis will be performed on specific HWMU COCs in accordance with the SEP. Soil excavated from HWMU and UST areas will be hauled to the OSDF if characterization data indicate it meets chemical and radiological WAC. However, where an HWMU footprint overlaps an above-WAC area, the HWMU material will be excavated to the extent necessary to remove the above-WAC material and hauled to WPRAP, stockpiled for treatment, or containerized. The following paragraphs summarize HWMUs by remediation area.

Although there are no known USTs remaining in 3B/4B/5, there are eleven former UST footprints requiring excavation and demonstration of FRL attainment. The following paragraphs summarize former UST footprints by remediation area.

3.6.2.1 HWMUs and USTs - Area 3B

Area 3B contains one HWMU as shown on the Area 3B Layout Plan (drawing 99X-5500-G-00685), as follows:

- HWMU #20 Plant 1 Storage Pad

HWMU #20 consists of an outdoor paved area with partial secondary containment and the former locations of tension support structures (TS-3, 4 and 5) where containers were stored and spills recorded. The HWMU will be excavated in accordance with Area 3B/MDC HWMU Excavation Details and Limits (Drawing 99X-5500-G-00711) and Specification Section 02205.

Area 3B contains three former UST footprints requiring excavation and demonstration of FRL attainment, as shown on the Area 3B Layout Plan (drawing 99X-5500-G-00685). These former USTs and their approximate location descriptions are as follows:

- UST-11 Southeast corner of Plant 1 truck dock, 15 feet south of Plant 1 Pad
- UST-12 Southeast corner of Plant 1 truck dock, 2 feet south of UST-11
- UST-13 Southeast of Plant 1 truck dock, 30 feet south of Plant 1 Pad

3.6.2.2 HWMUs and USTs – Area 4B

There are five HWMUs in Area 4B, as shown on the Area 4B Layout Plan (Drawing 99X-5500-G-00644) and summarized below.

- HWMU #4 Lab loading dock storage area
- HWMU #5 Lab drum storage area
- HWMU #17 Plant 8 East Pad
- HWMU #18 Plant 8 West Pad
- HWMU #22 Pilot Plant Sump

These HWMUs will be excavated in accordance with Area 4B HWMU Excavation Details and Limits (Drawing 99X-5500-G-00678) and Specification Section 02205.

Area 4B contains one former UST footprint requiring excavation and demonstration of FRL attainment, as shown on the Area 4B Layout Plan (Drawing 99X-5500-G-00644). This former UST footprint, shown in it's approximate location in the southern portion of Plant 8, is from a UST recently discovered and removed during D&D activities. Research of historical information pertaining to this UST is ongoing toward the development of pertinent COCs for FRL attainment and the establishment of footprint bounding coordinates.

3.6.2.3 HWMUs and USTs - Area 5

There are no known HWMUs in Area 5 requiring remediation.

Area 5 contains six former UST footprints requiring excavation and demonstration of FRL attainment, as shown on the Area 5 Layout Plan (Drawing 99X-5500-G-00702). These former USTs and their location descriptions are summarized as follows:

- UST-1 Centerline approximately 51 feet east of Garage (Bldg. 31)
- UST-2 Centerline approximately 51 feet east of Garage (Bldg. 31)
- UST-5 Approximately 10 feet east of Garage (Bldg. 31)
- UST-9 Approximately 8½ feet northeast of Garage (Bldg. 31)
- UST-10 Centerline approximately 43½ feet east of Garage (Bldg. 31)
- UST-17 Approximately 10 feet north of Heavy Equipment Building (Bldg. 46)

3.6.2.4 HWMUs and USTs - MDC

MDC excavation area contains one HWMU that requires remediation, as shown on the Area 3B Layout Plan (Drawing 99X-5500-G-00685):

- HWMU #11 Tank Farm Sump

HWMU #11, the tank farm sump, is located just north of the Tank Farm Settling Basin constructed during 3A/4A site preparation. The HWMU will be excavated in accordance with Area 3B/MDC HWMU Excavation Details and Limits (Drawing 99X-5500-G-00711) and Specification Section 02205.

MDC excavation area contains one former UST footprint requiring excavation and demonstration of FRL attainment, as shown on the MDC Dewatering and Remediation Plan (drawing 99X-5500-G-00714). This former UST and its approximate location is as follows:

- UST-8 Approximately 12 feet northeast of Garage (Bldg. 31)

3.6.3 General Excavation

General excavation includes mass removal of above-FRL, but below-WAC soil and debris and 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 in order to achieve final remediation limits. Necessary removal of below-FRL soil is performed for excavation of safe slopes, building footers and foundations, and to promote positive drainage within the excavation area. Excavation of Area 3B/4B/5 entails removal of approximately 718,622 yd^3 of above-FRL but below-WAC soil and 89,523 yd^3 of debris. Approximately 221,096 yd^3 of below-FRL soil will be excavated for removal of deep structures and for purposes of drainage, but this soil will remain within the excavation. Designed excavation contours are shown on Grading/Drainage Plans for each remediation area. Cross section drawings show the excavation profile relative to contamination, building structures and utilities, and the GMA. Appendix D provides soil and debris volume estimates by remediation area.

The generic approach to massive soil excavation is presented in the SEP. Massive soil excavation is in contrast to discrete soil excavation that will be carried out to remove utilities that lie below FRL contamination. In general, above-WAC soil will be excavated in nominal 3-foot lifts not exceeding 4 feet in thickness prior to initiating FRL excavation. The FRL excavation will proceed in nominal 3-foot lifts that will not exceed 4 feet in thickness. Excavation driven by contamination, as shown on Contamination Grading Plans, will be performed in lifts to allow for visual inspection of excavated soil and the cut surface. Time will be scheduled to allow 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.

Several work areas may be active within the project boundaries at any given time. A minimum of two active work areas will be required to allow the contractor and real-time monitoring crew to alternate between active work areas. The real-time monitoring crew will survey one excavation while construction removes soil from another excavation.

Unless otherwise noted on the Construction Drawings, the following slope stability requirements shall apply during excavation activities:

- Excavation slopes with depths less than 20-feet shall be performed in accordance with applicable OSHA guidelines
- Sloped excavations greater than 20 feet in depth shall be designed by a Professional Engineer registered in the state of Ohio

- Temporary excavation slopes with depths less than 20-feet shall be no steeper than 1.5H:1V with a maximum height of 13 feet between 15-foot benches
- Design slopes and slopes created by supplemental excavation shall be no steeper than 2H:1V with a maximum height of 13 feet between 15-foot benches.

These criteria have been 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.

3.6.3.1 General Excavation - Area 5

General excavation of Area 5 presents a scenario unique to 3B/4B/5 remediation in that the majority of the area will be excavated as a clean area. Impacted soil excavation is limited to the 2-feet scrape within the portions of Area 5 that extend into the FPA, and spot excavations of above-FRL soil from isolated locations. The remaining excavation will be performed to remove at- and below-grade debris for disposal in the OSDF, leaving the below-FRL soil in the area for use in backfilling excavated foundations. Portions of Area 5 within the FPA will be excavated a minimum of 2 feet below slabs, pads or roads as impacted material requiring disposal in the OSDF.

3.6.4 Utilities

Utility lines that remain after general excavation has reached the design grade will be removed using a backhoe and trench excavation techniques as illustrated on drawing 99X-5500-G-00769, Utility and Structure Removal Below Design Grade. 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 and site FRLs.

Excavation activities to remove utilities below the design grade will proceed as shown on the construction drawings. Overburden soil will be removed and placed in the OSDF as select and/or contouring material. The CM and WAO will observe the excavation and cease the excavation of overburden soil when the pipe or bedding material is encountered. The pipe interior will be inspected by WAO to determine its disposition. If the pipe is free of visible process residue it 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 WPRAP in accordance with Specification Section 02205.

If pipe bedding shows no visible signs of pipe leakage, real-time monitoring will be performed on the pipe bedding within the trench using EMS or adjacent to the trench using the HPGe tripod. Material will be hauled to WPRAP (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. Material will be hauled to WPRAP (exceeds WAC) or to the OSDF based on the results of physical sampling. If the material is below OSDF WAC, it will 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 specification Section 02205.

3.6.5 Structures

Structures that remain after general excavation has reached the design grade will be excavated using similar methods as those employed for removal of utilities below the design grade as illustrated on Drawing 99X-5500-G-00769, Utility and Structure Removal Below Design Grade. A combination of *in situ* gamma measurements and laboratory analyses will be used to demonstrate the soil and bedding material removed from around the structure meet OSDF WAC and site FRLs. Additionally, the surface area above structure will be precertified with *in situ* gamma spectroscopy measurements prior to excavating the structure.

Overburden soil will be removed from around the structure and temporarily stockpiled in the area. The structure will then be removed or truncated as shown on the construction drawings and inspected by WAO to determine its disposition. 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 WPRAP in accordance with Specification Section 02205. Real-time monitoring and/or physical sampling will then be performed at the bottom of the excavation. Based on the results of real-time scanning and/or physical sampling, stockpiled material will be hauled to the OSDF or used as fill material within the excavation. If OSDF

disposal is required, stockpiled material will be over-excavated to a depth of 6 inches to ensure that contaminated material is removed.

The excavation will then be backfilled using non-impacted soil previously excavated from around the structure, or soil from the immediate area. The backfill will be compacted in accordance with Specification Section 02206 to meet the surrounding grade. The excavation bottom will be re-excavated if analytical results from physical sampling indicate COCs are above their FRLs. Additional real-time scans and/or physical samples will be collected to verify attainment of applicable FRLs.

3.7 IMPACTED MATERIAL MANAGEMENT

Impacted material consists of contaminated soil and water, man-made debris, and special materials. Excavated impacted material that meets OSDF WAC will be placed in the OSDF in accordance with the Impacted Materials Placement Plan (DOE 2001f). Impacted material will be managed to ensure OSDF placement objectives are met. For example, impacted material needed for the OSDF select layer will be stockpiled to ensure the material quantity needed is available during scheduled OSDF liner or select impacted material layer construction. Materials that do not comply with OSDF WAC will be transferred to WPRAP, placed in the SMTA for shipment to an off-site disposal facility, or stockpiled in an appropriate stockpile for treatment. The Traffic Flow and Material Tracking Plan drawings lay out the tracking numbers for impacted material removed from the project area. General information on the handling and tracking of impacted materials is provided in the following text and in Section 3.3.2 of the SEP.

3.7.1 Excavation Water

Excavation water will be managed as previously detailed in Section 3.2.

3.7.2 Contaminated Soil and Debris

Contaminated soil and debris removed from the project area will be assigned the source tracking number identified on the Traffic Control and Material Tracking Plan for each remediation area. Excavated soil and debris will be hauled to the OSDF if physical, chemical and radiological WAC are met. Soil and debris that does not meet OSDF WAC will be hauled to WPRAP, the SMTA, or an appropriate stockpile for treatment.

Above-WAC soil will be hauled to WPRAP if organic COCs are below the allowable levels of the off-site disposal facility. Soil contaminated with organic COCs at levels that exceed the OSDF WAC will be hauled to AR6-003, or an appropriate stockpile for treatment. Soil above-WAC for both organic and

radiological COCs will be segregated from soil that is above-WAC for organic COCs only. Along with similar soils from the FPA, low-temperature thermal treatment of the soil by a subcontractor is planned. Treated soil will undergo toxicity characteristic leaching procedure testing to establish final disposition of the soil. If treatment is successful, treated soil with below-WAC levels of radiological COCs will be hauled to the OSDF. Treated soil that contains above-WAC levels of radiological COCs will be hauled to WPRAP if COCs meet off-site WAC for organics.

3.7.3 Other 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 3B/4B/5 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 a visual inspection of pipe interiors is passed. Materials prohibited from OSDF disposition and materials that do not meet the OSDF WAC will be placed at WPRAP or packaged into containers and placed at the SMTA. In general, all special materials that exceed the OSDF WAC, except process residues and uranium metal, will be hauled to WPRAP. Process residues and uranium metal will be containerized and placed at the SMTA. Fluor Fernald Waste Generator Services will retrieve the containers from the SMTA and disposition the material to 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).

3.8 GMA AND TRENCH BACKFILLING

Backfilling of excavated areas generally will not be permitted until the certification process is completed. Exceptions to this requirement are: 1) areas where the excavation comes within 5 feet of, or exposes the sand and gravel deposits of the GMA or, 2) trenches excavated below the design grade to remove utilities.

The EPA and OEPA will be notified when excavation activities approach within 5 feet of the till/GMA

contact depicted on the drawings or breach the GMA. In addition, a geologist familiar with the GMA sand and gravel deposits will be present to observe the excavation. If the geologist determines that sand and gravel material associated with the GMA has been encountered, excavation activities will be stopped to examine the nature of the material in the bottom of the excavation. The geologist will determine if the GMA has been breached and, if so, action required to protect the GMA. Selected actions will be dictated by weather conditions and/or forecasts.

If a breach of the GMA occurs and precipitation is likely in the next 24 hours, the breach will be backfilled immediately to a minimum of 2 feet with clay from the local excavation in accordance with Technical Specification Section 02206. Every effort will be made to cover the exposed sand and gravel of the GMA with clay that has been precertified to local FRLs. Physical samples of the 2-foot plug will be taken to allow a certification determination to be made. If samples indicate COCs are present above their FRLs, the backfill area will be re-excavated to remove the soil failing certification. All ponded water will be pumped from the affected excavation as soon as practical following the precipitation event. When excavation resumes, or in the event that excavation continues because a precipitation event is not imminent, the lateral extent of excavation around the breach will be completed per the design. However, the depth of excavation will be taken as the top of the unconsolidated sand and gravel when this horizon is reached prior to the design depth. Excavation into the sand and gravel deposits of the GMA is prohibited. Once the excavation is complete, backfilling of the breach and sampling of the plug will take place as noted above.

In excavations where clay covers the GMA but the clay is less than 5 feet thick, the thickness of clay will be brought up to a minimum thickness of 5 feet. The contractor must initiate work to bring the clay up to a thickness of 5 feet within five working days, and ponded water must be continually pumped out of the excavation until the clay is returned to a minimum thickness of 5 feet. Prior to initiating the backfill work, certification samples of the clay will be taken at the design grade. If the samples indicate COCs are present above their FRLs, the backfill area will be re-excavated to remove the soil failing certification.

For Exception (2), soil removed from above the utility lines that is below the FRLs will be set aside and used to backfill the trench after the utility lines and bedding material is removed. Section 3.4.5 describes the excavation, sampling, and disposition of material removed from trenches. Technical requirements regarding the compaction of the backfill are presented in Specification Section 02206 and illustrated on construction drawings. As the trench will be backfilled before analytical results are obtained on the

collected soil samples, the trench is backfilled with the risk of re-excavating should the soil samples exceed the established FRLs.

3.9 PRECERTIFICATION AND INTERIM GRADING

Precertification activities will commence after the design grade has been reached and the contractor has left the active excavation area. 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 being free of uranium, thorium, and radium hot spots (i.e., three times FRL). 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 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 the restoration grading.

A radiological control point will be established to monitor ingress and egress of equipment and personnel entering the precertification area. After precertification activities are completed, certification samples will be collected in a timely fashion to minimize the cost and time associated with pumping surface water out of the excavation. Final grading plans for Areas 3B, 4B and MDC will be prepared once post remediation surveys have been obtained.

Section 4

4.0 PROJECT-SPECIFIC ENVIRONMENTAL CONTROLS AND MONITORING

This section defines the project-specific environmental controls and monitoring that will be performed during remediation of Area 3B/4B/5, use of the resulting information, and how the information will be integrated with sitewide monitoring and reporting requirements. Control mechanisms and monitoring/inspection requirements are provided to account for the air, surface water, and groundwater pathways, as well as impacts to natural resources (i.e., endangered species, wetlands, and cultural resources). The general sitewide controls and monitoring are discussed in Section 5.0 of the SEP.

The IEMP (DOE 2001a) quarterly reporting cycles provide a link between the individual, project-specific remediation actions across the entire FCP site. Information provided to the IEMP report by the project may include improvements to the surface-water management system, the location of additional air monitors, or newly identified groundwater pathways. Normally, routine decisions made by the SDFP to react and respond to project-specific operating conditions and process-control objectives (e.g., extending boundaries of a real-time survey) will not be reported as part of the IEMP reporting cycles. These types of routine decisions will be maintained as part of the project record and will be considered normal practice to achieve project-specific operating objectives.

4.1 NATURAL RESOURCE IMPACTS

On-property natural resource impacts include those associated with threatened and endangered species, cultural resources, and wetlands/floodplains. Section 5.0 of the SEP establishes a three-component strategic control mechanism for natural resource impacts:

- Identify unavoidable impacts to natural resources anticipated to result from remediation activities
- Plan and design remediation activities to limit resource damage that is unavoidable
- Conduct natural resource restoration.

The first component has been addressed in the OU3 and OU5 RODs. There are no wetlands, endangered species, or cultural resources identified within Area 3B/4B/5, and all access points, staging areas, and equipment laydown areas are outside Priority Natural Resource Areas identified on Figure 5-2 in the SEP. Therefore, the second component is not applicable to Area 3B/4B/5 at this time. In the event cultural resources are discovered contingency plans will be developed to deal with the discovery per the intent of component two. Natural resource restoration (third component) is briefly described in Section 1.3.3 and is the subject of the NRRP.

4.2 AIR PATHWAY

This subsection presents the control and monitoring requirements for the air pathway during remediation of Area 3B/4B/5. The air pathway includes noise, fugitive emissions (visible dust), airborne radiological particulates and radon, and direct radiation. Air pathway monitoring activities, to the maximum extent possible, will make use of both the existing FCP occupational air monitoring program and the sitewide environmental monitoring program (described in Section 6.0 of the IEMP). Regulatory protocols established in these monitoring programs will be used to ensure that project-specific data are of comparable quality and are beneficial in evaluating and reporting project-specific air pathway releases. Administrative and engineering control techniques, in accordance with Fugitive Dust Control Requirements (RM-0047), will be implemented during Area 3B/4B/5 remediation activities to mitigate potential emissions of fugitive dust and airborne radiological particles.

4.2.1 Noise

Noise control and abatement during the Area 3B/4B/5 remediation will include mufflers on equipment and machinery, proper maintenance of equipment and machinery, and rescheduling heavy equipment use times in the field if late operational hours are needed. The number of remediation activities performed after sunset will be minimized.

To ensure that the OSHA and American Conference of Governmental and Industrial Hygienists (ACGIH) noise limits are met, an administrative action level below these limits will be set (Section 5.0 of this plan). This administrative action level will be used to assess the need for hearing protection for field personnel in the remediation areas, for maintenance of vehicles and machinery, and for additional noise control and abatement.

Noise monitoring will be conducted as part of Area 3B/4B/5 project-specific health and safety requirements. Noise measurements will be made in the field by Fluor Fernald and Contractor Safety and Health (S&H) personnel, using safety and health protocols for noise monitoring. The noise measurements will assess whether administrative action levels are exceeded, the need for hearing protection, the need for maintenance of vehicles and machinery, the need for additional noise control or abatement, and compliance with OSHA and ACGIH occupational noise limits.

The noise monitoring program will develop area-specific background levels before starting excavation activities and monitor noise levels during remedial activities. Field personnel will be responsible for documenting noise levels in the field in accordance with records management guidelines presented in Section 6.7, as well as for initiating noise abatement measures. If background noise levels are within 5 dBA (decibels on the A-weighted scale) of the administrative action level (85 dBA, as specified in the safety and health requirements), S&H personnel will contact the project manager to begin appropriate corrective actions.

4.2.2 Fugitive Emissions

Water, commercially available dust suppression agents, or other appropriate methods and proactive work practices will be used to minimize dust generation during Area 3B/4B/5 remedial activities. In general, dust generation during soil excavation, handling, hauling, and placement will be controlled using work practices that include cleaning paved haul roads or applying water (or other dust suppressant agents) to paved and unpaved haul roads. Water or other dust suppression agents will be applied in sufficient quantities to reasonably minimize dust generation, but limited so that they do not result in water migration beyond work area boundaries.

For excavation activities, dust control will be focused on making the material less dusty. The principal control mechanism will be the inherent moisture in the soil; during dry conditions, dust control will be initiated before excavation. If visible dust emissions occur during excavation, one or more of the following dust control methods will be used:

- Apply more water mist
- Add surfactant or other agents to the water mist
- Apply resins, crusting agents, or foams in lieu of water mist.

For soil handling, hauling, and placement activities, dust control will focus on making the transported material unlikely to become airborne. The principal control mechanism will be reliance on inherent moisture in the soil coupled with a 20-mph speed limit during hauling on paved haul roads (10-mph speed limit on unpaved haul roads). If visible dust emissions occur during handling, hauling, or placement, one or a combination of the following dust control methods will be used:

- Change configuration of material (e.g., place less in the trucks)
- Apply water mist
- Add surfactant or other agents to the water mist
- Apply resins, crusting agents, or foams in lieu of water mist
- Reduce truck speed
- Cover load bed.

The numbers or types of dust suppression equipment in operation will not preclude stopping work if there is visible dust or excessive visible dust. Increasing levels of visible dust indicate a need to increase dust control effort, including possible alteration, slowdown, or temporary suspension of the work activities generating the visible dust. The work activities observed to be generating the visible dust will be temporarily suspended if the visible dust exceeds the site-specific limit or Ohio standard (RM-0047). Dust controls will be increased and/or work practices will be modified to bring the fugitive emissions to a level below the limit/standard during dust-generating activities.

Personnel will be on call during non-work periods seven days per week (including holidays) to respond to an "off-hours dust alert," which is defined as whenever Fluor Fernald gives notification to the contractor that visible particulate emissions exceed the site-specific limits during non-work periods. Site personnel will notify the contractor of such an alert and dust suppression will begin no more than three hours after such notification.

As part of their Safe Work Plan, the contractor will develop a Dust Control Plan that:

- Describes how field personnel will implement the Dust Control Plan, monitor for visible dust, progressively implement increased dust control or alter work activities when required, and maintain appropriate records of dust control activities
- Lists methods to be used to suppress dust and the associated frequency that routine dust suppression measures are to be implemented
- Describes the materials to be used to suppress dust - e.g., water, dust suppression agents, etc.
- Lists the specific types and quantities of equipment to be used to suppress dust
- Provides a description of the notification process, including designation of personnel, that the contractor intends for SDFP personnel to utilize during non-work periods to notify the contractor of an "off-hours dust alert."

Fluor Fernald will review the contractor's Dust Control Plan against these criteria. Approval of the plan by Fluor Fernald is required before authorization of earthmoving activities.

Project personnel will tour the active remediation areas at the start of the day and periodically during the day. Real-time observation of visible dust, in accordance with the criteria described in Fugitive Dust Control Requirements (RM-0047), will be used to assess fugitive dust emissions and implement corrective measures, as needed. Additionally, visual monitoring will be conducted in accordance with 40 CFR Part 60, Appendix A, Method 22, Visual Determination of Fugitive Emissions from Material Sources and Smoke Emission from Flares. Excavation, hauling, and storage-pile activities will be subjected to opacity measurements in accordance with 40 CFR Part 60, Appendix A, Method 9, Visual Determination of Opacity of Emissions from Stationary Sources (or an approved alternative method).

Field managers will be responsible for documenting visible emissions and maintaining monitoring records in the field, as well as for initiating fugitive dust abatement measures. In accordance with the record keeping guidelines defined in Section 6.7, daily information that will be recorded as part of the Area 3B/4B/5 remediation project includes:

- The date, weather conditions, and scheduled work activities (e.g., excavation, trenching, hauling, placement, compaction, loading, etc.)
- Opacity readings (if any) in accordance with 40 CFR Part 60, Appendix A, Method 9, Visual Determination of Opacity of Emissions from Stationary Sources (or an approved alternative method) (Note: not required for off-hours dust alert responses)
- Time of dust-alert notification (if any) given to the contractor, names of the individuals involved (SDFP individual who gave the notification, contractor individual notified, and dust-alert responders), and time of initiation of dust suppression activity (Note: required only for days when such notification occurs)
- Identification of areas (or segments) where dust control was performed
- The manner or type of dust control activity(ies) applied to each area or segment
- Application rate of water or other dust suppression agents - at a minimum, tank truck load capacity and number of tank loads applied to each area or segment
- Identification of the party(ies) responsible for the dust control activity in each area or segment - at a minimum, name of the contractor.

Dust suppression agents shall not include petroleum products, lignosulfate, or chloride products.

4.2.3 Airborne Radiological Particles

All airborne radiological particles associated with Area 3B/4B/5 remediation activities are anticipated to be from fugitive emissions. Control mechanisms for fugitive emissions are presented in Section 4.2.2, and these mechanisms provide sufficient control to alleviate environmental and public safety concerns arising from Area 3B/4B/5 soil remediation activities.

Airborne radiological particles associated with Area 3B/4B/5 remediation activities will be monitored via the sitewide airborne particulate monitoring program presented in Section 6.0 of the IEMP. The IEMP monitoring network surrounds the FCP site and encompasses all the current and expected diffuse and point sources at the FCP. Data collected under the IEMP particulate monitoring program will be used to assess the collective effect of concurrent remediation activities at the FCP site, per regulatory drivers described in Section 6.0 of the IEMP.

Supplements or modifications to the IEMP monitoring program are not anticipated to be required as a result of Area 3B/4B/5 soil remediation activities. Monitoring stations surround the FCP and the monitoring frequency and analyses addressed by the IEMP adequately address the COCs in the remediation area. Therefore, there are no plans to relocate monitor stations prior to soil remediation activities in Area 3B/4B/5.

4.2.4 Radon

Emission of radon from soil being remediated under the Area 3B/4B/5 project is not anticipated to be an environmental or public safety concern. Hence, no project-specific radon control mechanisms are needed for Area 3B/4B/5 soil remediation activities.

Sitewide radon emissions are monitored via the monitoring program presented in Section 6.0 of the IEMP. No supplement or modification to that program is anticipated for Area 3B/4B/5 soil remediation activities. Radon monitoring stations surround the FCP site and will not be relocated for Area 3B/4B/5 soil remediation activities.

4.2.5 Direct Radiation

Project-specific direct radiation control mechanisms beyond those provided by fugitive emissions control are not required for environmental or public safety concerns associated with Area 3B/4B/5 soil remediation activities. Environmental radiation levels associated with Area 3B/4B/5 soil remediation activities will be monitored via the Sitewide Environmental Direct Radiation Monitoring Program (Section 6.0 of the IEMP). No supplement or modification to the IEMP is anticipated to be needed for Area 3B/4B/5 soil remediation activities, and monitoring stations will not be relocated from their present positions.

4.3 SURFACE WATER PATHWAY

As a condition of its NPDES permit (Ohio EPA Permit No. 1IO00004*FD), the FCP was required to develop and implement a SWPPP (Stormwater Pollution Prevention Plan). The SWPPP identifies potential sources of pollution associated with construction and industrial activities that may affect storm water quality at the facility and describes the practices that will be employed to reduce pollutants within surface water discharges. This plan also contains provisions on the inspection program that must be implemented to ensure that discharges of storm water associated with construction and industrial activities comply with the requirements of the FCP NPDES permit.

Area 3B/4B/5 is located inside the FPA drainage basin, and all run off is presently passed to the SWRB via storm sewers. Water residing in the SWRB is treated at the AWWT Facility to remove uranium (Phase I) and then discharged to Paddys Run and the Great Miami River. Once soil remediation activities begin in Area 3B/4B/5, surface water runoff and perched groundwater that seeps into the excavation will be managed in accordance with Section 3.0 for subsequent AWWT treatment.

The SWPPP mandates that construction activity inspections will be conducted in the remediation area on a weekly basis. The FCP's construction activity inspection program performs weekly inspections within all site construction areas and after any rain events totaling 0.5 inches or more within a 24-hour period. Construction activity inspections are documented and maintained as part of the NPDES and SWPPP files at the facility.

Industrial activity inspections will also be conducted in the Area 3B/4B/5 remediation area, as required under the SWPPP. The industrial activity inspection program covers areas within and outside the FPA drainage basin. Inspections are conducted in areas draining to the site's controlled storm sewer system (FPA drainage basin) and in uncontrolled watershed basins draining through the NPDES

permitted storm water outfalls *4003 through *4006. Industrial activity inspections are documented and maintained as part of the NPDES and SWPPP files at the facility.

Inspections conducted in the Area 3B/4B/5 project will ensure that:

- Erosion and sedimentation control measures are in place and are well maintained
- Work practices and housekeeping activities are conducted in a manner that reduces the potential discharge of pollutants in association with storm water discharges from disturbed areas
- Corrective actions related to the establishment and/or maintenance of erosion and sedimentation control structures are documented and tracked to resolution
- Excessive erosion and/or situation to off-property waterways is not occurring as a result of construction activities initiated under the Area 2, Phase III Part Two soil remediation activities.

The SEP discusses potential project-specific storm water monitoring programs for soil remediation areas located outside the FPA drainage basin. The objectives of such a program would be to monitor performance of erosion and sedimentation control structures (e.g., sediment traps and basins) against their anticipated design efficiencies, and to determine whether the runoff presents an unacceptable impact to surface water quality or presents an unacceptable cross-media impact to the GMA. Specific surface-water monitoring tasks applicable to the Area 3B/4B/5 Project are discussed in Section 3.5.1.

4.4 GROUNDWATER PATHWAY

In Area 3B/4B/5, water moving from the surface down to the GMA must move through or over the glacial overburden. The perched water table in the glacial overburden follows topography and slopes west-southwest beneath Area 3B/4B/5 at a gradient between 0.008 and 0.015 (i.e., dropping 8 to 15 feet per 1,000 horizontal feet as one traverses to the southwest). The overall vertical hydraulic gradient through the glacial overburden is 1, because unsaturated conditions are present at the base of the overburden. The water table of the GMA slopes to the east, southeast and south towards the Great Miami River.

Strategic control mechanisms to protect the GMA are outlined in Section 5.1.4 of the SEP. Applicable controls to be used in Area 3B/4B/5 include:

- Prompt removal of water that accumulates in deep excavations to limit the volume of infiltration (Section 3.5)
- Backfill the deep excavations that are expected to reach the unsaturated portion of the GMA (Section 3.6).

The sitewide management strategy for monitoring groundwater during remedial activities is described in detail in Section 3.0 of the IEMP, which lists the objectives, regulatory drivers, monitoring, data evaluation, and reporting requirements for the program. Section 3.6 and Specification Section 02206 detail the requirements for backfilling excavations that breach or come within 5 feet of the GMA sand and gravel deposits.

Section 5

5.0 PROJECT-SPECIFIC HEALTH AND SAFETY

All FCP employees, visitors, vendors, and contractors associated with remedial activities in Areas 3B/4B/5 are required to abide by:

- The applicable project-specific Construction Traveler Package (CT)
- Site work permits
- All FCP site Health & Safety requirements
- Soil & Disposal Facility Project Integrated Health and Safety Plan (20100-HS-0002)

In addition to the CTs, permits, and the requirements of this document, field activities will be performed in compliance with applicable federal, state, and local requirements (e.g., OSHA). Fluor Fernald managers and supervisors are responsible for ensuring that the project-specific CT complies with the environmental safety and health/training requirements and ensuring compliance with the project-specific CT. All personnel have stop-work authority for imminent safety hazards resulting from noncompliance with the applicable health and safety practices. Health and safety requirements and procedures for this Implementation Plan will be governed by the project-specific CT, site work permits, and the overall strategy discussed in the SEP (Section 6.0).

In accordance with procedure SH-0001, Developing Project Specific Health and Safety Requirements, or an equivalent procedure, a project-specific CT will be developed for construction, excavation, and impacted material placement activities related to Areas 3B/4B/5. This project-specific CT will provide information on possible safety hazards and training associated with each task. Occupational exposure monitoring requirements will be incorporated into the project-specific CT. This Implementation Plan addresses COCs for the Area 3B/4B/5 project area.

The project-specific CT may be revised, as tasks and/or associated hazards are identified, added, or deleted. The project-specific CT will be maintained at the project site, with controlled copies in the project document control files.

Fluor Fernald will assign an occupational health and safety representative to the design team to review all project design documents and ensure compliance with all applicable worker safety and health regulations. Fluor Fernald will provide all radiological occupational monitoring for the contractor, including Radiological Control Technicians (RCTs) to support remediation activities. Requirements for Area 3B/4B/5 remediation activities will be detailed in activity-specific Radiological Work Permits (RWPs)

and Chemical Hazard Permits (CHPs). Personnel performing work under a RWP or CHP will be briefed on the specific hazards and task requirements before work begins. Radiological control personnel will evaluate the data obtained from field surveys to determine the effectiveness of the radiological controls.

Fluor Fernald will provide safety and health coverage, including air sampling for non-radiological contaminants. Fluor Fernald S&H will provide random verification sampling and perform periodic walk-throughs to assure compliance with OSHA regulations and safety and health requirements, as deemed necessary.

Work authorization is controlled by SH-0021, FEMP Work Permits. SDFP uses the following documents to define the work and provide a hazard assessment:

- Soil & Disposal Facility Project Integrated Health and Safety Plan (20100-HS-0002)
- Implementation Plan for Areas 3B/4B/5
- Project-specific CT
- FCP site permits

Section 6

6.0 REMEDIAL ACTION MANAGEMENT STRATEGY

This section describes the following management activities for the remediation of Areas 3B/4B/5: organization and responsibilities, configuration management, construction management, impacted material management, contingency management, data and records management, QA/QC and regulatory audit, integration of Area 3B/4B/5 activities with other SDFP and FCP activities, and remedial action and certification schedule.

6.1 ORGANIZATION AND RESPONSIBILITIES

The 1991 Amended Consent Agreement between DOE and EPA Region V (EPA 1991) decrees that both agencies have ultimate project management responsibility, with DOE as the designated lead agency. OEPA has an oversight and advisory role, as defined by regulatory agreements, for wastewater management (NPDES), hazardous waste management and HWMU closure, dust and noise control, groundwater monitoring, and air and water pathways.

The DOE-FCP Remedial Action Project Manager is responsible for ensuring that FCP remedial actions meet project goals, standards, specifications and requirements, while the DOE OU5 Team Leader provides DOE-FCP programmatic direction for at- and below-grade remediation of Areas 3B/4B/5. DOE-FCP will assign a Facility Representative to conduct field oversight of the project through Technical Leads that will be responsible for construction, excavation/remediation, engineering, QA/QC, health and safety, environmental controls and monitoring, and other pertinent aspects of the project. The DOE-FCP Facility Representative and Technical Leads will consult with the OU5 Team Leader or DOE Remedial Action Project Manager, as appropriate, to seek prompt resolution of any issues or problems.

DOE's primary contractor, Fluor Fernald, is responsible for overall management and remediation at the FCP. Remedial activities will be performed by the Area 3B/4B/5 Project Team, which will consist of personnel working for DOE's primary contractor. The Area 3B/4B/5 Project Team consists of personnel in SDFP, supported by other FCP functional areas and subcontractors as necessary. Senior SDFP personnel will provide project management, construction management, technical, and regulatory guidance to the Project Team.

As work progresses, the project organization will change to perform each particular phase of the project as efficiently as possible. The basic organization will stay the same throughout the project; however, leadership will be shifted between the SDFP Engineering/Planning Manager to the SDFP Construction

Manager during the project. During the characterization, design, and certification phases, the project will be managed by the Engineering/Planning Manager. During the construction phases, the project will be managed by the Construction Manager. This organizational structure provides clear lines of responsibility and experienced leadership to the appropriate technical phases of the project.

The Area 3B/4B/5 Project Team includes personnel in the following groups (refer to Figure 6-1):

- Management
- Primary technical areas
- Functional support.

The roles and responsibilities of SDFP personnel within each group are presented below, and personnel who serve as points of interface between SDFP and other FCP projects are discussed in Section 6.8.

6.1.1 Management

Area 3B/4B/5 management includes the SDFP Project Director, Deputy Director, Engineering/Planning Manager, Construction Manager, and administrative support. Each of these positions is discussed below, and many of the positions are described in greater detail in FCP procedures and project documents.

6.1.1.1 SDFP Project Director

The SDFP Project Director (Project Director) has overall responsibility for the general direction, guidance, management, and oversight of the project, and reports directly to the Director of Projects. In this role, the Project Director's direct reports include the Engineering/Planning Manager, the Construction Manager and the SDFP Deputy Director (Deputy Director). The Project Director also serves as the primary contact for the SDFP with the DOE and the regulatory agencies. In the Project Director's absence, or as assigned by the Project Director, the Deputy Director will have the overall responsibilities of the Project Director.

6.1.1.2 Engineering/Planning Manager and Construction Manager

The Engineering/Planning Manager and Construction Manager oversee and manage the project and have overall responsibility to complete the project scope within budget and on schedule. The transition point between the design and construction phases of the project is the approval of the IRDP and CFC drawings. During the characterization, design, and certification phases of the project, the project is managed by the Engineering/Planning Manager which includes his direct reports from Engineering, Restoration Management, Characterization/Waste Management, and Real-Time Instrumentation Measurement

Program (RTIMP). Also, support is provided from other SDFP support personnel from QA/QC, project controls, administration, safety and health, radiological control, surveying, and construction. During construction, the overall project is managed by the Construction Manager and his direct reports including construction superintendents, construction engineers, labor support, logistical support, safety and health, and radiological control. He is also supported by the Engineering/Planning Manager and his team.

The general responsibilities of the Engineering/Planning Manager include:

- Overall management of characterization, design and certification phases
- Developing the IRDP and obtaining regulatory approval of the project
- Assuring the technical accuracy and quality of the CFC drawings and the technical specifications through the completion of construction
- Ensuring that the DCN process is properly evaluated and efficiently managed by the Project Engineer
- Managing the Project Engineer, Characterization/Waste Management Lead, RTIMP Lead, and other SDFP resources to provide timely and sufficient technical support per the Execution Manager's request during construction
- Facilitating implementation of FCP oversight functions (e.g., QA/QC, WAO, etc.) on engineering and characterization procedures
- Closing Nonconformance Reports on engineering and characterization procedures and/or deliverables.

The Construction Manager is in charge of, and accountable for, Area 3B/4B/5 construction activities, including:

- Managing SDFP construction personnel (i.e., Construction Superintendents, Construction Engineers, Construction Coordinators, Logistical Support, Surveying/CADD, and Labor Support)
- Obtaining the required FCP permits and ensuring permit requirements are fully understood and followed by field personnel
- Facilitating timely and sufficient implementation of FCP oversight functions (e.g., QA/QC, Safety and Health, WAO, etc.) on construction procedures and/or deliverables
- Closing Nonconformance Reports on construction procedures and/or deliverables

- Providing documentation, information and support to satisfy the Standard Start-up Review requirements for long-term pumping facilities

- Requesting engineering, characterization, and other administrative support during construction through the Engineering/Planning Manager.

6.1.1.3 Records Management

Project records are submitted to Engineering/Construction Document Control (ECDC). Project personnel are responsible for the management of project records until they have been submitted to ECDC. Specific responsibilities of project personnel include:

- Interfacing with ECDC,
- Managing project documents
- Coordinating the review and comment response process for project documents.

6.1.1.4 Project Controls

The Project Controls group provides the Project Director, Engineering/Planning Manager, and Construction Manager with cost and schedule information for control accounts within the project. Specific responsibilities include:

- Ensuring cost and schedule requirements are defined, planned, and monitored against an integrated baseline so that performance can be measured and reported consistent with overall commitments, budgets and available funding

- Establishing cost, schedule, and technical baselines and maintaining them through the issuance of change proposals

- Collecting monthly status reports to identify trends which may result in forecast variances from the baselines

- Assisting the SDFP Cost Account Manager and other project personnel in the various administrative duties associated with establishing baselines and forecasts, and ensuring that charges are directed to the proper accounts as defined in the baselines

- Working with sitewide training coordinators to ensure that individuals assigned to the project are in compliance with established training procedures and guidelines

- Working with project and site commitment trackers to ensure that project commitments are entered into the tracking systems and that responsible personnel are kept informed of the requirements of each commitment

- Providing adequate documentation of commitment completion to project and sitewide trackers.

6.1.2 Primary Technical Areas

The primary technical areas that support soil remediation in Areas 3B/4B/5 are:

- Engineering
- Construction
- Characterization.

6.1.2.1 Engineering

The SDFP Engineering staff (engineering staff) under SDFP Engineering Manager (Engineering Manager) direction performs Title I and II design and engineering services by creating CFC design drawings and technical specifications. The engineering staff also prepares specific sections of the Implementation Plan and provides technical input during the development and review of the IRDP, including the CFC package.

The Engineering Manager reports to the Engineering/Planning Manager on project-specific remedial designs, as well as associated documentation and design modifications. During construction, the Engineering Manager will assign a Project Engineer who will perform Title III engineering services which include processing Requests for Clarification or Information (RCIs) and creating and/or processing DCNs. Specific responsibilities of the engineering staff include:

- Preparing CFC engineering documents
- Developing responses to RCIs
- Developing, reviewing, and/or approving DCNs
- Reviewing and approving vendor data submittals or engineering and design components
- Revising construction drawings and technical specifications when necessary
- Reviewing and approving "as-built drawings" supplied by the construction contractors at the completion of field work
- Preparing work statements and verifying that contractual work has been performed by the contract CADD technical staff
- Verifying that regulatory commitments are completed and approved
- Conducting inspection of erosion and sediment control measures

- Requesting a safety assessment be prepared to govern the remediation effort
- Assuring that safety is incorporated into the design.

6.1.2.2 Construction

Under the lead of the CM, remedial action construction will be performed by building trades labor and/or the construction support contractor reporting directly to SDFP construction management personnel. The CM has Construction Superintendents, Construction Engineers, Construction Coordinators, Logistical Support, Surveying/CADD, and Labor Support personnel on staff to support these activities. During remedial design, construction will provide input in the form of lessons learned and formal reviews of design drawings and technical specifications to ensure the design is constructable. Specific responsibilities include:

- Managing the building trades labor force to self perform the Area 3B/4B/5 construction
- Coordinating daily work activities in the field and providing technical direction to the construction support contractor as necessary
- Providing, reviewing, and/or approving submittals as listed on the submittal register prepared by Engineering
- Utilizing project and functional area resources as necessary
- Installing and maintaining erosion and sediment control measures.

Construction field personnel will be qualified to supervise the performance of tasks associated with the Areas 3B/4B/5 remedial activities. They are responsible for coordinating and supervising their work as well as any subcontractor work in Areas 3B/4B/5. At a minimum, Construction's representatives will be responsible for the following:

- Implementing a safety program in accordance with FCP requirements
- Discussing and interpreting the Area 3B/4B/5 design and informing Engineering of any discrepancies between the plans, specifications and field conditions
- Distributing documentation required by the project specifications in a timely manner
- Attending project coordination meetings
- Scheduling the applicable remedial activities
- Maintaining a daily log of Area 3B/4B/5 activities and assisting the Execution Manager or his designated representative in reviewing and approving submittals, as necessary
- Implementing and verifying QC procedures required of the contractor and/or their subcontractors
- Assuring that construction activities are conducted in a safe manner.

6.1.2.3 Characterization

The Characterization/Waste Management Lead (Characterization Lead) will coordinate Area 3B/4B/5 field measurements, sample collection, laboratory analyses, and data management associated with the characterization of waste materials and soil in Areas 3B/4B/5. These responsibilities include:

- Developing PSPs and coordinating sampling and analysis to support predesign characterization activities
- Evaluating and reporting characterization data to provide recommendations and documentation
- Identifying areas of known contamination that will require issuance of chemical hazard permits prior to remedial work being performed in that area.
- Reporting precertification and certification sampling/measurements.

The Characterization Lead will oversee sampling and analytical activities that support the remedial design and certification of Areas 3B/4B/5. Sampling personnel are responsible for providing input on PSPs, collecting field data, and performing data management for project sampling activities, as directed by the Characterization Lead. An exception to this is scheduled environmental monitoring outlined in the IEMP, which is performed by environmental monitoring personnel. The individual sampling tasks are defined in PSPs prepared by the Characterization Lead and support personnel.

6.1.3 Functional Support

The Area 3B/4B/5 Project will require support from personnel in other FCP functional areas, and these individuals will be matrixed to the project. Generally, the lead technical group will manage the functional support staff. To the extent possible, functional support will be provided by personnel dedicated to the SDFP (e.g., QA/QC, Safety and Health, etc).

6.1.3.1 Safety and Health

Safety and Health support during the project will be provided by the Safety and Health Lead and his direct reports. This support will include:

- Preparing Safety and Health documents for the project
- Assist in preparing traveler packages, permits, Job Safety Analysis, and other like documents
- Reviewing documents as they are prepared for compliance with Safety and Health requirements
- Implementing the Area 3B/4B/5 Project-Specific Health and Safety Plan, as required
- Assuring that FCP personnel and contractors follow safe work practices.

Health and Safety personnel and any other employee have stop-work authority if unsafe conditions or acts are observed.

6.1.3.2 Radiological Control

Radiological control support during the project will include:

- Preparing required radiological control documents for the project (including radiological ALARA
- Reviewing project documents as they are prepared for compliance for radiological requirements.

6.1.3.3 Environmental Compliance

Environmental Compliance support during the project will come from the Closure Project Regulatory Management Division when needed and it may include:

- Preparing required Environmental Compliance documents for the project, including the ARARs and TBC summary in the Design Criteria Package and the ARARs crosswalk
- Reviewing project documents as they are prepared for Environmental Compliance requirements
- Coordinating with internal and external groups, including regulatory agencies, regarding regulatory matters
- Providing oversight to ensure compliance with environmental requirements.

6.1.3.4 Quality Assurance/Quality Control

The SDFP QA/QC Lead and his direct reports (QA/QC representatives) will be matrixed to the project from the FCP QC Operations organization and the QA/QC Lead will report to the Project Director in an administrative fashion, while retaining an independent oversight role. The QA/QC Lead will be responsible for developing and implementing QA plans for the project, with the primary responsibility being oversight of QA/QC activities during design, sampling, waste disposition, and construction excavation tasks. To ensure compliance with FCP requirements and procedures, the QA/QC representatives will monitor and provide support to the project in accordance with quality program elements identified in the FEMP Quality Assurance Program (RM-0012), the Sitewide CERCLA Quality Assurance Project Plan (SCQ), and the SEP Quality Assurance Project Plan. QA/QC representatives have stop-work authority if quality concerns go unresolved.

6.1.3.5 Waste Disposition

A FCP WAO representative will provide waste management support. Support will include preparation of Project Waste Identification and Disposition forms (PWIDs), definition of Material Tracking Locations (MTLs), technical direction and oversight for waste stream segregation and management, preparation of Field Tracking Logs (FTLs) and OSDF Manifests, preparation of waste stream profiles, and coordination

with the Construction Manager and the Waste Management Manager for handling and disposition of waste streams.

6.1.3.6 Natural Resources

Personnel within the Natural Resources organization will be responsible for assessing potential damages to natural resources within Areas 3B/4B/5 during the design and planning stages of the project. Natural resources personnel will also be responsible for planning and implementing interim and final restoration of Areas 3B/4B/5 as described in the NRRP. However, natural resources personnel will not monitor natural resources impacts, as this monitoring is covered under the IEMP and is performed by environmental monitoring personnel.

6.1.3.7 Cultural Resources

Cultural Resources will be responsible for handling unexpected discoveries of cultural resources during site preparation and excavation in Areas 3B/4B/5. Because much of the upper 2 to 3 feet of soil in the production area has been disturbed, cultural resources should not be found during site preparation activities. However, the deep excavations to remove uranium contamination could encounter cultural resources, which will be handled in accordance with Section 6.5.3.

6.1.3.8 Procurement

FCP Procurement will assist the Area 3B/4B/5 Project Team in obtaining equipment, services, and materials needed or the project. The principal support will be in the area of procuring materials and equipment for removal of soil and at- and below-grade concrete structures. Procured equipment and material will meet the technical specification requirements defined in the submittal register. Vendor data will be submitted to the project team management to review and ensure design and technical specification requirements are met. Responsibility for maintenance and repair of procured equipment and material lies with Construction.

6.1.4 Coordination of Excavation Site Activities

Several non-excavation activities will be on going at each active excavation site. Because of the potential safety hazards associated with large construction equipment and open excavations, these activities must be coordinated and supervised. Non-excavation activities include:

- Visual observation
- Sampling and monitoring
- Radiological occupational monitoring
- Asbestos monitoring
- Material documentation
- Occupational Health and Safety monitoring
- Construction monitoring
- Surveying
- Visual dust monitoring
- Environmental monitoring
- Safety inspections.

The following paragraphs describe each of these activities, the personnel involved, and the time required for their tasks. In addition to the coordination responsibilities, Construction will have one full-time equipment operator, the equivalent of one full-time truck driver, and a part-time supervisor at each active excavation area.

6.1.4.1 Visual Observation

The active face of excavations will be monitored visually and continuously to identify special materials encountered during excavation. WAO and Construction personnel will monitor the excavation face. Special materials that are likely to be encountered during excavation activities include asbestos, miscellaneous debris, piping, non-pressurized containers, non-soil residues, uranium metal, and acid brick. A complete list of special materials is given in Section 2.5.8 of the SEP.

6.1.4.2 Sampling and Monitoring

Physical sampling and/or Radiation Scanning System (RSS)/Radiation Tracking System (RTRAK) or HPGe monitoring will be performed as necessary during excavation of Areas 3B/4B/5. In general, RSS/RTRAK or HPGe monitoring will be conducted after each excavation lift in areas known to contain soil above the OSDF WAC. HPGe monitoring may also be used to precertify the area with respect to achieving FRLs for uranium, thorium, and radium. Physical samples may be necessary to characterize suspect zones when special materials are encountered. Sampling and monitoring work will be performed under the direction of the Characterization Lead.

6.1.4.3 Radiological Occupational Monitoring

Radiological Control will have one full-time RCT in the field to monitor the ambient radiation level of the excavation, ensure RWP compliance, assess changes in ambient radiation levels that affect the radiological classification of the area, and to scan any special materials encountered. Additional information on RCT monitoring and oversight is provided in Section 6.3.4.

6.1.4.4 Asbestos Monitoring

When excavation activities encounter material suspected of containing asbestos, a qualified asbestos hazard abatement specialist (as certified by the Ohio Department of Health) must be present to monitor the removal of the material. Personal breathing zone and general area air sampling for asbestos may be required. Asbestos is likely to be encountered during the removal of electrical lines and utilities, and it may also be found in the form of buried transite panels.

6.1.4.5 Material Documentation

A WAO representative will complete the OSDF Manifest and FTL to document the transfer of material from Areas 3B/4B/5 to the OSDF or other MTLs. Trucks hauling to the OSDF from Areas 3B/4B/5 must leave the excavation with an OSDF Manifest. The manifest will track the material to a project by identifying initial, interim, and final MTLs. The WAO representative will use verbal and written information from contractor personnel to document movements between MTLs. Additional information on field documentation information management can be found in Section 3.6.4 of the SEP.

6.1.4.6 Occupational Health and Safety

FCP Safety and Health will be responsible to monitor the work area for occupational health and safety concerns that include: occupational dust, compliance with the CT Package, chemical exposure, other hazards, and changes in field conditions affecting worker safety. FCP Safety and Health will periodically observe health and safety conditions at the active excavation area. Additional monitoring information is discussed in Section 6.3.3.

6.1.4.7 Construction Monitoring

FCP Construction will direct and monitor the remediation work for compliance with the CFC documents. One full-time FCP construction person will be assigned to Area 3B/4B/5 field activities and additional part-time personnel will be assigned on a periodic basis. Other surveillance and inspection responsibilities are discussed in Section 6.3.2.

6.1.4.8 Surveying

Construction will have a two- to three-person survey crew in the field on an intermittent basis to provide construction control and measure the excavation volume for progress reporting.

6.1.4.9 Visual Dust Monitoring

Construction will have the primary responsibility to monitor the construction area for compliance with the best available technology dust policy requirements. Additional details on fugitive dust control requirements (i.e., per RM-0047) and best available technology dust policy are discussed in Section 5.0 of the SEP.

6.1.4.10 Environmental Monitoring

Environmental monitoring will be done on a regular basis by FCP personnel. Weekly inspections of surface water control facilities will be supplemented with inspections after every major rain event, per the SWPPP requirements and Section 3.5.1. Groundwater and air monitoring is covered under the IEMP.

6.1.4.11 Safety Inspections

The Construction Manager or his designated representative will lead a weekly joint safety inspection of the work area. Participants will include Safety and Health representatives. Additional Safety and Health oversight functions are discussed in Section 6.3.3.

6.1.5 Field Team

The typical field team that will provide oversight at each excavation will consist of one RCT to cover occupational monitoring of ambient radiation, one WAO representative to observe the excavation materials and one WAO representative to prepare waste manifestation documents and one construction representative for oversight of field activities. It is possible that more people could be near an active excavation site at any one time (e.g., utility engineer, Safety and Health, project management, etc). However, only personnel who are directly involved with or need to work immediately adjacent to the active construction area will be allowed within 50 feet of the active excavation.

6.1.6 Management of Field Personnel

The potentially large group of personnel at a single excavation site at any given time creates logistical and safety concerns. Therefore, the responsibility for the management and coordination of field personnel and activities has been assigned to Construction. Personnel needing access to the excavation site will sign in with Construction before entering the excavation area and sign out upon leaving the area. This type of administrative control provides Construction with information on the number of people in a given area at any time, which is critical information needed in the event of an emergency.

6.2 CONFIGURATION MANAGEMENT

Configuration management will not be implemented on the Areas 3B/4B/5 project since it does not apply to these Performance Grade 4 and 5 facilities.

6.3 CONSTRUCTION MANAGEMENT

Fluor Fernald Construction (Construction) is responsible for implementing this remedial action project in accordance with DOE direction. Construction will directly perform the remediation work through the use of building trades labor working directly for Construction or to a much lesser extent, using the site construction support contractor where appropriate. In addition, Construction will be responsible for construction management during the work. Construction management includes, but is not limited to, conducting status meetings, daily work surveillance and inspections, and daily safety tours and oversight of the project. The Construction Manager or his designated representative will ensure that safety concerns are brought to the attention of the FCP Safety and Health Officer and the responsible Construction team members to ensure timely resolution of the concerns.

6.3.1 Status Meetings

The Construction Manager, or his designated representative, will conduct regularly scheduled status meetings with the Engineering/Planning Manager, Engineering, Health and Safety, QA/QC, and others, as warranted. The meetings will address action item status, project progress, planning, schedule status, safety items, quality, environmental protection, and problem resolution.

Construction supervision will prepare a daily report (or log) covering the previous day's work status and identifying any safety or quality problems encountered. This report and any supplementary reports will ultimately be retained in the FCP project file.

6.3.2 Surveillance and Inspection

Construction supervision has first line responsibility to inspect work and correct any deficiencies. The Construction Manager, Engineering/Planning Manager or their designated representative(s) will conduct inspections and surveillances to ensure the design is being properly implemented and contract requirements are being satisfied. QC inspections will be in accordance with the Construction QA Plan and design requirements. If a deficiency is noted, then Construction will implement the necessary corrective action(s) as soon as possible.

6.3.3 Safety and Health Oversight

The SDFP Safety and Health Lead, or his designated representative, will perform safety oversight of the Area 3B/4B/5 construction. While FCP personnel are responsible for following safety requirements identified in the Traveler Package, as appropriate, the assigned Area 3B/4B/5 Safety and Health representative will perform periodic surveillance of the Area 3B/4B/5 remedial action to monitor compliance. Although project personnel have stop-work authority for imminent safety hazards, the Safety and Health representative will have stop-work authority (in the event of a threat to worker and/or public safety) until the proper corrective follow-up actions are taken. The Safety and Health representative will be the single point of contact for safety, industrial hygiene, and fire protection issues. The Radiological Engineer is responsible for radiological concerns. Health and safety issues and concerns will be directed to the Construction Manager for resolution/implementation.

6.3.4 Radiological Monitoring and Oversight

To ensure occupational radiological compliance, FCP RCTs will be assigned to the Area 3B/4B/5 project. The assigned RCTs will perform the necessary radiological monitoring and oversight to provide documentation that demonstrates project compliance with regulatory occupational exposure control requirements. The Area 3B/4B/5 CT Package will be the basis for the required project occupational radiological monitoring and it will identify action levels to ensure personnel radiological safety, as well as industrial/occupational safety.

6.4 IMPACTED MATERIAL MANAGEMENT

Impacted materials generated during Area 3B/4B/5 remediation will be managed under the FCP Waste Disposition Program, which is implemented as an integrated effort by WAO, waste programs, and construction organizations. Roles and responsibilities for each of these organizations are established in procedure EW-1022, On-Site Tracking and Manifesting of Impacted Material.

Programmatic controls begin with waste planning during the predesign phase, at which time a volume estimate for each waste type (e.g., exceeds OSDF WAC, special materials, RCRA, etc.) is prepared, characterization methods are specified, and tentative interim (if required) and final means of disposal are identified. During project execution, waste streams are segregated by disposition categories and managed in the context of the following characterization, storage, and disposal options:

- Bulk Waste Streams: On-Site Disposition
  - Physical matrix allows bulk management
  - Meets the OSDF chemical, radiological, and physical WAC
- Bulk Waste Streams: Off-site Disposition
  - Physical matrix allows bulk management
  - Exceeds the OSDF radionuclide WAC (rail transport)
  - Exceeds the OSDF chemical WAC (truck transport)
- Containerized Waste Streams: Off-site Disposition
  - Exceeds OSDF chemical, radiological or physical WAC
  - Cannot be processed to meet OSDF WAC
- Containerized Waste Streams: On-Site Disposition
  - Physical matrix or nature of waste does not allow bulk management
  - Requires processing in a controlled area to meet OSDF WAC
  - Requires confirmatory sampling for OSDF WAC
  - Special Material that meets the OSDF WAC, but requires special handling for health and safety concerns.

Bulk waste stream information will be managed in the Integrated Information Management Systems (IIMS) database. Anticipated impacted material segregation protocols are listed in Technical Specification Section 02205. The relationship between IIMS and other site databases are illustrated on Figure 3-9 in the SEP. IIMS is designed to accommodate fast track, bulk waste stream characterization, OSDF WAC attainment demonstration, and OSDF manifesting by using site characterization data. It interfaces with the SED through the State of Ohio NAD 83 coordinate system to track historical RI/FS and newly generated data with the excavated material moved from the source location. It also interfaces with the Sitewide Waste Information Forecasting and Tracking System (SWIFTS) to allow electronic transfer of bulk waste inventory to the container management system, when containerization is required.

Field information for input to IIMS will be collected on FTLs and OSDF Manifests, with information subsequently entered into IIMS. Key data elements that are recorded on these forms are listed below:

- Project number and name
- Source MTL
- Interim or final disposition MTL (FTL only)
- Estimated volume of material
- Material matrix or profile number
- Generation date
- Signature.

Copies of FTLs and OSDF Manifests are kept in the project files.

MTLs are defined electronically in IIMS using the State of Ohio NAD 83 coordinate system. Prior to project start-up, SED data are reviewed and contiguous areas with like data are identified as unique MTLs. MTLs are identified on project drawings and in the field. When data from an FTL log is entered to IIMS, SED data for the specified MTL is tied to excavated soil volumes that have been moved to either an interim (pre-remediation area, stockpile, or container) or final (OSDF disposal) location. IIMS maintains transaction histories to provide cumulative analytical data for soil volumes that are moved more than one time. The main types of MTLs include WAC attainment areas, stockpiles and the OSDF.

A root profile is assigned to each of the five primary waste streams designated for OSDF disposal:

Profile # 91,000 OSDF Category 1	Soil and soil-like material
Profile # 92,000 OSDF Category 2	Debris for en masse placement
Profile # 93,000 OSDF Category 3	Debris for individual placement
Profile # 94,000 OSDF Category 4	High organic content (humus and vegetation)
Profile # 95,000 OSDF Category 5	Friable asbestos-containing material, sludges, and materials requiring case-by-case approval

The waste profile number facilitates electronic information retrieval from IIMS. Numeric extensions (e.g., 91,001...95,999) are used for further waste stream delineation on an as-needed basis. The second digit of the profile number identifies the OSDF category. Wastes manifested to the OSDF will be covered under a waste stream profile. The manifest number is used to retrieve characterization information from IIMS, if required, to support a determination that the waste meets WAC.

6.5 CONTINGENCY MANAGEMENT

Conditions that are unexpected cannot be managed through established excavation guidelines, and they are not accommodated in the detailed remedial design. These conditions will be dealt with according to contingency management protocols and plans set forth in Appendix F of the SEP. The contingencies are categorized as follows:

- Unearthing of materials that require special handling (e.g., asbestos)
- Encountering contamination or soil conditions that may pose a risk to human health or the environment if standard excavation practices are used (e.g., process residues), or which are significantly different than expected, or which may affect other operations
- Discovering unexpected utilities or cultural/historic resources.

6.5.1 Materials Which Require Special Handling

Special materials, and the protocol for their handling, are given in Appendix F of the SEP and procedure EW-1024. The special materials that are likely to be encountered during Area 3B/4B/5 excavation activities include asbestos-containing materials, acid brick, piping, and miscellaneous debris. Some special materials may meet OSDF WAC, while others will require off-site shipment. The SDFP and WAO will provide assistance to FCP Construction for field decisions related to the management and disposition of special materials. If applicable, WAO will arrange for movement of materials to the appropriate storage and handling areas for characterization, treatment evaluation, and/or final disposition arrangements. Additional details are provided in Technical Specification Section 02205.

6.5.2 Unexpected Contamination or Soil Conditions

In accordance with the SEP, the FCP design change process will be used to effect design changes in cases where conditions and design changes do not differ significantly from the approved IRDP. If conditions are significantly different than the approved IRDP design, than one of the following options will be exercised:

- Revise the IRDP design within SEP guidelines, submit a letter to regulatory agencies describing the design revision, and proceed with excavation
- Stop work at the boundary of the problem condition, and address the continued excavation in a subsequent IRDP
- Discuss optional approaches with the regulatory agencies to determine if the area must be addressed as an exception to SEP guidelines.

Table 6-1 addresses the specific situations relative to discovery of unknown underground utilities and unexpected above-WAC material.

6.5.3 Unexpected Discovery of Cultural or Historic Resources

If cultural resources are discovered, then the contingency plan described in Appendix F of the SEP and procedure EP-0003 will be implemented. The construction personnel will be trained to the plan and must recognize a potential cultural resource when encountered. Personnel will ensure safe handling of the resources by isolating the affected area until an on-call specialty contractor can perform any necessary data recovery. The specialty contractor is required to be on site within four hours. DOE will consult with the appropriate parties (e.g., OHPO, pursuant to 36 CFR Part 800) to determine a course of action that will avoid and minimize any adverse impacts to the extent practical. If human remains, associated funerary objects, unassociated funerary objects, sacred objects, or objects of cultural patrimony are discovered, the appropriate Native American tribe(s) will be consulted. During the consultation, DOE will cease activity in the immediate area and make a reasonable attempt to secure the remains and/or objects. Construction work stoppages in the immediate area could last a minimum of 30 days.

6.6 DATA AND RECORDS MANAGEMENT

Management of data and records for Area 3B/4B/5 remediation will be in general accord with the strategy and protocols as described in Section 3.6 of the SEP and the QA protocols for data management activities described in Appendix E of the SEP. The primary documents that will be generated during Area 3B/4B/5 remediation, and the files in which they will be maintained, are identified in Table 6-2.

6.7 QA/QC AND REGULATORY AUDIT

Area 3B/4B/5 project activities will be assessed to verify compliance to program requirements specified in this Implementation Plan. The assessment will include audits, surveillances and inspections commensurate to the scope and level of verification needed for the field tasks, contract execution, and programmatic implementation of driver documents. QA programmatic drivers are the DOE-approved FEMP QA Plan (RM-0012), the EPA-approved SCQ, and Appendix E of the SEP Quality Assurance Project Plan.

The applicable quality requirements will be specified in project-planning documents. These documents include Data Quality Objectives and PSPs that serve as planning and field instructions for environmental real-time and physical sampling activities. Additionally, the engineering design packages will include the necessary QC to assure conformance to design specifications. The FEMP QA Plan describes the appropriate QA requirements for the self-performed construction. Other documents that require QA review and concurrence are procedures and purchase requisitions.

The SDFP QA/QC Lead will coordinate project QA/QC oversight through audits, surveillances, inspections, vendor surveys, and other internal assessments needed to verify quality issues associated with the IRDP activities. External assessments from the FCP will also be coordinated with the SDFP QA/QC Lead. Construction will be responsible for documenting field inspections, nonconformance identification, and corrective actions in a timely and controlled manner.

The DOE-FCP, EPA, and OEPA have access to IRDP field activities, planning documents, and databases as necessary to assess and verify IRDP implementation. The OEPA has FCP oversight responsibility for NPDES, RCRA, dust and noise control, ground water monitoring, air and water pathways, and related split-sampling programs.

FCP procurement requisitions are reviewed and signed by the SDFP QA/QC Lead. The Area 3B/4B/5 QA/QC representative will identify material receipt requirements and the frequency of vendor source inspections, as necessary. Nonconforming items will be tagged and stored as unacceptable until corrective measures are determined.

6.8 INTEGRATION OF AREA 3B/4B/5 PROJECT WITH OTHER SDFP AND FCP ACTIVITIES

Area 3B/4B/5 remediation activities are planned and conducted in cooperation with other SDFP and FCP remediation projects and activities to ensure effective and efficient attainment of project-specific and sitewide remediation objectives. The integration with FCP support groups is established through functional support representatives that are integral members of the Area 3B/4B/5 Project Team (e.g., environmental compliance, natural and cultural resource management, sampling and analysis, QA, construction management). As noted in Section 6.1, the Engineering/Planning Manager and Execution Manager are responsible for ensuring that coordination is established and maintained with other projects and support groups, and the Project and Construction Engineers are responsible for implementing this coordination on a day-to-day basis. Key interfaces with other SDFP and FCP organizations not directly represented on the Area 3B/4B/5 Project Team include the following:

- Sitewide Planning and Scheduling
  - Integrating the Area 3B/4B/5 plan and schedule with the FCP master schedule

- OSDF Project
  - Planning and scheduling activities to ensure timely placement of Area 3B/4B/5 impacted material into the OSDF in accordance with the Impacted Materials Placement Plan and other pertinent requirements
- Demolition Projects
  - Coordinating above-grade demolition of Area 3B/4B/5 components with at- and below-grade remediation of these facilities by SDFP under this Implementation Plan
- Aquifer Restoration and Wastewater Projects
  - Treatment of storm water and perched water collected and managed from the excavation through Phase I or Phase II of the AWWT system
  - Assessing potential adverse effects on the GMA from deep excavations, if appropriate, and designing and implementing measures to ensure protectiveness
- Site Utilities
  - Coordinating installation of electrical power supply and communications lines to Area 3B/4B/5 Support Area and Radiological Control Point Facility
  - Coordinating as necessary to remove, replace, or relocate other utilities
- WAO
  - WAO, an FCP organization independent of both the soil- and debris-generating projects and the receiving OSDF project, has programmatic responsibility for the OSDF WAC attainment compliance assurance program presented in the WAC Attainment Plan. WAO representatives will provide oversight of field activities from the origin of excavated impacted material to OSDF receipt.
- FCP Real Estate Office
  - Coordinating to obtain cooperation of Cincinnati Gas and Electric on matters potentially affecting their utility facilities or areas within easements for these facilities
  - Coordinating to secure agreement for off-property remedial activities, if necessary (e.g., off-property impacted area sampling and excavation).

6.9 REMEDIAL ACTION AND CERTIFICATION SCHEDULE

In accordance with the Amended Consent Agreement, this Implementation Plan identifies Area 3B/4B/5 project-specific milestones for remedial actions and certification activities (Table 6-3). These milestones are subject to enforceable deadlines by EPA and OEPA.

TABLE 6-1
CONTINGENCY PLANS FOR RECOGNIZED BUT UNEXPECTED CONDITIONS

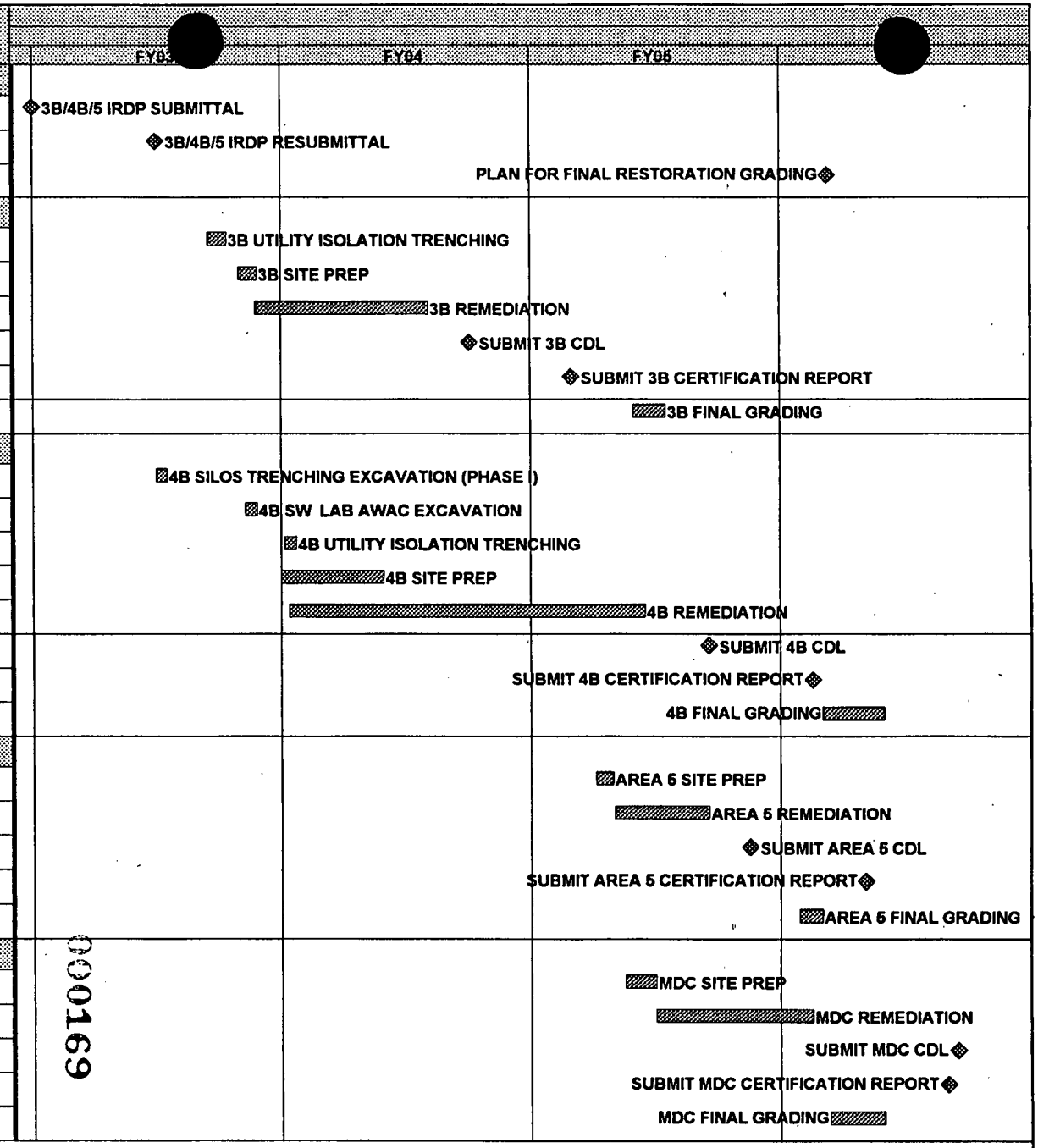
Condition	Contingency Plan
Discovery of unexpected underground utilities	Stop work in the area. Coordinate with Site Utilities and, if appropriate, non-DOE utility owner to determine utility location information, jurisdiction, operational status, necessary safe shutdown requirements (e.g., electrical de-energizing, gas pipeline capping and purging), and remediation options. Revise the design within SEP guidelines and protocols described in this Implementation Plan for known utilities. Submit a letter to regulatory agencies describing the design revision, and proceed with excavation.
Discovery of above-WAC material outside of areas designated for excavation in the IRDP	Prepare options for remediation. If the design would conform to SEP guidelines, submit letter describing investigation plans, design changes, and schedule implications to the regulatory agencies, complete design, and proceed. Otherwise, discuss optional approaches with the regulatory agencies to determine if the area must be addressed as an exception to guidelines.

TABLE 6-2
AREAS 3B/4B/5 PRIMARY RECORDS AND ASSOCIATED FILES

Document	File *
Construction drawings, Technical Specifications and Associated Field Logs	IIMS GIS Component ECDC
Miscellaneous Field Logs	ECDC
Manifest-type Documents	IIMS SWIFTS Component ECDC
Containerized Impacted Material Documents	IIMS SWIFTS Component Site Operating Record
Analytical Data and Associated Field Logs	IIMS SED Component ECDC

GIS = Geographic Information System

Activity Description	Orig Dur	Early Start	Early Finish
AREAS 3B/4B/5			
3B/4B/5 IRDP SUBMITTAL	0		30SEP02*
3B/4B/5 IRDP RESUBMITTAL	0		31MAR03*
PLAN FOR FINAL RESTORATION GRADING	0		09DEC05*
AREA 3B			
3B UTILITY ISOLATION TRENCHING	19	17JUN03*	14JUL03
3B SITE PREP	18	01AUG03*	26AUG03
3B REMEDIATION	171	26AUG03*	03MAY04
SUBMIT 3B CDL	0		01JUL04*
SUBMIT 3B CERTIFICATION REPORT	0		30NOV04*
3B FINAL GRADING	33	01MAR05*	15APR05
AREA 4B			
4B SILOS TRENCHING EXCAVATION (PHASE I)	14	31MAR03*	17APR03
4B SW LAB AWAC EXCAVATION	14	11AUG03*	28AUG03
4B UTILITY ISOLATION TRENCHING	15	06OCT03*	24OCT03
4B SITE PREP	101	01OCT03*	27FEB04
4B REMEDIATION	354	15OCT03*	17MAR05
SUBMIT 4B CDL	0		17JUN05*
SUBMIT 4B CERTIFICATION REPORT	0		17NOV05*
4B FINAL GRADING	60	02DEC05*	01MAR06
AREA 5			
AREA 5 SITE PREP	20	03JAN05*	28JAN05
AREA 5 REMEDIATION	97	31JAN05*	17JUN05
SUBMIT AREA 5 CDL	0		17AUG05*
SUBMIT AREA 5 CERTIFICATION REPORT	0		01FEB06*
AREA 5 FINAL GRADING	23	28OCT05*	02DEC05
MAIN DRAINAGE CORRIDOR			
MDC SITE PREP	30	16FEB05*	31MAR05
MDC REMEDIATION	160	01APR05*	16NOV05
SUBMIT MDC CDL	0		16JUN06*
SUBMIT MDC CERTIFICATION REPORT	0		01JUN06*
MDC FINAL GRADING	53	13DEC05*	01MAR06



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FERNALD Closure Project

Start Date	02SEP02
Finish Date	16JUN06
Data Date	02SEP02
Run Date	09FEB04 16:31

EPA1

TABLE 6-3
AREA 3B/4B/5 SOIL REMEDIATION AND CERTIFICATION SCHEDULE

Sheet 1 of 1

Early Bar
Progress Bar
Critical Activity

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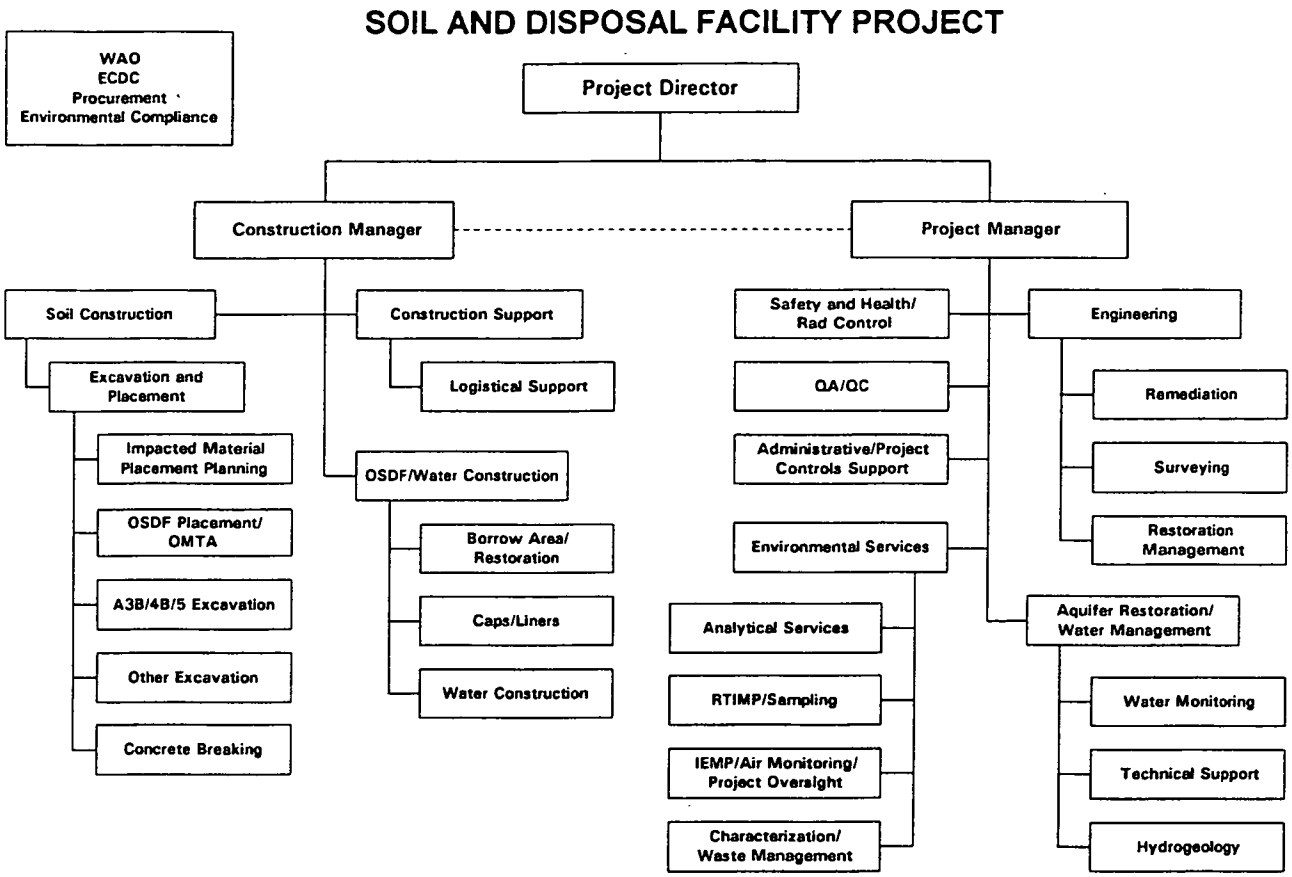

FIGURE 6-1 ORGANIZATIONAL CHART FOR AREA 3B/4B/5 PROJECT

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Appendix A

APPENDIX A

DESIGN CRITERIA PACKAGE

DESIGN CRITERIA PACKAGE FOR THE AT- AND BELOW-GRADE REMEDIATION OF THE FORMER PLANT AREA

FERNALD CLOSURE PROJECT
FERNALD, OHIO

JULY 28, 2003

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

20201-DC-0001
REVISION 4
PCN 1

DESIGN CRITERIA PACKAGE FOR THE AT- AND BELOW-GRADE REMEDIATION OF THE FORMER PLANT AREA

20201-DC-0001
Revision 4

March 5, 2003

APPROVALS:

3/5/03
Dave Russell, Project Engineer — Date
Soil and Disposal Facility Project

FOR ANTHONY SNIDER 3/5/03
Anthony Snider, Lead Project Engineer — Date
Soil and Disposal Facility Project

3/5/03
Jyh-Dong Chiou, Program Manager — Date
Soil and Disposal Facility Project

REVISION SUMMARY

Revision	Date	Description of Revision
Rev. 0	3-10-99	Initial issuance of the Design Criteria Package for the At- and Below-Grade Remediation of the Former Plant Area
Rev. 1	1-26-00	Refined approval page and revised Figure 5-1. Revised design storm and water release requirements for surface water management. Clarified perched water management narrative.
Rev. 2	3-31-00	Added Revision Summary page, renamed Figure 5-1 and added Figure 5-2. Noted characterization criteria for 3-D computer excavation model. Clarified applicability of ODNR requirements for surface water management. Refined Options 1 and 2 for perched water management. Clarified characterization of stockpiles. Refined intended transportation routes. Revised interim restoration criteria
Rev. 3	3-01	Added title of Rainwater and Land Development in Sections 4.0 and 5.4. Deleted references to Water Management Facility and Biodenitrification Surge Lagoon. Clarified disposition of VOC-contaminated water. Clarified disposition of surface water from certified area and revised traffic requirements.
Rev. 4A	6-02	Revised Approval page, replaced Figure 5-1 and deleted Figure 5-2. Added Area 6 (including General Area, Former Pit Area, Former Production Area, the Solid Waste Landfill, and Fire Training Facility) and Area 2, Phase II areas to be included under the scope of this document. Deleted references to A/E subcontractor and construction contractor and replaced with Soil and Disposal Facility Project Engineering Group and Soil and Disposal Facility Project Construction Group. Added new Section 5.1 for Utility Isolation Requirements to correlate with list detailed in Section 5.0 and renumbered sections accordingly. Added alternative to pump water requiring AWWT Phase II treatment through temporary HDPE piping.
Rev. 4	3-5-03	In response to agency comment made against SWL/FTF IRDP, revised excavation slope requirements to be consistent with those stated in the technical specifications. Incorporated MDC in excavation sequencing. Softened the requirement for a Surface Water Management Plan. Clarified isolation trenching requirements to include the new Area 3B/4B trench.
PCN 1	7-28-03	Per Ohio EPA request, Table A-2 on Page A2 of A74 was revised to reflect the 1999 capture of one Indiana Bat

DESIGN CRITERIA PACKAGE FOR THE AT- AND BELOW-GRADE REMEDIATION OF THE FORMER PLANT AREA

Table of Contents

1.0 Scope 1

2.0 Comprehensive Design Requirements 1
- 2.1 Technical Requirements 1
- 2.2 Safety and Health Requirements 2
- 2.3 Environmental Requirements 3
- 2.4 Utility Requirements 3

3.0 ARARs and TBCs 3

4.0 Regulations, Codes, Standards, Orders, Manuals, and Guides 3

5.0 Project Specific Requirements 6
- 5.1 Isolation Trenching Requirements 8
- 5.2 Excavation Requirements 9
- 5.3 Sequencing Within and Between Remediation Areas 11
- 5.4 Impacted Material Management 11
- 5.5 Surface Water Management 12
- 5.6 Perched Water Management 13
- 5.7 Equipment and Personnel Monitoring Decontamination 14
- 5.8 Environmental Monitoring and Sampling 14
- 5.9 Certification 14
- 5.10 Predesign Sampling Requirements to Support Design 15
- 5.11 Sampling Requirements for Containerized Soil-Like Materials 15
- 5.12 Transportation 15
- 5.13 Restoration 16

6.0 Assumptions Inherent in the Project Scope 16

Appendix A 17

LIST OF TABLES

Table A-1 Groupings of ARARs and TBCs Used in Table A-2 ..... A1
Table A-2 Pertinent ARARs and TBCs A2-A74

LIST OF FIGURES

Figure 5-1 Areas with Lower Uranium FRL Due to High Leachability 10

LIST OF ACRONYMS AND ABBREVIATIONS

A/E	Architect/Engineer
ALARA	as low as reasonably achievable
ARAR	applicable or relevant and appropriate requirements
ASCE	American Society of Civil Engineers
ASCOC	area-specific constituent of concern
AWWT	Advanced Waste Water Treatment (facility)
BAT	best available technology
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
COC	constituents of concern
DAC	derived air concentration
DCP	Design Criteria Package
DOE	U S. Department of Energy
EPA	U. S. Environmental Protection Agency
FCP	Fernald Closure Project
FRL	final remediation level
FTF	Fire Training Facility
GMA	Great Miami Aquifer
gpm	gallons per minute
HWMU	hazardous waste management unit
IRDP	Integrated Remedial Design Package
NAD	North American Datum
NOAA	National Oceanic and Atmospheric Administration
OAC	Ohio Administrative Code
ODNR	Ohio Department of Natural Resources
ODOT	Ohio Department of Transportation
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
OU	Operable Unit
PPE	personal protective equipment
ppm	parts per million
RCRA	Resource Conservation and Recovery Act of 1976
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SCS	Soil Conservation Service
SEP	Sitewide Excavation Plan
SWL	Solid Waste Landfill
SWRB	Storm Water Retention Basin
TBC	to be considered
USGS	U.S. Geologic Survey
WAC	waste acceptance criteria
WPM	Waste Programs Management

DESIGN CRITERIA PACKAGE FOR THE AT- AND BELOW-GRADE REMEDIATION OF THE FORMER PLANT AREA

1.0 Scope

The purpose of this Design Criteria Package (DCP) is to assemble the specific criteria and assumptions for the at- and below-grade remediation of the Former Plant Area of the Fernald Closure Project (FCP). The Former Plant Area is comprised of the Former Production Area (Areas 3A, 3B, 4A, and 4B) and the Administration Area (Area 5), and for the scope of this document, shall include Area 6 (including General Area, Former Waste Pit Area, outlying areas of the Former Production Area, Solid Waste Landfill [SWL] and Fire Training Facility [FTF]), and Area 2, Phase II. Comprehensive development of design criteria relating specifically to the project requirements is conducive to orderly and accurate development of preliminary and definitive designs.

The remediation objective for the Former Plant Area is to excavate and remove impacted material, including contaminated soil, perched groundwater, at- and below-grade man-made structures (such as pavements, building foundations, basements, debris, and underground utilities, with the possible exception of pile foundations driven below contaminated depths), residual above-grade man-made structures (such as utility poles, fire hydrants, equipment foundations, and bollards), and soil-like containerized materials remaining after Operable Unit (OU) 3 demolition activities. Impacted material will be transported for placement in the On-Site Disposal Facility (OSDF), temporarily staged for bulk shipment off site, or containerized for on-site or off-site treatment, depending on attainment of OSDF waste acceptance criteria (WAC). Remediation will be sequenced and integrated with other projects near the subject remediation area. Project documents to be prepared subsequent to this DCP will be written with the goal of achieving this remediation objective.

Also included in the scope of this DCP is the design of support facilities such as personnel and equipment decontamination areas, construction support areas, packaging, material stockpiles, surface water management, erosion and sediment control facilities, and all other facilities (including utilities) necessary to excavate and handle impacted material with the intent of mitigating effects to human health and the environment.

2.0 Comprehensive Design Requirements

The overall remediation objective for the Former Plant Area is to excavate, remove, and dispose all impacted material. Based on constituents of concern (COCs), levels of contamination, and the ability to meet OSDF WAC, impacted materials will be placed at the OSDF, temporarily staged before placement at OSDF, shipped to an appropriate off-site disposal facility, or containerized for on-site or off-site treatment. Impacted material includes soil, man-made structures, and other material with contaminant concentrations above the final remediation levels (FRLs). This presents the comprehensive design requirements necessary to achieve technical, health and safety, and environmental objectives. Project specific requirements are presented in Section 5.0 of this DCP.

2.1 Technical Requirements

The Soil and Disposal Facility Project (SDFP) Engineering Group will prepare technical Title I and Title II design documents for remediation of the Former Plant Area. These documents will include construction drawings, specifications, and other documents that clearly describe requirements and general procedures of the proposed remediation. The SDFP Engineering Group will utilize all available reports

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and plans that summarize previous investigations of the area (e.g., environmental analyses and geotechnical data). The SDFP Construction Group will use these design documents to implement the excavation activities after U.S. Department of Energy (DOE), U. S. Environmental Protection Agency (EPA), and Ohio Environmental Protection Agency (OEPA) approval.

The design will address the following technical requirements:

- Excavation Criteria and Objectives - Excavation criteria and objectives to remediate impacted materials will be developed and presented in design documents. The criteria in design documents will be performance-oriented. The SDFP Construction Group will develop specific excavation methodologies. Design drawings must clearly show the estimated limit of excavation based on analytical and geotechnical data, environmental and stratigraphic modeling, and other appropriate information.

- Excavation Requirements - Impacted material will be excavated as efficiently as possible. As stated above, design drawings will clearly show the estimated limit of excavation. Further, perched groundwater zones encountered during excavation will be excavated with the contaminated soil. Design documents will present a general methodology to excavate impacted material, as well as procedures to minimize potential impacts to the underlying Great Miami Aquifer (GMA) during excavation.

- Flexibility - The design effort will prepare documents that can adjust to actual field conditions encountered during remediation (i.e. contingency will be built into the design). Further, the design will be developed as a phased excavation approach with contingency noted to ensure that cost-saving measures, enhanced excavation techniques, and identified problems are incorporated.

- Consistent with Final Land Use - The primary focus of restoration activities will be to establish a system of wetland and open water habitats with supporting woodlands and grasslands to support a diverse natural system. Design plans will be integrated with this final land use plan.

- Contingency Plans - Contingency plans for encountering unexpected material, structures, or utilities will be developed during design activities. Also, contingency plans will be developed for adverse weather conditions, seasonal shutdowns, as well as due regard for existing and/or ongoing remedial operations.

2.2 Safety and Health Requirements

The design will incorporate engineered safety controls/measures specific to the work scope to promote safe execution of the project.

Radiologically contaminated soil and other material can become airborne during excavation and material transportation. Dust suppression methods that implement the best available technology (BAT) will be used to control airborne emissions in accordance with FCP procedure RM-0047, Fugitive Dust Control Requirements. Monitoring for airborne radioactive particles will be performed by Fluor Fernald during excavation activities.

Title 10 Code of Federal Regulations (CFR) 835.1002 requires that airborne particles are controlled and inhalation of such material by workers is kept to levels as low as reasonably achievable (ALARA). Therefore, activities that increase worker exposure, such as eating, drinking, and smoking, will not be

permitted in any radiologically controlled work area. Requirements for respirators will be determined on a task-specific basis, considering the environmental conditions.

Applicable worker safety and health requirements will apply to this project. This includes the requirement that site workers have Hazardous Waste Operations and Emergency Response training in accordance with 29 CFR 1910.120. Exposure rate goals for radiological workers are identified in Section 5.0 of this DCP.

2.3 Environmental Requirements

Remediation of the Former Plant Area is part of the FCP sitewide environmental remediation. Therefore, the remedial design will address protection of the environment during construction and improvement of the environment at the completion of remedial activities.

Environmental considerations include using existing data to develop a computer model of the estimated limit of excavation; evaluating and analyzing site geology, perched groundwater, and surface water flow characteristics; and incorporating regulatory requirements into the design.

Collection and transfer of perched groundwater and subsequent treatment of that water at the Advanced Wastewater Treatment (AWWT) Facility will be addressed during design. Similar technical approaches to stormwater runon/runoff and erosion and sediment control will be addressed in the design.

2.4 Utility Requirements

Consideration will be given to utilities required to support FCP remedial actions. Design documents will address utility relocation and/or decommissioning. Energy source utilities entering or exiting the remediation area will be identified during design. Utility services required during remediation activities will be included in the design. Precautions and reporting requirements for potentially unidentified utilities will be included in design documents and project permitting.

3.0 ARARs and TBCs

The remediation design of the Former Plant Area will conform to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) § 121(d)(2), which requires that remedial actions protect human health and the environment while complying with applicable or relevant and appropriate requirements (ARARs). To be considered (TBC) criteria will also be evaluated as part of design activities. This includes nonpromulgated criteria, advisories, and guidance issued by federal and state governments that may or may not be legally binding.

Pertinent ARARs and TBCs for the sitewide soil remediation effort are included in the Sitewide Excavation Plan (SEP). These ARARs and TBCs for at- and below-grade remediation of the Former Plant Area have been reissued and are appended to this document (refer to Tables A-1 and A-2 in Appendix A).

4.0 Regulations, Codes, Standards, Orders, Manuals, and Guides

This document contains references to general regulations, codes, standards, orders, manuals, and guides that apply to Title I and Title II design work. Requirements listed in the latest edition of each of the following documents will apply, unless otherwise noted.

American Society of Civil Engineers (ASCE)

- ASCE 77 — Design and Construction of Urban Stormwater Management Systems

Code of Federal Regulations (CFR)

- 10 CFR 835 — Occupational Radiation Protection
- 10 CFR 1022 — Compliance with Floodplains/Wetlands Environmental Review Requirements
- 29 CFR 1910 — Occupational Safety and Health Standards
- 29 CFR 1926 — Safety and Health Regulations for Construction
- 40 CFR 122 — EPA Administered Permit Program: The National Pollutant Discharge Elimination System (NPDES)
- 40 CFR 125 — Criteria and Standards for the NPDES
- 40 CFR 192 — Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings
- 40 CFR 240 — Guidelines for the Thermal Processing of Solid Wastes
- 40 CFR 256 — Guidelines for Development and Implementation of State Solid Waste Management Plans
- 40 CFR 260 — Hazardous Waste Management System: General
- 40 CFR 261 — Identification and Listing of Hazardous Wastes
- 40 CFR 262 — Standards Applicable to Generators of Hazardous Wastes
- 40 CFR 263 — Standards Applicable to Transporters of Hazardous Wastes
- 40 CFR 264 — Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
- 40 CFR 265 — Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

Fluor Fernald Procedures

- ED-12-2007 — ALARA Review
- ED-12-3001 — Engineering Design Initiation
- ED-12-3002 — Collection, Verification, and Use of Engineering Data
- ED-12-4004 — Design Package
- ED-12-4005 — Calculation Preparation and Review Process
- ED-12-4006 — Specifications Preparation and Issue
- ED-12-4007 — Drawing Preparation and Issue
- FD-1000 — Sitewide CERCLA Quality Assurance Project Plan (SCQ)
- NS-0003 — Safety Assessment Hazard Screening and Classification
- RM-0012 — Quality Assurance Program
- RM-0039 — Storm Water Pollution Prevention Plan
- RM-0047 — Fugitive Dust Control Requirements

National Oceanic and Atmospheric Administration (NOAA)

- NOAA/TP40 — Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from One to 100 Years

Ohio Administrative Code (OAC)

- OAC 4101 — Ohio Basic Building Code and Related Codes

Ohio Department of Natural Resources (ODNR)

- ODNR — Rainwater and Land Development, Ohio's Standards for Stormwater Management Land Development and Urban Stream Protection, Second Edition, 1996

Ohio Department of Transportation (ODOT)

- ODOT — Construction and Material Specifications

Ohio Environmental Protection Agency (OEPA)

- OEPA — Stormwater Pollution Prevention Plan Checklist

Soil Conservation Service (SCS), U. S. Department of Agriculture

- TR55 — Urban Hydrology for Small Watersheds

U. S. Department of Energy (DOE)

- DOE 5480.19 — Conduct of Operations
- DOE 5480.23 — Nuclear Safety Analysis Reports
- DOE-STD-1021 — Natural Phenomena Hazards Performance Categorization Guidelines for Structures, Systems, and Components

U.S. Geologic Survey (USGS)

- 1983 NAD — Ohio State Plane Coordinate System South, Zone 3402

The following are the primary reference documents that apply to the design of the at- and below-grade remediation of the Former Plant Area. Copies of these documents will be readily available to design personnel.

- Sitewide Excavation Plan, 2500-WP-0028, Revision 0, July 1998
- National Pollutant Discharge Elimination System Permit, Ohio EPA Permit Number 1IO0000*FD, March 1, 2000
- Functional Requirements Document for the Former Plant Area, 20300-PL-0003, Revision 2, February 2002
- Advanced Conceptual Design, 20201-PL-0002, Revision 0, May 24, 1999

The following are secondary reference documents that apply to the design of at- or below-grade remediation of the Former Plant Area. Copies of these documents will be readily available to design personnel.

- Geotechnical Sampling and Testing Plan of the Former Plant Area, Revision 0, April 1997
- Geotechnical Engineering Report for Project Order 177, A-E Support Services for Geotechnical Investigation of the Former Plant Area, 20800-RP-0001, Revision C, March 1998
- Impacted Materials Placement Plan On-Site Disposal Facility, 20100-PL-007, Revision 3, October 2001
- Waste Acceptance Criteria Attainment Plan for the On-Site Disposal Facility, 20100-PL-0014, Revision 0, June 1998
- Natural Resource Impact Assessment and Natural Resource Restoration Plan, 20300-RP-0002, Revision D, 212E-PL-0003, Revision E, July 1998
- Strategic Utilities Plan Summary, Final, 1996
- 1997 Integrated Site Environmental Report, 51350-RP-0001, June 1998

The following are tertiary reference documents that apply to the design of at- and below-grade remediation of the Former Plant Area. Copies of these documents will be available to design personnel.

- OU3 Remedial Investigation and Feasibility Study Report (4 volumes), February 1996
- OU3 Record of Decision for Final Remedial Actions, August 1996
- OU5 Remedial Investigation Report (18 volumes), March 1995
- OU5 Feasibility Study Report (3 volumes), June 1995
- OU5 Record of Decision for Final Remedial Actions, January 1996
- OU2 Remedial Investigation Report, 1995
- OU2 Feasibility Study Report, 1995
- OU2 Record of Decision for Final Remedial Actions, 1995
- Utility Design Reconstitution (Parsons PO 141)
- WPRAP Remediation System Design, 10100 (Parsons PO 145)
- Rerouted North Entrance Road, 20120 (Parsons PO 145/158)
- Site Preparation and Underground Utilities, 40310 (Parsons PO 146)
- Southern Waste Units, 20400 (Parsons PO 165)
- Paddys Run Trestle Upgrade, 10200 (Parsons PO 167, includes all OU1 Railroad Upgrades and Additions)
- Closeout Package Report for Area 3 Remedial Design Services, 20810-RP-0003, Revision 0, November 1997 (Parsons PO 180)
- On-Site Disposal Facility Design, 20100
- Borrow Source Evaluation for Fill of the Deep Area 3 Excavations Located Near the On-Site Disposal Facility, 20810-RP-0001, August 1997

5.0 Project Specific Requirements

This section addresses primary and general deliverable requirements for Title I and Title II design as applied in Fluor Fernald engineering procedures. This DCP will be used to govern both Title I and Title II design efforts for at- and below-grade remediation of the Former Plant Area.

Title I design generally includes, but is not limited to the following:

- Definition of project design criteria to meet project specific ARARs/TBCs and establishment of quality levels for systems, structures, and components
- Expansion of conceptual design drawings in greater detail or development of new drawings based on new design concepts (including locating and sizing structures, systems, and components)
- Development of an outline of technical specifications
- Development of conceptual-level technical approaches to address health, safety, and environmental protection requirements
- Development of preliminary cost estimates.

Title II design typically advances the preliminary design developed in Title I engineering and planning to a level suitable for construction. Title II design generally includes the following:

- Preparation of final working drawings, specifications and implementation plans
- Development of bidding documents, as required
- Finalization of cost estimates
- Project coordination of all parties involved with the project
- Development of refined construction and procurement schedules.

The Title I and Title II design documents will present information necessary to perform remediation activities. These documents will present the remediation plan and excavation sequencing, while allowing flexibility to make adjustments in the field based on actual conditions encountered. The documents will represent a practical approach based on lessons learned from other projects completed and currently underway on site.

The documents will present specific functional requirements in the following areas:

- Isolation Trenching
- Excavation
- Sequencing Within and Between Remediation Areas 3A, 3B, 4A, 4B, 5, SWL, FTF, A2PII, 6 (General Area, Former Pit Area, and Former Production Area)
- Impacted Material Management
- Surface Water Management
- Perched Water Management
- Equipment and Personnel Decontamination
- Environmental Monitoring and Sampling
- Certification
- Predesign Sampling Requirements to Support Design
- Sampling Requirements for Containerized Soil-Like Materials
- Transportation
- Restoration.

5.1 Isolation Trenching Requirements

Undocumented below-grade utilities are defined as utility lines that are not shown on current master utility grid plans. Prior to full-scale FRL excavation activities, undocumented below-grade utilities in Areas 3A, 4A, and 4B will be isolated by cutting an approximate 2-foot wide by 12-foot deep area isolation trench corresponding closely to the area excavation limits. Areas 5 and 6 do not require isolation trenching due to the majority of utility feeds into the area being previously isolated by Area 3A, 4A and 3B/4B trenching. Area 2, Phase II will not require isolation trenching due to minimal risk related to undocumented below-grade utilities. The rationale for the 12-foot depth lies with providing additional assurance that utilities existing below the typical utility depth of 6-8 feet not reflected on the master underground utility grids will be severed by cutting to the maximum depth achievable by the equipment. Isolation trenching will ensure that unknown electrical utilities are disconnected near the area excavation limits. As necessary, excavation beyond the isolation trench will be performed under a penetration permit. Isolation trenching requirements will be detailed in the technical specifications and summarized below.

Known active electrical and water lines shown on FCP grid plans will be isolated before performing isolation trenching. With respect to low-voltage lines (i.e., 220V), there is a small probability that the master utility grid plans do not capture every 220V line placed over the four decades that the site was operating. Given the noise of the machine and the speed at which the cutting saw operates, the severing of a 220V line is not likely to be noticeable to field personnel. The trencher operator will be insulated from electrical hazards, and the hazard will be identified by visual inspection after the machine has passed. Although the trench will not remain open for a significant period of time, there are instances when the trench may need to be accessed to plug a sewer or utility line. For these special cases, a trench may remain open for over 24 hours, and OSHA regulations for excavating and trenching will apply.

A sequence for maintaining, using, and/or abandoning existing storm sewer lines within the excavation area may be proposed by the CM prior to isolation trenching. Storm sewer lines selected for use will be protected during trenching by raising the trench-cutting tool above the storm sewer. The CM will then explore areas around protected storm sewer lines for unknown utilities and other known utilities not cut by the trencher. Prior to cutting storm sewer lines that are to be abandoned, lines will be plugged to prevent the introduction of storm water into the severed lines.

Trenching activities will be observed at all times by the CM and WAO. Dust control will be provided, as needed, to prevent the spread of airborne contamination. The trencher operator will be inside an enclosed cab that provides ventilation through a particulate air filter. Trenching will be stopped if there is evidence of draining sanitary sewer or process lines, special materials, unknown electrical utilities, or cultural resources. When observed, leaking sanitary sewer or process lines will be plugged if the seepage has not stopped before backfilling the trench. Backfilling will occur daily using the material excavated from the trench, with the top 2 feet of backfill compacted to minimize infiltration. If the trench needs to be kept open, it will be barricaded and shored in accordance with applicable OSHA regulations. When observed, the locations where sanitary sewer or process lines drained into the trench will be recorded on redline drawings of the completed trench. Material released from a leaking sanitary sewer or process line will be excavated, along with the material placed in the trench as backfill, during remediation of the trench with the adjacent remediation area. HPGe shots will be done in areas where draining sanitary sewer or process lines were noted on redline drawings to monitor for elevated levels of contamination.

5.2 Excavation Requirements

Excavation will be performed to remove impacted material in the Former Plant Area. Excavation strategies have been set forth in the SEP. Unless otherwise designed by a registered professional engineer, the following slope stability requirements shall apply during excavation activities:

- Excavation slopes with depths less than 20-feet shall be performed in accordance with applicable Occupational Safety and Health Administration (OSHA) guidelines.
- Sloped excavations greater than 20 feet in depth shall be designed by a Professional Engineer (PE) registered in the state of Ohio.
- Temporary excavation slopes with depths less than 20-feet shall be no steeper than 1.5H:1V with a maximum height of 13 feet between 15 foot benches.
- Design slopes and slopes created by supplemental excavation shall be no steeper than 2H:1V with a maximum height of 13 feet between 15 foot benches.

These requirements are consistent with those recommended by Parsons in the Geotechnical Engineering Report for Project Order 177, A-E Support Services for Geotechnical Investigation of the Former Plant Area (20800-RP-0001). Design documents for area 3A, 3B, 4A, and 4B will be developed based on a 3-D computer model of the extent of contamination. Design documents for remaining areas will be based on characterization results of physical sampling and real-time monitoring. The 3-D computer model included in the Advanced Conceptual Design (20201-PL-0002) will be modified and updated during Title I design to support the design effort. Three FRLs for total uranium - 20 mg/kg within high-leachability areas (refer to Figure 5-1), 82 mg/kg outside high-leachability areas, and 38.6 mg/kg within the SWL boundaries, will be used to develop the 3-D computer model for extent of excavation in accordance with the SEP. An additional ALARA goal of 50 mg/kg for total uranium will be reached if soil with uranium concentrations of 50 mg/kg or greater is within one lift thickness (3 $\pm$ 1 foot) of an area of soil exceeding the 82 mg/kg uranium FRL. The following types of impacted material will be addressed in the design:

- Soil with contaminant concentration levels above OSDF WAC (WAC for soil contaminants are listed in the SEP)
- Soil with area-specific constituents of concern (ASCOCs) above the FRL
- Soil with the potential to exhibit Resource Conservation and Recovery Act (RCRA) toxicity characteristics (as identified in the SEP)
- At- or below-grade man-made structures, debris, and utilities (with the possible exception of pile foundations driven below contaminated depths)
- Above-grade man-made structures remaining after OU3 demolition activities
- Fill material
- Contaminated and non-contaminated perched groundwater
- Encountered special materials (as defined in the SEP)

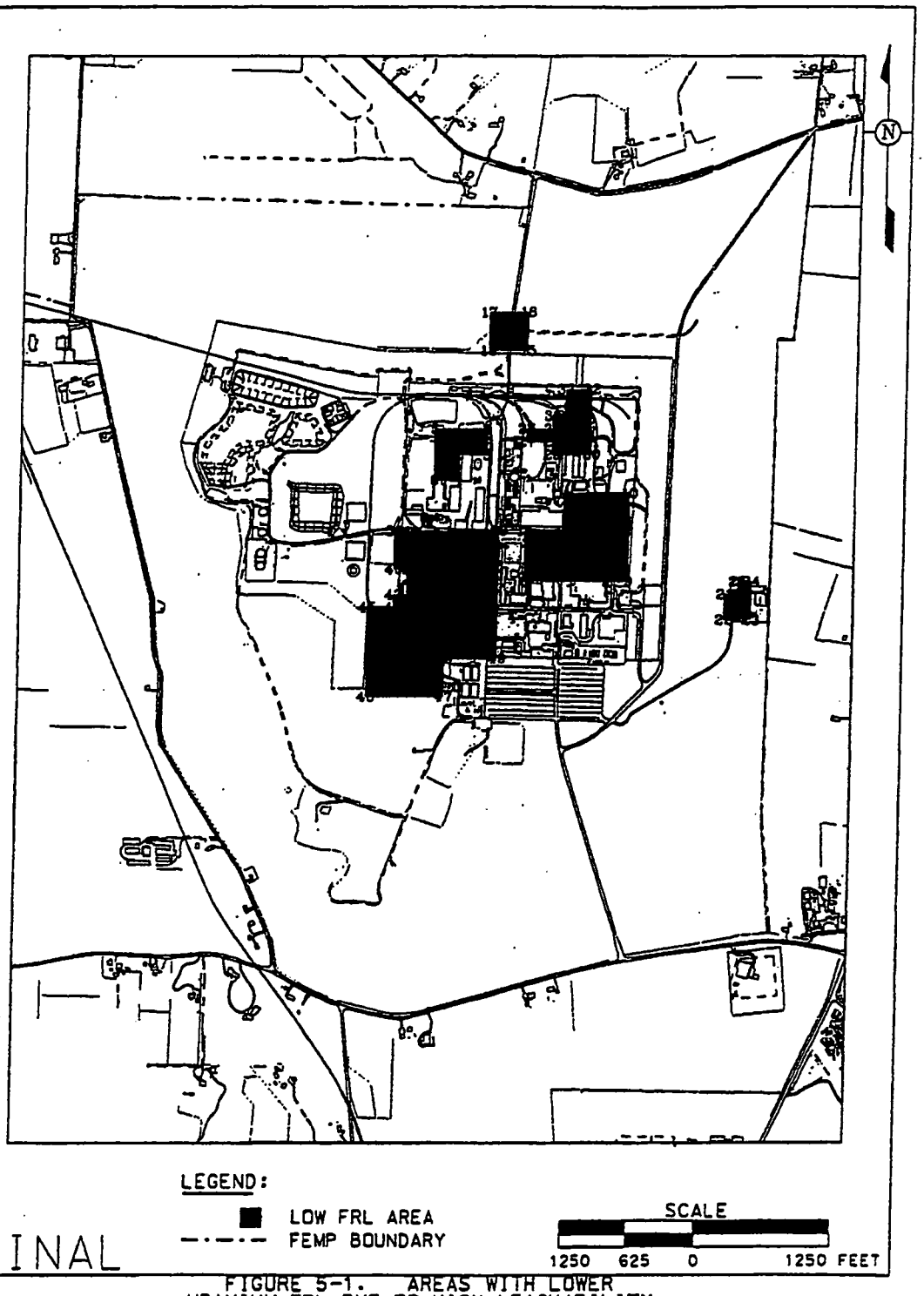

FIGURE 5-1. AREAS WITH LOWER URANIUM FRL DUE TO HIGH LEACHABILITY

- The design must identify locations and depths where elevated levels of contamination are known to exist.
- This will be done using the 3-D computer model to provide the preliminary extent of excavation based on total uranium concentrations in Areas 3A, 3B, 4A, and 4B.
- The top 2 feet of gravel and soil will be removed during the remediation of Areas 3A, 3B, 4A, 4B, 5 and 6 (Former Production Area).
- The top 6 inches of gravel and soil will be removed during the remediation of Area 6 (General Area).
- At a minimum, gravel, asphalt, and concrete in areas altered by establishment of infrastructure facilities (i.e. trailer complex, parking lot, etc.) in Area 2, Phase II will be removed.
- When excavating for borrow material, the bottom of the excavation will be at least 5 feet above the unsaturated sand and gravel deposits of the GMA.
- Excavation must maximize OSDF Category 1 material, as defined in the OSDF Impacted Materials Placement Plan.

5.3 Sequencing Within and Between Remediation Areas

The Sitewide Sequencing Plan is summarized for areas within the Former Plant Area, as follows: Area 3A, Area 4A, Area 4B, Area 5, Area 3B, Area 6 General Area, Area 6 Former Waste Pits, and Area 6 Former Production Area. For purposes of design and excavation sequencing, a portion of the main storm sewer drainage corridors (MDC) within the Former Production area and Administrative Area may be separated from adjacent remediation areas to be executed as it's own sub-area. Area 2, Phase II, the SWL and the FTF excavations will be used as supplemental areas to ensure material needs for the OSDF are met.

Utilities must be sequenced into remediation areas to provide utility requirements for the SDFP Construction Group. The Utilities Integration Group will provide much of the required coordination, but it does not necessarily cover all of this project's specific needs. Specific utility systems that must be considered in this project include electric power, telecommunications, alarms, potable water, firewater, sanitary sewers, and storm sewers.

The 20A electrical substation east of Plant 1 pad is the designated tie in location for electrical power. Office facilities and dewatering pump stations will require electrical service. These are located on the periphery or within each remediation area.

5.4 Impacted Material Management

Impacted material excavated from the Former Plant Area will consist of radiologically contaminated soil and debris, RCRA waste, former HWMUs, USTs, and other material. Excavated material that meets on-site radiological, physical, and chemical WAC will be placed in the OSDF in accordance with the Impacted Materials Placement Plan. Material that fails to meet physical WAC may be size reduced to allow placement in the OSDF. Material that cannot be size reduced to meet on-site physical WAC will be transferred to temporary staging areas for shipment off site to a permitted and licensed disposal facility. Temporary staging areas will be designated by Fluor Fernald.

Impacted materials exceeding chemical WAC may be treated, according to the nature of the contaminant, material type, and regulatory requirements. Material that does not meet the chemical WAC will generally be transferred to temporary staging areas before off-site shipment unless it can be treated to meet WAC. During design, the cost-effectiveness of treating materials to meet on-site chemical WAC versus off-site disposal will be evaluated.

Soil containing radiological constituents (e.g., uranium, technetium-99, etc.) above the WAC limits will be excavated and staged for off-site disposal. If soil in a RCRA area exhibits toxicity characteristics and overlaps with an area delineated as exceeding radiological WAC, then the soil and any associated debris will be staged separately to await a decision by Characterization/Waste Management Department under SDFP on treatment and final off site disposal options.

The amount of Category 1 material needed to place other OSDF material categories (e.g. concrete) is limited. Therefore, the design will maximize the amount of Category 1 (i.e., soil and soil-like material) being dispositioned to the OSDF, while attaining FRLs in a cost-effective manner.

5.5 Surface Water Management

In some cases, a Surface Water Management Plan may be developed to supplement requirements stated in the IRDP to address both stormwater and erosion and sediment control. Stormwater management component will address water storage within the project site from the 10-year, 24-hour storm event. Sitewide pump and retention capacities will be designed so that the following criteria are met.

- Draining and pumping water out of the excavation area will occur within 72 hours (3 days) after the event.
- The existing stormwater retention basin (SWRB), or any newly constructed retention basins, will not be redesigned.

Erosion and sediment control requirements will address construction, remediation, and long-term conditions. The surface water management system for each remedial area will be designed to meet the following requirements:

- Surface water runoff from disturbed and noncertified areas will be collected and managed.
- Surface water run-on will be diverted away from deep excavations.
- Surface water runoff not requiring AWWT Phase II wastewater treatment will be routed to the existing SWRB via the existing storm sewer system within the Former Plant Area.
- Surface water runoff requiring AWWT Phase II wastewater treatment will be pumped into portable tanks and transported to treatment by the Construction Manager or shall be pumped through temporary HDPE piping, based on the volume and most economical route.
- Surface water from disturbed areas will be sent through a sediment basin or shall pass through an engineered erosion control structure, such as silt fences and/or riprap check dams, to remove gross suspended solids prior to being released into the storm sewer system.

- Upon completion of remedial activities and certification of the remediated area, drainage of surface water from the certification buffer area will be collected and pumped outside of the remediated area. The capacity of ditches and culverts along the drainage route will be verified to ensure they can handle the additional flows without flooding adjacent areas and nearby roadways.

- Any new holding tanks will be nonmetallic and contain lifting lugs to ease transport.

- Any required secondary containment must be easily assembled and disassembled for reuse.

During design the following items will be evaluated:

- Preventing or minimizing uncontaminated surface water run-on to disturbed areas
- Removal of gross suspended solids.

The stormwater and sediment control structures will be evaluated, selected, designed, and coordinated, as appropriate, to be consistent with the objectives set forth in Storm Water Pollution Prevention Plan (RM-0039), Rainwater and Land Development, Ohio's Standard for Stormwater Management Land Development and Urban Stream Protection, and sound engineering judgment. The standards set forth in ODNR will not be incorporated into the design of this project in areas where runoff from disturbed surfaces are either discharged into the existing storm sewer system for subsequent AWWT Phase I treatment or collected for AWWT Phase II treatment. The existing stormwater system will be used as much as possible; it may be rerouted but it will not be upgraded since it will be removed during the course of this project. Use of hay bales is not standard engineering practice at the site. Silt fences and/or riprap check dams will be utilized as the primary erosion control devices.

Stormwater calculations will be based on TR-55 or other commonly accepted stormwater design practices, where applicable. The usage of any other stormwater design practice must be documented in design calculations.

5.6 Perched Water Management

The evaluation and analysis of geology and groundwater flow characteristics will be incorporated into the design process. This information will be used to develop design and construction procedures and methods to minimize potential contamination of the GMA and remediated areas during remediation and construction. The design of perched groundwater extraction/removal will address slope stability and dewatering requirements of open excavations, particularly for excavations penetrating significant zones of coarse-grained materials.

The need for pretreatment of remediation-generated wastewater, before discharging water to the appropriate main treatment loop of the AWWT (i.e., Phase I and Phase II), will be evaluated during design using the AWWT wastewater acceptance guidelines; these guidelines are based on NPDES permit requirements and coordinated with the AWWT Facility.

The AWWT capacity for water treatment is 600 gallons per minute (gpm) for Phase I and 300 gpm for Phase II. Surface water collected in remediation areas will be treated via the AWWT Phase I System. Excavation surface water collected with perched groundwater that contains volatile organic compounds will be pumped into portable tanks and transported to the AWWT or will be pumped through temporary HDPE piping to be treated via the Phase II treatment system.

The estimated volume of surface water requiring AWWT Phase II treatment will be included with the estimated volume of perched groundwater.

5.7 Equipment and Personnel Monitoring Decontamination

Radiological control point facilities will be constructed at the ingress/egress points in the designated support areas. Temporary decontamination facilities and/or radiological control point facilities from previous remediation work will be considered for use, when practical. Treated or uncontaminated groundwater will be used for dust control. Before releasing equipment or support materials from a radiological area to an off-site area, radiological control personnel will perform an unrestricted release survey. Decontamination will be performed, as necessary, to support the release of equipment and/or support materials off site.

Exposure levels for personnel performing remedial work associated with at- and below-grade structures in the Former Plant Area are expected to be well below 10 CFR 835 exposure limits. The ALARA process described in engineering procedure ED-12-2007, ALARA Review, will be implemented in a manner consistent with 10 CFR 835 requirements to ensure that personnel exposures are controlled at levels that are reasonably achievable. The goal for total effective dose equivalent is not to exceed 200 mrem/yr/person.

External exposure rates are expected to be well below 0.5 mrem/hr and will be routinely monitored throughout the performance of work on the project. Airborne radioactive material levels contributing to personnel internal exposures are not expected to exceed 4 derived air concentrations (DAC)-hrs/week/person. BAT will be used to minimize fugitive dust emissions and control airborne radioactive materials such that only administrative controls are necessary to maintain personnel internal exposures at levels consistent with ALARA. Occupational air sampling will be performed routinely throughout the project to evaluate airborne radioactive particles. The collected radiological data will be assessed to establish performance indicators that evaluate the remediation project against established goals.

A radiation protection program will be in place to manage and control exposure to operations involving radioactive materials. Surface contamination and airborne radioactivity levels will be monitored as the project progresses to ensure that occupational radiation hazards are minimized. Based on the nature of the work and the hazard present, the prescribed personal protective equipment and controls will be correct and appropriate for the work being performed. Based on evaluation of the radiological survey data obtained during remedial activities, engineering and administrative controls will be adjusted as necessary.

5.8 Environmental Monitoring and Sampling

Environmental monitoring and sampling is not included in the scope of this document. However, sequencing of construction to include environmental monitoring and sampling will be incorporated into the detailed designs. This includes excavation control characterization, environmental radiological monitoring, and certification sampling that will be performed by Fluor Fernald. Fluor Fernald will provide oversight for the incorporation of environmental monitoring and sampling into the detailed design and the implementation of associated procedures. The two principal components of environmental monitoring and sampling (real time scanning and safety and health monitoring) are discussed in the SEP.

5.9 Certification

Between certified areas where deep remedial excavations have occurred and nonremediated/noncertified areas, transitional certification zones will be established that allow sufficient space for stable excavation

slopes and run-on prevention systems. Transitional certification zones cannot be certified until the adjacent nonremediated areas are excavated. Because of this transitional requirement, the active remediation area within the Former Plant Area and its associated certification area will not cover exactly the same area. A certification area within the Former Plant Area will generally be smaller than and offset from its associated remediation area.

5.10 Predesign Sampling Requirements to Support Design

In each remediation area, the following predesign sampling and analytical efforts will be completed before the 90 percent submittal of the Title II design:

- Delineation of RCRA soil in areas designated as possessing the potential to contain RCRA constituents
- Radiological surveys, sampling, and analysis to establish surficial extent of above-WAC materials
- Footprint survey for identified hazardous waste management units (HWMUs).
- Subsurface investigation to identify extent of above-WAC material, FRL boundaries, below present grade pads, roads, and building foundations

Within each remediation area, all stockpiles will be characterized prior to remedial excavation.

5.11 Sampling Requirements for Containerized Soil-Like Materials

Sampling and analytical efforts for characterization of soil-like materials in portable waste containers stored within a given remedial area should be completed before the start of remedial excavation within that remedial area or the waste should be relocated to another remediation area facility to appropriately and safely store the waste. Soil-like waste materials stored in nonmovable containers should be characterized before the completion of Title I design.

5.12 Transportation

Traffic and transportation patterns and requirements will be developed during Title I and Title II design and coordinated with other FCP remediation and administrative activities. The remediation documents will illustrate routes and/or provisions to transport impacted material to the OSDF and other on-site destinations during remediation (e.g., above-WAC drop-off point, SP-7), while minimizing the impact to other non-construction-related traffic in the area.

Principal haul routes to SP-7, OSDF, OMTA areas, and soil treatment areas will use existing road surfaces. The Impacted Material Haul Road, at the northern boundary of Area 3A, will be the controlled haul route to SP-7, OSDF, and OMTA areas. Impacted material excavated for placement in the OSDF will be hauled to the OMTA southern entrance point and follow the contaminated haul route to the active cell. Above grade debris from the remediation activities outside Area 3A will be hauled to the OMTA Bulk Debris and Container areas via 2nd Street.

Materials containerized within the excavation area will be placed at the Special Material Transfer Area (SMTA) and hauled directly from the SMTA. In order to haul directly from an established SMTA, the

SMTA must be located on the perimeter of the excavation area with direct access to controlled roadways, and have proper administrative and engineering radiological controls.

Traffic routing will be controlled to minimize haul routes through contaminated areas. Haul routes through contaminated areas will be controlled to prevent cross-contamination of certified clean areas. Traffic will be routed via paved roads, to the extent practical, to minimize dust generation and cross-contamination.

Removal of roads will be sequenced to optimize their use during remediation. Existing roads will be used to support as many areas as possible to minimize new construction costs and reduce waste generation.

5.13 Restoration

Grading and filling will be minimized in post-excavated areas (except for safety and GMA protection concerns). In general and where practical, interim restoration should integrate the project with the sitewide Natural Resource Restoration Plan.

Borrow material used for fill will be obtained from certified or precertified areas within the Former Plant Area.

Borrow material used as fill, prior to certification, within high-leachability areas must be obtained from other certified or precertified high-leachability areas, or must otherwise be shown to meet the 20 mg/kg uranium FRL.

Due to the requirement to ensure protection of the GMA, excavations within the Former Plant Area that either breach the sand and gravel deposits of the GMA or extend within 5-feet of GMA sand and gravel deposits must be plugged with uncontaminated clay-like material as quickly as possible. The GMA sands and gravels will not be used for structural or general borrow material.

Borrow material used as fill, prior to certification, within the SWL area must be obtained from other certified or precertified areas, or must otherwise be shown to meet the 38.6 mg/kg uranium FRL.

Winterization will be necessary to ensure that an excavation area can be reentered in the spring in minimal time following winter shutdown. These activities include stabilization of all exposed surfaces within the project limits, maintenance of all drainage channels and erosion and sediment control devices, protection of liquid lines susceptible to freezing, and submittal of itemized winter maintenance plans.

Since all topsoil and gravel within the Former Plant Area will be excavated and disposed during remedial activities, topsoil and gravel usage will not be included in any interim grading, backfilling, or vegetation plan or design. Restoration grading to be completed for this project will be considered interim grading, which may later be altered to a final restoration grade.

6.0 Assumptions Inherent in the Project Scope

This DCP does not address or govern:

- Final restoration grading, backfilling, and vegetation requirements or designs
- Use of topsoil and associated certification process during final restoration
- Excavation of contamination in the GMA sand and gravel layer
- Remediation of waste pit material in Area 6.

APPENDIX A

ARARs AND TBCs

TABLE A-1
GROUPINGS OF ARARs AND TBCs USED IN TABLE A-2

Presentation Group	Topical Subdivision(s)	Table A-2 Pages
Natural and Cultural Resources	Threatened and Endangered Species Protection	A2-A3
	Archeological, Historic, and Cultural Resource Protection	A3-A6
Air Pathway	Noise Pollution Control	A7
	Air Emissions	A7-A19
Surface Water Pathway	Floodplain/Wetlands Protection	A20-A27
	Discharge to Surface Water	A28-A31
Groundwater Pathway	Groundwater Protection	A32
	Wells - Construction	A32
	Wells - Abandonment	A33
Soil Remediation	Closure of Underground Storage Tanks	A34
	Closure of Hazardous Waste Management Units	A34-A38
	Radionuclide Concentrations	A39-A42
	Lead Concentration	A43
	PCB Concentration	A43
	Certification of Cleanup	A44
Impacted Material Management	Definitions and General Facility Standards	A45-A58
	Management of Low-Level Radioactive Material	A59
	Management of Hazardous Remediation Waste	A60-A67
	Management of PCB-Tainted Material	A68
Post-Closure	Description of Post-Closure Care	A69-A71
	Modifications to Post-Closure Care Plan or Period	A71
	Property Use Restrictions	A72-A73
	Post-Closure Notice/Survey Plat	A73
	Deed Notation	A74

TABLE A-2
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
NATURAL & CULTURAL RESOURCES						
	THREATENED & ENDANGERED SPECIES PROTECTION					
Procedures for Implementing the National Environmental Policy Act 40 CFR §6.302(h) 10 CFR Part 1021 Endangered Species Act 16 U.S.C. §1531, et seq. Endangered and Threatened Wildlife and Plants 50 CFR §17.21, §17.31, §17.61, §17.71, and §17.94 Interagency Cooperation-Endangered Species Act 50 CFR §402.01	All federal agencies must ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of the constituent elements essential to the conservation of a listed species within a defined critical habitat. Additional requirements apply if it is determined that a proposed activity could adversely affect these species or their habitat.	Appl	Appl	Appl	Findings of 1993-94 updated surveys at the FBMP property: • Populations of the state-listed threatened Sloan's crayfish (*Orconectes sloanii*) are located in sections of Paddy's Run. • Good habitat for the federally-listed endangered Indiana bat (*Myotis sodalis*) exists and is found along Paddy's Run and the storm sewer outfall ditch. • Suitable habitat exists in limited areas for the federal-listed endangered running buffalo clover (*Trifolium stoloniferum*), and only in the northern woodlot for the state-listed threatened spring corralroot (*Corallorhiza wisteriana*). • Marginal habitat for the state-listed endangered cave salamander (*Eurycea lucifuga*) exists in a very limited single area. • Neither habitat nor populations were located for the state-listed endangered mountain bindweed (*Polygonum cilinode*) and slender fingergrass (*Digitaria filiformis*).	Section 5.1 of the Sitewide Excavation Plan. However, 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 this remediation project; no additional surveys conducted or planned.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
THREATENED & ENDANGERED SPECIES PROTECTION, continued						
Interagency Cooperation-Endangered Species Act 50 CFR §402.12(a), (b)	A biological assessment shall evaluate the potential effects of the action on listed and proposed critical habitat and determine whether any such species or habitat are likely to be adversely affected by the action and is used in determining whether formal consultation or a conference is necessary. These procedures are required for federal actions that are "major construction activities."	Appl	Appl	Appl	No critical habitat is present on the Fernald property. Updated surveys of the FEMP property in 1993 found marginal habitat for the state-listed endangered cave salamander (*Eurycea lucifuga*) exists in a very limited single area.	See preceding.
Endangered Species Regulations ORC 1531.25	No person shall take or possess any native species of wild animal, or any eggs or offspring thereof, that is endangered with state-wide extinction.	Appl	Appl	Appl	Updated surveys of the FEMP property in 1993-94 found populations of the state-listed threatened Sloan's crayfish (*Orconectes sloanii*) in sections of Paddy's Run.	See preceding.
Endangered Species Regulations ORC 1518.02 OAC 1501:18-1	No person shall root-up, injure, destroy, remove, or carry away on or from public highways, public property, or waters of the state, or on or from the property of another, without the written permission of the owner, lessee, or other person entitled to possession, any endangered plant listed in OAC 1501:18-1.	Appl	Appl	Appl	Surveys of the FEMP property in 1994 did not locate populations of the following plants: the federal-listed endangered running buffalo clover (*Trifolium stoloniferum*); the state-listed endangered mountain bindweed (*Polygonum cilinode*) and slender fingergrass (*Digitaria filiformis*); and the state-listed threatened spring corralroot (*Corallorhiza wisteriana*).	See preceding.
ARCHAEOLOGICAL, HISTORIC AND CULTURAL RESOURCE PROTECTION						
Antiquities Act of 1906 16 U.S.C. §431	No person may appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument, or any object of antiquity situated or controlled by the Government of the United States without an applicable permit. Identification and preservation of cultural resources on federal lands is required, including natural landmarks.	Appl	Appl	Appl	Proposed areas of disturbance will be surveyed and consultation will occur between DOE, the Advisory Council on Historic Preservation and the State of Ohio Historic Preservation Office (OHPO) as agreed upon in the Programmatic Agreements (later entries).	Section F.4.2 of the Sitewide Excavation Plan
Historic Sites Preservation Act 16 U.S.C. §461-467		✓	Appl	Appl		

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Archaeological Resources Protection Act 16 U.S.C. § 470aa-470ll Procedures for Implementing the National Environmental Policy Act 40 CFR §6.301(c) Protection of Archaeological Resources 43 CFR §7.4(a)	Whenever any Federal agency finds, or is notified, in writing, by an appropriate historical or archaeological authority, that its activities in connection with any Federal construction project or federally licensed project, activity, or program may cause irreparable loss or destruction of significant scientific prehistorical, historical, or archaeological data, such agency shall notify the Secretary of the Interior, in writing, and shall provide the Secretary with appropriate information concerning the project, program, or activity. No person may excavate, remove, damage, or otherwise alter or deface or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands unless such activity is pursuant to a permit. If an EPA activity may cause irreparable loss or destruction of significant scientific, prehistoric, historic, or archaeological data, the responsible official or the secretary of the Interior is authorized to undertake data recovery and preservation activities.	Appl	Appl	Appl	See preceding.	See preceding.
National Historic Preservation Act (NHPA) 16 U.S.C. §470 Protection of Historic Properties 36 CFR Part 800 Procedures for Implementing the National Environmental Policy Act 40 CFR §6.301(a), (b)	A federal agency (DOE) must take into account the effect of an undertaking on historic properties and accord the Advisory Council on Historic Preservation a reasonable opportunity to comment. Historic properties are defined as any prehistoric or historic district, building, site, structure, or object included in or eligible for inclusion in the National Register of Historic Places. This term includes artifacts, records, and persons released to and located within such properties. Historic properties that are to be substantially altered or demolished must be recorded for future use and reference. The purpose of this Act is not only to protect those properties listed in or eligible for the National Register of Historic Places, but also those properties that have not been listed or formally determined eligible for the listings. The heads of all Federal agencies shall assume responsibility for the preservation of historic properties which are owned or controlled by such agency. Prior to any Federal undertaking which may directly and adversely affect any National Historic Landmark, the head of the responsible agency shall, to the extent possible, minimize the harm to such landmark.	Appl	Appl	Appl	See preceding.	See preceding.
Archaeological and Historic Preservation Act 16 U.S.C. §469	Upon discovery that a project may cause the irreparable loss, destruction, significant scientific finding, prehistorical finding, or loss of historical or archaeological data, DOE must notify the Dept. of the Interior in writing and provide appropriate information concerning the project. DOE must, with possible assistance from the OHPO, undertake recovery, protection, and preservation of the data.	✓	Appl	Appl	See preceding.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	ARCHAEOLOGICAL, HISTORIC AND CULTURAL RESOURCE PROTECTION, continued					
Executive Order 11593, Protection and Enhancement of Cultural Environment 3 CFR Part 54	An inventory of a site with potential historic places is required for eligibility in the National Register of Historic Places.	✓	Appl	Appl	See preceding and following entries.	See preceding.
Programmatic Agreement Regarding Disposition of Facilities under the Operable Unit 3 Record of Decision for Interim Remedial Action at the Fernald Environmental Management Project (January 16, 1996)	• Prepare a report package describing the primary buildings and structures at the FEMP, using existing information to provide information regarding construction details, production process descriptions, design changes, current structural conditions, and current use. The report package is to include written descriptions, photographs, representative engineering drawings, and videotape, as appropriate. If existing documentation is not adequate, additional documentation will be obtained (i.e., additional photographs). Representative support buildings and structures are to be documented with photographs and written summaries as well. • Prepare a separate report package describing the FEMP's role in the DOE weapons complex and the significance of the FEMP contribution to the U.S. defense.		✓	✓	Draft reports have been submitted to the Ohio Historic Preservation Office (OHPO). Once finalized, both documents will be available to the public in the Public Environmental Information Center and archived as appropriate.	See preceding.
Programmatic Agreement Regarding Archaeological Investigations at the Fernald Environmental Management Project (March 6, 1997)	Annual report packages, the first of which must be submitted on July 1,1997, must be submitted to the Ohio Historic Preservation Office (OHPO) and the Advisory Council on Historic Preservation (the Advisory Council) containing the following information: 1 list of all response actions and associated activities initiated within the year reported on; 2. map showing locations of above response actions/ associated activities; 3. list of response actions/associated activities conducted in previously surveyed (archeological survey) areas; 4. a list of surveys which identified no eligible historic properties; 5. a list of eligible historic properties that were avoided when implementing response actions and/or associated activities; 6. a list of Phase I-III reports generated; and 7. a map of locations of areas identified in item 6 and all properties identified. DOE-FEMP must also submit any and all Phase I reports generated within the last year, and not previously submitted, with the annual report. By September 2, 1997 (within 180 days of the signing of the Programmatic Agreement), submit to the OHPO and the Advisory Council a literature search, examination of aerial photographs, and use of a predictive model for all disturbed and/or contaminated areas of the FEMP (as defined in the Agreement). The predictive model is to utilize existing archeological data from the FEMP and surrounding area to determine the likelihood of additional archeological sites within the contaminated/disturbed areas and the spatial distribution, physical characteristics, and uses.	✓	✓	✓	In accordance with this programmatic agreement, the following will occur for each remediation area as needed: • survey • appropriate consultation with the OHPO and the Advisory Council • appropriate data recovery for potential historic properties discovered. Unexpected discoveries will be addressed accordingly (see Section F.4.2 of the SEP). Draft reports are under preparation for submission to the OHPO and the Advisory Council. Once finalized, the reports will be available to the public in the Public Environmental Information Center and archived as appropriate.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
ARCHAEOLOGICAL, HISTORIC AND CULTURAL RESOURCE PROTECTION, continued						
Native American Graves Protection and Repatriation Act 25 U.S.C. §3001 et seq.	Identification and preservation of cultural resources on federal lands is required, including natural landmarks. DOE must consult with appropriate Indian tribes before the intentional excavation or removal after an inadvertent discovery of Native American cultural items including human remains and objects of cultural significance.	Appl	Appl	Appl	DOE will consult with likely culturally affiliated tribes to determine the excavation, treatment, analysis and preparation of any extra reviews, associated funerary objects, unassociated funerary objects, sacred objects, or objects of cultural patrimony. Consultation will be coordinated with NHPA compliance when possible.	See preceding.
43 CFR Part 10	Provides for the return of human remains and cultural objects from Native American graves to affiliated tribes.	Appl	✓	✓		
American Indian Religious Freedom Act 42 U.S.C. §1996	Provides for tribal access by native peoples to grave sites and sites of cultural, symbolic, or religious significance.	Appl	Appl	Appl	See preceding.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
AIR PATHWAY						
	NOISE POLLUTION CONTROL					
Noise Control Act, as amended 42 U.S.C. §4901, *et seq.* Noise Pollution and Abatement Act 42 U.S.C. §7641	The public must be protected from noises that jeopardize health and welfare.	Appl	Appl	R&A	Appropriate engineering controls and best management practices will be implemented so that nuisance noise from vehicles and equipment will be reduced to the maximum practicable extent during conduct of the actions.	Section 5.1.2.1 of the Sitewide Excavation Plan
	AIR EMISSIONS					
Solid Waste and Infectious Waste Regulations, Authorized, Limited, and Prohibited Solid Waste Disposal Methods OAC 3745-27-05 ORC 3734.03	Open dumping of solid waste is prohibited [OAC 3745-27-05(C)]. Solid waste disposal by means of open burning, as defined in OAC 3745-19, is permitted only as provided therein [OAC 3745-27-05(B)].	Appl	Appl	Appl		Addressed through the description of the selected remedy in the OU2 ROD (Section 9.0), OU5 ROD (Section 9.0), and OU3 ROD (Section 8.0)
Criteria for Classification of Solid Waste Disposal Facilities and Practices, Air [40 CFR §257.3-7]	Open burning of residential, commercial, institutional or industrial solid waste is prohibited. *This requirement does not apply to infrequent burning of agricultural wastes in the field, silvicultural wastes for forest management purposes, land-clearing debris, diseased trees, debris from emergency clean-up operations, and ordnance* [40 CFR §257.3-7].	✓	✓	Appl		
Open Burning Standards, Open Burning in Unrestricted Areas OAC 3745-19-04©	Open burning is allowed for the following purposes [OAC 3745-19-04(C)]: • Recognized horticultural, silvicultural, range, or wildlife management practices [OAC 3745-19-04(C)(5)]. • Disposal of land clearing waste if the following conditions are met [OAC 3745-19-04(C)(4)]: - The fire is set only when atmospheric conditions will readily dissipate contaminants; - The fire does not create a visibility hazard on roadways, railroad tracks, or air fields; - The fire is located at a point on the premises no less than 1000 feet from any inhabited building not located on said premises.	✓	✓	Appl		

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
General Provisions on Air Pollution Control, Air Pollution Nuisances Prohibited OAC 3745-15-07 ORC 3704.01-.05 ORC 3734.02(I)	Measures shall be taken to adopt and maintain a program for the prevention, control, and abatement of air pollution in order to protect and enhance the quality of the state's air resource so as to promote the public health, welfare, and economic vitality of the people of the state. The emission or escape into open air from any source whatsoever of smoke, ashes, dust, dirt, grime, acids, fumes, gases, vapors, odors and combinations of the above in such a manner or in such amounts as to endanger the health, safety, and welfare of the public, or to cause unreasonable injury or damage to property shall be declared to be a public nuisance. It is unlawful for any person to cause, permit, or maintain any such public nuisance. No owner or operator of a hazardous waste facility, in the operation of the facility, shall cause, permit, or allow the emission therefrom of any particulate matter, dust, fumes, gas, mist, smoke, vapor, or odorous substances that, in the opinion of the Director [of Environmental Protection, a.k.a., the Director of the OEPA], unreasonably interferes with comfortable enjoyment of life or property by persons living or working in the vicinity of the facility, or that is injurious to public health. Any such action is hereby declared to be a public nuisance.	Appl ✓	Appl ✓	Appl R&A	Only fugitive dust (dirt, flyash, bottom ash) is anticipated from this soil remedial action project. Air pollution nuisance prohibitions will be met by employing best management practices for control of fugitive dust.	FEMP Fugitive Dust Control BAT Determination, and Section 5.1.2 of the Sitewide Excavation Plan
Particulate Matter Standards, Ambient Air Quality Standards OAC 3745-17-02(B), (C), (D) [National Primary and Secondary Ambient Air Quality Standards 40 CFR §50.6(a), (b), (c)]	The level of the primary and secondary 24-hour ambient air quality standards for particulate matter is a 150 $\mu g/m^3$, 24-hour average concentration [OAC 3745-17-02(C)]. The level of the primary and secondary annual ambient air quality standards for particulate matter is 50 $\mu g/m^3$, annual arithmetic mean (average) [OAC 3745-17-02(D)]. Particulate matter shall be measured in the ambient air as PM_{10} (particles with an aerodynamic diameter less than or equal to a nominal 10 μm).	Appl	Appl	✓	The National Ambient Air Quality Standards (NAAQS) were established as regional goals that states were required to meet and maintain. These ambient air quality standards were never intended, nor are they appropriate, as air quality standards for individual facilities. The methods used by the states to comply with the NAAQS are the State Implementation Plan (SIPs), which include state-level regulations for emission controls or emission standards (included as separate entries). By meeting these pertinent individual requirements, FEMP emissions will not cause an exceedance of the NAAQS/Ohio Ambient Air Quality Standards.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Particulate Matter Standards, Non-Degradation Policy OAC 3745-17-05	The significant and avoidable deterioration of air quality in any part of the area where presently existing air quality is better than the particulate ambient air quality standards in OAC 3745-17-02 (described above) shall be prohibited.	Appl	Appl	✓	Appropriate control measures will be applied to all construction grading, excavation, loading/unloading and material management activities to reduce fugitive emissions. Also see preceding entry.	FEMP Fugitive Dust Control BAT Determination, and Section 5.1.2.2 of the Sitewide Excavation Plan
Particulate Matter Standards, Control of Visible Particulate Emissions from Stationary Sources OAC 3745-17-07(A)(1)(a)	Visible particulate emissions from any point source shall not exceed 20 percent opacity, as a 6-minute average, but shall not exceed 60 percent opacity, as a 6-minute average, at any time. Transient exceedance limits are included in this regulation.	Appl	Appl	Appl	All point sources associated with a remedial action project (i.e., sludge dewatering, etc.) will employ best available emissions control technologies to mitigate particulate emissions.	As necessary, point source monitoring requirements will be addressed in the appropriate IRDP.
Particulate Matter Standards, Control of Visible Particulate Emissions from Stationary Sources OAC 3745-17-07(B)(1)	Visible particulate emissions from any fugitive dust source shall not exceed 20 percent opacity, as a 3-minute average.	✓	✓	✓	Appropriate control measures will be applied to all construction grading, excavation, loading/unloading and material management activities to reduce fugitive emissions.	FEMP Fugitive Dust Control BAT Determination, and Section 5.1.2.2 of the Sitewide Excavation Plan

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
Particulate Matter Standards, Control of Visible Particulate Emissions from Stationary Sources OAC 3745-17-07 (B)(4), (5), (6)	There shall be no visible particulate emissions from any paved roadway or paved parking area except for a period of time not to exceed 6 minutes during any 60-minute observation period. There shall be no visible particulate emissions from any unpaved roadway or unpaved parking area except for a period of time not to exceed 13 minutes during any 60-minute observation period. There shall be no visible particulate emissions from any material storage piles except for a period of time not to exceed 13 minutes during any 60-minute observation period.	Appl	R&A	✓	Appropriate control measures will be applied to all construction grading, excavation, loading/unloading and material management activities to reduce fugitive emissions.	FEMP Fugitive Dust Control BAT Determination, and Section 5.1.2.2 of the Sitewide Excavation Plan
Particulate Matter Standards, Restriction of Emission of Fugitive Dust OAC 3745-17-08(B)	No person shall cause or permit any fugitive dust source to be operated; or any materials to be handled, transported, or stored; or a building (or its appurtenances) or a road to be used, constructed, altered, repaired, or demolished without taking or installing reasonably available control measures to prevent fugitive dust from becoming airborne. Such reasonably available control measures shall include, but are not limited to, one or more of the following which are appropriate to minimize or eliminate visible particulate emissions of fugitive dust. • The use of water or other suitable dust suppression chemicals for the control of fugitive dust from the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land; or • The periodic application of asphalt, oil, water, or other suitable dust suppression chemicals on dirt or gravel roads and parking lots, and any other surfaces that may cause emissions of fugitive dust.	Appl	R&A	Appl	This requirement is applicable only to certain cities in Butler and Hamilton Counties. Appropriate control measures will be applied to all construction grading, excavation, loading/unloading and material management activities to reduce fugitive emissions.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Particulate Matter Standards, Restrictions on Particulate Emissions from Industrial Processes OAC 3745-17-11	The following are restrictions for particulates from any operation, process, or activity which releases or may release particulate emissions into the ambient air. These limits are based on the weight of material being processed. Process Weight at Maximum Capacity (lb/hr) — Allowable Particulate Emission Rate (lb/hr) 100 — 0.551 200 — 0.877 400 — 1.40 600 — 1.83 800 — 2.22 1000 — 2.58 *These limits do not apply to generation of fugitive dust* subject to OAC 3745-17-08 (listed above).	Appl		R&A	All point sources associated with a remedial action project (i.e., sludge dewatering, etc.) will employ best available emissions control technologies to mitigate particulate emissions.	See preceding.
Ambient Air Quality Standards for Non-methane Hydrocarbons OAC 3745-21-02(C), -03(D)	The ambient air quality guidelines for nonmethane hydrocarbons is a maximum three hour arithmetic mean concentration of 160 $\mu g/m^3$, not to be exceeded between the hours of 6 and 9 a.m. Hourly and 3-hour concentrations must be determined in accordance with prescribed methods.		Appl		The National Ambient Air Quality Standards (NAAQS) were established as regional goals that states were required to meet and maintain. These ambient air quality standards were never intended, nor are they appropriate, as air quality standards for individual facilities. The methods used by the states to comply with the NAAQS are the State Implementation Plan (SIPs), which include state-level regulations for emission controls or emission standards. By meeting these pertinent individual requirements, FEMP emissions will not cause an exceedance of the NAAQS/Ohio Ambient Air Quality Standards.	See preceding relevant Ohio air regulation citations.

TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
National Primary and Secondary Ambient Air Quality Standards 40 CFR §50.12 Ohio Lead Emissions, Ambient Air Quality Standards—Lead OAC 3745-71-02(A)	The ambient air quality standards for lead shall be a maximum arithmetic mean of 1.5 micrograms per cubic meter during any calendar quarter.	R&A	R&A		See preceding.	See preceding
National Primary and Secondary Ambient Air Quality Standards 40 CFR Part 50	The following are the primary National Ambient Air Quality Standards (NAAQS):	R&A			Note that other NAAQSs are presented in preceding entries.	
	Criteria Pollutant / Primary Standard, ppm / Averaging Time					
	Carbon Monoxide / 9 / 8-hour	R&A				
	35 / 1-hour					
	Nitrogen Dioxide / 0.053 / Annual	R&A				
	Ozone / 0.12 / 1-hour	R&A				
	Sulfur oxides / 0.03 / Annual	R&A				
	0.14 / 24-hour					
Permit to Install New Sources of Pollution OAC 3745-31-05 (A)(3)	The installation or modification and operation of an air contaminant source, solid waste disposal facility, water pollution source, disposal system, land application of sludge, or public water system, must employ the best available technology. The terms used in the above are defined in OAC 3745-15-01, unless otherwise defined in OAC 3745-31-01.	R&A	Appl	R&A	Appropriate control measures will be applied to all construction grading, excavation, loading/unloading and material management activities to reduce fugitive emissions. All point sources associated with a remedial action project (i.e., sludge dewatering, etc.) will employ best available emissions control technologies to mitigate particulate emissions.	FEMP Fugitive Dust Control BAT Determination, and Section 5.1.2.2 of the Sitewide Excavation Plan

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Standards of Performance for New Stationary Sources, Subpart OOO—Standards of Performance for Nonmetallic Mineral Processing Plants 40 CFR §60.672(a), (d), (e)	No owner or operator shall cause to be discharged into the atmosphere from a crusher any emissions which: • Contain particulate matter in excess of 0.05 grams per dry cubic meter at standard conditions (g/dscm); and • Exhibit greater than 7 percent opacity Truck dumping of nonmetallic minerals into any crusher is exempt from these requirements.	R&A	✓		It is not anticipated that a crusher will be used during this remedial action project. All point sources associated with a remedial action project (i.e., sludge dewatering, etc.) will employ best available emissions control technologies to mitigate particulate emissions.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
40 CFR Part 61, Subpart M-National Emission Standard for Asbestos, Standard for Waste Disposal for Manufacturing, Fabrication, Demolition, Renovation, and Spraying Operation 40 CFR §61.150	(a) Discharge no visible emissions [of asbestos] to the outside air during the collection, processing, packaging, or transporting of any asbestos-containing waste material, or use one of the emission control methods specified in paragraphs (a)(1) through (4) of this section: (1) Adequately wet asbestos-containing material (ACM). After wetting, seal all asbestos-containing waste material in leak-tight containers while wet; or, put materials that will not fit into containers without additional breaking into leak-tight wrapping. Label the containers or wrapped materials in accordance with 29 CFR 1910.1001(j)(2) or 1926.58(k)(2)(iii). ... (4) Use an alternative emission control and waste treatment method that has received prior approval from the Administrator. (5) As applied to demolition and renovation, the requirements above under paragraph (a) of this section do not apply to Category I non-friable ACM waste and Category II non-friable ACM waste that did not become crumbled, pulverized, or reduced to powder. "Adequately wet" means sufficiently mix or penetrate with liquid to prevent the release of particulates; if visible emissions are observed coming from the asbestos-containing material, the material has not been adequately wetted [40 CFR §61.41].	✓	✓	Appl		See preceding, and following sections of the Sitewide Excavation Plan: 2.5.8 Special Materials 3.3.2.2 Special Materials F.4.1.1 Asbestos
Asbestos Emission Control, Standard for Asbestos Waste Handling OAC 3745-20-05(B), (C)&(D)	(B) Discharge no visible emissions [of asbestos] during the collection, processing, packaging, transporting or deposition of any asbestos-containing waste material, and use one of the emission control methods below: (1) Adequately wet asbestos-containing material and seal the material into durable leak-tight containers or enclosure system. (2) For facilities where asbestos was not removed prior to demolition [or excavation], keep asbestos-containing waste adequately wet or sealed/encapsulated until collected for disposal.					

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	(C) Seal all friable asbestos-containing waste material into durable leak-tight disposal containers or use an approved alternative disposal system in accordance with the following: (1) Label all containers of asbestos-containing waste material: DANGER CONTAINS ASBESTOS FIBERS AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD R.Q. Hazardous Substance N.O.S. asbestos ORM-E 9188 (2) Seal asbestos-containing waste materials in plastic bags at least 6 mils (0.006 inch) thick, and seal that in a second clean, leak-tight plastic bag at least 6 mils thick; or (4) Facility components coated with, covered or containing friable asbestos materials and removed in sections or units — Seal with leak-tight plastic at least 12 mils (0.012 inch) thick or leak-tight polypropylene woven fabric at least 10 mils (0.010 inch) thick; or (3) Whenever necessary to prevent any asbestos-containing waste material from penetrating a container (bag or wrap) — Seal the materials using a combination of a 6 mils thick plastic bag and a leak-tight steel, plastic, or fiber drum, or reinforced disposal box, leak-tight polypropylene woven fabric bag, or similar suitable and durable container. Fit drums with a matching lid and lock-rims. Band and seal boxes with reinforced tape or in accordance with manufacturers recommendations; or (5) Asbestos-containing waste materials, facility components, and contaminated debris may be disposed of using an alternative disposal system which has received prior approval from the Director. (D) Prepare and secure any load of asbestos-containing waste material in a manner that prevents any visible emissions [of asbestos], load loss, and spillage or leakage of liquids.					

TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
Asbestos Emission Control, Standard for Active Asbestos Disposal Sites OAC 3745-20-06(A)&(B) [40 CFR Part 61, Subpart M-National Emission Standard for Asbestos, Standard for Active Waste Disposal Sites, 40 CFR §61.154]	(A) Each owner or operator of an active asbestos waste disposal site shall cause or permit no visible emissions [of asbestos] to the outside air; or shall comply with the requirements of paragraph (B) of this rule. (B) Rather than meet the no visible emissions requirement of paragraph (A) of this rule, each owner or operator of an active asbestos waste disposal site shall comply with the following: (1) There shall be no visible emissions from asbestos-containing waste materials during the on-site transportation, transfer, deposition or compacting operations. (2) Deposition and burial operations shall be conducted in a manner which prevents handling by equipment or persons that causes asbestos-containing waste materials to be broken-up or dispersed before the materials are buried. (3) As soon as practicable after deposition of the asbestos-containing waste materials but no later than at the end of each operating day, the asbestos-containing waste material deposited at the site during the operating day shall be buried with at least twelve inches of compacted nonasbestos-containing material. Alternatively, any owner or operator of an active asbestos waste disposal site may apply for approval of the Director [of Environmental Protection, a.k.a. Director of the OEPA] to utilize alternative control measures to bind dust, control wind erosion or convert [friable] asbestos to non-friable forms. (4) During the unloading, deposition, burial, and initial compaction of asbestos-containing materials, the owner or operator of the active [asbestos] waste disposal site shall establish a restricted area adequate to deter the unauthorized entry of the general public and any unauthorized personnel from any location within one hundred feet of the operations, and shall display the following information on a sign not less than twenty by fourteen inches, so that it is visible before entering the restricted area: ASBESTOS DUST HAZARD Do Not Remain In Area Unless Your Work Requires It Breathing Asbestos Dust Is Hazardous To Your Health	✓	✓	Appl	Pertinent to the management of asbestos-containing materials. Also note that requirements from paragraphs (A) and (B) which are pertinent to disposal of asbestos-containing materials, are included in the OSDF Impacted Materials Placement Plan. NOTE: The sizing & language for warning signs under (B)(4) at left conflicts with that required by OSHA under 29 CFR §1926.1101(k)(7). The FEMP will follow either the Ohio active asbestos waste disposal sites language or the OSHA required sign language: DANGER ASBESTOS CANCER & LUNG DISEASE HAZARD AUTHORIZED PERSONNEL ONLY OSHA does not impose a minimum sign size.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Asbestos Emission Control, Standard for Inactive Asbestos Disposal Sites OAC 3745-20-07(C) [40 CFR Part 61, Subpart M-National Emission Standard for Asbestos, Standard for Inactive Waste Disposal Sites, for Asbestos Mills and Manufacturing and Fabricating Operations 40 CFR §61.151]	The owner or operator may use an alternate control method that has received prior approval of the Director [of Environmental Protection, a.k.a. Director of the OEPA] rather than comply with the requirements of paragraph (A) [emissions and cover requirements] or (B) [posting and access control requirements] of this rule.	✓	✓	Appl	These requirements for inactive asbestos waste disposal sites are very similar to those for active asbestos waste disposal sites under OAC 3745-20-06 (preceding entry). During soil remediation activities under this remedial action project, the requirements for active asbestos disposal sites (preceding entry) will be followed while managing friable asbestos-containing material. Also note that requirements pertinent to disposal of asbestos-containing materials under paragraphs (A) and (C) of OAC 3745-20-07 are included in the OSDF Impacted Materials Placement Plan.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	AIR EMISSIONS, continued					
Asbestos Emission Control, Standard for Inactive Asbestos Disposal Sites OAC 3745-20-07(D) [40 CFR Part 61, Subpart M-National Emission Standard for Asbestos, Standard for Inactive Waste Disposal Sites for Asbestos Mills and Manufacturing and Fabricating Operations, 40 CFR §61.151(d)]	Each owner or operator of an inactive asbestos waste disposal site shall notify the Director [of Environmental Protection, a.k.a. the Director of the OEPA] in writing prior to disturbing or removing any asbestos-containing waste material. The notice shall contain:	✓	✓	✓	Submission of the project-specific IRDPs to OEPA constitute this notification.	
	• the reason for disturbing the waste,					The reason for disturbing the material is documented in the OU2, OU5 and OU3 RODs.
	• the procedures to be used to control emissions,					FEMP Fugitive Dust Control BAT Determination, the OSDF Impacted Materials Placement Plan, and following sections of the Sitewide Excavation Plan: 2.5.8 Special Materials 3.3.2.2 Special Materials 5.1.2.2 Fugitive Emissions F.4.1.1 Asbestos
	• the duration of the operation, and				Project schedules contained in project-specific IRDPs.	
	• the location of the final disposal site.					The OSDF, unless the OSDF WAC is not met; else, an off-site permitted/licensed disposal facility.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
National Emission Standards for Hazardous Air Pollutants, Subpart H—National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities, 40 CFR §61.90, §61.91 and §61.92 - .97 [Radiation Protection of the Public and the Environment DOE Order 5400.5 Chapter II (1)(b)]	Emissions of radionuclides (except radon-220 and radon-222) to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr. To determine compliance with the standard, radionuclide emissions shall be determined and effective dose equivalent values to members of the public calculated using EPA-approved sampling procedures, computer models CAP-88 or AIRDOS-PC, or other procedures for which EPA has granted prior approval.	Appl	Appl	Appl		Section 6 of the Integrated Environmental Monitoring Plan (IEMP) and the following sections of the Sitewide Excavation Plan: 5.1.2.3 Airborne Radiological Particulates 5.1.2.4 Radon 5.1.2.5 Direct Radiation
National Emission Standards for Hazardous Air Pollutants, Subpart Q—National Emission Standards for Radon Emissions From Department of Energy Facilities 40 CFR §61.190, §61.192	No source at a DOE facility shall emit more than 20 pCi/m^3/sec of radon-222 as an average for the entire source into the air.	Appl	Appl	R&A	The existing distribution of contaminants within the site soils attains compliance with this requirement. Will be addressed sitewide as necessary by the Integrated Environmental Monitoring Plan (IEMP).	

TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
SURFACE WATER PATHWAY						
FLOODPLAIN/WETLANDS PROTECTION						
Executive Order 11990, Protection of Wetlands	Federal agencies are required to take action to avoid adversely impacting wetlands wherever possible, to minimize wetland destruction, and to preserve the values of wetlands.	Appl	Appl		Floodplain and wetland impacts associated with soil remediation activities will be minimized and avoided to the maximum extent practicable. Projects with unavoidable impacts will be undertaken in accordance with 33 CFR Parts 323 and 330. A review of an overlay of each remediation area boundary on the FEMP Jurisdictional Wetland Delineation (Drwg. 75X-5500-G-00372) will be conducted to determine the approximate acreage of jurisdictional wetlands that will be dredged and filled during excavation of the remediation area. Dredge and fill activities within these wetlands will comply with the substantive requirements of Nationwide Permit Nos. 38 and 26 (subsequent entry) — promulgated in Appendix A of 33 CFR Part 330 (subsequent entry) and OEPA's corresponding State Water Quality Certification (see subsequent entry for OAC 3745-32).	Approximately 36 acres of jurisdictional wetlands and 9 acres of waters of the United States were identified on the FEMP property as a result of the 1993 Jurisdictional Wetlands & Waters of the U.S. (1993 FEMP Wetland Delineation). The U.S. Army Corps of Engineers officially approved the delineation on August 19, 1993. See also: Appendix H of the OU2 FS Report; Appendix J of the OU5 FS Report, and Appendix J of the OU3 RI/FS. The Natural Resources Restoration Plan (NRRP); also, remedial action completion reports must include NEPA compliance, as per following sections of the Sitewide Excavation Plan: 1.4.2 Related Documents 7.4 Certification Report 7.5 Other Related Future Documents
Procedure for Implementing the National Environmental Policy Act 40 CFR §6.302(a)	Federal agencies conducting certain activities must avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands, and avoid support of new construction in wetlands when a practicable alternative exists.	Appl	Appl		See preceding.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Executive Order 11988, Floodplain Management Procedures for Implementing the National Environmental Policy Act 40 CFR §6.302(b)	Federal agencies must evaluate the potential effects of actions they may take in a floodplain to avoid, to the extent possible, adverse effects associated with direct and indirect development of a floodplain.	Appl	Appl		Remediation is needed, and can not be avoided. Nationwide Permit # 38 (subsequent entry) authorizes such remedial activity in a floodplain. The floodplain will not be developed as a result of this federal agency action.	An updated floodplain determination was conducted in October 1992 for Paddy's Run using the U.S. Army Corps of Engineers' standard HEC2 water surface profile analysis program. The 100-year flood elevations reach the western slope of the Inactive Flyash Pile and the toe of the South Field slope.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	FLOODPLAIN/WETLANDS PROTECTION, continued					
DOE Compliance with Floodplain/ Wetlands Environmental Review Requirements 10 CFR §1022.3(a), 3(b)(1), 3(b)(2), 3(b)(3), 3(b)(5), 3(b)(6), 3(c), 3(d), 3(e)	DOE shall exercise leadership and take action to: • Avoid to the extent possible the long- and short-term adverse impacts associated with the destruction of wetlands and the occupancy and modification of floodplains and wetlands, and avoid direct and indirect support of floodplain and wetland development wherever there is a practicable alternative. • Incorporate floodplain management goals and wetlands protection considerations into its planning, regulatory, and decision-making processes and shall to the extent practicable: - Reduce the hazard and risk of flood loss. - Minimize the impact of floods on human safety, health, and welfare. - Restore and preserve natural and beneficial values served by the floodplain. - Minimize the destruction, loss, or degradation of wetlands. - Preserve and enhance the natural and beneficial values of wetlands. • Undertake a careful evaluation of the potential effects of any DOE action taken in a floodplain and any new construction undertaken by DOE in wetlands not located in a floodplain. • Identify, evaluate, and as appropriate, implement alternative actions which may avoid or mitigate adverse floodplain/wetlands impacts. • Provide opportunity for early public review of any plans or proposals for actions in floodplains and new construction in wetlands.	Appl	Appl	Appl	10 CFR Part 1022 is the DOE implementing regulation for Executive Orders 11988 and 11990 (see corresponding preceding entries).	Remediation decisions included avoidance to/ minimization of wetlands impacts. See: Appendix H of the OU2 FS Report; Appendix J of the OU5 FS Report, and Appendix J of the OU3 RI/FS. Also, see preceding entries.
DOE Compliance with Floodplain/ Wetlands Environmental Review Requirements 10 CFR §1022.5(b), (h)	This part shall apply to all proposed floodplain/wetlands actions, including those sponsored jointly with other agencies, where practicable alternatives to the proposed actions are still available. The policies and procedures of this part which are applicable to floodplain actions shall apply to all proposed actions which occur in a wetlands located in a floodplain.	Appl	Appl	Appl	See preceding entries.	See preceding entries.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
DOE Compliance with Floodplain/ Wetlands Environmental Review Requirements 10 CFR §1022.11 (a), (b), (c)	Concurrent with its review of a proposed action to determine appropriate NEPA requirements, DOE shall determine applicability of the floodplain management and wetlands protection requirements of this part. In making a floodplain determination, DOE shall utilize the Flood Insurance Rate Maps (FIRMs) or the Flood Hazard Boundary Maps (FHBMs) prepared by the Federal Insurance Administration of the Department of Housing and Urban Development to determine if a proposed action is located in the base or critical action floodplain, as appropriate. For a proposed action in an area of predominately federal or state land holdings where FIRM or FHBM maps are not available, information shall be sought from the land administering agency (e.g., Bureau of Land Management, Soil Conservation Service, etc.) or from agencies with floodplain analysis expertise.	Appl	Appl		See preceding entries.	See preceding entries.
DOE Compliance with Floodplain/ Wetlands Assessments 10 CFR §1022.12(a)	If DOE determines, pursuant to 10 CFR §§ 1022.5 and 1022.11, that this part is applicable to the proposed action, DOE shall prepare a floodplain/wetlands assessment, according to the requirements in this section (10 CFR §1022.12).	Appl	Appl		See preceding entries.	See preceding entries.
DOE Compliance with Floodplain/ Wetlands Environmental Review Requirements 10 CFR §1022.15(a)	If DOE finds that no practicable alternative to locating in the floodplain/wetland is available, consistent with the policy set forth in Executive Order 11988, DOE shall, before taking action, design, or modify its action in order to minimize potential harm to or within the floodplain or wetland.	Appl	Appl		See preceding entries.	See preceding entries.
Federal Water Pollution Control Act (a.k.a., Clean Water Act) General Regulatory Policies 33 CFR §323.3	Permits will be required for the discharge of dredged or fill material into waters of the United States including wetlands. Certain discharges specified in 33 CFR Part 330 are permitted by that regulation (nationwide permits). If a discharge of dredged or fill material is not permitted by 33 CFR Part 330 (Nationwide Permits), an individual section 404 permit will be required for the discharge of dredged or fill material into waters of the United States. Discharges of dredged or fill material into waters of the United States done by or on behalf of any Federal agency, other than the Corps of Engineers, are subject to the authorization procedures of these regulations. Remedial actions involving the discharge of dredge and fill material into these areas shall meet the substantive requirements of this section and 40 CFR Part 230.	Appl	 Appl		See preceding entry for Executive Order 11990 (first Floodplain/Wetland Protection entry). Discharges of dredged and fill material not authorized by a NWP will be conducted in accordance with the substantive requirements of these regulations.	See preceding entries.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	FLOODPLAIN/WETLANDS PROTECTION, continued					
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit (NWP) Program 33 CFR Part 330	The U.S. Army Corps of Engineers has authorized certain categories of activities involving the discharge of dredged and fill material into wetlands and waters of the United States under the NWP program. Activities involving the discharge of dredged and fill material will be conducted in accordance with the substantive requirements of applicable NWPs as required. Discharges not authorized by NWP will be conducted in accordance with the substantive requirements of 33 CFR Part 323 and 40 CFR Part 230.	✓	Appl	R&A	See preceding entries.	Following sections of the Sitewide Excavation Plan: 3.3.1 Implementation of Construction, Excavation, and Material-handling Activities 5.1.1 Natural Resource Impacts 5.1.3 Surface Water Pathway
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit Program 33 U.S.C. §1341(a)(1), (d) 33 CFR §330.1(c)	An activity is authorized under an Nationwide Permit (NWP) *only if that activity and the* permittee satisfy all of the individual NWP's terms and conditions. Potentially applicable NWPs include: • Nationwide Permit #38 — Cleanup of Hazardous and Toxic Waste - This permit authorizes specific activities required to affect the containment, stabilization or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority provided the permittee notifies the district engineer. - For discharges in special aquatic sites, including wetlands, the notification must include a delineation of affected special aquatic sites, *including wetlands.* - This nationwide permit does not authorize the establishment of new disposal sites or the expansion of existing sites used for the disposal of hazardous or toxic waste. • Nationwide Permit #26 — Headwaters and Isolated Waters Discharges - The discharge does not cause the loss of more than 10 acres of waters of the United States. - The permittee notifies the district engineer if the discharge would cause the loss of waters of the United States greater than 1 acre. - For discharges in special aquatic sites, including wetlands, the notification must also include a delineation of affected special aquatic sites, including wetlands. - The discharge, including all attendant features, both temporary and permanent, is part of a single and complete project.	Appl	Appl	R&A	See preceding entry for Executive Order 11990 (first Floodplain/Wetlands Protection entry).	January 17, 1992 letter from Donald R. Schregardus, Director of the OEPA, to the U.S. Army Corps of Engineers, "401 Certification — Grant," the OEPA conditionally certified that projects authorized by NWP #s 38 and 26 will comply with the applicable provisions of the Federal Water Pollution Control Act.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit Program Section B(26) to Appendix A of 33 CFR Part 330	Discharges of dredged or fill material into headwaters and isolated waters [under Nationwide Permit # 26] are approved provided: • The discharge does not cause the loss of more than 10 acres of waters of the United States. • The permittee notifies the district engineer if the discharge would cause the loss of waters of the United States greater than 1 acre. • For discharges in special aquatic sites, including wetlands, the notification must also include a delineation of affected special aquatic sites, including wetlands. • The discharge, including all attendant features, both temporary and permanent, is part of a single and complete project.	✓	✓	✓	See preceding and following entries.	See preceding and following entries.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	FLOODPLAIN/WETLANDS PROTECTION, continued					
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit Program 33 CFR §330.4 (c)(1) Ohio Section 401 State Water Quality Certifications OAC 3745-32-02	Section 401 State Water Quality Certification pursuant to Section 401 of the Clean Water Act, or waiver thereof, is required to prior to issuance or re-issuance of individual or nationwide permits authorizing (dredge and fill) activities which may result in a discharge into waters of the United States. State Water Quality Certification is granted provided: 1. The discharge does not prevent or interfere with the attainment or maintenance of applicable water quality standards; and 2. The discharge does not result in a violation of any applicable provisions of the Federal Water Pollution Control Act (a.k.a., Clean Water Act).	Appl	Appl		See preceding and following entries.	January 17, 1992 letter from Donald R. Schregardus, Director of the OEPA, to the U.S. Army Corps of Engineers, "401 Certification — Grant," the OEPA conditionally certified that projects authorized by the NWP #s 38 and 26 (see previous entry) will comply with the applicable provisions of the Federal Water Pollution Control Act.
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit Program Section C of Appendix A to 33 CFR Part 330	In addition to the General Conditions, the following [Section 404 only] conditions apply only to activities that involve the discharge of dredge or fill material and must by followed in order for authorization of the nationwide permits to be valid: • No discharge of dredged or fill material may consist of unsuitable material (e.g., trash, debris, car bodies, etc.). And material discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act). • Discharges of dredged or fill material into waters of the United States must be minimized or avoided to the maximum extent practicable at the project site, unless the District Engineer has approved a compensation mitigation plan for the specific regulated activity.	✓	✓		See preceding entries.	The Natural Resources Restoration Plan (NRRP)

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	FLOODPLAIN/WETLANDS PROTECTION, continued					
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Nationwide Permit Program Section C of Appendix A to 33 CFR Part 330	Factors that the District Engineer will consider when determining the acceptability of appropriate and practicable mitigation include, but are not limited to: • To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of overall project purposes. • To the extent appropriate, permittees should consider mitigation banking and other forms of mitigation including contribution to wetland trust funds, which contribute to the restoration, creation, replacement, enhancement, or preservation of wetlands. • Furthermore, examples of mitigation that may be appropriate and practicable include but are not limited to: reducing the size of the project; establishing buffer zones to protect aquatic resource values; and replacing the loss of aquatic resource values by creating, restoring, and enhancing similar functions and values. In addition, mitigation must address impacts and cannot be used to offset the acreage of wetland losses that would occur in order to meet the acreage limits of some of the nationwide permits.	✓	✓		See preceding entries.	The Natural Resources Restoration Plan (NRRP)
Federal Water Pollution Control Act (a.k.a., Clean Water Act) §404 (33 U.S.C. §1344) Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material, Subpart B—Compliance With the Guidelines, Restrictions on Discharge 40 CFR §230.10	No discharge of dredged or fill material shall be permitted: • If there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as, the alternative does not have other significant adverse environmental consequences. • Unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem. No discharge of dredged or fill material shall be permitted if it: • Causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable state water quality standard. • Violates any applicable toxic effluent standard or prohibition under section 307 of the Clean Water Act. • Jeopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, as amended, or results in likelihood of the destruction or adverse modification or a habitat which is determined to be a critical habitat under the Endangered Species Act of 1973, as amended.	Appl	✓	✓	See preceding entries.	Appendix H of the OU2 FS Report; Appendix J of the OU5 FS Report, and Appendix J of the OU3 RI/FS.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DISCHARGE TO SURFACE WATER					
Pollution to Waters of the State ORC 6111.04	No person shall cause pollution or place or cause to be placed any sewage, industrial waste, or other wastes in a location where they cause pollution of any waters of the state. No person to whom a permit has been issued shall place or discharge, or cause to be placed or discharged, in any waters of the state any sewage, industrial waste, or other wastes in excess of the permissive discharges specified under such existing permit without first receiving a permit from the Director to do so. Pollution to waters of the state is prohibited.	Appl	Appl	R&A		FEMP Site NPDES Permit Number 1IO00004*ED, the FEMP Stormwater Pollution Prevention Plan (RM-0039), Section 4 of the Integrated Environmental Monitoring Plan (IEMP), and the following section of the Sitewide Excavation Plan: 5.1.3 Surface Water Pathway
Compliance with Ohio Water Pollution Control Requirements ORC 6111.07(A), (C)	Failure to comply with water pollution control requirements is prohibited.	✓	Appl	Appl		See preceding.
Water Quality Standards, Criteria Applicable to All Waters OAC 3745-1-04	To every extent practical and possible, all surface waters of the State of Ohio shall be free from: • Suspended solids or other substances that enter the waters as a result of human activity that will form putrescent or otherwise objectionable sludge deposits • Floating debris, oil, scum and other floating materials entering the waters as a result of human activity in amounts sufficient to be unsightly or cause degradation • Materials entering the waters as a result of human activity producing color, odor or other conditions in such a degree as to create a nuisance • Substances entering the waters as a result of human activity in concentrations that are toxic or harmful to human, animal or aquatic life and/or are rapidly lethal in the mixing zone • Nutrients entering the waters in concentrations that create nuisance growths of aquatic weeds or algae	✓	R&A	R&A		See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DISCHARGE TO SURFACE WATER, continued					
Water Quality Standards, Antidegradation Policy OAC 3745-1-05(A)&(B)	(A) Existing instream water uses as defined in OAC 3745-1-07 [subsequent entry] shall be maintained and protected. No further water quality degradation which would interfere with or become injurious to designated uses is allowable. (B) Waters in which existing water quality is better than the criteria prescribed in these rules and exceeds those levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water shall be maintained and protected. ... Degradation of water quality shall not interfere or become injurious to existing or planned uses, and the Director shall require that ... feasible management or regulatory programs pursuant to Section 208 and 303 of the Act [Clean Water Act], 33 U.S.C. Sections 1288 and 1313, be applied to nonpoint sources.	✓	✓	Appl	Soil remedial action projects will ensure that existing instream water uses of the Great Miami River and Paddy's Run will be maintained as health protective.	See preceding.
Water Quality Standards, Great Miami River OAC 3745-1-21	Paddy's Run and the Great Miami River are designated as: • Warm water aquatic life habitat • Agricultural and industrial water supply • Primary contact recreation The Great Miami River between Ross Road (RM 95.7) to Taylorsville Dam (RM 92.6) is a state resource water, and RM 130 and 118 are public water supplies.	Appl	Appl	Appl	Discharges to the Great Miami River and Paddy's Run must not cause a violation of applicable numeric or narrative water quality standards for these designations. The FEMP effluent discharge pipe, located at River Mile (RM) 24.73 on the Great Miami River, is downstream of the state resource waters and public water supplies.	See preceding.
National Pollutant Discharge Elimination System 40 CFR §122.26(a)(l)(ii), 40 CFR §122.26(b)(14)(v), (x)	A discharge composed entirely of storm water associated with industrial activity is required to obtain a NPDES permit. These categories of facilities are considered to be engaging in "industrial activity": • Landfills, land application sites, and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described under this subsection), including those that are subject to regulation under Subtitle D of RCRA; and • Construction activities including clearing, grading, and excavation that disturbs five acres or more of total land area.	Appl	Appl	Appl	Discharges of stormwater associated with industrial and/or construction activities are regulated in accordance with the existing FEMP NPDES Permit (Ohio EPA Number 1IO00004*ED), and the FEMP Stormwater Pollution Prevention Plan (RM-0039).	See preceding.
Ohio NPDES Permits, Ohio NPDES Permits Required OAC 3745-33-02(A)	No person may discharge any pollutant or cause, permit, or allow a discharge of any pollutant [from a point source] without applying for and obtaining an Ohio NPDES permit in accordance w with the requirements of this Chapter, 3745-33.	✓	✓	✓	See preceding and following entries.	FEMP Site NPDES Permit (Ohio EPA Number 1IO00004*ED), and the FEMP Stormwater Pollution Prevention Plan (RM-0039).

TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Ohio NPDES General Permits, Ohio NPDES Permit Required OAC 3745-38-02(A)	No person may discharge any pollutant or cause, permit, or allow a discharge of any pollutant from a point source without either applying for and obtaining an Ohio NPDES permit in accordance w with the requirements of Chapter 3745-33 of the Administrative Code [preceding entry], ... or have authorization to discharge under an Ohio NPDES general permit in accordance with the requirements of this chapter [3745-38]. **NOTE:** In September 1992, the FEMP applied for an individual stormwater permit to cover its industrial stormwater discharges to Paddy's Run. On the basis of the information provided in the original FEMP Stormwater Permit Application, Ohio EPA has chosen to regulate FEMP site industrial stormwater discharges under the individual permit process (OAC 3745-33, preceding entry), by incorporating stormwater monitoring requirements at Paddy's Run into the NPDES permit. The site NPDES permit also addresses discharges of stormwater associated with construction activities by requiring a Stormwater Pollution Prevention Plan that defines the manner in which these discharges will be managed.	✓	✓	✓	In accordance with the note at left, the general permitting process described in OAC 3745-38 is not applicable to the FEMP site stormwater discharges. Rather, these are regulated within the context of the existing FEMP NPDES Permit (Ohio EPA Number 1IO00004*ED) and the FEMP Stormwater Pollution Prevention Plan (RM-0039), both of which derive their regulatory basis from OAC 3745-33 (preceding entry).	See preceding entries.
Rules and Regulations of the Hamilton County Soil and Water Conservation District Governing Earthwork for Unincorporated Hamilton County, Ohio	Temporary and/or permanent erosion and sediment control features and devices shall be designed and constructed in general accordance with the State of Ohio Temporary Erosion Control Specifications. *Exempted* from these requirements are: • *any public work performed by or under control of any governmental agency*, provided such operations do not cause instability of any adjacent or contiguous property and substantially equivalent sediment control policies are applied [3.10 E]. • *operations involving process and stockpiling of soils or rock materials where controlled by other regulations*, provided such operations do not cause instability of any adjacent or contiguous property [3.10 H].	✓	TBC	TBC		FEMP Site NPDES Permit (OEPA Number 1IO00004*ED), and the FEMP Stormwater Pollution Prevention Plan (RM-0039), and the following sections of the Sitewide Excavation Plan: 5.1.3 Surface Water Pathway App F Implementation of Construction

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DISCHARGE TO SURFACE WATER, continued					
Federal Water Pollution Control Act (a.k.a., Clean Water Act) Subpart K—Best Management Practices (BMP) Programs 40 CFR §125.104	BMP programs shall be developed in accordance with good engineering practices and: 1) Be documented in narrative form and include any necessary plot plans, drawings or maps; 2) Establish specific objectives for the control of toxic and hazardous pollutants: (a) Each facility component or system shall be examined for its potential for causing a release of significant amounts of toxic or hazardous pollutants to waters of the United States due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc. (b) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances to result in significant amounts of toxic or hazardous pollutants reaching surface waters, the program should include a prediction of the direction, rate of flow and total quantity of toxic or hazardous pollutants which could be discharged from the facility as a result of each condition or circumstance; 3) Establish specific BMPs to meet the objectives identified in (2) above, addressing each component or system capable of causing a release of significant amounts of toxic or hazardous pollutants to the waters of the United States.		Appl	R&A	BMP requirements will be met by implementing FEMP's BMP Plan. The BMP Plan will be progressively updated to accommodate changing site activities during the conduct of CERCLA remedial actions.	Addressed as part of the selected remedy described in the OU5 ROD. Also see preceding entries.

TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
GROUNDWATER PATHWAY						
GROUNDWATER PROTECTION						
Safe Drinking Water Act 42 U.S.C. §1424(e)	All Federal financially assisted projects constructed in the area of a sole source aquifer and its principal recharge zone will be subject to EPA's review to insure that these projects are designed and constructed so that they do not create a significant hazard to public health.	Appl	Appl	Appl	A notice in 53 FR 15876 (May 4, 1988) designated the Buried Valley Aquifer System of the Great Miami/ Little Miami River Basins of southwestern Ohio as a sole or principal source of drinking water. The Fernald site is located above this aquifer.	EPA and OEPA review of project submittals
WELLS — CONSTRUCTION						
Water Well Standards, Pumping Wells OAC 3745-9-08(C)	Pumps may only be primed with potable water.		Appl		Pertains to all well pumps that require priming.	The Sitewide CERCLA Quality Assurance Project Plan (SCQ), the Integrated Environmental Monitoring Plan (IEMP), and the individual project-specific plans for sampling.
Water Well Standards, Monitoring Well Maintenance and Modification OAC 3745-9-09(A) through (C), and (E) through (G)	Monitoring wells must be maintained or modified to avoid cross-contamination of groundwater.		Appl		Pertains to all groundwater wells and piezometers.	The Sitewide CERCLA Quality Assurance Project Plan (SCQ), the Integrated Environmental Monitoring Plan (IEMP), and the following section of the Sitewide Excavation Plan: F.6.3 Monitoring Well Preservation

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	WELLS — ABANDONMENT					
Water Well Standards. Abandonment of Test Holes and Wells OAC 3745-9-10	Upon completion of testing, a test hole shall be either completely filled with grout or such other material as will prevent contaminants from entering groundwater. If a well [or similar device] containing walls is not being used for obtaining groundwater or for determining the quality, quantity, or level of groundwater, it shall be completely filled with grout or other similar material as wneeded, wells, peizometers and				lysimeters are to be properly plugged and abandoned in accordance with these requirements.	The Sitewide CERCLA Quality Assurance Project Plan (SCQ), the Integrated Environmental Monitoring Plan (IEMP), and the following section of the Sitewide Excavation Plan: F.6.1 Plugging and Abandonment F.6.2 Monitoring Well Excavation

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
SOIL REMEDIATION						
CLOSURE OF UNDERGROUND STORAGE TANKS						
General Requirements OAC 1301:7-7-36 40 CFR §§280.61 through .66	Owner or operators of petroleum or hazardous substance underground storage tank (UST) systems must, in response to a confirmed release from the UST system, comply with abatement measures, site characterization, product removal, investigations for soil and groundwater cleanup, and corrective action plan, except for USTs excluded under 40 CFR §280.10(b) and UST systems subject to RCRA Subtitle C corrective action requirements under Section 3004(u) of RCRA, as amended.		Appl	✓	Risk-based closures are to be performed for USTs with media contamination as integrated with the CERCLA soil remediation activities.	Risk-based soil cleanup levels, known as FRLs, are established in the RODs. Following sections of the Sitewide Excavation Plan: 2.1.1.2 Underground Storage Tanks 2.2.6 UST Closure 4.0 Location-Specific Excavation Approaches App F Implementation of Construction
CLOSURE OF HAZARDOUS WASTE MANAGEMENT UNITS						
OEPA Closure Plan Review Guidance for RCRA Facilities (Interim Final) September 1, 1993	Federal Regulations of May 2, 1986 (50 FR 16422) and March 19, 1987 (52 FR 8704) modified the closure performance standard such that risk assessment, or what constitutes "decontamination" of a site, may be considered by EPA as a closure option. On December 8, 1988 (see OAC 3745-67-28), the OEPA adopted the equivalent of the EPA's March 19, 1987 regulations, clarifying that risk assessment may be a closure option. It is OEPA and its Division of Hazardous Waste Management (DHWM) practice to consider risk assessment/risk-based closure as a possible third option for closure for all types of units [hazardous waste management units (HWMUs) and solid waste management units (SWMUs)].		TBC	✓	Risk-based closures are to be performed for HWMUs with media contamination as integrated with the CERCLA soil remediation activities (see following entry).	Risk-based soil cleanup levels, known as FRLs, are established in the RODs. Following sections of the Sitewide Excavation Plan: 2.1.1.1 Hazardous Waste Management Units 2.2.5 HWMU Closure 4.0 Location-Specific Excavation Approaches App F Implementation of Construction

000229
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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
RCRA/CERCLA Integrated Closure Director's Final Findings and Orders (June 4, 1996) Section V.1	The Respondent ... shall comply with the closure regulations contained in OAC rules 3745-66-11(A) and (B), 3745-66-11(C) as applicable, 3745-66-14, and 3745-66-16 through 3745-66-20 as applicable for the HWMUs [hazardous waste management units] listed in Attachment A [to these Orders].		✓	✓	Pertinent to closures of HWMUs presented in Table 2-1 of the Sitewide Excavation Plan (derived from the DF&O's Attachment A) during the CERCLA soil remediation activities	See subsequent entries in this table for those OAC rules determined by the RODs as ARARs. While OAC 3745-66-11 and -14 are presented in the next two entries, entries for 3745-66-16 through -20 for post-closure are addressed in the subsequent Post-Closure presentation group of this table.
RCRA/CERCLA Integrated Closure Director's Final Findings and Orders (June 4, 1996) Section V.1	The Respondent ... shall comply with the closure regulations contained in OAC rules 3745-66-11(A) and (B), 3745-66-11(C) as applicable, 3745-66-14, and 3745-66-16 through 3745-66-20 as applicable for the HWMUs [hazardous waste management units] listed in Attachment A [to these Orders].		✓	✓	Pertinent to closures of HWMUs in preceding entry during the CERCLA soil remediation activities.	See preceding and subsequent entries.
Closure and Post-Closure Under Interim Standards Closure Performance Standard OAC 3745-66-11 [40 CFR §265.111]	The owner or operator shall close his facility or hazardous waste management unit (HWMU) in a manner that: (A) minimizes the need for further maintenance; (B) controls, minimizes, or eliminates, to the extent necessary to protect public health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and (C) complies with these closure requirements.	✓	Appl	Appl	Pertinent to closures of HWMUs during the CERCLA soil remediation activities; also cited in RCRA/CERCLA Integrated Closure DF&O @ V.1. **NOTE:** These requirements are the same as those for new hazardous waste facilities under OAC 3745-55-11 (40 CFR §264.111). **NOTE:** DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	Following sections of the Sitewide Excavation Plan: 2.1.1.1 Hazardous Waste Management Units 2.2.5 HWMU Closure 4.0 Location-Specific Excavation Approaches App F Implementation of Construction

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	CLOSURE OF HAZARDOUS WASTE MANAGEMENT UNITS, continued					
Closure and Post-Closure Under Interim Standards Disposal or Decontamination of Equipment, Structures and Soils OAC 3745-66-14 [40 CFR §265.114]	During the partial and final closure periods, all contaminated equipment, structures, and soils must be properly disposed of or decontaminated [to risk-based cleanup levels] [i.e., clean closed, have risk-based closure, or be closed in place], unless otherwise specified in: OAC 3745-66-97 Closure and Post-Closure Under Interim Standards: [Tank System] Closure and Post-Closure Care OAC 3745-67-28 Surface Impoundments: Closure and Post-Closure Care OAC 3745-67-58 Surface Impoundments: [Waste Piles] Closure and Post-Closure Care OAC 3745-67-80 Surface Impoundments: [Land Treatment Facility] Closure and Post-Closure Care OAC 3745-68-10 Landfills, Incinerators, Thermal Treatment, Miscellaneous Units: Closure and Post-Closure	✓	Appl	Appl	Pertinent to closures of the identified HWMUs during the CERCLA soil remediation activities; also cited in RCRA/CERCLA Integrated Closure DF&O @ V.1. **NOTE:** These requirements are the same as those for new hazardous waste facilities under OAC 3745-55-14 (40 CFR §264.114), with corresponding cross-references presented therein.	Risk-based soil cleanup levels, known as FRLs, are established in the RODs. Also see preceding entry.
Surface Impoundments: [Surface Impoundments] Closure and Post-Closure Care OAC 3745-67-28	At closure of a surface impoundment HWMU, the owner or operator must remove or decontaminate [to risk-based cleanup levels] all waste residues, contaminated waste containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate. If the owner or operator demonstrates that not all contaminated soils can be practically removed or decontaminated [to risk-based cleanup levels], he must close the HWMU and perform post-closure care in accordance with the closure and post-closure care requirements that apply to landfills under OAC 3745-66-10 to 3745-66-20 and OAC 3745-68-10 (40 CFR §264.310).		✓	✓	Pertinent to closure of surface impoundment HWMUs during the CERCLA soil remediation activities, as cited in a preceding entry. **NOTE:** These requirements are the same as those for new hazardous waste facilities under OAC 3745-56-28 (40 CFR §264.228).	See preceding.
Hazardous Waste New Facility Corrective Action, Closure and Post-Closure Requirements [Container Storage Area] Closure OAC 3745-55-78 [40 CFR §264.178]	At closure of a container storage area HWMU, the owner or operator must remove all hazardous waste and hazardous waste residues from the containment system. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or hazardous waste residues must be removed or decontaminated [to risk-based cleanup levels].	✓	R&A	✓	Pertinent to closures of container storage area HWMUs during the CERCLA soil remediation activities **NOTE:** There are no corresponding requirements for interim status hazardous waste facilities under OAC 3745-65, -66, or -67 (40 CFR Part 265).	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Landfills, Incinerators, Thermal Treatment, Miscellaneous Units: Closure and Post-Closure OAC 3745-68-10(A) [40 CFR §265.310(a)]	At final closure of a HWMU as a landfill ... the owner or operator must cover the HWMU ... with a final cover designed and constructed to: • provide long-term minimization of migration of liquids through the closed HWMU; • function with minimum maintenance; • promote drainage and minimize erosion or abrasion of the cover; • accommodate settling and subsidence so that the cover's integrity is maintained; and • have a permeability less than or equal to the permeability of any bottom liner system or natural subsoil present.	✓	R&A	✓	Pertinent to HWMUs that are "closed in place" — i.e., all contaminated soils can not practically be removed or decontaminated [to risk-based cleanup levels] — during the CERCLA soil remediation process. **NOTE:** DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs rather than close in-place (close as a landfill).	See preceding.

TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	CLOSURE OF HAZARDOUS WASTE MANAGEMENT UNITS, continued					
RCRA/CERCLA Integrated Closure Director's Final Findings and Orders (June 4, 1996) Section V.2 in lieu of Closure and Post-Closure Under Interim Standards Closure Plan; Amendment of Closure Plan OAC 3745-66-12	The Respondent ... are hereby exempted from complying with OAC rule 3745-66-12 for the HWMUs identified in Attachment A of these Orders, provided that the Respondent: a. Submits the documents contained in Attachment C [of these Orders] to Ohio EPA in accordance with the dates established pursuant to the ACA [Amended Consent Agreement]. Within one week after submitting these documents to Ohio EPA, the Respondent shall submit a cross-reference index which contains pertinent page and section identifications for each HWMU that is contained in the documents and said index shall be cumulative and reference all previous document locations. ... d. Implements the final remedies as reflected in the Records of Decision issued in accordance with the ACA.		✓	✓	Pertinent to closures of HWMUs listed in preceding entries (see Table 2-1 of the Sitewide Excavation Plan, derived from the DF&O's Attachment A) during the CERCLA soil remediation activities. DOE will submit the cross-reference index for the listed HWMUs accordingly.	Following sections of the Sitewide Excavation Plan: 2.1.1.1 Hazardous Waste Mangement Units 2.2.5 Hazardous Waste Management Unit Closure 3.3.1.3 Treatment, Special Handling and Disposal Options. 3.4.7 Certification Reports

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	RADIONUCLIDE CONCENTRATIONS					
Radiation Protection of the Public and the Environment DOE Order 5400.5 Chapter I (4) and Chapter II (2)	An "as low as reasonably achievable (ALARA)" process is to be used in planning and carrying out all DOE activities that have the potential to cause radiation exposure to the public. ALARA requires judgement with respect to what is reasonably achievable. Factors that relate to societal, technological, economic, and other public policy considerations shall be evaluated to the extent practicable. Factors to be considered, at a minimum, include: • Maximum dose to members of the public; • Collective dose to the population; • Alternative processes, such as alternative treatment of discharge streams, operating methods, or controls; • Doses for each process alternative; • Cost for each of the technological alternatives; • Examination of the changes in cost among alternatives; and • Changes in societal impact associated with process alternatives (e.g., differential doses from various pathways). Except for meeting requirements of NEPA, qualitative analyses are acceptable, in most instances, for ALARA judgements, especially when the potential doses are well below the dose limit. The bases for these judgements should be documented. More detailed analyses should be considered if the decision might result in doses that approach the limit.	TBC	TBC		In addition to the evaluations conducted as part of the CERCLA selection of remedy process [the short- and long-term risk assessments of the Comprehensive Remedial Action Risk Evaluation (CRARE) within the feasibility studies (FSs)], documentation of "equivalent evaluations" for environmental ALARA are performed in accordance with the "FEMP Environmental ALARA Plan" and retained as part of the site and project records. Also addressed through the approved selected remedy in the RODs. An ALARA goal is set in the OU5 ROD for the total uranium FRL.	Following sections of the Sitewide Excavation Plan: 2.1.3 Final Remediation Levels 2.1.5.2 Radiological Hot Spots 2.1.5.3 ALARA Requirements 2.2.2 Certifying FRL Attainment 2.2.3 Detection of and Criteria for Hot Spots 3.3.1.4 ALARA Implementa-tion 3.3.3 Precertifica-tion Activities 3.4.6 Implementa-tion Strategy for Hot Spot Criteria 3.4.7 Certification Report

TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	RADIONUCLIDE CONCENTRATIONS, continued					
Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, Subpart B— Standards for Cleanup of Land and Buildings Contaminated with Residual Radioactive Materials from Inactive Uranium Processing Sites 40 CFR §192.12(a) Subpart C— Implementation 40 CFR §192.20	Remedial actions shall be conducted so as to provide reasonable assurance that, as a result of residual radioactive materials, the concentration of radium-226 in land averaged over any area of 100 m^2 shall not exceed the background level by more than: • 5 pCi/g averaged over the first 15 cm of soil below the surface, and • 15 pCi/g, averaged over 15-cm-thick layers of soil more than 15 cm below the surface. Compliance with this requirement should be shown through measurements performed within the accuracy of currently available types of field and laboratory instruments in conjunction with reasonable survey and sampling procedures.	R&A	R&A	R&A	Met through the selection of FRLs based on risk assessment, followed by certification of cleanup. The selected remedy in the OU2 and OU5 RODs established more stringent clean-up levels for radium-226 of 1.7 pCi/g, as opposed to 5.0 pCi/g above background.	See preceding.
Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, Subpart C— Implementation 40 CFR §192.21(f) and §192.22(b)	Where radionuclides other than radium-226 and its decay product are present in sufficient quantity and concentration to constitute a significant radiation hazard from residual radioactive materials, remedial actions shall, in addition to satisfying the standards of Subpart A in 40 CFR §192.02 and Subpart B in 40 CFR §192.12 (both listed above), reduce other residual radioactivity to levels that are ALARA.	R&A	R&A	R&A	The approved selected remedy in the OU5 ROD set an ALARA goal for the total uranium FRL.	See preceding.
Postclosure Standards for Uranium and Thorium Mill Tailings, Subpart D— Standards for the Management of Uranium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended 40 CFR §192.32 (b)(2)	The requirements for the management of uranium byproduct materials after closure of a disposal area [40 CFR §192.32(b)(1)] shall not apply to any portion of a disposal site which contains a concentration of radium-226 in land, averaged over areas of 100 m^2, which, as a result of uranium byproduct material, does not exceed the background level by more than the limits specified in 40 CFR §192.12(a) (see above).	R&A	R&A	R&A		See preceding.

000235
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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Management of Thorium Mill Tailings, Subpart E— Standards for the Management of Thorium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended 40 CFR §192.40 - §192.42	The following are requirements for the management of thorium byproduct materials: • The provisions for the management of uranium byproduct material (40 CFR §192.32) shall apply to thorium byproduct material and: - Provisions applicable to the element uranium shall also apply to the element thorium - Provisions applicable to radon-222 shall also apply to radon-220 - Provisions applicable to radium-226 shall also apply to radium-228 With the concurrence of EPA, alternative provisions may be substituted for any of the above requirements provided the alternative provisions will provide at least an equivalent level of protection for human health and environment.	R&A	R&A	R&A		See preceding.
Radiation Protection of the Public and the Environment, DOE Order 5400.5 Chapter IV (4)(a)	Guidelines for residual concentrations of radionuclides other than thorium and radium shall be derived from the basic dose limits by means of an environmental pathway analysis using specific property data where available. Procedures for these derivations are given in *DOE/CH-8901*. Residual concentrations of radioactive material in soil are defined as those in excess of background concentrations averaged over an area of 100 m^2.	TBC			Considered in the development of the selected remedy in the OU2 and OU5 RODs.	See preceding.
Radiation Protection of the Public and the Environment, DOE Order 5400.5 Chapter IV (4)(a)(1) 10 CFR Part 834 (PROPOSED)	If the average residual concentration of radionuclides in any surface or below- surface area less than or equal to 25 m^2 exceeds the limit or guideline by a factor of $(100/A)^{0.5}$ [where A is the area (in square meters) of the region in which the concentrations are elevated], limits for "hot spots" shall also be developed and applied. Procedures for calculating these hot spots limits, which depend on the extent of the elevated local concentrations, are given in DOE/CH-8901. In addition, reasonable efforts shall be made to remove any source of radionuclide that exceeds 30 times the appropriate limit in the soil, irrespective of the average concentration in the soil.	TBC	TBC			See preceding.

RADIONUCLIDE CONCENTRATIONS, continued

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000236

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Radiation Protection of the Public and the Environment, DOE Order 5400.5 Chapter IV (4)(a)(2)(3) 10 CFR Part 834 (PROPOSED)	The generic guidelines for residual concentrations of radium-226, radium-228, thorium-230, and thorium-232 are: • 5 pCi/g, averaged over the first 15 cm of soil below the surface; and • 15 pCi/g, averaged over 15-cm-thick layers of soil more than 15 cm below the surface. These guidelines take into account ingrowth of radium-226 from thorium-230 and of radium-228 from thorium-232, and assume secular equilibrium. If both thorium-230 and radium-226, or both thorium-232 and radium-228, are present and not in secular equilibrium, the appropriate guideline is applied as a limit for the radionuclide with the higher concentration. If other mixtures of radionuclides occur, the concentrations of individual radionuclides shall be reduced so that either the dose for the mixture will not exceed the basic dose limit or the sum of the ratios of the soil concentration of each radionuclide to the allowable limit for that radionuclide will not exceed 1. Explicit formulas for calculating residual concentrations guidelines for mixtures are given in DOE/CH-8901.	TBC	TBC		Included as it is more restrictive than the federal standard in 40 CFR §192.02, .12(a), .20, .21(f), .22(b), .32(b)(2), .40-.42.	See preceding.
Guidelines for Residual Radioactive Material—Surface Contamination DOE Order 5400.5 Chapter IV (4)(d) 10 CFR Part 834 (PROPOSED)	These generic surface contamination guidelines are applicable to existing structures and equipment. These guidelines are generally consistent with standards of the NRC (1982) and functionally equivalent to Section 4, "Decontamination for Release for Unrestricted Use," of Regulatory Guide 1.86, but apply to nonreactor facilities. These limits apply to both interior equipment and building components that are potentially salvageable or recoverable scrap. If a building is demolished, the guidelines in paragraph IV (6)(a) are applicable to the resulting contamination in the ground.		TBC		Will be used for any process facility building or structures built and/or used for the remedial action, including the AWWT, soil staging, etc.	See preceding.

000237

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	LEAD CONCENTRATION					
Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, OSWER Directive # 9355.4-12 (July 14, 1994)	EPA recommends using 400 ppm soil lead as a screening level for lead in soil for residential scenarios at CERCLA sites and at RCRA Corrective Action sites. Residential areas with soil lead below 400 ppm generally require no further action. Site-specific preliminary remediation goals (PRGs) at CERCLA sites and media cleanup standards at RCRA corrective action facilities for residential land use are described.	TBC	TBC		The selected remedy in the OU2 and OU5 RODs established this value as the lead FRL.	Following section of the Sitewide Excavation Plan: 2.1.3 Final Remediation Levels
	PCB CONCENTRATION					
Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution In Commerce, And Use Prohibitions, Subpart A— Applicability, Definitions 40 CFR §761.3	PCB materials which appear at concentrations less than 50 ppm are excluded from the PCB disposal requirements in this regulation.	R&A	✓	R&A	Operable Unit 2 does not contain PCB materials which have a concentration greater than 50 mg/kg (ppm by weight).	Following sections of the Sitewide Excavation Plan: 2.5.8 Special Materials; 3.3.2.2 Special Materials; F.4.1 Materials Which Require Special Handling
Subpart G— PCB Spill Cleanup Policy, Requirements for PCB Spill Cleanup 40 CFR §761.125(c)	PCBs at a concentration of greater than 50 mg/kg (ppm by weight) are subject to TSCA decontamination requirements in 40 CFR §761.120(b). Soil in restricted access areas contaminated by a PCB spill shall be cleaned to 25 mg/kg PCBs [40 CFR §761.125(c)(3)(v)]. At such times as restricted access areas (other than outdoor electrical substations) are converted to another use, the spill site shall be cleaned up to the non-restricted access area requirements of 40 CFR §761.125(c)(4)(v). Soils in non-restricted access areas contaminated by a PCB spill shall be cleaned to 10 mg/kg PCBs, provided that the soil is excavated to a minimum depth of 10 inches. The excavated soil will be replaced with clean soil (i.e., containing less than 1 mg/kg PCBs), and the spill site will be restored (e.g., replacement of turf) [40 CFR §761.125(c)(4)(v)].		TBC	TBC	Soil containing PCBs will be excavated as necessary to attain FRLs; soil concentrations are expected to be less than 50 mg/kg PCBs. The OU5 ROD established FRLs for the PCBs Arochlor-1254 and Arochlor-1260 as 0.13 mg/kg.	Following section of the Sitewide Excavation Plan: 2.1.3 Final Remediation Levels
Subpart G— PCB Spill Cleanup Policy, Sampling Requirements 40 CFR §761.130	Criteria that the EPA uses to determine the adequacy of the cleanup of spills resulting from the release of regulated PCB materials at concentrations of ≥ 50 mg/kg. Applies to spills which occur after May 4, 1987.			TBC	Applies to spills of regulated PCB materials (i.e., those that have a concentration ≥ 50 mg/kg) that occurred after May 4, 1987.	See preceding

0332
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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	CERTIFICATION OF CLEANUP					
Methods for Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media EPA 230/02-89-042 NTIS PB89-234959 February 1989	This EPA guidance document describes methods for testing whether soil chemical concentrations at a site are statistically below a cleanup standard or ARAR. If it can be reasonably concluded that the remaining soil or treated soil at a site has concentrations that are statistically less than relevant cleanup standards then the site can be judged protective of human health and the environment.	TBC	✓			Following sections of the Sitewide Excavation Plan: 2.2.2 Certifying FRL Attainment 3.4 Certification App G Certification Design Rationale
RCRA/CERCLA Integrated Closure Director's Final Findings and Orders (June 4, 1996) Section V.4 in lieu of Closure and Post-Closure Under Interim Standards Certification of Closure OAC 3745-66-15	For the HWMUs identified in Attachment A of these Orders, the Respondent ... are hereby exempted from complying with OAC rule 3745-66-15 provided that they submit Remedial Action Reports for the HWMUs contained in operable units 1, 3, and 5 within 60 days from completion of remedial activities at each operable unit, which is determined by the U.S. EPA, in accordance with CERCLA. These Remedial Action Reports shall certify that the HWMUs contained in operable units 1 and 3 have been closed, and that the environmental media in operable unit 5 has been managed, in accordance with the final remedies contained in the Records of Decision and in accordance with the Director's closure performance standards. Attachment C [of these Orders] summarizes the documents that will be provided during remediation process. These CERCLA documents contain the substantive requirements of the RCRA and Ohio hazardous waste closure regulations.		✓	✓	Pertinent to closures of HWMUs listed in preceding entries (from Table 2-1 of the Sitewide Excavation Plan, derived from the DF&O's Attachment A) during the CERCLA soil remediation activities.	Following sections of the Sitewide Excavation Plan: 2.2.5 HWMU Closure 3.4 Certification 7.3 Certification Design Letter 7.4 Certification Report 7.5 Other Related Future Documents

000239
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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
IMPACTED MATERIAL MANAGEMENT						
	DEFINITIONS & GENERAL FACILITY STANDARDS					
Resource, Conservation, and Recovery Act 42 U.S.C. §6903 (27)	Solid waste means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities, but does not include source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954.	Appl	✓	✓		Following sections of the Sitewide Excavation Plan: 3.0 General Implementation Approach App F Implementation of Construction
Solid Waste and Infectious Waste Regulations, Definitions OAC 3745-27-01 (B)(40)	Solid wastes means such unwanted residual solid or semisolid material as results from industrial, commercial, agricultural, and community operations, *excluding earth or material from construction, mining, or demolition operations, or other waste materials of the type that would normally be included in demolition debris, nontoxic flyash, spent nontoxic foundry sand, and slag and other substances that are not harmful or inimical to public health*, and includes, but is not limited to, garbage, tires, combustible and noncombustible material, street dirt, and debris. Solid waste does not include any material that is an infectious waste or a hazardous waste. For the purpose of this definition, "semisolid material" does not contain liquids which can be readily released under normal climatic conditions, as determined by method 9095 (paint filter liquids test) in SW-846: "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods".	Appl	✓	✓		See preceding.
Solid Waste and Infectious Waste Regulations, Definitions OAC 3745-27-01 (B)(15) OAC 3745-27-30 (A), (E), (H) ORC 3734.021 (A)(1)(c), (d)	Infectious waste is defined by nine categories of waste including human blood specimens and blood products, sharp wastes used in the treatment or inoculation of human beings, and any other waste materials generated in the diagnosis, treatment, or immunization of human beings. A generator who places all sharp infectious wastes and all unused hypodermic needles, syringes, and scalpel blades into a "SHARPS" container before they are transported and who generates less than 50 lbs. of infectious wastes each month and does not hold a certificate of *registration as a generator of infectious wastes may transport and dispose of infectious wastes* in the same manner as solid wastes. Treated infectious wastes can be transported and disposed in the same manner as *noninfectious waste.* Infectious waste that is also radioactive shall be managed in accordance with applicable Ohio Department of Health and U.S. Nuclear Regulatory Commission regulations.	Appl	✓			See preceding.

000240

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Identification and Listing of Hazardous Waste, Definition of Hazardous Waste OAC 3745-51-03(A) [Identification and Listing of Hazardous Waste, Subpart A—General, Definition of Hazardous Waste 40 CFR §261.3(a)]	A solid waste is a hazardous waste, if: (1) it is not excluded from regulation as a hazardous waste under OAC 3745-51-04(B) [40 CFR §261.4(b)]; and (2)(a) it exhibits any of the characteristics of hazardous waste identified in OAC 3745-51-20 to 3745-51-24, with certain exceptions noted therein; or (2)(b) it is listed as hazardous waste in OAC 3745-51-31 to 3745-51-33 [40 CFR §§ 261.30 - 261.35]; or (2)(c) it is a mixture of solid and hazardous wastes; (2)(d) it is a mixture of hazardous wastes as defined in OAC 3745-51-03(A)(2)(a) to 3745-51-03(A)(2)(c) [three previous bullets in this entry] and source material, special nuclear material, or by product material, as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq., or other radionuclides. However, only the hazardous components of the mixture are subject to regulation for purposes of this [OAC 3745-51] chapter. (2)(e) Wastewater mixed with a RCRA F-listed spent solvent waste, whose concentration is less then the following *de minimis* levels before *or* at introduction to the headworks of a Clean Water Act-regulated system, *is not a listed hazardous waste*: 1 mg/L: carbon tetrachloride; tetrachloroethene; and trichloroethene. 25 mg/L: the remaining listed spent solvents.	Appl	✓	✓	This Hazardous Waste Mixture Rule Exclusion is pertinent to management of perched water and other remediation-generated wastewaters, particularly near the Fire Training Facility (HWMU 1) and Sludge Drying Beds (HWMU 41).	See preceding. Following section of the Sitewide Excavation Plan: 2.5.4 Perched Water
Identification and Listing of Hazardous Waste, Exclusions OAC 3745-51-04(B)(4) [Identification and Listing of Hazardous Waste, Subpart A—General, Exclusions 40 CFR §261.4(b)(4)]	The following are not hazardous wastes: fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels.	Appl	✓	✓		See preceding.

000241

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Identification and Listing of Hazardous Wastes, Requirements for Recyclable Materials OAC 3745-51-06(A)(3) [40 CFR §261.6]	The following recyclable materials are not subject to regulation under rules 3745-50-40 to 3745-50-62 or Chapters 3745-52 to 3745-57 and 3745-65 to 3745-69 of the Ohio Administrative Code [Parts 262 through 266 or 268, 270, or 124 of 40 CFR], and are not subject to the notification requirements of Chapter 3734 of the Ohio Revised Code [Section 3010 of RCRA]: (b) used batteries (or used battery cells) returned to a battery manufacturer for regeneration; (c) used oil that exhibits one or more of the characteristics of hazardous waste but is recycled in some other manner than being burned for energy recovery; (d) scrap metal.	✓	✓	Appl	Pertinent to remediation generated materials. Recycling of remediation generated materials may be conducted.	Operable Unit 3 Integrated RD/RA Work Plan
Termination of Operating Licenses for Nuclear Reactors Section C.4 Decontamination for Release for Unrestricted Use U.S. Nuclear Regulatory Commission Regulatory Guide 1.86 (June 1974)	A reasonable effort shall be made to eliminate residual surface radiological contamination and to achieve the acceptable surface contamination levels stated in this guide.	✓	✓	TBC	Pertinent to releasing to off-site any potentially radiologically-contaminated materials. Radiation surveys will be performed prior to releasing any potentially radiologically-contaminated materials off-site to demonstrate compliance with the surface contamination levels stated in this guide.	Operable Unit 1 Design Criteria Package
Identification and Listing of Hazardous Waste, Subpart A—General, Definition of Hazardous Waste 40 CFR §261.3	Debris means solid material exceeding a 60-mm particle size that is intended for disposal and that is a manufactured object, plant or animal matter, or natural geologic material.	✓	Appl	Appl	Applicable to hazardous debris that will be disposed of off-site.	Operable Unit 1 Design Criteria Package, and following sections of the Sitewide Excavation Plan: 1.3.2.4 Remediation Debris 2.5.10 Off-Site Shipments F.5.2 Off-Site Disposal

000242
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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
DEFINITIONS & GENERAL FACILITY STANDARDS, continued						
Land Disposal Restrictions, Subpart A—General, Definitions Applicable to This Part 40 CFR §268.2	Hazardous debris means debris that contains a listed hazardous waste, or that exhibits a characteristic of hazardous waste.	✓	Appl	Appl	"contains a listed hazardous waste" portion is not applicable to on-property disposal within a CAMU under the CAMU Rule as invoked under the OU5 ROD.	See preceding.
Hazardous Waste Regulations Contained-In Policy 58 FR 48092 (September 14, 1993) Proposed rule. 58 FR 59976 (November 12, 1993) Notice to extend comment. 59 FR 10778 (March 8, 1994) Clarification, partial withdrawal.	Hazardous soil means soil that contains RCRA hazardous waste(s) listed in Subpart D of 40 CFR Part 261, or that exhibits one or more of the characteristics of a hazardous waste as defined in Subpart C of 40 CFR Part 261. This proposed rule recommends contained-in determinations for hazardous debris, hazardous soil and other environmental media. Any person may petition the Regional Administrator to exclude, under 261.3(f)(2) or 261.3(g) of this chapter, hazardous debris and hazardous soil or other environmental media, including but not limited to groundwater, surface water, and sediment, from regulation as hazardous waste. The petition for a contained-in determination must include information sufficient to demonstrate that specific constituent concentrations in the hazardous debris, hazardous soil, or other environmental media to be excluded do not pose a hazard to human health and the environment at that site. (Such a petition is not necessary for remedial actions conducted pursuant to RCRA or CERCLA authorities provided that a similar determination is made by the Regional Administrator based on substantially equivalent information including public notice and comment requirements).		TBC	TBC	Will be considered for managing treated soil that is contaminated with RCRA waste.	Addressed in the selected remedy in the OU5 ROD. Following sections of the Sitewide Excavation Plan: 3.3 Remedial Action App F Implementation of Construction
Ohio Petroleum Contaminated Soil Policy OEPA Policy PP.01-03-200	The basis of the "contained in" policy is that environmental media, such as soil or groundwater, are not considered to be waste material. Because they are not a solid waste, the mixture rule, as set forth in OAC 3745-51-03, does not apply when they become contaminated with a listed hazardous waste but only contains the waste. The result of this policy is that if the waste constituents can be removed, the soil is no longer considered to contain a hazardous waste. Therefore, since soil is not a waste material it does not have to be de-listed in order for it to be used for its intended purpose. However, as long as the soil contains the waste material, it must be managed as a hazardous waste. If this concept is applied to petroleum-contaminated soil, the soil containing a petroleum hydrocarbon would not need to be managed as a solid waste if the contaminants were removed.	TBC	TBC		Allows for treated/clean soil to be used as backfill. Thus, any soil below FRLs can be backfilled or otherwise used as clean soil.	See preceding.
DEFINITIONS & GENERAL FACILITY STANDARDS, continued						

000243
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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Hazardous Waste Management System: General, Subpart B—Definitions 40 CFR §260.10	Remediation waste means all solid and hazardous waste, and all media (including groundwater, surface water, soils, and sediments) and debris, which contain listed hazardous wastes or which themselves exhibit a hazardous waste characteristic, that are managed for the purpose of implementing corrective action requirements under 40 CFR §264.101 and RCRA section 3008(h). For a given facility, remediation wastes may originate only from within the facility boundary, but may include waste managed in implementing RCRA sections 3004(v) or 3008(h) for releases beyond the facility boundary.	R&A	✓	✓	Under the Consent Agreement as amended in 1991 (a.k.a., the ACA), remediation at the FEMP is conducted under the authorities of CERCLA as well as RCRA sections 3004(v) and 3008(h).	Following sections of the Sitewide Excavation Plan: 1.3.2.1 Soil and Sediment 1.3.2.6 Corrective Action Management Unit Rule 2.1 Remediation Drivers 2.2.1 Demonstrating OSDF WAC Attainment
CERCLA Compliance with Other Laws Manual Section 2.7	Placement/disposal of waste does not occur under the following circumstances: • waste is consolidated within a unit (including an area of contamination that can be viewed as a single unit); • waste is capped in place, including grading prior to capping; • waste is treated in situ; and • waste is processed within the unit in order to improve its structural stability for closure or for movement of equipment over the area.	TBC	✓	TBC	See following entry on the Corrective Action Management Unit.	See following entry.

000244

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Corrective Action Management Unit Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subpart S- 40 CFR §264.552 (58 FR 865829, February 16, 1993)	For the purpose of implementing remedies under Sec. 264.101 or RCRA Section 3008(h), the EPA Regional Administrator may designate an area at the facility as a corrective action management unit (CAMU). One or more CAMUs may be designated at a facility under the following conditions: 1) Emplacement of remediation wastes into or within a CAMU does not constitute land disposal of hazardous wastes. 2) Consolidation or emplacement of remediation wastes into or within a CAMU does not constitute creation of a unit subject to minimum technology requirements. 3) The CAMU shall facilitate the implementation of reliable, effective, protective, and cost-effective remedies. 4) Waste management activities associated with the CAMU shall not create unacceptable risks to humans or to the environment resulting from exposure to the wastes. 5) The CAMU shall include uncontaminated areas of the facility only if including such areas for the purpose of managing remediation waste is more protective than management of such wastes at contaminated areas of the facility. 6) Areas within the CAMU, where wastes remain in place after closure of the CAMU, shall be managed and contained so as to minimize future releases, to the extent practicable. 7) The CAMU shall expedite the timing of remedial activity implementation, when appropriate and applicable. 8) The CAMU shall enable the use, when appropriate, of treatment technologies (including innovative technologies) to enhance the long-term effectiveness of remedial actions by reducing the toxicity, mobility, or volume of wastes that will remain in place after closure of the CAMU. 9) The CAMU shall, to the extent practicable, minimize the land area of the facility upon which wastes will remain in place after closure of the CAMU. The owner/operator shall provide sufficient information to enable the Regional Administrator to designate a CAMU in accordance with the criteria in Sec. 264.552. **Note:** RCRA regulated units (HWMUs) within a CAMU are fully subject to RCRA closure regulations.	R&A	Appl	R&A	Per the selected remedy in the OU5 ROD: • the FEMP property (bounded by its property boundaries) is designated as a CAMU; • consolidation or management of on-site remediation wastes into or within the CAMU does not constitute creation of a unit subject to minimum technology requirements (MTRs) [OAC 3745-68-101 and 40 CFR §265.301(a)] and does not invoke land disposal restrictions (LDRs)[OAC 3745-59 and 40 CFR §§268.40 through .44].	Section 9.1.8 of the OU5 ROD, and following section of the Sitewide Excavation Plan: 1.3.2.6 Corrective Action Management Unit Rule

000245

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
DEFINITIONS & GENERAL FACILITY STANDARDS, continued						
Generator Standards, Hazardous Waste Determination OAC 3745-52-11(A) through (F)	A person who generates a solid waste must determine if that waste is a hazardous waste using the following method:	✓	R&A	R&A		Following sections of the Sitewide Excavation Plan: 2.1.1 RCRA 2.1.2 Waste Acceptance Criteria 3.1 Predesign Investigation 3.3.1 Implementation of Construction, Excavation, and Material-handling Activities 3.3.2 Impacted Materials Handling and Tracking 3.6 Record Keeping and Information Management
[Standards Applicable to Generators of Hazardous Waste, Subpart A—General, Hazardous Waste Determination 40 CFR §262.11]	1) First determine if the waste is excluded from regulation (not a solid waste) under OAC 3745-51-04 (40 CFR §261.4).					
	2) If the waste is not excluded from regulation, then determine if the waste is listed as a waste ("listed waste") in OAC 3745-51-30 to 3745-51-33 (Subpart D of 40 CFR Part 261).				Not pertinent for on-site disposal because of the CAMU rule (see preceding entry); pertinent for off-site treatment or disposal.	See preceding entry, and following sections of the Sitewide Excavation Plan: 2.5.10 Off-Site Shipments F.5.2 Off-Site Disposal

000246

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	3) For purposes of complying with OAC 3745-59 (40 CFR Part 268), or if the waste is not a "listed waste" per step 2 above, then determine if the waste is a "characteristic waste" as identified in OAC 3745-51-20 through 3745-51-24 (Subpart C of 40 CFR Part 261), by either (a) testing the waste using appropriate methods, or (b) applying knowledge of the hazardous characteristic of the waste in light of the materials or processes used ("process knowledge").				Per the RODs, pertinent only to the following areas: In OU2: approx. 300 cubic yards of lead-containing soil in the South Field Firing Range. In OU5: 1) Abandoned sump west of Pilot Plant; 2) Area between KC-2 Warehouse and RR tracks; 3) Trap Range; 4) Paddy's Run streambank fill materials west of OU4's Silos 1-4; 5) Scrap Metal Pile area; and 6) Area north of maintenance building.	Sections 7.4 (@ p. 7-5), 9.1 (@ p. 9-2), and 10.2.2 (@ p. 10-4) of the OU2 ROD; Section 9.1.1 (@ p. 9-6) and Table 9-1 of the OU5 ROD
Interim [Status Hazardous Waste Facility] Standards —General Provisions, General Provisions OAC 3745-65-13 through -16 [Interim Status Hazardous Waste Facility Standards, Subpart B—General Facility Standards 40 CFR §§265.13 through .16]	Owners/operators of a facility must obtain chemical and physical analyses of a representative sample of each hazardous or nonhazardous waste to be treated, stored or disposed of at the facility prior to treatment, storage or disposal. At a minimum, the analysis must contain all the information which must be known to treat, store or dispose of the waste, and may include using existing published or documented data on the waste or on waste generated from similar processes ("process knowledge") [OAC 3745-65-13].	✓	R&A	R&A	Pertinent to management of hazardous waste.	Following sections of the Sitewide Excavation Plan: 3.3.2 Impacted Materials Handling and Tracking 4.0 Location-Specific Excavation Approaches F.5 Excavated Material Management
	The facility owner/operator must prevent the unknowing entry, and minimize the possibility of unauthorized entry, to the active portion of the facility unless certain conditions apply [OAC 3745-65-14].				Controls which limit access to the FEMP will remain in place throughout remediation activities.	F.2.1 Establishing Excavation Boundaries and Access Controls

DEFINITIONS & GENERAL FACILITY STANDARDS, continued

000247
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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	The facility operator must maintain and inspect all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing human health hazards. The frequency of inspection may vary by item, and should be based on the rate of possible deterioration of the equipment/item and the probability of an environmental or human health incident if the deterioration, malfunction, or operator error goes undetected [OAC 3745-65-15]. The facility operator must train personnel for procedures relevant to the positions in which they are employed [OAC 3745-65-16].					F.8 Remediation Maintenance Activities
Hazardous Waste Facility Environmental Impact ORC 3734.05(D)(6)(c)	A hazardous waste facility installation and operation permit shall not be approved unless it is proven that the facility represents the minimum adverse environmental impact, considering the state of available technology, the nature and economics of various alternatives and other pertinent considerations	✓	Appl	✓	**NOTE:** Incorrectly cited in RODs as OAC 3745.05(D)(6)(c).	Appendix H of OU2 FS, Appendix J of OU5 FS, and Appendix J of OU3 RI/FS.
Hazardous Waste Facility Minimum Risk ORC 3734.05(D)(6)(d)	A hazardous waste facility installation and operation permit shall not be approved unless it is proven that the facility represents the minimum risk of all the following: 1) contamination of groundwater and surface water; 2) fires or explosions from treatment, storage, or disposal methods; 3) accidents during transportation; 4) impact to public health and safety; 5) air pollution; and 6) soil contamination.	✓	Appl	✓	**NOTE:** Incorrectly cited in RODs as OAC 3745.05(D)(6)(d).	OU2, OU5, and OU3 FS Reports and RODs. Also, see preceding.
Interim [Status Hazardous Waste Facility] Standards—General Provisions, Preparedness and Prevention OAC 3745-65-31 through -35, and -37 [Interim Status Hazardous Waste Facility Standards, Subpart C—Preparedness and Prevention 40 CFR §§265.31 through .35, and .37]	TSD facility operators must design, construct, maintain and operate facilities to minimize the possibility of fire, explosion or any unplanned sudden or non-sudden release of hazardous waste to air, soil, or surface water which might threaten human health or the environment.	✓	R&A	R&A		See two preceding entries. For waste that is dispositioned for off-site disposal, see the Operable Unit 1 Design Criteria Package.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Interim [Status Hazardous Waste Facility] Standards—General Provisions. Contingency Plan and Emergency Procedures OAC 3745-65-51, -52, -55 and -56 [Interim Status Hazardous Waste Facility Standards, Subpart D—Contingency Plan and Emergency Procedures 40 CFR §265.51, .52, .55 and .56]	Each facility operator must have a contingency plan designed to minimize hazards to human health and the environment due to fires, explosions, or any unplanned releases of hazardous waste constituents to air, soil or surface/groundwater.	✓	R&A	R&A	Pertinent to on-site facilities that treat, store, or dispose of hazardous waste.	FEMP Emergency Plan (PL-3020); all HWMUs identified in Table 2-1 of the Sitewide Excavation Plan (and the subset identified previously in this table) are addressed in Section G: Contingency Plan of the RCRA Part B Permit Application. Also, see three preceding entries. For waste that is dispositioned for off-site disposal, see the Operable Unit 1 Design Criteria Package.
Hazardous Waste Incinerators [and Miscellaneous Units]. Environmental Performance Standards OAC 3745-57-91 and -92 [Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subpart X—Miscellaneous Units, 40 CFR §§264.601 through .603]	Prevention of any release that may have adverse effects on human health or the environment includes, but is not limited to: A. Migration of waste constituents in the groundwater or subsurface environment. B. Migration of waste constituents in surface water, or wetlands or on the soil surface. C. Migration of waste constituents in the air. Monitoring, tests, analytical data, inspections, response, and reporting procedures and frequencies must ensure compliance with pertinent portions of the OAC.	✓	R&A	✓	Pertinent to on-site facilities that treat, store, or dispose of hazardous waste in miscellaneous units unless the CAMU Rule is applied.	See preceding.

000249
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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Radioactive Waste Management DOE Order 5820.2A Chapter III (3)(d)	Low-level waste shall be characterized with sufficient accuracy to permit proper segregation, treatment, storage, and disposal. This characterization shall ensure that, upon generation after processing, the actual physical and chemical characteristics and major radionuclide content are recorded and known during all stages of the waste management process. Waste characterization data shall be recorded on a waste manifest and shall include: • the physical and chemical characteristics of the waste; • volume of the waste (total of waste and any solidification or absorbent media); • weight of the waste (total of waste and any solidification or absorbent media); • major radionuclides and their concentrations; and • packaging date, package weight, and external volume.	TBC	✓	TBC	The CERCLA RI/FS process established the nature and extent of contamination at the FEMP. During excavation, monitoring will be performed in accordance with of the Sitewide Excavation Plan and individual IRDPs, and results will be documented in order to determine if impacted material meets the OSDF WACs or offsite WACs. These sources of characterization information (RI/FS sampling, pre-design investigations, FRL attainment, WAC attainment) will provide the required manifest information.	Addressed throughout the CERCLA RI/FS and selection of remedy process, culminated in the OU2, OU5 and OU3 RODs; OSDF Impacted Materials Placement Plan; following section of the Sitewide Excavation Plan: 3.3.2 Impacted Materials Handling and Tracking

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PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Waste Treatment DOE Order 5820.2A Chapter III (3)(f)	Waste treatment techniques such as incineration, shredding, and compaction to reduce volume and provide more stable waste forms shall be implemented as necessary to meet performance requirements. Use of waste treatment techniques to increase the life of the disposal facility and improve the long-term facility performance, by improved site stability and reduction of infiltrating water, is required to the extent it is cost effective. The development of large scale waste treatment facilities shall be supported by the appropriate National Environmental Policy Act documentation. Operation of waste treatment facilities shall be supported by adequate documentation.	TBC	TBC	TBC	Based upon CERCLA RI/FS data, the majority of the impacted material from OU2, OU5 & OU3 will meet the OSDF WACs and thus the performance objectives of the OSDF & DOE Order 5820.2A without treatment. This has been demonstrated through the modeling performed in the FSs to establish the OSDF WACs. Two categories of impacted materials may need to be treated before disposal. Toxicity characteristic soil from seven areas will be quantified & treated to the extent necessary to remove the toxicity characteristic that cause them to be regulated as hazardous. Physical sizing & treatment as per the OSDF Impacted Material Placement Plan will be conducted as needed on debris for proper waste placement and stability within the OSDF. Some physical treatment might also be necessary for the sludge from the OU2 Lime Sludge Ponds to decrease the moisture content before placement into the OSDF.	Addressed throughout the CERCLA RI/FS and selection of remedy process, culminated in the OU2, OU5 and OU3 RODs; OSDF Impacted Materials Placement Plan; following sections of the Sitewide Excavation Plan: 1.3.2.7 RCRA Characteristic Waste Disposal 2.1.1.3 Toxicity Characteristic Hazardous Wastes 3.3.2 Impacted Materials Handling and Tracking F.5 Excavated Material Management

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TABLE [illegible]2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEFINITIONS & GENERAL FACILITY STANDARDS, continued					
Radioactive Waste Management DOE Order 5820.2A Chapter III (3)(g)	The volume of waste and number of shipments of low-level wastes shall be minimized and the shipments will be conducted based on plans developed by field organizations. Generators shall provide an annual forecast in the third quarter of the fiscal year to the field organizations managing the off-site disposal facility to which the waste is to be shipped. Generators must receive advance approval from the receiving facility and shall certify prior to shipment that waste meets the receiving facility waste acceptance criteria. The certification program shall be auditable and able to withstand independent review.	TBC	TBC	TBC	The volume of impacted material to be disposed onsite in the OSDF will be minimized through a number of programs. First, extensive sampling has been performed during the CERCLA RI/FS process and the extent of excavation has been established using this data. Combined with the sampling/monitoring that will be performed during excavation in accordance with Section 3.3 of the Sitewide Excavation Plan and individual IRDPs, this will confirm that only impacted materials are excavated and sent to disposal. Compliance with the FEMP Pollution Prevention and Waste Minimization Awareness Plan will minimize the amount of low-level waste (i.e., equipment and personal protective equipment) generated during remediation.	FEMP Pollution Prevention and Waste Minimization Awareness Plan; also see preceding.
Control of Residual Radioactive Material DOE Order 5400.5 Chapter IV (6)(b) 10 CFR Part 834 (PROPOSED)	Interim storage must provide: 1) Control and stabilization features shall be designed to provide, to the extent reasonably achievable, an effective life of 50 years with a minimum life of at least 25 years.	✓	TBC		The selected remedies are for a permanent remedy, not for interim storage; any short-term management of impacted material to be employed is to facilitate implementation of the permanent remedy.	The approved selected remedy in the OU2 and OU5 RODs, associated remedial design documents (i.e., IRDPs).
	2) Controls shall be designed such that radon-222 concentrations in the atmosphere above facility surfaces or openings in addition to background levels, will not exceed: (a) 100 pCi/L at any given point; (b) An annual average concentration of 30 pCi/L over the facility site; and (c) An annual average concentration of 3 pCi/L at or above any location outside the facility site. (d) Flux rates from the storage of radon producing wastes shall not exceed 20 pCi/m²/sec, as required by 40 CFR Part 61.					

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	3) Controls shall be designed such that concentrations of radionuclides in the groundwater and quantities of residual radioactive material will not exceed applicable federal or state standards.					Section 5.0 of the Sitewide Excavation Plan, for environmental controls to be implemented during remediation.
	4) Access to a property and use of on-site material contaminated by residual radioactive material should be controlled through appropriate administrative and physical controls such as those described in 40 CFR Part 192. These control features should be designed to provide, to the extent reasonable, an effective life of at least 25 years.					Section 3.0 and Appendix F of the Sitewide Excavation Plan and IRDPs, for access controls to be implemented during remediation.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	MANAGEMENT OF LOW-LEVEL RADIOACTIVE MATERIAL					
Low-level Radioactive Waste Generation DOE Order 5820.2A Chapter III (3)(c)	Technical and administrative controls shall be directed to reducing the gross volume of waste generated and/or the amount of radioactivity requiring disposal. Waste reduction efforts shall include consideration of process modification, process optimization, materials substitution, and decontamination. All DOE low-level waste generators shall establish auditable programs to assure that the amount of low-level waste generated and/or shipped for disposal is minimized. Each DOE low-level waste generator shall separate uncontaminated waste from low-level waste to facilitate cost-effective treatment and disposal. Each DOE low-level waste generator preparing a design for a new process or process change shall incorporate principles into the design that will minimize the generation of low-level waste.	TBC	TBC	TBC	Implementation of the FEMP Pollution Prevention and Waste Minimization Awareness Plan will confirm that all newly generated waste is minimized during remediation. Additionally, excavation controls such as rapid test methodology and additional laboratory sampling will be implemented to confirm that only impacted material with contamination that is potentially above the FRLs is being excavated and sent to disposal. Physical sampling of the impacted materials and/or rapid test method methodology will also confirm that only material that exceeds the OSDF WAC is sent offsite for disposal.	Addressed throughout the CERCLA RI/FS and selection of remedy process, culminated in the OU2, OU5 and OU3 RODs; also, FEMP Pollution Prevention and Waste Minimization Awareness Plan.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	MANAGEMENT OF HAZARDOUS REMEDIATION WASTE					
Identification and Listing of Hazardous Waste, Residues of Hazardous Waste in Empty Containers OAC 3745-51-07(A) &(B) [Identification and Listing of Hazardous Waste, Subpart A—General, Residues of Hazardous Waste in Empty Containers 40 CFR §261.7]	Any hazardous waste remaining in either an empty container or an inner liner removed from an empty container is not subject to regulation under 40 CFR Parts 261 through 265 (RCRA requirements). A container is empty if: 1) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container (e.g., pouring, pumping, and aspirating); and 2) No more than 2.5 cm (1 inch) of residue remains on bottom of the container or inner liner; or 3) No more than 3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gal. in size, or no more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110 gal. in size.	✓	R&A	Appl	Pertinent when containerizing: soil contaminated by RCRA waste; any treatment residues exhibiting RCRA characteristics including soil decontamination residues.	Following sections of the Sitewide Excavation Plan: 2.5.8 Special Materials 3.3.2.2 Special Materials App F Implementation of Construction

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
MANAGEMENT OF HAZARDOUS REMEDIATION WASTE, continued						
Closure and Post-Closure Under Interim Standards, Condition of Containers OAC 3745-66-71 Compatibility of Containers OAC 3745-66-72 Management of Containers OAC 3745-66-73 Inspections OAC 3745-66-74 Special Requirements for Ignitable or Reactive Waste OAC 3745-66-76 Special Requirements for Incompatible Wastes OAC 3745-66-77 [Interim Status Standards, Subpart I—Use & Management of Containers, 40 CFR §§265.171 through .174, .176 and .177]	If a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or begins to leak, the owner or operator must transfer the hazardous waste from this container to a container that is in good condition or manage the waste in some other way that complies with this requirement.	✓	R&A	Appl	Pertinent to handling containers holding environmental media contaminated with RCRA waste.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
[New Facilities] Corrective Action, Closure and Post-Closure Requirements Containment OAC 3745-55-75 [Interim Status Hazardous Waste Facility Standards, Subpart I—Use & Management of Containers 40 CFR §§265.175(a) through (c)]	A containment system for RCRA container storage areas must be designed and operated to provide: 1) A sufficiently impervious base, which is sloped to collect any leaking liquids. 2) Sufficient capacity to contain liquids. 3) Prevention of run-on into the containment system. 4) A sump to prevent overflow of the collection system. Storage areas for containers holding only wastes that do not contain free liquids need not have a containment system, provided that: 1) The storage area is sloped or is otherwise designed and operated to drain and remove liquid resulting from precipitation, or 2) The containers are elevated or are otherwise protected from contact with accumulated liquid.	✓	R&A	Appl	Pertinent to handling soil contaminated with RCRA listed or characteristic hazardous waste. A Part B Permit Application for RCRA storage has been submitted to the OEPA.	See preceding.
[New Facilities] Surface Impoundments, Waste Piles, and Tanks [Waste Piles] Design and Operating Requirements OAC 3745-56-51(A) through (F)	A waste pile used to store or treat hazardous waste must have: 1) A liner that is designed, constructed, and installed to prevent any migration of waste out of the pile into the adjacent subsurface soil or groundwater or surface water at any time during the active life (including the closure period) of the waste pile, and 2) A leachate collection and removal system immediately above the liner that is designed, constructed, maintained, and operated to collect and remove leachate from the pile.	✓	R&A	✓	Pertinent to on-site hazardous waste piles used for longer than 90 days unless the CAMU Rule is applied.	Addressed through remedial design documents (IRDPs).
	The owner/operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-yr storm and manage a runoff management system to collect and control at least the water volume resulting from a 24-hr, 25-yr storm.	✓	R&A	✓		
	If the pile contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the pile to control wind dispersal.	✓	R&A	✓		FEMP Fugitive Dust Control BAT Determination, and Section 5.1.2.2 and Appendix F of the Sitewide Excavation Plan

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
MANAGEMENT OF HAZARDOUS REMEDIATION WASTES, continued						
Monitoring and Inspection OAC 3745-56-54(A) and (B)	During construction or installation, liners and cover systems must be inspected for uniformity, damage, and imperfections.	✓	R&A	✓		
	Collection and holding facilities associated with run-on and runoff control system must be inspected weekly and be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.	✓	R&A	✓		FEMP Stormwater Pollution Prevention Plan (RM-0039), and Appendix F of the Sitewide Excavation Plan
Special Requirements for Ignitable or Reactive Waste OAC 3745-56-56(A) and (B) Special Requirements for Incompatible Wastes OAC 3745-56-57(A), (B) and (C) [Subpart L—Waste Piles, 40 CFR §§264.251 through .259]	Ignitable, reactive, or incompatible waste must not be added to a waste pile, unless specified in OAC 3745-56-56(A) and (B) or 57(A), (B) and (C).	✓	R&A	✓	The CERCLA RIs did not find evidence of ignitive or reactive material on-site. Impacted and non-impacted materials management will be segregated and managed in separate piles, based upon intended disposition (waste acceptance criteria).	Following sections of the Sitewide Excavation Plan: 3.3.2 Impacted Materials Handling and Tracking 4.0 Location-Specific Excavation Approaches F.5 Excavated Material Management
Temporary Units Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subpart S- 40 CFR §264.553 (a), (b) (58 FR 865829, February 16, 1993)	For temporary tanks and container storage areas used for treatment or storage of remediation wastes during remedial activities, the Regional Administrator may determine that a design, operating, or closure standard applicable to such units may be replaced by alternative requirements which are protective of human health and the environment. Any temporary unit to which alternative requirements are applied shall be: • located within the facility boundary; and • used solely for treatment or storage of remediation wastes.	R&A	✓	R&A	Pertinent to short-term management/storage of impacted materials during the CERCLA soil remediation activities. IRDPs can designate and utilize temporary units to facilitate remediation within the already designated CAMU. Alternative requirements which are protective of human health and the environment may be used in lieu of the design, operating, or closure requirements that would otherwise apply to such units under RCRA.	Following section of the Sitewide Excavation Plan: 1.3.2.6 CAMU Rule

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subpart DD—Containment Building 40 CFR §§264.1100 through .1102 57 FR 37194 (August 18, 1992)	The owner or operator is not subject to the definition of land disposal in RCRA Section 3004(k) provided that the unit: 1) Is a completely enclosed, self-supporting structure that is designed and constructed of synthetic materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit, and to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes to which they are exposed, climatic conditions, and the stresses of daily operation, including the movement of heavy equipment within the unit and contact of such equipment with containment walls; 2) Has a primary barrier for management of solids, in addition to a liquid collection system and secondary containment for management of liquids. 3) Has controls sufficient to prevent fugitive dust emissions to meet the no visible emission standard in Sec. 264.1101(c)(1)(iv); and 4) Is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel or equipment. At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components, contaminated subsoil, and structures and equipment contaminated with waste and leachate, and handle them as a hazardous waste.	√	R&A	R&A	Pertinent to excavated RCRA hazardous soil and sediment that may require short-term management/ storage during the CERCLA soil remediation activities. DOE does not anticipate utilizing containment buildings.	Following sections of the Sitewide Excavation Plan: 3.3.2 Impacted Materials Handling and Tracking 4.0 Location-Specific Excavation Approaches F.5 Excavated Material Management

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	MANAGEMENT OF HAZARDOUS REMEDIATION WASTE, continued					
Procedures for Planning and Implementing Offsite Response Actions ("The CERCLA Offsite Rule") 40 CFR §300.400	Materials from remediation of a CERCLA site ("CERCLA waste") may only be transferred to offsite facilities that are in compliance with Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), or other applicable federal and state requirements. Only U.S. EPA has the authority to determine whether the facility in question meets the acceptability criteria and is acceptable for receiving CERCLA waste from offsite. A determination of acceptability for a potential receiving facility is to be made in advance (prior to initiating transportation offsite, and optimally prior to making offsite treatment/ storage/disposal contract arrangements). Materials covered under this rule ("CERCLA waste") are any hazardous substance, pollutant, or contaminant as defined under CERCLA sections 101(14) and 101(33). Samples of waste sent to a laboratory for characterization are exempt from the rule, as are certain treatability study waste. The receiving facility must meet compliance and release criteria presented therein. Facility is defined as the receiving unit(s) that directly stores, treats, or disposes of the CERCLA waste. Non-receiving units at the facility need not be in compliance in order for the U.S. EPA to determine that the receiving unit meets acceptance criteria. U.S. EPA may deem a facility acceptable even if certain minor violations have occurred at the facility. If a facility does not meet the criteria for receiving CERCLA wastes, the rule presents notification, determination, appeal/review and reinstatement procedures.	✓	✓	Appl	Pertinent to preparation of materials for off-site disposition.	Operable Unit 1 Design Criteria Package, and following sections of the Sitewide Excavation Plan: 2.5.10 Off-Site Shipments F.5.2 Off-Site Disposal
[Hazardous Waste] Generator Standards OAC 3745-52-20 through -23, and -30 through -33 [40 CFR §§262.20 through .23, and .30 through .33]	Before transporting hazardous waste or offering hazardous waste for transportation off-site ("pre-transport"), for either treatment or disposal, general requirements for the generator require a manifest [OAC 3745-52-20 through -23] in accordance with the requirements specified therein. Pre-transport requirements also include appropriate packaging [OAC 3745-52-30], labeling [OAC 3745-52-31], marking [OAC 3745-52-32], and placarding [OAC 3745-52-33], in accordance with the requirements specified therein.	✓	Appl	Appl	Pertinent to preparation of RCRA hazardous waste (and mixed waste) for off-site treatment and/or disposal.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Implementation of the United Nations Recommendations, International Maritime Dangerous Goods Code, and the International Civil Aviation Organization's Technical Instructions 59 FR 67390 (December 29, 1994) as amended by 60 FR 26796 (May 18, 1995)	These rules (final rule was effective October 1, 1995) comprehensively revise the Hazardous Materials Regulations (HMR), 49 CFR Parts 171-173, 177, and 178, with respect to hazard communication, classification, and packaging requirements based on United Nations recommendations.	✓	✓	Appl	These Hazardous Materials Regulations are requirements embedded in both the state (OAC) and federal (CFR) regulations in both the generator standards (preceding entry) and the transporter standards (subsequent entry).	See preceding generator standards entry and subsequent transporter standards entry.
[Hazardous Waste] Land Disposal Restrictions OAC 3745-59 [Land Disposal Restrictions, Subpart D—Treatment Standards 40 CFR §§268.40 through .44]	A restricted hazardous waste may be land disposed only if: 1) An extract of the waste or of the treatment residue of the waste does not exceed the value shown in 40 CFR §268.41. 2) It is treated using a technology specified in 40 CFR §268.42(a) or an equivalent treatment method. 3) The constituent concentrations in the waste or treatment residue of the waste do not exceed the value shown in 40 CFR §268.43.	✓	Appl	Appl	Not applicable to on-property disposal within a CAMU under the CAMU Rule as invoked under the OU5 ROD. Applicable to those RCRA hazardous wastes that will be dispositioned off site.	See three preceding entries.
Land Disposal Restrictions, Subpart D—Treatment Standards, Treatment Standards Expressed as Concentrations in Waste Extract 40 CFR §268.41	The maximum concentration of lead (5.0 mg/L) may not be exceeded whether it is the extract of a waste or waste treatment residual.	R&A	Appl		Not applicable to on-property disposal within a CAMU under the CAMU Rule as invoked under the OU5 ROD. Applicable to those RCRA hazardous wastes that will be disposed of off-site.	See four preceding entries.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
MANAGEMENT OF HAZARDOUS REMEDIATION WASTE, continued						
Land Disposal Restrictions, Subpart D—Treatment Standards, Contaminated Debris 40 CFR §268.45	Hazardous debris must be treated before land disposal unless the EPA determines that the debris is no longer contaminated with hazardous waste or the debris is treated to the waste-specific treatment standard for the waste contaminating the debris. Provided the debris does not exhibit a RCRA characteristic it is not subject to regulation under 40 CFR 260, 261 to 266, 268, or 270 if: 1) The hazardous debris has been treated using one of the required extraction or destruction technologies specified in 40 CFR §268.45; or 2) The debris, considering the extent of contamination, is determined to no longer be contaminated with hazardous waste.	✓	Appl	Appl	Not applicable to on-property disposal within a CAMU under the CAMU Rule as invoked under the OU5 ROD. Applicable to those RCRA hazardous wastes that will be disposed of off-site.	See five preceding entries.
[Hazardous Waste] Transporter Standards OAC 3745-53-20 through -22, -30 and -31 [40 CFR §§263.20 through .22, .30 and .31]	General requirements for the transporter during transportation of hazardous waste for off-site treatment and/or disposal require acceptance and handling of hazardous waste and use of the manifest system [OAC 3745-53-20], compliance with the manifest [OAC 3745-53-21], and recordkeeping [OAC 3745-53-22], in accordance with the requirements specified therein. Appropriate response actions must be taken for any hazardous waste discharge during transportation [OAC 3745-53-30 and -31], in accordance with the requirements specified therein.	✓	Appl	Appl	Pertinent to transportation of RCRA hazardous wastes for off-site treatment and/or disposal.	See six preceding entries.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
MANAGEMENT OF PCB-TAINTED MATERIAL						
Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution In Commerce, And Use Prohibitions, Subpart D—Storage and Disposal, Disposal Requirements 40 CFR §761.60(a)(4)	Any nonliquid PCBs at concentrations 50 mg/kg or greater in the form of contaminated soil, rags, or other debris shall be disposed of in an incinerator which complies with 40 CFR §761.70, or in a chemical waste landfill which complies with 40 CFR §761.75.		Appl	Appl	Pertinent if soil or other material containing PCBs above 50 mg/kg is excavated. PCBs were detected in soil beneath the Fire Training Facility.	Following sections of the Sitewide Excavation Plan: 3.3.2 Impacted Materials Handling and Tracking 4.0 Location-Specific Excavation Approaches F.5 Excavated Material Management
Subpart D—[PCB] Storage and Disposal, Disposal Requirements 40 CFR §761.60(e)	Any person who is required to incinerate PCBs or PCB items under this subpart and who can demonstrate that an alternate method of destroying PCBs or PCB items can achieve a level of performance equivalent to the requirements under 40 CFR §761.70 may submit a written request to either the Regional Administrator or the Director, Exposure Evaluation Division, for an exemption from the incineration requirements of 40 CFR §§ 761.70 or 761.60. The applicant must show that the alternate method of destroying PCBs will not present an unreasonable risk of injury to health or the environment.		Appl	Appl	Pertinent only if PCB contaminated soil is greater than 50 mg/kg and is treated on-property using a method besides incineration. DOE neither currently anticipates any such material nor on-property treatment for any such material under the soil remediation projects.	See preceding entry, plus following sections of the Sitewide Excavation Plan: 2.5.10 Off-Site Shipments F.5.2 Off-Site Disposal
Subpart D—[PCB] Storage and Disposal, Storage for Disposal 40 CFR §761.65	This section applies to the design of storage areas to be used for later disposal of PCBs at concentrations of 50 ppm (mg/kg or mg/L) or greater.		Appl	Appl	Pertinent to storage of PCB-contaminated material at 50 ppm or greater. DOE does not currently anticipate any such material under the soil remediation projects.	See two preceding entries.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
POST-CLOSURE						
	DESCRIPTION OF POST-CLOSURE CARE					
[New Facilities Hazardous Waste] Surface Impoundments, Waste Piles, and Tanks, [Waste Piles] Post-Closure OAC 3745-56-58(B) [Subpart L—Waste Piles, 40 CFR §§264.251 through .259]	If, after removing or decontaminating all residues and making all reasonable effort to effect removal or decontamination of contaminated components, subsoil, structures and equipment, the owner/operator finds that not all contaminated subsoil can be practically removed or decontaminated, he must close the unit/facility and perform post-closure care in accordance with OAC 3745-57-10. NOTE: If clean (or risk-based) closure is performed, then post-closure care is not required.	✓	R&A		Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	Currently addressed in the OSDF Post-closure Care and Inspection Plan, which notes in its Prologue that it can be revised at a later date to expand the scope of coverage to encompass the entire FEMP site as needed. Will also be addressed in the Certification Report and Remedial Action Report — see following sections of the Sitewide Excavation Plan: 1.4.2 Related Documents 2.2.5 HWMU Closure 3.4.7 Certification Report 3.5.3.6 Postremediation/post-closure Care and Inspection 7.4 Certification Report 7.5 Other Related Future Documents
[New Facilities Hazardous Waste] Incinerators [and Miscellaneous Units], [Miscellaneous Units] Environmental Performance Standards OAC 3745-57-93 [Subpart X—Miscellaneous Units, 40 CFR §§264.601 through .603]	If a treatment or storage miscellaneous unit has contaminated soil or groundwater that cannot be completely removed or decontaminated during closure, the unit must also meet the requirements of OAC 3745-57-91 during the post-closure care period. The post-closure plan under OAC 3745-55-18 must specify the procedures that will be used to satisfy this requirement. A miscellaneous unit that is a disposal unit must be maintained in a manner that complies with OAC 3745-57-91 during the post-closure care period. NOTE: If clean (or risk-based) closure is performed, then post-closure care is not required.	✓	R&A		Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Closure and Post-Closure Under Interim Standards, Post-closure Care and Use of Property OAC 3745-66-17(A) [40 CFR §265.117(a)(2)]	Post-closure care of hazardous waste management units must begin after completion of closure of the unit and continue for 30 years after that date unless shortened by the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] in accordance with OAC 3745-66-18(G) (40 CFR §117(a)(2)). NOTE: If clean (or risk-based) closure is performed, then post-closure care is not required.	✓	Appl		NOTE: Identified in the OU5 ROD as applicable only to existing hazardous waste management units (HWMUs); also cited in RCRA/CERCLA Integrated Closure DF&O @ V.1. Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	See preceding.
Closure and Post-Closure Under Interim Standards, Post-closure Care and Use of Property OAC 3745-66-17(A)(1) [40 CFR §265.117(a)(1)]	Post-closure care...must consist of at least the following: • monitoring and reporting; and • maintenance and monitoring of waste containment systems. NOTE: If clean (or risk-based) closure is performed, then post-closure care is not required.	✓	✓	✓	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1. Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DESCRIPTION OF POST-CLOSURE CARE, continued					
Closure and Post-Closure Under Interim Standards, Post-closure Plan; Amendment of Plan OAC 3745-66-18(A)&(C)	The owner of a hazardous waste disposal unit shall have a written post-closure plan, which shall identify the activities that will be carried on after closure of each unit and the frequency of those activities, and include at least: • a description of the planned monitoring activities and frequencies at which they will be performed; • a description of the planned maintenance activities and frequencies at which they will be performed, to ensure (a) the integrity of the cap and final cover or other containment systems, and (b) the functioning of the monitoring equipment; and • the name, address and telephone number of the person or office to contact about the hazardous waste disposal unit or facility during the post-closure period. NOTE: If clean (or risk-based) closure is performed, then post-closure care is not required.	✓	✓	✓	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1. Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	See preceding.
	MODIFICATIONS TO POST-CLOSURE CARE PLAN OR PERIOD					
Closure and Post-Closure Under Interim Standards, Post-closure Plan; Amendment of Plan OAC 3745-66-18(D)	The owner may amend the post-closure plan any time during the active life of the facility or during the post-closure period. NOTE: If clean (or risk-based) closure is performed, then post-closure care is not required.	✓	✓	✓	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1. Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	See preceding.
Closure and Post-Closure Under Interim Standards, Post-closure Plan; Amendment of Plan OAC 3745-66-18(G)	The post-closure plan and length of the post-closure period may be modified any time prior to the end of the post-closure care period. A modification of the post-closure plan may include, where appropriate, the temporary suspension rather than permanent deletion of one or more post-closure care requirements. At the end of the specified period of suspension, the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] would then determine whether the requirements should be permanently discontinued or reinstated to prevent threats to human health and the environment. NOTE: If clean (or risk-based) closure is performed, then post-closure care is not required.	✓	✓	✓	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1. Only pertinent to those units where risk-based FRLs are not met. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	PROPERTY USE RESTRICTIONS					
Closure and Post-Closure Under Interim Standards, Post-closure Care and Use of Property OAC 3745-66-17© [40 CFR §265.117(c)]	Post-closure use of property on or in which hazardous waste remain after partial or final closure must never be allowed to disturb the integrity of the final cover, liner(s), or any other component of the containment system, or the function of the facility's monitoring systems, unless the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] approves otherwise. NOTE: If clean (or risk-based) closure is performed, then post-closure care is not required.	✓	Appl	✓	NOTE: Identified in the OU5 ROD as applicable only to existing hazardous waste management units (HWMUs); also cited in RCRA/CERCLA Integrated Closure DF&O @ V.I. DOE intends, and anticipates being able, to clean (risk-based) close all identified HWMUs.	Currently addressed in the OSDF Post-closure Care and Inspection Plan, which notes in its Prologue that it can be revised at a later date to expand the scope of coverage to encompass the entire FEMP site as needed.
Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings Subpart A— 40 CFR §192.02(a)	Controls of residual radioactive materials from inactive uranium processing sites shall be designed to be effective for up to 1,000 years, to the extent reasonably achievable, and in any case, for at least 200 years, and provide protection of groundwater.	R&A	R&A		Most pertinent to the design and closure of the On-Site Disposal Facility.	Addressed by selected remedies of OU2 and OU5 RODs in establishment of FRLs.
Long-Term Management of Residual Radioactive Material DOE Order 5400.5 Chapter IV (6)(d) 10 CFR Part 834 (PROPOSED)	Controls of residual radioactive materials from inactive uranium processing sites shall be designed to be effective for up to 1,000 years, to the extent reasonably achievable, and in any case, for at least 200 years, and provide protection of groundwater.		TBC			Addressed by selected remedies of OU2 and OU5 RODs in establishment of FRLs.
	For long-term management of uranium, thorium, and their decay products, access to a property and use of on-site materials contaminated by residual radioactive material should be controlled through appropriate administrative and physical controls such as those described in 40 CFR 192. These controls should be designed to be effective to the extent reasonable for at least 200 years.	TBC	TBC			
Control of Residual Radioactive Material Above the Guidelines DOE Order 5400.5 Chapter IV (6)	Residual radioactive material with concentrations above the generic guidelines (see chemical-specific requirements) shall be managed in accordance with Chapter II, Requirements for Radiation Protection of the Public and the Environment, and operational and control requirements.	TBC	✓			See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
Supplemental Limits and Exceptions for Residual Radioactive Material DOE Order 5400.5 Chapter IV (7)	If special specific property circumstances indicate that the concentration guidelines or authorized limits are not appropriate, supplemental limits or an exception may be requested to those guidelines or limits.	TBC	✓			See preceding.
Release of Property DOE Order 5400.5 Chapter II (5)	Real property (land and structures), personal property, materials, and equipment shall be released if the concentration of radioactivity is within the limits of residual radioactive contamination.	TBC	✓			See preceding.
POST-CLOSURE NOTICE/SURVEY PLAT						
Closure and Post-Closure Under Interim Standards, Survey Plat OAC 3745-66-16	The owner shall submit -- to the local zoning authority, or the authority with jurisdiction over local land use, and to the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] -- a survey plat, prepared and certified by a professional land surveyor, indicating the location and dimensions of landfill cells or other hazardous waste disposal units with respect to permanently surveyed benchmarks. The plat must contain a note, prominently displayed, which states the owner's obligation to restrict disturbance of the hazardous waste disposal unit in accordance with OAC 3745-66-17(C).	✓	✓	✓	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1.	Currently addressed in the OSDF Post-closure Care and Inspection Plan, which notes in its Prologue that it can be revised at a later date to expand the scope of coverage to encompass the entire FEMP site as needed.
Closure and Post-Closure Under Interim Standards, Post-closure Notices OAC 3745-66-19(A)	The owner shall submit -- to the local zoning authority, or the authority with jurisdiction over local land use, and to the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] -- a record of the type, location, and quantity of hazardous waste disposed of within each cell or disposal unit of the facility.	✓	✓	✓	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1.	See preceding.

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TABLE A-2 (Continued)
PERTINENT ARARs AND TBCs

Citation	Requirement	OU2 ROD	OU5 ROD	OU3 ROD	Remarks	Cross-Reference
	DEED NOTATION					
Closure and Post-Closure Under Interim Standards, Post-closure Notices OAC 3745-66-19(B)	The owner shall record, in accordance with state law, a notation on the deed of the facility property, or on some other instrument which is normally examined during title search, that will notify in perpetuity the potential purchasers of the property that: • the land has been used to manage hazardous wastes; • its use is restricted under the Ohio Administrative Code closure and post-closure rules; and • a survey plat and record of the type, location, and quantity of hazardous wastes disposed of within each cell or hazardous waste unit of the facility as required by OAC 3745-66-16 and OAC 3745-66-19(A) have been filed with the local zoning authority or th. the Ohio Director of Environmental Protection].	✓	✓	✓	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1.	Currently addressed in the OSDF Post-closure Care and Inspection Plan, which notes in its Prologue that it can be revised at a later date to expand the scope of coverage to encompass the entire FEMP site as needed. Will also be addressed in the NRRP.
Closure and Post-Closure Under Interim Standards, Post-closure Notices OAC 3745-66-19©	If the owner or any subsequent owner of the land upon which a hazardous waste disposal unit was located wishes to remove hazardous wastes and hazardous waste residues in satisfaction of the criteria in OAC 3745-66-17(C), the owner may request that the Director [of the OEPA, a.k.a. the Ohio Director of Environmental Protection] approve either: • the removal of the notation on the deed to the facility property or other instrument normally examined during title search; or • the addition of a notation to the deed or instrument indicating the removal of the hazardous waste.	✓	✓	✓	Cited in the RCRA/CERCLA Integrated Closure DF&O @ V.1.	See preceding.

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Appendix B

APPENDIX B

SURFACE WATER CALCULATIONS

Stormwater Drainage in the 3B/4B Excavation Area

The 3B/4B Excavation Area has been graded so that all runoff from the excavated area is drained to one of two collection points: Basin 4B1 and Basin 4B2. Total runoff was determined using TR-55 SCS Runoff Curve Method. Runoff volume was calculated for a ten year 24 hour storm.

Area 4B Drainage Areas

Ten Year Storm - Full Abstraction

BASIN	SUB AREA	SQ FT	ACRES	CN	10 YR	VOL (CF)	Vol (cyds)
4B1	SA I	1380852	31.70	0.91	0.216667	272257.99	10084
	4B1 TOTALS		31.7			272300	10080
4B2	SA II	661193	15.18	0.9	0.216667	128932.64	4775
	4B2 TOTALS		15.2			129000	4780

PUMPOUT for Basin 4B1

272300 Cubic Feet Required

1 CF = 7.48 GAL
1 CFS = 448.83 GPM

272300 X 7.48 = 2036804 GALLONS OF TOTAL RUNOFF

72 HOURS = 4320 MINS

2036804 / 4320 = 471.5 GPM RATE REQUIRED 580 GPM PROVIDED - OKAY

PUMPOUT for Basin 4B2

129000 Cubic Feet Required

1 CF = 7.48 GAL
1 CFS = 448.83 GPM

129000 X 7.48 = 964920 GALLONS OF TOTAL RUNOFF

72 HOURS = 4320 MINS

964920 / 4320 = 223.36 GPM RATE REQUIRED 230 GPM PROVIDED - OKAY

Stage Volume for Basin 4B1

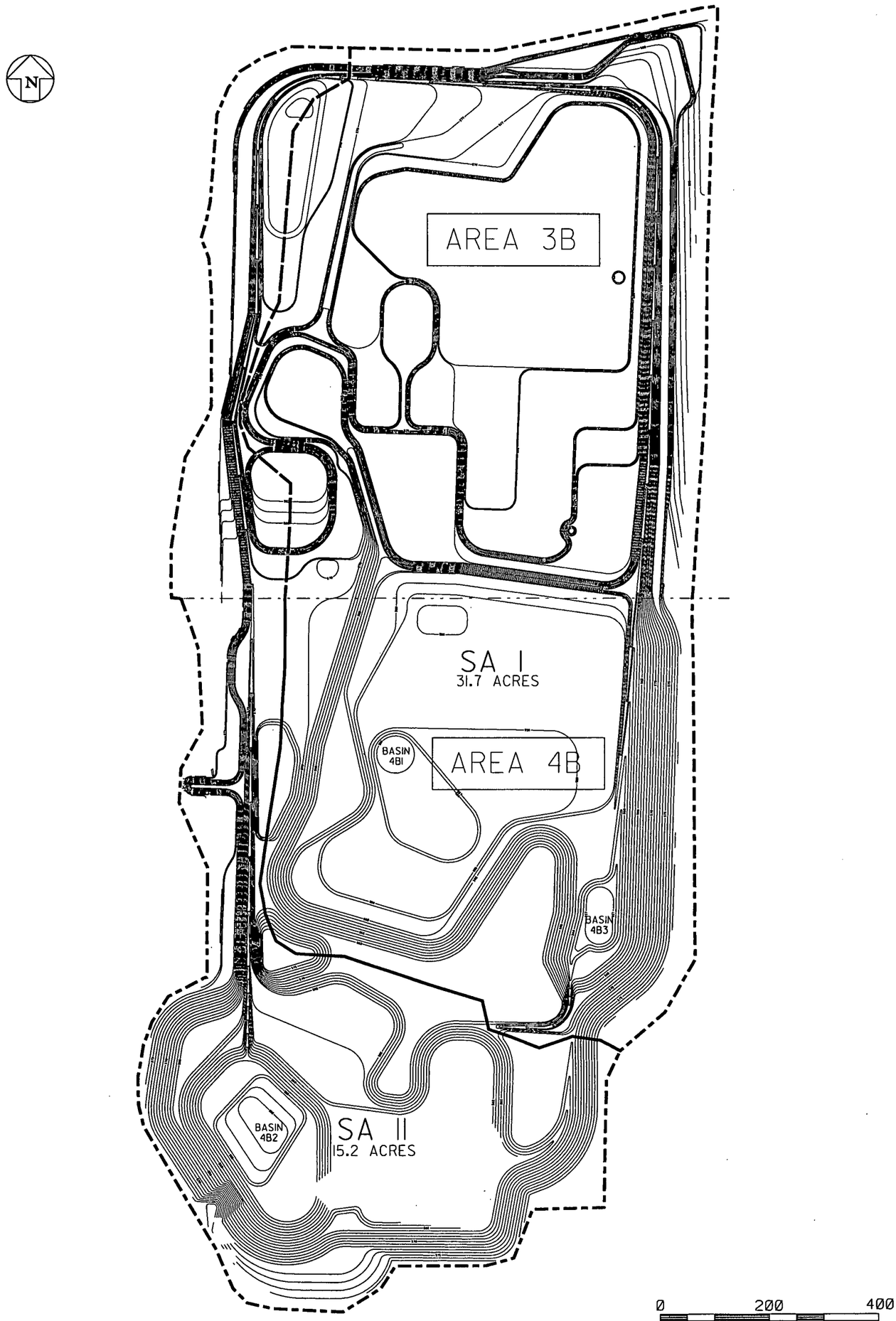
ELEV.	Area	Ave. Area	Depth	Layer Vol.	Total Vol. (cft)	
565	1234427					
		1123570	1	1123570	4137980	
564	1012712					
		908613	1	908613	3014410	
563	804514					
		710672	1	710672	2105797	
562	616829					
		533298	1	533298	1395126	
561	449767					
		374934	1	374934	861828	
560	300100					
		268194	0.5	134097	486894	
559.5	236288					
		204381	0.5	102191	352797	272300 Cubic Feet Required
559	172475					
		139102	1	139102	250607	
558	105728					
		68368	1	68368	111505	
557	31007					
		29321	1	29321	43138	
556	27634					
		13817	1	13817	13817	
555	0					

272300 cuft required
Volume Achieved below elevation 559.5

Stage Volume for Basin 4B2

ELV.	Area	Ave. Area	Depth	Layer Vol.	Total Vol. (cft)		
565	360922						
		333344	1	333344	1392314		
564	305766						
		280365	1	280365	1058970		
563	254963						
		232865	1	232865	778606		
562	210766						
		191444	1	191444	545741		
561	172122						
		117005	1	117005	354297		
560	61887						
		59099	1	59099	237293		
559	56310						
		55024	0.5	27512	178194		
558.5	53737						
		52450	0.5	26225	150683	129000	Cubic Feet Required
558	51163						
		48775	1	48775	124458		
557	46387						
		44173	1	44173	75683		
556	41958						
		31510	1	31510	31510		
555	21062						

129000 CuFt Required
Volume Achieved below elevation 558.5



AREA 4B DRAINAGE SUB AREAS
FIGURE BI

PRELIMINARY
INFORMATION ONLY
CADD SERVICES

5330

002076

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.

FLUOR FERNALD CADD DRAWING. DO NOT REVISE MANUALLY.

CONFIGURATION MANAGEMENT DRAWING

CODNIZANT ENGINEER DATE

APPROVALS

CIVIL & STR.		SAFETY ENG.	
ELECTRICAL		MAINTENANCE	
ENGINEER		ENV. PROTECT.	
INSTRUMENT		WASTE MANAGE.	
MECHANICAL		SECURITY	
		PROJECTS	
CHECKED			
APPROVED			

Fernald Environmental Management Project

FLUOR FERNALD, INC.

U.S. DEPARTMENT OF ENERGY

AREA 3B/4B DRAINAGE SUB AREAS
FIGURE BI

DATE
DRAWN

FILE NAME: 4BDRAIN CALC REVLDGN

Appendix C

APPENDIX C

CHARACTERIZATION DATA FOR AREA 3B/4B/5

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12860	479918.3	1348405.74	1	1.5	Technetium-99	1.7	UNV	pCi/g
12860	479918.3	1348405.74	2	2.5	Technetium-99	1.7	UNV	pCi/g
12860	479918.3	1348405.74	2.5	3	Technetium-99	1.7	UNV	pCi/g
12860	479918.3	1348405.74	3	3.5	Technetium-99	1.6	UNV	pCi/g
12860	479918.3	1348405.74	9	9.5	Technetium-99	1.6	UNV	pCi/g
12860	479918.3	1348405.74	1	1.5	Thorium, Total	7.45	NV	mg/kg dry
12860	479918.3	1348405.74	3	3.5	Thorium, Total	5.44	NV	mg/kg dry
12860	479918.3	1348405.74	6	6.5	Thorium, Total	6.61	NV	mg/kg dry
12860	479918.3	1348405.74	9	9.5	Thorium, Total	2.82	NV	mg/kg dry
12860	479918.3	1348405.74	11	11.5	Thorium, Total	4.47	NV	mg/kg dry
12860	479918.3	1348405.74	14	14.5	Thorium, Total	3.73	NV	mg/kg dry
12860	479918.3	1348405.74	17	17.5	Thorium, Total	5.54	NV	mg/kg dry
12860	479918.3	1348405.74	20	20.5	Thorium, Total	4.49	NV	mg/kg dry
12860	479918.3	1348405.74	24.5	25	Thorium, Total	5.05	NV	mg/kg dry
12860	479918.3	1348405.74	1	1.5	Uranium, Total	162	NV	mg/kg dry
12860	479918.3	1348405.74	3	3.5	Uranium, Total	2.62	NV	mg/kg dry
12860	479918.3	1348405.74	6	6.5	Uranium, Total	1.81	NV	mg/kg dry
12860	479918.3	1348405.74	9	9.5	Uranium, Total	2.21	NV	mg/kg dry
12860	479918.3	1348405.74	11	11.5	Uranium, Total	2.75	NV	mg/kg dry
12860	479918.3	1348405.74	14	14.5	Uranium, Total	1.4	NV	mg/kg dry
12860	479918.3	1348405.74	17	17.5	Uranium, Total	1.8	NV	mg/kg dry
12860	479918.3	1348405.74	20	20.5	Uranium, Total	2.2	NV	mg/kg dry
12860	479918.3	1348405.74	24.5	25	Uranium, Total	1.72	NV	mg/kg dry
12861A	479831.87	1348442.19	1	1.5	1,1-Dichloroethene	70	U	ug/L
12861A	479831.87	1348442.19	2.5	3	1,1-Dichloroethene	70	U	ug/L
12861A	479831.87	1348442.19	4.5	5	1,1-Dichloroethene	70	U	ug/L
12861A	479831.87	1348442.19	7.5	8	1,1-Dichloroethene	70	U	ug/L
12861A	479831.87	1348442.19	9.5	10	1,1-Dichloroethene	70	U	ug/L
12861A	479831.87	1348442.19	10.5	11	1,1-Dichloroethene	70	U	ug/L
12861A	479831.87	1348442.19	11.5	12	1,1-Dichloroethene	70	U	ug/L
12861A	479831.87	1348442.19	13.5	14	1,1-Dichloroethene	70	U	ug/L
12861A	479831.87	1348442.19	21.5	22	1,1-Dichloroethene	70	U	ug/L
12861A	479831.87	1348442.19	23.5	24	1,1-Dichloroethene	70	U	ug/L
12861A	479831.87	1348442.19	1	1.5	1,2-Dichloroethane	50	U	ug/L
12861A	479831.87	1348442.19	2.5	3	1,2-Dichloroethane	50	U	ug/L
12861A	479831.87	1348442.19	4.5	5	1,2-Dichloroethane	50	U	ug/L
12861A	479831.87	1348442.19	7.5	8	1,2-Dichloroethane	50	U	ug/L
12861A	479831.87	1348442.19	9.5	10	1,2-Dichloroethane	50	U	ug/L
12861A	479831.87	1348442.19	10.5	11	1,2-Dichloroethane	50	U	ug/L
12861A	479831.87	1348442.19	11.5	12	1,2-Dichloroethane	50	U	ug/L
12861A	479831.87	1348442.19	13.5	14	1,2-Dichloroethane	50	U	ug/L
12861A	479831.87	1348442.19	21.5	22	1,2-Dichloroethane	50	U	ug/L
12861A	479831.87	1348442.19	23.5	24	1,2-Dichloroethane	50	U	ug/L
12861A	479831.87	1348442.19	1	1.5	2-Butanone	20000	U	ug/L
12861A	479831.87	1348442.19	2.5	3	2-Butanone	20000	U	ug/L
12861A	479831.87	1348442.19	4.5	5	2-Butanone	20000	U	ug/L
12861A	479831.87	1348442.19	7.5	8	2-Butanone	20000	U	ug/L
12861A	479831.87	1348442.19	9.5	10	2-Butanone	20000	U	ug/L
12861A	479831.87	1348442.19	10.5	11	2-Butanone	20000	U	ug/L
12861A	479831.87	1348442.19	11.5	12	2-Butanone	20000	U	ug/L
12861A	479831.87	1348442.19	13.5	14	2-Butanone	20000	U	ug/L
12861A	479831.87	1348442.19	21.5	22	2-Butanone	20000	U	ug/L
12861A	479831.87	1348442.19	23.5	24	2-Butanone	20000	U	ug/L
12861A	479831.87	1348442.19	13	13.5	Barium	33	J	mg/kg
12861A	479831.87	1348442.19	15.5	16	Barium	39.8	J	mg/kg
12861A	479831.87	1348442.19	21	21.5	Barium	84.1	J	mg/kg
12861A	479831.87	1348442.19	24.5	25	Barium	83.6	J	mg/kg
12861A	479831.87	1348442.19	1	1.5	Benzene	50	U	ug/L
12861A	479831.87	1348442.19	2.5	3	Benzene	50	U	ug/L

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861A	479831.87	1348442.19	4.5	5	Benzene	50	U	ug/L
12861A	479831.87	1348442.19	7.5	8	Benzene	50	U	ug/L
12861A	479831.87	1348442.19	9.5	10	Benzene	50	U	ug/L
12861A	479831.87	1348442.19	10.5	11	Benzene	50	U	ug/L
12861A	479831.87	1348442.19	11.5	12	Benzene	50	U	ug/L
12861A	479831.87	1348442.19	13.5	14	Benzene	50	U	ug/L
12861A	479831.87	1348442.19	21.5	22	Benzene	50	U	ug/L
12861A	479831.87	1348442.19	23.5	24	Benzene	50	U	ug/L
12861A	479831.87	1348442.19	1	1.5	Carbon Tetrachloride	50	U	ug/L
12861A	479831.87	1348442.19	2.5	3	Carbon Tetrachloride	50	U	ug/L
12861A	479831.87	1348442.19	4.5	5	Carbon Tetrachloride	50	U	ug/L
12861A	479831.87	1348442.19	7.5	8	Carbon Tetrachloride	50	U	ug/L
12861A	479831.87	1348442.19	9.5	10	Carbon Tetrachloride	50	U	ug/L
12861A	479831.87	1348442.19	10.5	11	Carbon Tetrachloride	50	U	ug/L
12861A	479831.87	1348442.19	11.5	12	Carbon Tetrachloride	50	U	ug/L
12861A	479831.87	1348442.19	13.5	14	Carbon Tetrachloride	50	U	ug/L
12861A	479831.87	1348442.19	21.5	22	Carbon Tetrachloride	50	U	ug/L
12861A	479831.87	1348442.19	23.5	24	Carbon Tetrachloride	50	U	ug/L
12861A	479831.87	1348442.19	1	1.5	Chlorobenzene	10000	U	ug/L
12861A	479831.87	1348442.19	2.5	3	Chlorobenzene	10000	U	ug/L
12861A	479831.87	1348442.19	4.5	5	Chlorobenzene	10000	U	ug/L
12861A	479831.87	1348442.19	7.5	8	Chlorobenzene	10000	U	ug/L
12861A	479831.87	1348442.19	9.5	10	Chlorobenzene	10000	U	ug/L
12861A	479831.87	1348442.19	10.5	11	Chlorobenzene	10000	U	ug/L
12861A	479831.87	1348442.19	11.5	12	Chlorobenzene	10000	U	ug/L
12861A	479831.87	1348442.19	13.5	14	Chlorobenzene	10000	U	ug/L
12861A	479831.87	1348442.19	21.5	22	Chlorobenzene	10000	U	ug/L
12861A	479831.87	1348442.19	23.5	24	Chlorobenzene	10000	U	ug/L
12861A	479831.87	1348442.19	1	1.5	Chloroform	600	U	ug/L
12861A	479831.87	1348442.19	2.5	3	Chloroform	600	U	ug/L
12861A	479831.87	1348442.19	4.5	5	Chloroform	15.3	J	ug/L
12861A	479831.87	1348442.19	7.5	8	Chloroform	600	U	ug/L
12861A	479831.87	1348442.19	9.5	10	Chloroform	600	U	ug/L
12861A	479831.87	1348442.19	10.5	11	Chloroform	600	U	ug/L
12861A	479831.87	1348442.19	11.5	12	Chloroform	600	U	ug/L
12861A	479831.87	1348442.19	13.5	14	Chloroform	600	U	ug/L
12861A	479831.87	1348442.19	21.5	22	Chloroform	600	U	ug/L
12861A	479831.87	1348442.19	23.5	24	Chloroform	600	U	ug/L
12861A	479831.87	1348442.19	13	13.5	Chromium	12.5	-	mg/kg
12861A	479831.87	1348442.19	15.5	16	Chromium	11.8	-	mg/kg
12861A	479831.87	1348442.19	21	21.5	Chromium	18.2	-	mg/kg
12861A	479831.87	1348442.19	24.5	25	Chromium	16.7	-	mg/kg
12861A	479831.87	1348442.19	1	1.5	Gross Alpha	56	NV	pCi/g
12861A	479831.87	1348442.19	1	1.5	Gross Beta	48	NV	pCi/g
12861A	479831.87	1348442.19	13	13.5	Lead	7.89	J	mg/kg
12861A	479831.87	1348442.19	15.5	16	Lead	7.15	J	mg/kg
12861A	479831.87	1348442.19	21	21.5	Lead	8.98	J	mg/kg
12861A	479831.87	1348442.19	24.5	25	Lead	8.66	J	mg/kg
12861A	479831.87	1348442.19	12	12.5	Radium-226	0.811	-	pCi/g
12861A	479831.87	1348442.19	20	20.5	Radium-226	1.022	-	pCi/g
12861A	479831.87	1348442.19	12	12.5	Radium-228	0.59	-	pCi/g
12861A	479831.87	1348442.19	20	20.5	Radium-228	0.724	-	pCi/g
12861A	479831.87	1348442.19	0.5	1	Technetium-99	3.6	NV	pCi/g
12861A	479831.87	1348442.19	10	10.5	Technetium-99	5	NV	pCi/g
12861A	479831.87	1348442.19	20	20.5	Technetium-99	1.7	UNV	pCi/g
12861A	479831.87	1348442.19	1	1.5	Tetrachloroethene	70	U	ug/L
12861A	479831.87	1348442.19	2.5	3	Tetrachloroethene	70	U	ug/L
12861A	479831.87	1348442.19	4.5	5	Tetrachloroethene	70	U	ug/L
12861A	479831.87	1348442.19	7.5	8	Tetrachloroethene	70	U	ug/L

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861A	479831.87	1348442.19	9.5	10	Tetrachloroethene	70	U	ug/L
12861A	479831.87	1348442.19	10.5	11	Tetrachloroethene	70	U	ug/L
12861A	479831.87	1348442.19	11.5	12	Tetrachloroethene	70	U	ug/L
12861A	479831.87	1348442.19	13.5	14	Tetrachloroethene	70	U	ug/L
12861A	479831.87	1348442.19	21.5	22	Tetrachloroethene	70	U	ug/L
12861A	479831.87	1348442.19	23.5	24	Tetrachloroethene	70	U	ug/L
12861A	479831.87	1348442.19	0.5	1	Thorium, Total	9.17	NV	mg/kg dry
12861A	479831.87	1348442.19	5	5.5	Thorium, Total	7.19	NV	mg/kg dry
12861A	479831.87	1348442.19	10	10.5	Thorium, Total	3.34	NV	mg/kg dry
12861A	479831.87	1348442.19	13	13.5	Thorium, Total	4.09	NV	mg/kg dry
12861A	479831.87	1348442.19	22	22.5	Thorium, Total	4.51	NV	mg/kg dry
12861A	479831.87	1348442.19	1	1.5	Trichloroethene	210	-	ug/L
12861A	479831.87	1348442.19	2.5	3	Trichloroethene	50	U	ug/L
12861A	479831.87	1348442.19	4.5	5	Trichloroethene	50	U	ug/L
12861A	479831.87	1348442.19	7.5	8	Trichloroethene	50	U	ug/L
12861A	479831.87	1348442.19	9.5	10	Trichloroethene	50	U	ug/L
12861A	479831.87	1348442.19	10.5	11	Trichloroethene	50	U	ug/L
12861A	479831.87	1348442.19	11.5	12	Trichloroethene	26.6	J	ug/L
12861A	479831.87	1348442.19	13.5	14	Trichloroethene	50	U	ug/L
12861A	479831.87	1348442.19	21.5	22	Trichloroethene	50	U	ug/L
12861A	479831.87	1348442.19	23.5	24	Trichloroethene	50	U	ug/L
12861A	479831.87	1348442.19	0.5	1	Uranium, Total	71.1	NV	mg/kg dry
12861A	479831.87	1348442.19	5	5.5	Uranium, Total	1.41	NV	mg/kg dry
12861A	479831.87	1348442.19	10	10.5	Uranium, Total	94.3	NV	mg/kg dry
12861A	479831.87	1348442.19	13	13.5	Uranium, Total	10.5	NV	mg/kg dry
12861A	479831.87	1348442.19	22	22.5	Uranium, Total	1.48	NV	mg/kg dry
12861A	479831.87	1348442.19	1	1.5	Vinyl chloride	20	U	ug/L
12861A	479831.87	1348442.19	2.5	3	Vinyl chloride	20	U	ug/L
12861A	479831.87	1348442.19	4.5	5	Vinyl chloride	20	U	ug/L
12861A	479831.87	1348442.19	7.5	8	Vinyl chloride	20	U	ug/L
12861A	479831.87	1348442.19	9.5	10	Vinyl chloride	20	U	ug/L
12861A	479831.87	1348442.19	10.5	11	Vinyl chloride	20	U	ug/L
12861A	479831.87	1348442.19	11.5	12	Vinyl chloride	20	U	ug/L
12861A	479831.87	1348442.19	13.5	14	Vinyl chloride	20	U	ug/L
12861A	479831.87	1348442.19	21.5	22	Vinyl chloride	20	U	ug/L
12861A	479831.87	1348442.19	23.5	24	Vinyl chloride	20	U	ug/L
12861B	479831.87	1348442.19	10	12	1,1,1-Trichloroethane	0.74	NV	ug/L
12861B	479831.87	1348442.19	10	12	1,1,1-Trichloroethane	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	1,1,2,2-Tetrachloroethane	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	1,1,2,2-Tetrachloroethane	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	1,1,2-Trichloroethane	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	1,1,2-Trichloroethane	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	1,1-Dichloroethane	21.1	NV	ug/L
12861B	479831.87	1348442.19	10	12	1,1-Dichloroethane	23.5	NV	ug/L
12861B	479831.87	1348442.19	10	12	1,1-Dichloroethene	1	NV	ug/L
12861B	479831.87	1348442.19	10	12	1,1-Dichloroethene	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	1,2-Dichloroethane	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	1,2-Dichloroethane	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	1,2-Dichloroethene (Total)	124	NV	ug/L
12861B	479831.87	1348442.19	10	12	1,2-Dichloroethene (Total)	139	NV	ug/L
12861B	479831.87	1348442.19	10	12	1,2-Dichloropropane	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	1,2-Dichloropropane	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	2-Butanone	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	2-Butanone	250	UNV	ug/L
12861B	479831.87	1348442.19	10	12	2-Hexanone	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	2-Hexanone	250	UNV	ug/L
12861B	479831.87	1348442.19	10	12	4-Methyl-2-pentanone	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	4-Methyl-2-pentanone	250	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Acetone	50	UNV	ug/L

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861B	479831.87	1348442.19	10	12	Acetone	250	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Benzene	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Benzene	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Bromodichloromethane	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Bromodichloromethane	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Bromoform	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Bromoform	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Bromomethane	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Bromomethane	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Carbon disulfide	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Carbon disulfide	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Carbon Tetrachloride	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Carbon Tetrachloride	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Chlorobenzene	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Chlorobenzene	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Chloroethane	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Chloroethane	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Chloroform	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Chloroform	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Chloromethane	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Chloromethane	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	cis-1,3-Dichloropropene	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	cis-1,3-Dichloropropene	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Dibromochloromethane	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Dibromochloromethane	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Ethylbenzene	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Ethylbenzene	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Methylene chloride	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Methylene chloride	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Styrene	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Styrene	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Tetrachloroethene	11	NV	ug/L
12861B	479831.87	1348442.19	10	12	Tetrachloroethene	13.8	NV	ug/L
12861B	479831.87	1348442.19	10	12	Toluene	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Toluene	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	trans-1,3-Dichloropropene	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	trans-1,3-Dichloropropene	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Trichloroethene	16.8	NV	ug/L
12861B	479831.87	1348442.19	10	12	Trichloroethene	20.7	NV	ug/L
12861B	479831.87	1348442.19	10	12	Vinyl chloride	3.7	NV	ug/L
12861B	479831.87	1348442.19	10	12	Vinyl chloride	50	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Xylenes, Total	10	UNV	ug/L
12861B	479831.87	1348442.19	10	12	Xylenes, Total	50	UNV	ug/L
12861C	479830.87	1348442.19	16	16.5	1,1-Dichloroethene	70	UNV	ug/L
12861C	479830.87	1348442.19	17.5	18	1,1-Dichloroethene	70	UNV	ug/L
12861C	479830.87	1348442.19	19.5	20	1,1-Dichloroethene	70	UNV	ug/L
12861C	479830.87	1348442.19	16	16.5	1,2-Dichloroethane	50	UNV	ug/L
12861C	479830.87	1348442.19	17.5	18	1,2-Dichloroethane	50	UNV	ug/L
12861C	479830.87	1348442.19	19.5	20	1,2-Dichloroethane	50	UNV	ug/L
12861C	479830.87	1348442.19	16	16.5	2-Butanone	20000	UNV	ug/L
12861C	479830.87	1348442.19	17.5	18	2-Butanone	20000	UNV	ug/L
12861C	479830.87	1348442.19	19.5	20	2-Butanone	20000	UNV	ug/L
12861C	479830.87	1348442.19	0.5	1	Barium	301	-	mg/kg
12861C	479830.87	1348442.19	2	2.5	Barium	115	J	mg/kg
12861C	479830.87	1348442.19	4	4.5	Barium	143	J	mg/kg
12861C	479830.87	1348442.19	7	7.5	Barium	133	J	mg/kg
12861C	479830.87	1348442.19	9	9.5	Barium	0.815	NV	mg/L
12861C	479830.87	1348442.19	9	9.5	Barium	103	NV	mg/kg
12861C	479830.87	1348442.19	10	10.5	Barium	0.882	NV	mg/L

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861C	479830.87	1348442.19	10	10.5	Barium	60	J	mg/kg
12861C	479830.87	1348442.19	11	11.5	Barium	0.712	NV	mg/L
12861C	479830.87	1348442.19	11	11.5	Barium	32.8	J	mg/kg
12861C	479830.87	1348442.19	17	17.5	Barium	86.7	J	mg/kg
12861C	479830.87	1348442.19	19	19.5	Barium	68.4	J	mg/kg
12861C	479830.87	1348442.19	23	23.5	Barium	93	J	mg/kg
12861C	479830.87	1348442.19	16	16.5	Benzene	50	UNV	ug/L
12861C	479830.87	1348442.19	17.5	18	Benzene	50	UNV	ug/L
12861C	479830.87	1348442.19	19.5	20	Benzene	50	UNV	ug/L
12861C	479830.87	1348442.19	16	16.5	Carbon Tetrachloride	50	UNV	ug/L
12861C	479830.87	1348442.19	17.5	18	Carbon Tetrachloride	50	UNV	ug/L
12861C	479830.87	1348442.19	19.5	20	Carbon Tetrachloride	50	UNV	ug/L
12861C	479830.87	1348442.19	16	16.5	Chlorobenzene	10000	UNV	ug/L
12861C	479830.87	1348442.19	17.5	18	Chlorobenzene	10000	UNV	ug/L
12861C	479830.87	1348442.19	19.5	20	Chlorobenzene	10000	UNV	ug/L
12861C	479830.87	1348442.19	16	16.5	Chloroform	600	UNV	ug/L
12861C	479830.87	1348442.19	17.5	18	Chloroform	600	UNV	ug/L
12861C	479830.87	1348442.19	19.5	20	Chloroform	600	UNV	ug/L
12861C	479830.87	1348442.19	0.5	1	Chromium	8.36	J	mg/kg
12861C	479830.87	1348442.19	2	2.5	Chromium	25.7	-	mg/kg
12861C	479830.87	1348442.19	4	4.5	Chromium	29.6	-	mg/kg
12861C	479830.87	1348442.19	7	7.5	Chromium	29.9	-	mg/kg
12861C	479830.87	1348442.19	9	9.5	Chromium	0.005	UNV	mg/L
12861C	479830.87	1348442.19	9	9.5	Chromium	24.5	NV	mg/kg
12861C	479830.87	1348442.19	10	10.5	Chromium	0.007	NV	mg/L
12861C	479830.87	1348442.19	10	10.5	Chromium	14.1	-	mg/kg
12861C	479830.87	1348442.19	11	11.5	Chromium	0.005	UNV	mg/L
12861C	479830.87	1348442.19	11	11.5	Chromium	7.94	J	mg/kg
12861C	479830.87	1348442.19	17	17.5	Chromium	19.1	-	mg/kg
12861C	479830.87	1348442.19	19	19.5	Chromium	14.8	-	mg/kg
12861C	479830.87	1348442.19	23	23.5	Chromium	19	-	mg/kg
12861C	479830.87	1348442.19	0.5	1	Gross Alpha	1700	NV	pCi/g
12861C	479830.87	1348442.19	0.5	1	Gross Beta	930	NV	pCi/g
12861C	479830.87	1348442.19	0.5	1	Lead	22	-	mg/kg
12861C	479830.87	1348442.19	2	2.5	Lead	12.6	-	mg/kg
12861C	479830.87	1348442.19	4	4.5	Lead	16.9	-	mg/kg
12861C	479830.87	1348442.19	7	7.5	Lead	17.3	-	mg/kg
12861C	479830.87	1348442.19	9	9.5	Lead	0.016	NV	mg/L
12861C	479830.87	1348442.19	9	9.5	Lead	11.6	NV	mg/kg
12861C	479830.87	1348442.19	10	10.5	Lead	0.016	NV	mg/L
12861C	479830.87	1348442.19	10	10.5	Lead	8.12	J	mg/kg
12861C	479830.87	1348442.19	11	11.5	Lead	0.014	NV	mg/L
12861C	479830.87	1348442.19	11	11.5	Lead	6.21	J	mg/kg
12861C	479830.87	1348442.19	17	17.5	Lead	10	J	mg/kg
12861C	479830.87	1348442.19	19	19.5	Lead	10.8	-	mg/kg
12861C	479830.87	1348442.19	23	23.5	Lead	8.86	J	mg/kg
12861C	479830.87	1348442.19	16.5	17	Radium-226	0.725	-	pCi/g
12861C	479830.87	1348442.19	24	24.5	Radium-226	0.847	-	pCi/g
12861C	479830.87	1348442.19	16.5	17	Radium-228	0.586	-	pCi/g
12861C	479830.87	1348442.19	24	24.5	Radium-228	0.641	-	pCi/g
12861C	479830.87	1348442.19	16	16.5	Tetrachloroethene	70	UNV	ug/L
12861C	479830.87	1348442.19	17.5	18	Tetrachloroethene	70	UNV	ug/L
12861C	479830.87	1348442.19	19.5	20	Tetrachloroethene	70	UNV	ug/L
12861C	479830.87	1348442.19	0.5	1	Thorium, Total	95.2	NV	mg/kg dry
12861C	479830.87	1348442.19	1	1.5	Thorium, Total	25.3	NV	mg/kg dry
12861C	479830.87	1348442.19	16	16.5	Thorium, Total	2.87	NV	mg/kg dry
12861C	479830.87	1348442.19	19	19.5	Thorium, Total	4.52	NV	mg/kg dry
12861C	479830.87	1348442.19	24	24.5	Thorium, Total	3.92	NV	mg/kg dry
12861C	479830.87	1348442.19	16	16.5	Trichloroethene	50	UNV	ug/L

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861C	479830.87	1348442.19	17.5	18	Trichloroethene	50	UNV	ug/L
12861C	479830.87	1348442.19	19.5	20	Trichloroethene	50	UNV	ug/L
12861C	479830.87	1348442.19	0.5	1	Uranium, Total	70.3	NV	mg/kg dry
12861C	479830.87	1348442.19	1	1.5	Uranium, Total	71.3	NV	mg/kg dry
12861C	479830.87	1348442.19	16	16.5	Uranium, Total	1.18	NV	mg/kg dry
12861C	479830.87	1348442.19	19	19.5	Uranium, Total	1.49	NV	mg/kg dry
12861C	479830.87	1348442.19	24	24.5	Uranium, Total	1.67	NV	mg/kg dry
12861C	479830.87	1348442.19	16	16.5	Vinyl chloride	20	UNV	ug/L
12861C	479830.87	1348442.19	17.5	18	Vinyl chloride	20	UNV	ug/L
12861C	479830.87	1348442.19	19.5	20	Vinyl chloride	20	UNV	ug/L
12861D	479831.87	1348442.19	1	1.5	1,1,1-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	1,1,1-Trichloroethane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	1,1,1-Trichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	1,1,1-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	1,1,1-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	1,1,1-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	1,1,1-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	1,1,1-Trichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	1,1,1-Trichloroethane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	1,1,1-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	1,1,1-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	1,1,1-Trichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	1,1,1-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	1,1,1-Trichloroethane	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	1,1,1-Trichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	1,1,2,2-Tetrachloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	1,1,2,2-Tetrachloroethane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	1,1,2,2-Tetrachloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	1,1,2,2-Tetrachloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	1,1,2,2-Tetrachloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	1,1,2,2-Tetrachloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	1,1,2,2-Tetrachloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	1,1,2,2-Tetrachloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	1,1,2,2-Tetrachloroethane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	1,1,2,2-Tetrachloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	1,1,2,2-Tetrachloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	1,1,2,2-Tetrachloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	1,1,2,2-Tetrachloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	1,1,2,2-Tetrachloroethane	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	1,1,2,2-Tetrachloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	1,1,2-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	1,1,2-Trichloroethane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	1,1,2-Trichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	1,1,2-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	1,1,2-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	1,1,2-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	1,1,2-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	1,1,2-Trichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	1,1,2-Trichloroethane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	1,1,2-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	1,1,2-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	1,1,2-Trichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	1,1,2-Trichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	1,1,2-Trichloroethane	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	1,1,2-Trichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	1,1-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	1,1-Dichloroethane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	1,1-Dichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	1,1-Dichloroethane	66.4	NV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861D	479831.87	1348442.19	5.5	6	1,1-Dichloroethane	46.2	NV	ug/kg
12861D	479831.87	1348442.19	7.5	8	1,1-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	1,1-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	1,1-Dichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	1,1-Dichloroethane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	1,1-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	1,1-Dichloroethane	14.6	NV	ug/kg
12861D	479831.87	1348442.19	16	16.5	1,1-Dichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	1,1-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	1,1-Dichloroethane	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	1,1-Dichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	1,1-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	1,1-Dichloroethene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	1,1-Dichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	1,1-Dichloroethene	16.9	NV	ug/kg
12861D	479831.87	1348442.19	5.5	6	1,1-Dichloroethene	19.8	NV	ug/kg
12861D	479831.87	1348442.19	7.5	8	1,1-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	1,1-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	1,1-Dichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	1,1-Dichloroethene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	1,1-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	1,1-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	1,1-Dichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	1,1-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	1,1-Dichloroethene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	1,1-Dichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	1,2-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	1,2-Dichloroethane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	1,2-Dichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	1,2-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	1,2-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	1,2-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	1,2-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	1,2-Dichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	1,2-Dichloroethane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	1,2-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	1,2-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	1,2-Dichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	1,2-Dichloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	1,2-Dichloroethane	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	1,2-Dichloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	1,2-Dichloropropane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	1,2-Dichloropropane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	1,2-Dichloropropane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	1,2-Dichloropropane	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	1,2-Dichloropropane	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	1,2-Dichloropropane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	1,2-Dichloropropane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	1,2-Dichloropropane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	1,2-Dichloropropane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	1,2-Dichloropropane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	1,2-Dichloropropane	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	1,2-Dichloropropane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	1,2-Dichloropropane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	1,2-Dichloropropane	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	1,2-Dichloropropane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	2-Butanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	2-Butanone	47.2	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	2-Butanone	49	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861D	479831.87	1348442.19	4.5	5	2-Butanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	2-Butanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	2-Butanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	2-Butanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	2-Butanone	49	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	2-Butanone	100	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	2-Butanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	2-Butanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	2-Butanone	49	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	2-Butanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	2-Butanone	48.1	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	2-Butanone	49	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	2-Hexanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	2-Hexanone	47.2	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	2-Hexanone	49	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	2-Hexanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	2-Hexanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	2-Hexanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	2-Hexanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	2-Hexanone	49	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	2-Hexanone	100	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	2-Hexanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	2-Hexanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	2-Hexanone	49	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	2-Hexanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	2-Hexanone	48.1	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	2-Hexanone	49	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	4-Methyl-2-pentanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	4-Methyl-2-pentanone	47.2	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	4-Methyl-2-pentanone	49	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	4-Methyl-2-pentanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	4-Methyl-2-pentanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	4-Methyl-2-pentanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	4-Methyl-2-pentanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	4-Methyl-2-pentanone	49	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	4-Methyl-2-pentanone	100	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	4-Methyl-2-pentanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	4-Methyl-2-pentanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	4-Methyl-2-pentanone	49	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	4-Methyl-2-pentanone	50	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	4-Methyl-2-pentanone	48.1	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	4-Methyl-2-pentanone	49	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Acetone	50	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Acetone	47.2	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Acetone	49	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Acetone	50	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Acetone	50	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Acetone	50	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Acetone	50	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Acetone	49	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Acetone	100	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Acetone	50	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Acetone	50	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Acetone	49	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Acetone	50	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Acetone	48.1	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Acetone	49	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Benzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Benzene	4.72	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861D	479831.87	1348442.19	2.5	3	Benzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Benzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Benzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Benzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Benzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Benzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Benzene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Benzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Benzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Benzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Benzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Benzene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Benzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Bromodichloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Bromodichloromethane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Bromodichloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Bromodichloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Bromodichloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Bromodichloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Bromodichloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Bromodichloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Bromodichloromethane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Bromodichloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Bromodichloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Bromodichloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Bromodichloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Bromodichloromethane	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Bromodichloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Bromoform	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Bromoform	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Bromoform	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Bromoform	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Bromoform	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Bromoform	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Bromoform	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Bromoform	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Bromoform	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Bromoform	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Bromoform	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Bromoform	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Bromoform	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Bromoform	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Bromoform	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Bromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Bromomethane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Bromomethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Bromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Bromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Bromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Bromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Bromomethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Bromomethane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Bromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Bromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Bromomethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Bromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Bromomethane	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Bromomethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Carbon Tetrachloride	5	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861D	479831.87	1348442.19	21.5	2	Carbon Tetrachloride	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Carbon Tetrachloride	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Carbon Tetrachloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Carbon Tetrachloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Carbon Tetrachloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Carbon Tetrachloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Carbon Tetrachloride	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Carbon Tetrachloride	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Carbon Tetrachloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Carbon Tetrachloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Carbon Tetrachloride	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Carbon Tetrachloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Carbon Tetrachloride	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Carbon Tetrachloride	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Chlorobenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Chlorobenzene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Chlorobenzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Chlorobenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Chlorobenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Chlorobenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Chlorobenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Chlorobenzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Chlorobenzene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Chlorobenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Chlorobenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Chlorobenzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Chlorobenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Chlorobenzene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Chlorobenzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Chloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Chloroethane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Chloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Chloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Chloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Chloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Chloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Chloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Chloroethane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Chloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Chloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Chloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Chloroethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Chloroethane	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Chloroethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Chloroform	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Chloroform	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Chloroform	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Chloroform	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Chloroform	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Chloroform	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Chloroform	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Chloroform	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Chloroform	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Chloroform	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Chloroform	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Chloroform	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Chloroform	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Chloroform	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Chloroform	4.9	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861D	479831.87	1348442.19	1	1.5	Chloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Chloromethane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Chloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Chloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Chloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Chloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Chloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Chloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Chloromethane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Chloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Chloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Chloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Chloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Chloromethane	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Chloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	cis-1,2-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	cis-1,2-Dichloroethene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	cis-1,2-Dichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	cis-1,2-Dichloroethene	40.1	NV	ug/kg
12861D	479831.87	1348442.19	5.5	6	cis-1,2-Dichloroethene	41.8	NV	ug/kg
12861D	479831.87	1348442.19	7.5	8	cis-1,2-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	cis-1,2-Dichloroethene	16.1	NV	ug/kg
12861D	479831.87	1348442.19	10.5	11	cis-1,2-Dichloroethene	16.4	NV	ug/kg
12861D	479831.87	1348442.19	11	11.5	cis-1,2-Dichloroethene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	cis-1,2-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	cis-1,2-Dichloroethene	35.3	NV	ug/kg
12861D	479831.87	1348442.19	16	16.5	cis-1,2-Dichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	cis-1,2-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	cis-1,2-Dichloroethene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	cis-1,2-Dichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	cis-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	cis-1,3-Dichloropropene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	cis-1,3-Dichloropropene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	cis-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	cis-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	cis-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	cis-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	cis-1,3-Dichloropropene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	cis-1,3-Dichloropropene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	cis-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	cis-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	cis-1,3-Dichloropropene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	cis-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	cis-1,3-Dichloropropene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	cis-1,3-Dichloropropene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Dibromochloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Dibromochloromethane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Dibromochloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Dibromochloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Dibromochloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Dibromochloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Dibromochloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Dibromochloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Dibromochloromethane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Dibromochloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Dibromochloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Dibromochloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Dibromochloromethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Dibromochloromethane	4.81	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861D	479831.87	1348442.19	23.5	24	Dibromochloromethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Dibromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Dibromomethane	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Dibromomethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Dibromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Dibromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Dibromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Dibromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Dibromomethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Dibromomethane	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Dibromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Dibromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Dibromomethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Dibromomethane	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Dibromomethane	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Dibromomethane	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Ethylbenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Ethylbenzene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Ethylbenzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Ethylbenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Ethylbenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Ethylbenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Ethylbenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Ethylbenzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Ethylbenzene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Ethylbenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Ethylbenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Ethylbenzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Ethylbenzene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Ethylbenzene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Ethylbenzene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	m,p-Xylene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	m,p-Xylene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	m,p-Xylene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	m,p-Xylene	8.12	NV	ug/kg
12861D	479831.87	1348442.19	5.5	6	m,p-Xylene	27.4	NV	ug/kg
12861D	479831.87	1348442.19	7.5	8	m,p-Xylene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	m,p-Xylene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	m,p-Xylene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	m,p-Xylene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	m,p-Xylene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	m,p-Xylene	8.04	NV	ug/kg
12861D	479831.87	1348442.19	16	16.5	m,p-Xylene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	m,p-Xylene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	m,p-Xylene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	m,p-Xylene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Methylene chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Methylene chloride	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Methylene chloride	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Methylene chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Methylene chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Methylene chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Methylene chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Methylene chloride	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Methylene chloride	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Methylene chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Methylene chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Methylene chloride	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Methylene chloride	5	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861D	479831.87	1348442.19	19.5	20	Methylene chloride	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Methylene chloride	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	o-Xylene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	o-Xylene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	o-Xylene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	o-Xylene	304	NV	ug/kg
12861D	479831.87	1348442.19	5.5	6	o-Xylene	823	NV	ug/kg
12861D	479831.87	1348442.19	7.5	8	o-Xylene	9.55	NV	ug/kg
12861D	479831.87	1348442.19	9.5	10	o-Xylene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	o-Xylene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	o-Xylene	43.4	NV	ug/kg
12861D	479831.87	1348442.19	11.5	12	o-Xylene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	o-Xylene	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	o-Xylene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	o-Xylene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	o-Xylene	4.85	NV	ug/kg
12861D	479831.87	1348442.19	23.5	24	o-Xylene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Styrene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Styrene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Styrene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Styrene	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Styrene	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Styrene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Styrene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Styrene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Styrene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Styrene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Styrene	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Styrene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Styrene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Styrene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Styrene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Tetrachloroethene	12.8	NV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Tetrachloroethene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Tetrachloroethene	21.1	NV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Tetrachloroethene	125	NV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Tetrachloroethene	339	NV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Tetrachloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Tetrachloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Tetrachloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Tetrachloroethene	13.2	NV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Tetrachloroethene	17.6	NV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Tetrachloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Tetrachloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Tetrachloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Tetrachloroethene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Tetrachloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Toluene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Toluene	6.24	NV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Toluene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Toluene	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Toluene	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Toluene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Toluene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Toluene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Toluene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Toluene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Toluene	7.06	NV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Toluene	4.9	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861D	479831.87	1348442.19	17.5	18	Toluene	7.06	NV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Toluene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Toluene	5.67	NV	ug/kg
12861D	479831.87	1348442.19	1	1.5	trans-1,2-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	trans-1,2-Dichloroethene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	trans-1,2-Dichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	trans-1,2-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	trans-1,2-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	trans-1,2-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	trans-1,2-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	trans-1,2-Dichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	trans-1,2-Dichloroethene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	trans-1,2-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	trans-1,2-Dichloroethene	5.65	NV	ug/kg
12861D	479831.87	1348442.19	16	16.5	trans-1,2-Dichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	trans-1,2-Dichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	trans-1,2-Dichloroethene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	trans-1,2-Dichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	trans-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	trans-1,3-Dichloropropene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	trans-1,3-Dichloropropene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	trans-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	trans-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	trans-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	trans-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	trans-1,3-Dichloropropene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	trans-1,3-Dichloropropene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	trans-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	trans-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	trans-1,3-Dichloropropene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	trans-1,3-Dichloropropene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	trans-1,3-Dichloropropene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	trans-1,3-Dichloropropene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Trichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Trichloroethene	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Trichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Trichloroethene	17.5	NV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Trichloroethene	29.2	NV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Trichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Trichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Trichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Trichloroethene	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Trichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Trichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	16	16.5	Trichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Trichloroethene	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Trichloroethene	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Trichloroethene	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	1	1.5	Vinyl chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	21.5	2	Vinyl chloride	4.72	UNV	ug/kg
12861D	479831.87	1348442.19	2.5	3	Vinyl chloride	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	4.5	5	Vinyl chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	5.5	6	Vinyl chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	7.5	8	Vinyl chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	9.5	10	Vinyl chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	10.5	11	Vinyl chloride	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	11	11.5	Vinyl chloride	10	UNV	ug/kg
12861D	479831.87	1348442.19	11.5	12	Vinyl chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	13.5	14	Vinyl chloride	5	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12861D	479831.87	1348442.19	16	16.5	Vinyl chloride	4.9	UNV	ug/kg
12861D	479831.87	1348442.19	17.5	18	Vinyl chloride	5	UNV	ug/kg
12861D	479831.87	1348442.19	19.5	20	Vinyl chloride	4.81	UNV	ug/kg
12861D	479831.87	1348442.19	23.5	24	Vinyl chloride	4.9	UNV	ug/kg
12862	479827	1348434	4.5	5	1,1,1-Trichloroethane	58.2	U	ug/kg
12862	479827	1348434	7.5	8	1,1,1-Trichloroethane	62.6	U	ug/kg
12862	479827	1348434	9.5	10	1,1,1-Trichloroethane	59.4	U	ug/kg
12862	479827	1348434	10.5	11	1,1,1-Trichloroethane	57.8	U	ug/kg
12862	479827	1348434	11.5	12	1,1,1-Trichloroethane	27.8	U	ug/kg
12862	479827	1348434	13.5	14	1,1,1-Trichloroethane	0.8	J	ug/kg
12862	479827	1348434	16	16.5	1,1,1-Trichloroethane	11.8	U	ug/kg
12862	479827	1348434	17.5	18	1,1,1-Trichloroethane	10.9	U	ug/kg
12862	479827	1348434	19.5	20	1,1,1-Trichloroethane	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	1,1,1-Trichloroethane	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	1,1,1-Trichloroethane	11.6	UNV	ug/kg
12862	479827	1348434			1,1,1-Trichloroethane	10	UNV	ug/L
12862	479827	1348434	4.5	5	1,1,2,2-Tetrachloroethane	58.2	U	ug/kg
12862	479827	1348434	7.5	8	1,1,2,2-Tetrachloroethane	62.6	U	ug/kg
12862	479827	1348434	9.5	10	1,1,2,2-Tetrachloroethane	59.4	U	ug/kg
12862	479827	1348434	10.5	11	1,1,2,2-Tetrachloroethane	57.8	U	ug/kg
12862	479827	1348434	11.5	12	1,1,2,2-Tetrachloroethane	27.8	U	ug/kg
12862	479827	1348434	13.5	14	1,1,2,2-Tetrachloroethane	12	U	ug/kg
12862	479827	1348434	16	16.5	1,1,2,2-Tetrachloroethane	11.8	U	ug/kg
12862	479827	1348434	17.5	18	1,1,2,2-Tetrachloroethane	10.9	U	ug/kg
12862	479827	1348434	19.5	20	1,1,2,2-Tetrachloroethane	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	1,1,2,2-Tetrachloroethane	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	1,1,2,2-Tetrachloroethane	11.6	UNV	ug/kg
12862	479827	1348434			1,1,2,2-Tetrachloroethane	10	UNV	ug/L
12862	479827	1348434	4.5	5	1,1,2-Trichloroethane	58.2	U	ug/kg
12862	479827	1348434	7.5	8	1,1,2-Trichloroethane	62.6	U	ug/kg
12862	479827	1348434	9.5	10	1,1,2-Trichloroethane	59.4	U	ug/kg
12862	479827	1348434	10.5	11	1,1,2-Trichloroethane	57.8	U	ug/kg
12862	479827	1348434	11.5	12	1,1,2-Trichloroethane	27.8	U	ug/kg
12862	479827	1348434	13.5	14	1,1,2-Trichloroethane	12	U	ug/kg
12862	479827	1348434	16	16.5	1,1,2-Trichloroethane	11.8	U	ug/kg
12862	479827	1348434	17.5	18	1,1,2-Trichloroethane	10.9	U	ug/kg
12862	479827	1348434	19.5	20	1,1,2-Trichloroethane	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	1,1,2-Trichloroethane	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	1,1,2-Trichloroethane	11.6	UNV	ug/kg
12862	479827	1348434			1,1,2-Trichloroethane	10	UNV	ug/L
12862	479827	1348434	4.5	5	1,1-Dichloroethane	58.2	U	ug/kg
12862	479827	1348434	7.5	8	1,1-Dichloroethane	62.6	U	ug/kg
12862	479827	1348434	9.5	10	1,1-Dichloroethane	59.4	U	ug/kg
12862	479827	1348434	10.5	11	1,1-Dichloroethane	57.8	U	ug/kg
12862	479827	1348434	11.5	12	1,1-Dichloroethane	1.6	J	ug/kg
12862	479827	1348434	13.5	14	1,1-Dichloroethane	4.9	J	ug/kg
12862	479827	1348434	16	16.5	1,1-Dichloroethane	11.8	U	ug/kg
12862	479827	1348434	17.5	18	1,1-Dichloroethane	10.9	U	ug/kg
12862	479827	1348434	19.5	20	1,1-Dichloroethane	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	1,1-Dichloroethane	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	1,1-Dichloroethane	11.6	UNV	ug/kg
12862	479827	1348434			1,1-Dichloroethane	10	UNV	ug/L
12862	479827	1348434	4.5	5	1,1-Dichloroethene	58.2	U	ug/kg
12862	479827	1348434	4.5	5	1,1-Dichloroethene	70	U	ug/L
12862	479827	1348434	7.5	8	1,1-Dichloroethene	62.6	U	ug/kg
12862	479827	1348434	7.5	8	1,1-Dichloroethene	70	U	ug/L
12862	479827	1348434	9.5	10	1,1-Dichloroethene	59.4	U	ug/kg
12862	479827	1348434	9.5	10	1,1-Dichloroethene	70	U	ug/L
12862	479827	1348434	10.5	11	1,1-Dichloroethene	57.8	U	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12862	479827	1348434	10.5	11	1,1-Dichloroethene	70	U	ug/L
12862	479827	1348434	11.5	12	1,1-Dichloroethene	27.8	U	ug/kg
12862	479827	1348434	11.5	12	1,1-Dichloroethene	70	U	ug/L
12862	479827	1348434	13.5	14	1,1-Dichloroethene	12	U	ug/kg
12862	479827	1348434	13.5	14	1,1-Dichloroethene	70	U	ug/L
12862	479827	1348434	16	16.5	1,1-Dichloroethene	11.8	U	ug/kg
12862	479827	1348434	16	16.5	1,1-Dichloroethene	70	U	ug/L
12862	479827	1348434	17.5	18	1,1-Dichloroethene	10.9	U	ug/kg
12862	479827	1348434	17.5	18	1,1-Dichloroethene	70	U	ug/L
12862	479827	1348434	19.5	20	1,1-Dichloroethene	11.4	UNV	ug/kg
12862	479827	1348434	19.5	20	1,1-Dichloroethene	70	UNV	ug/L
12862	479827	1348434	21.5	22	1,1-Dichloroethene	11.6	UNV	ug/kg
12862	479827	1348434	21.5	22	1,1-Dichloroethene	70	UNV	ug/L
12862	479827	1348434	23.5	24	1,1-Dichloroethene	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	1,1-Dichloroethene	70	UNV	ug/L
12862	479827	1348434			1,1-Dichloroethene	10	UNV	ug/L
12862	479827	1348434	4.5	5	1,2-Dichloroethane	58.2	U	ug/kg
12862	479827	1348434	4.5	5	1,2-Dichloroethane	50	U	ug/L
12862	479827	1348434	7.5	8	1,2-Dichloroethane	62.6	U	ug/kg
12862	479827	1348434	7.5	8	1,2-Dichloroethane	50	U	ug/L
12862	479827	1348434	9.5	10	1,2-Dichloroethane	59.4	U	ug/kg
12862	479827	1348434	9.5	10	1,2-Dichloroethane	50	U	ug/L
12862	479827	1348434	10.5	11	1,2-Dichloroethane	57.8	U	ug/kg
12862	479827	1348434	10.5	11	1,2-Dichloroethane	50	U	ug/L
12862	479827	1348434	11.5	12	1,2-Dichloroethane	27.8	U	ug/kg
12862	479827	1348434	11.5	12	1,2-Dichloroethane	50	U	ug/L
12862	479827	1348434	13.5	14	1,2-Dichloroethane	2.2	J	ug/kg
12862	479827	1348434	13.5	14	1,2-Dichloroethane	50	U	ug/L
12862	479827	1348434	16	16.5	1,2-Dichloroethane	11.8	U	ug/kg
12862	479827	1348434	16	16.5	1,2-Dichloroethane	50	U	ug/L
12862	479827	1348434	17.5	18	1,2-Dichloroethane	10.9	U	ug/kg
12862	479827	1348434	17.5	18	1,2-Dichloroethane	50	U	ug/L
12862	479827	1348434	19.5	20	1,2-Dichloroethane	11.4	UNV	ug/kg
12862	479827	1348434	19.5	20	1,2-Dichloroethane	50	UNV	ug/L
12862	479827	1348434	21.5	22	1,2-Dichloroethane	11.6	UNV	ug/kg
12862	479827	1348434	21.5	22	1,2-Dichloroethane	50	UNV	ug/L
12862	479827	1348434	23.5	24	1,2-Dichloroethane	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	1,2-Dichloroethane	50	UNV	ug/L
12862	479827	1348434			1,2-Dichloroethane	10	UNV	ug/L
12862	479827	1348434	4.5	5	1,2-Dichloroethene (Total)	73.2	-	ug/kg
12862	479827	1348434	7.5	8	1,2-Dichloroethene (Total)	79.6	-	ug/kg
12862	479827	1348434	9.5	10	1,2-Dichloroethene (Total)	39.5	J	ug/kg
12862	479827	1348434	10.5	11	1,2-Dichloroethene (Total)	31.2	J	ug/kg
12862	479827	1348434	11.5	12	1,2-Dichloroethene (Total)	28.4	-	ug/kg
12862	479827	1348434	16	16.5	1,2-Dichloroethene (Total)	11.8	U	ug/kg
12862	479827	1348434	17.5	18	1,2-Dichloroethene (Total)	10.9	U	ug/kg
12862	479827	1348434	19.5	20	1,2-Dichloroethene (Total)	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	1,2-Dichloroethene (Total)	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	1,2-Dichloroethene (Total)	11.6	UNV	ug/kg
12862	479827	1348434			1,2-Dichloroethene (Total)	10	UNV	ug/L
12862	479827	1348434	4.5	5	1,2-Dichloropropane	58.2	U	ug/kg
12862	479827	1348434	7.5	8	1,2-Dichloropropane	62.6	U	ug/kg
12862	479827	1348434	9.5	10	1,2-Dichloropropane	59.4	U	ug/kg
12862	479827	1348434	10.5	11	1,2-Dichloropropane	57.8	U	ug/kg
12862	479827	1348434	11.5	12	1,2-Dichloropropane	27.8	U	ug/kg
12862	479827	1348434	13.5	14	1,2-Dichloropropane	12	U	ug/kg
12862	479827	1348434	16	16.5	1,2-Dichloropropane	11.8	U	ug/kg
12862	479827	1348434	17.5	18	1,2-Dichloropropane	10.9	U	ug/kg
12862	479827	1348434	19.5	20	1,2-Dichloropropane	11.4	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12862	479827	1348434	21.5	22	1,2-Dichloropropane	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	1,2-Dichloropropane	11.6	UNV	ug/kg
12862	479827	1348434			1,2-Dichloropropane	10	UNV	ug/L
12862	479827	1348434	4.5	5	2-Butanone	291	U	ug/kg
12862	479827	1348434	4.5	5	2-Butanone	20000	U	ug/L
12862	479827	1348434	7.5	8	2-Butanone	313	U	ug/kg
12862	479827	1348434	7.5	8	2-Butanone	20000	U	ug/L
12862	479827	1348434	9.5	10	2-Butanone	297	U	ug/kg
12862	479827	1348434	9.5	10	2-Butanone	20000	U	ug/L
12862	479827	1348434	10.5	11	2-Butanone	289	U	ug/kg
12862	479827	1348434	10.5	11	2-Butanone	20000	U	ug/L
12862	479827	1348434	11.5	12	2-Butanone	139	U	ug/kg
12862	479827	1348434	11.5	12	2-Butanone	20000	U	ug/L
12862	479827	1348434	13.5	14	2-Butanone	60	U	ug/kg
12862	479827	1348434	13.5	14	2-Butanone	20000	U	ug/L
12862	479827	1348434	16	16.5	2-Butanone	59	U	ug/kg
12862	479827	1348434	16	16.5	2-Butanone	20000	U	ug/L
12862	479827	1348434	17.5	18	2-Butanone	54.7	U	ug/kg
12862	479827	1348434	17.5	18	2-Butanone	20000	U	ug/L
12862	479827	1348434	19.5	20	2-Butanone	57.3	UNV	ug/kg
12862	479827	1348434	19.5	20	2-Butanone	20000	UNV	ug/L
12862	479827	1348434	21.5	22	2-Butanone	58.2	UNV	ug/kg
12862	479827	1348434	21.5	22	2-Butanone	20000	UNV	ug/L
12862	479827	1348434	23.5	24	2-Butanone	58.2	UNV	ug/kg
12862	479827	1348434	23.5	24	2-Butanone	20000	UNV	ug/L
12862	479827	1348434			2-Butanone	50	UNV	ug/L
12862	479827	1348434	4.5	5	2-Hexanone	291	U	ug/kg
12862	479827	1348434	7.5	8	2-Hexanone	313	U	ug/kg
12862	479827	1348434	9.5	10	2-Hexanone	297	U	ug/kg
12862	479827	1348434	10.5	11	2-Hexanone	289	U	ug/kg
12862	479827	1348434	11.5	12	2-Hexanone	139	U	ug/kg
12862	479827	1348434	13.5	14	2-Hexanone	60	U	ug/kg
12862	479827	1348434	16	16.5	2-Hexanone	59	U	ug/kg
12862	479827	1348434	17.5	18	2-Hexanone	54.7	U	ug/kg
12862	479827	1348434	19.5	20	2-Hexanone	57.3	UNV	ug/kg
12862	479827	1348434	21.5	22	2-Hexanone	58.2	UNV	ug/kg
12862	479827	1348434	23.5	24	2-Hexanone	58.2	UNV	ug/kg
12862	479827	1348434			2-Hexanone	50	UNV	ug/L
12862	479827	1348434	4.5	5	4-Methyl-2-pentanone	291	U	ug/kg
12862	479827	1348434	7.5	8	4-Methyl-2-pentanone	313	U	ug/kg
12862	479827	1348434	9.5	10	4-Methyl-2-pentanone	297	U	ug/kg
12862	479827	1348434	10.5	11	4-Methyl-2-pentanone	289	U	ug/kg
12862	479827	1348434	11.5	12	4-Methyl-2-pentanone	139	U	ug/kg
12862	479827	1348434	13.5	14	4-Methyl-2-pentanone	60	U	ug/kg
12862	479827	1348434	16	16.5	4-Methyl-2-pentanone	59	U	ug/kg
12862	479827	1348434	17.5	18	4-Methyl-2-pentanone	54.7	U	ug/kg
12862	479827	1348434	19.5	20	4-Methyl-2-pentanone	57.3	UNV	ug/kg
12862	479827	1348434	21.5	22	4-Methyl-2-pentanone	58.2	UNV	ug/kg
12862	479827	1348434	23.5	24	4-Methyl-2-pentanone	58.2	UNV	ug/kg
12862	479827	1348434			4-Methyl-2-pentanone	50	UNV	ug/L
12862	479827	1348434	4.5	5	Acetone	291	U	ug/kg
12862	479827	1348434	7.5	8	Acetone	313	U	ug/kg
12862	479827	1348434	9.5	10	Acetone	297	U	ug/kg
12862	479827	1348434	10.5	11	Acetone	289	U	ug/kg
12862	479827	1348434	11.5	12	Acetone	139	U	ug/kg
12862	479827	1348434	13.5	14	Acetone	16.7	U	ug/kg
12862	479827	1348434	16	16.5	Acetone	11.1	U	ug/kg
12862	479827	1348434	17.5	18	Acetone	8.7	U	ug/kg
12862	479827	1348434	19.5	20	Acetone	57.3	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12862	479827	1348434	21.5	22	Acetone	58.2	UNV	ug/kg
12862	479827	1348434	23.5	24	Acetone	58.2	UNV	ug/kg
12862	479827	1348434			Acetone	50	UNV	ug/L
12862	479827	1348434	4	4.5	Barium	117	J	mg/kg
12862	479827	1348434	7	7.5	Barium	152	J	mg/kg
12862	479827	1348434	9	9.5	Barium	0.54	NV	mg/L
12862	479827	1348434	9	9.5	Barium	0.54	U	mg/kg
12862	479827	1348434	10	10.5	Barium	0.561	NV	mg/L
12862	479827	1348434	10	10.5	Barium	153	J	mg/kg
12862	479827	1348434	11	11.5	Barium	0.297	NV	mg/L
12862	479827	1348434	11	11.5	Barium	25.8	J	mg/kg
12862	479827	1348434	13	13.5	Barium	38.3	J	mg/kg
12862	479827	1348434	15.5	16	Barium	52.9	J	mg/kg
12862	479827	1348434	17	17.5	Barium	119	J	mg/kg
12862	479827	1348434	19	19.5	Barium	30.6	NV	mg/kg
12862	479827	1348434	21	21.5	Barium	78.8	J	mg/kg
12862	479827	1348434	23	23.5	Barium	94	J	mg/kg
12862	479827	1348434	24.5	25	Barium	61.9	J	mg/kg
12862	479827	1348434	4.5	5	Benzene	58.2	U	ug/kg
12862	479827	1348434	4.5	5	Benzene	50	U	ug/L
12862	479827	1348434	7.5	8	Benzene	62.6	U	ug/kg
12862	479827	1348434	7.5	8	Benzene	50	U	ug/L
12862	479827	1348434	9.5	10	Benzene	59.4	U	ug/kg
12862	479827	1348434	9.5	10	Benzene	50	U	ug/L
12862	479827	1348434	10.5	11	Benzene	57.8	U	ug/kg
12862	479827	1348434	10.5	11	Benzene	50	U	ug/L
12862	479827	1348434	11.5	12	Benzene	27.8	U	ug/kg
12862	479827	1348434	11.5	12	Benzene	50	U	ug/L
12862	479827	1348434	13.5	14	Benzene	12	U	ug/kg
12862	479827	1348434	13.5	14	Benzene	50	U	ug/L
12862	479827	1348434	16	16.5	Benzene	11.8	U	ug/kg
12862	479827	1348434	16	16.5	Benzene	50	U	ug/L
12862	479827	1348434	17.5	18	Benzene	10.9	U	ug/kg
12862	479827	1348434	17.5	18	Benzene	50	U	ug/L
12862	479827	1348434	19.5	20	Benzene	11.4	UNV	ug/kg
12862	479827	1348434	19.5	20	Benzene	50	UNV	ug/L
12862	479827	1348434	21.5	22	Benzene	11.6	UNV	ug/kg
12862	479827	1348434	21.5	22	Benzene	50	UNV	ug/L
12862	479827	1348434	23.5	24	Benzene	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Benzene	50	UNV	ug/L
12862	479827	1348434			Benzene	10	UNV	ug/L
12862	479827	1348434	4.5	5	Bromodichloromethane	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Bromodichloromethane	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Bromodichloromethane	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Bromodichloromethane	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Bromodichloromethane	27.8	U	ug/kg
12862	479827	1348434	13.5	14	Bromodichloromethane	12	U	ug/kg
12862	479827	1348434	16	16.5	Bromodichloromethane	11.8	U	ug/kg
12862	479827	1348434	17.5	18	Bromodichloromethane	10.9	U	ug/kg
12862	479827	1348434	19.5	20	Bromodichloromethane	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	Bromodichloromethane	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Bromodichloromethane	11.6	UNV	ug/kg
12862	479827	1348434			Bromodichloromethane	10	UNV	ug/L
12862	479827	1348434	4.5	5	Bromoform	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Bromoform	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Bromoform	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Bromoform	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Bromoform	27.8	U	ug/kg
12862	479827	1348434	13.5	14	Bromoform	12	U	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12862	479827	1348434	16	16.5	Bromoform	11.8	U	ug/kg
12862	479827	1348434	17.5	18	Bromoform	10.9	U	ug/kg
12862	479827	1348434	19.5	20	Bromoform	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	Bromoform	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Bromoform	11.6	UNV	ug/kg
12862	479827	1348434			Bromoform	10	UNV	ug/L
12862	479827	1348434	4.5	5	Bromomethane	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Bromomethane	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Bromomethane	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Bromomethane	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Bromomethane	27.8	U	ug/kg
12862	479827	1348434	13.5	14	Bromomethane	12	U	ug/kg
12862	479827	1348434	16	16.5	Bromomethane	11.8	U	ug/kg
12862	479827	1348434	17.5	18	Bromomethane	10.9	U	ug/kg
12862	479827	1348434	19.5	20	Bromomethane	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	Bromomethane	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Bromomethane	11.6	UNV	ug/kg
12862	479827	1348434			Bromomethane	10	UNV	ug/L
12862	479827	1348434	4.5	5	Carbon disulfide	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Carbon disulfide	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Carbon disulfide	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Carbon disulfide	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Carbon disulfide	27.8	U	ug/kg
12862	479827	1348434	13.5	14	Carbon disulfide	12	U	ug/kg
12862	479827	1348434	16	16.5	Carbon disulfide	11.8	U	ug/kg
12862	479827	1348434	17.5	18	Carbon disulfide	10.9	U	ug/kg
12862	479827	1348434	19.5	20	Carbon disulfide	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	Carbon disulfide	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Carbon disulfide	11.6	UNV	ug/kg
12862	479827	1348434			Carbon disulfide	10	UNV	ug/L
12862	479827	1348434	4.5	5	Carbon Tetrachloride	58.2	U	ug/kg
12862	479827	1348434	4.5	5	Carbon Tetrachloride	50	U	ug/L
12862	479827	1348434	7.5	8	Carbon Tetrachloride	62.6	U	ug/kg
12862	479827	1348434	7.5	8	Carbon Tetrachloride	50	U	ug/L
12862	479827	1348434	9.5	10	Carbon Tetrachloride	59.4	U	ug/kg
12862	479827	1348434	9.5	10	Carbon Tetrachloride	50	U	ug/L
12862	479827	1348434	10.5	11	Carbon Tetrachloride	57.8	U	ug/kg
12862	479827	1348434	10.5	11	Carbon Tetrachloride	50	U	ug/L
12862	479827	1348434	11.5	12	Carbon Tetrachloride	27.8	U	ug/kg
12862	479827	1348434	11.5	12	Carbon Tetrachloride	50	U	ug/L
12862	479827	1348434	13.5	14	Carbon Tetrachloride	12	U	ug/kg
12862	479827	1348434	13.5	14	Carbon Tetrachloride	50	U	ug/L
12862	479827	1348434	16	16.5	Carbon Tetrachloride	11.8	U	ug/kg
12862	479827	1348434	16	16.5	Carbon Tetrachloride	50	U	ug/L
12862	479827	1348434	17.5	18	Carbon Tetrachloride	10.9	U	ug/kg
12862	479827	1348434	17.5	18	Carbon Tetrachloride	50	U	ug/L
12862	479827	1348434	19.5	20	Carbon Tetrachloride	11.4	UNV	ug/kg
12862	479827	1348434	19.5	20	Carbon Tetrachloride	50	UNV	ug/L
12862	479827	1348434	21.5	22	Carbon Tetrachloride	11.6	UNV	ug/kg
12862	479827	1348434	21.5	22	Carbon Tetrachloride	50	UNV	ug/L
12862	479827	1348434	23.5	24	Carbon Tetrachloride	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Carbon Tetrachloride	50	UNV	ug/L
12862	479827	1348434			Carbon Tetrachloride	10	UNV	ug/L
12862	479827	1348434	4.5	5	Chlorobenzene	58.2	U	ug/kg
12862	479827	1348434	4.5	5	Chlorobenzene	10000	U	ug/L
12862	479827	1348434	7.5	8	Chlorobenzene	62.6	U	ug/kg
12862	479827	1348434	7.5	8	Chlorobenzene	10000	U	ug/L
12862	479827	1348434	9.5	10	Chlorobenzene	59.4	U	ug/kg
12862	479827	1348434	9.5	10	Chlorobenzene	10000	U	ug/L

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12862	479827	1348434	10.5	11	Chlorobenzene	57.8	U	ug/kg
12862	479827	1348434	10.5	11	Chlorobenzene	10000	U	ug/L
12862	479827	1348434	11.5	12	Chlorobenzene	27.8	U	ug/kg
12862	479827	1348434	11.5	12	Chlorobenzene	10000	U	ug/L
12862	479827	1348434	13.5	14	Chlorobenzene	12	U	ug/kg
12862	479827	1348434	13.5	14	Chlorobenzene	10000	U	ug/L
12862	479827	1348434	16	16.5	Chlorobenzene	11.8	U	ug/kg
12862	479827	1348434	16	16.5	Chlorobenzene	10000	U	ug/L
12862	479827	1348434	17.5	18	Chlorobenzene	10.9	U	ug/kg
12862	479827	1348434	17.5	18	Chlorobenzene	10000	U	ug/L
12862	479827	1348434	19.5	20	Chlorobenzene	11.4	UNV	ug/kg
12862	479827	1348434	19.5	20	Chlorobenzene	10000	UNV	ug/L
12862	479827	1348434	21.5	22	Chlorobenzene	11.6	UNV	ug/kg
12862	479827	1348434	21.5	22	Chlorobenzene	10000	UNV	ug/L
12862	479827	1348434	23.5	24	Chlorobenzene	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Chlorobenzene	10000	UNV	ug/L
12862	479827	1348434			Chlorobenzene	10	UNV	ug/L
12862	479827	1348434	4.5	5	Chloroethane	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Chloroethane	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Chloroethane	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Chloroethane	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Chloroethane	27.8	U	ug/kg
12862	479827	1348434	13.5	14	Chloroethane	12	U	ug/kg
12862	479827	1348434	16	16.5	Chloroethane	11.8	U	ug/kg
12862	479827	1348434	17.5	18	Chloroethane	10.9	U	ug/kg
12862	479827	1348434	19.5	20	Chloroethane	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	Chloroethane	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Chloroethane	11.6	UNV	ug/kg
12862	479827	1348434			Chloroethane	10	UNV	ug/L
12862	479827	1348434	4.5	5	Chloroform	58.2	U	ug/kg
12862	479827	1348434	4.5	5	Chloroform	600	U	ug/L
12862	479827	1348434	7.5	8	Chloroform	62.6	U	ug/kg
12862	479827	1348434	7.5	8	Chloroform	600	U	ug/L
12862	479827	1348434	9.5	10	Chloroform	59.4	U	ug/kg
12862	479827	1348434	9.5	10	Chloroform	600	U	ug/L
12862	479827	1348434	10.5	11	Chloroform	57.8	U	ug/kg
12862	479827	1348434	10.5	11	Chloroform	600	U	ug/L
12862	479827	1348434	11.5	12	Chloroform	27.8	U	ug/kg
12862	479827	1348434	11.5	12	Chloroform	600	U	ug/L
12862	479827	1348434	13.5	14	Chloroform	12	U	ug/kg
12862	479827	1348434	13.5	14	Chloroform	600	U	ug/L
12862	479827	1348434	16	16.5	Chloroform	11.8	U	ug/kg
12862	479827	1348434	16	16.5	Chloroform	600	U	ug/L
12862	479827	1348434	17.5	18	Chloroform	10.9	U	ug/kg
12862	479827	1348434	17.5	18	Chloroform	600	U	ug/L
12862	479827	1348434	19.5	20	Chloroform	11.4	UNV	ug/kg
12862	479827	1348434	19.5	20	Chloroform	600	UNV	ug/L
12862	479827	1348434	21.5	22	Chloroform	1.1	NV	ug/kg
12862	479827	1348434	21.5	22	Chloroform	600	UNV	ug/L
12862	479827	1348434	23.5	24	Chloroform	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Chloroform	600	UNV	ug/L
12862	479827	1348434			Chloroform	10	UNV	ug/L
12862	479827	1348434	4.5	5	Chloromethane	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Chloromethane	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Chloromethane	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Chloromethane	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Chloromethane	27.8	U	ug/kg
12862	479827	1348434	13.5	14	Chloromethane	12	U	ug/kg
12862	479827	1348434	16	16.5	Chloromethane	11.8	U	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12862	479827	1348434	17.5	18	Chloromethane	10.9	U	ug/kg
12862	479827	1348434	19.5	20	Chloromethane	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	Chloromethane	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Chloromethane	11.6	UNV	ug/kg
12862	479827	1348434			Chloromethane	10	UNV	ug/L
12862	479827	1348434	4	4.5	Chromium	20.7	-	mg/kg
12862	479827	1348434	7	7.5	Chromium	30.1	-	mg/kg
12862	479827	1348434	9	9.5	Chromium	0.005	U	mg/kg
12862	479827	1348434	9	9.5	Chromium	0.005	UNV	mg/L
12862	479827	1348434	10	10.5	Chromium	0.005	UNV	mg/L
12862	479827	1348434	10	10.5	Chromium	16.7	-	mg/kg
12862	479827	1348434	11	11.5	Chromium	0.005	UNV	mg/L
12862	479827	1348434	11	11.5	Chromium	11.3	-	mg/kg
12862	479827	1348434	13	13.5	Chromium	10.6	-	mg/kg
12862	479827	1348434	15.5	16	Chromium	13.2	-	mg/kg
12862	479827	1348434	17	17.5	Chromium	24.1	-	mg/kg
12862	479827	1348434	19	19.5	Chromium	8.22	NV	mg/kg
12862	479827	1348434	21	21.5	Chromium	17.5	-	mg/kg
12862	479827	1348434	23	23.5	Chromium	19.4	-	mg/kg
12862	479827	1348434	24.5	25	Chromium	11.4	-	mg/kg
12862	479827	1348434	4.5	5	cis-1,3-Dichloropropene	58.2	U	ug/kg
12862	479827	1348434	7.5	8	cis-1,3-Dichloropropene	62.6	U	ug/kg
12862	479827	1348434	9.5	10	cis-1,3-Dichloropropene	59.4	U	ug/kg
12862	479827	1348434	10.5	11	cis-1,3-Dichloropropene	57.8	U	ug/kg
12862	479827	1348434	11.5	12	cis-1,3-Dichloropropene	27.8	U	ug/kg
12862	479827	1348434	13.5	14	cis-1,3-Dichloropropene	12	U	ug/kg
12862	479827	1348434	16	16.5	cis-1,3-Dichloropropene	11.8	U	ug/kg
12862	479827	1348434	17.5	18	cis-1,3-Dichloropropene	10.9	U	ug/kg
12862	479827	1348434	19.5	20	cis-1,3-Dichloropropene	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	cis-1,3-Dichloropropene	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	cis-1,3-Dichloropropene	11.6	UNV	ug/kg
12862	479827	1348434			cis-1,3-Dichloropropene	10	UNV	ug/L
12862	479827	1348434	4.5	5	Dibromochloromethane	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Dibromochloromethane	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Dibromochloromethane	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Dibromochloromethane	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Dibromochloromethane	27.8	U	ug/kg
12862	479827	1348434	13.5	14	Dibromochloromethane	12	U	ug/kg
12862	479827	1348434	16	16.5	Dibromochloromethane	11.8	U	ug/kg
12862	479827	1348434	17.5	18	Dibromochloromethane	10.9	U	ug/kg
12862	479827	1348434	19.5	20	Dibromochloromethane	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	Dibromochloromethane	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Dibromochloromethane	11.6	UNV	ug/kg
12862	479827	1348434			Dibromochloromethane	10	UNV	ug/L
12862	479827	1348434	4.5	5	Ethylbenzene	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Ethylbenzene	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Ethylbenzene	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Ethylbenzene	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Ethylbenzene	27.8	U	ug/kg
12862	479827	1348434	13.5	14	Ethylbenzene	12	U	ug/kg
12862	479827	1348434	16	16.5	Ethylbenzene	11.8	U	ug/kg
12862	479827	1348434	17.5	18	Ethylbenzene	10.9	U	ug/kg
12862	479827	1348434	19.5	20	Ethylbenzene	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	Ethylbenzene	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Ethylbenzene	11.6	UNV	ug/kg
12862	479827	1348434			Ethylbenzene	10	UNV	ug/L
12862	479827	1348434	2.5	3	Gross Alpha	890	NV	pCi/g
12862	479827	1348434	21.5	22	Gross Alpha	0.18	UNV	pCi/g
12862	479827	1348434	2.5	3	Gross Beta	440	NV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12862	479827	1348434	21.5	22	Gross Beta	0.31	UNV	pCi/g
12862	479827	1348434	4	4.5	Lead	12.2	J	mg/kg
12862	479827	1348434	7	7.5	Lead	14.5	J	mg/kg
12862	479827	1348434	9	9.5	Lead	0.012	U	mg/kg
12862	479827	1348434	9	9.5	Lead	0.012	UNV	mg/L
12862	479827	1348434	10	10.5	Lead	0.012	UNV	mg/L
12862	479827	1348434	10	10.5	Lead	10.1	J	mg/kg
12862	479827	1348434	11	11.5	Lead	0.012	UNV	mg/L
12862	479827	1348434	11	11.5	Lead	5.49	J	mg/kg
12862	479827	1348434	13	13.5	Lead	7.11	J	mg/kg
12862	479827	1348434	15.5	16	Lead	7.97	J	mg/kg
12862	479827	1348434	17	17.5	Lead	10.8	J	mg/kg
12862	479827	1348434	19	19.5	Lead	6.41	NV	mg/kg
12862	479827	1348434	21	21.5	Lead	8.84	J	mg/kg
12862	479827	1348434	23	23.5	Lead	9.13	J	mg/kg
12862	479827	1348434	24.5	25	Lead	8.22	J	mg/kg
12862	479827	1348434	4.5	5	Methylene chloride	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Methylene chloride	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Methylene chloride	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Methylene chloride	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Methylene chloride	27.8	U	ug/kg
12862	479827	1348434	13.5	14	Methylene chloride	12	U	ug/kg
12862	479827	1348434	16	16.5	Methylene chloride	11.8	U	ug/kg
12862	479827	1348434	17.5	18	Methylene chloride	10.9	U	ug/kg
12862	479827	1348434	19.5	20	Methylene chloride	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	Methylene chloride	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Methylene chloride	11.6	UNV	ug/kg
12862	479827	1348434			Methylene chloride	10	UNV	ug/L
12862	479827	1348434	12	12.5	Radium-226	0.709	NV	pCi/g
12862	479827	1348434	16.5	17	Radium-226	1.29	NV	pCi/g
12862	479827	1348434	20	20.5	Radium-226	0.908	NV	pCi/g
12862	479827	1348434	24	24.5	Radium-226	0.992	NV	pCi/g
12862	479827	1348434	12	12.5	Radium-228	0.546	NV	pCi/g
12862	479827	1348434	16.5	17	Radium-228	0.907	NV	pCi/g
12862	479827	1348434	20	20.5	Radium-228	0.725	NV	pCi/g
12862	479827	1348434	24	24.5	Radium-228	0.638	NV	pCi/g
12862	479827	1348434	4.5	5	Styrene	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Styrene	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Styrene	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Styrene	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Styrene	27.8	U	ug/kg
12862	479827	1348434	13.5	14	Styrene	12	U	ug/kg
12862	479827	1348434	16	16.5	Styrene	11.8	U	ug/kg
12862	479827	1348434	17.5	18	Styrene	10.9	U	ug/kg
12862	479827	1348434	19.5	20	Styrene	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	Styrene	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Styrene	11.6	UNV	ug/kg
12862	479827	1348434			Styrene	10	UNV	ug/L
12862	479827	1348434	1	1.5	Technetium-99	2.1	NV	pCi/g
12862	479827	1348434	10	10.5	Technetium-99	1.6	UNV	pCi/g
12862	479827	1348434	20	20.5	Technetium-99	1.6	UNV	pCi/g
12862	479827	1348434	4.5	5	Tetrachloroethene	258	-	ug/kg
12862	479827	1348434	4.5	5	Tetrachloroethene	32.1	J	ug/L
12862	479827	1348434	7.5	8	Tetrachloroethene	330	-	ug/kg
12862	479827	1348434	7.5	8	Tetrachloroethene	8.2	J	ug/L
12862	479827	1348434	9.5	10	Tetrachloroethene	342	-	ug/kg
12862	479827	1348434	9.5	10	Tetrachloroethene	30.2	J	ug/L
12862	479827	1348434	10.5	11	Tetrachloroethene	60.7	-	ug/kg
12862	479827	1348434	10.5	11	Tetrachloroethene	30.8	J	ug/L

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12862	479827	1348434	11.5	12	Tetrachloroethene	1520	-	ug/kg
12862	479827	1348434	11.5	12	Tetrachloroethene	54.2	J	ug/L
12862	479827	1348434	13.5	14	Tetrachloroethene	0.64	J	ug/kg
12862	479827	1348434	13.5	14	Tetrachloroethene	70	U	ug/L
12862	479827	1348434	16	16.5	Tetrachloroethene	11.8	U	ug/kg
12862	479827	1348434	16	16.5	Tetrachloroethene	70	U	ug/L
12862	479827	1348434	17.5	18	Tetrachloroethene	10.9	U	ug/kg
12862	479827	1348434	17.5	18	Tetrachloroethene	70	U	ug/L
12862	479827	1348434	19.5	20	Tetrachloroethene	11.4	UNV	ug/kg
12862	479827	1348434	19.5	20	Tetrachloroethene	70	UNV	ug/L
12862	479827	1348434	21.5	22	Tetrachloroethene	11.6	UNV	ug/kg
12862	479827	1348434	21.5	22	Tetrachloroethene	70	UNV	ug/L
12862	479827	1348434	23.5	24	Tetrachloroethene	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Tetrachloroethene	70	UNV	ug/L
12862	479827	1348434			Tetrachloroethene	10	UNV	ug/L
12862	479827	1348434	1	1.5	Thorium, Total	414	NV	mg/kg dry
12862	479827	1348434	2	2.5	Thorium, Total	92.8	NV	mg/kg dry
12862	479827	1348434	2.5	3	Thorium, Total	1729	NV	mg/kg dry
12862	479827	1348434	3	3.5	Thorium, Total	965	NV	mg/kg dry
12862	479827	1348434	3.5	4	Thorium, Total	122	NV	mg/kg dry
12862	479827	1348434	5	5.5	Thorium, Total	7.6	NV	mg/kg dry
12862	479827	1348434	10	10.5	Thorium, Total	10.5	NV	mg/kg dry
12862	479827	1348434	13	13.5	Thorium, Total	4.48	NV	mg/kg dry
12862	479827	1348434	16	16.5	Thorium, Total	3.8	NV	mg/kg dry
12862	479827	1348434	19	19.5	Thorium, Total	4.3	NV	mg/kg dry
12862	479827	1348434	22	22.5	Thorium, Total	5.57	NV	mg/kg dry
12862	479827	1348434	24	24.5	Thorium, Total	6.45	NV	mg/kg dry
12862	479827	1348434	4.5	5	Toluene	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Toluene	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Toluene	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Toluene	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Toluene	1.1	J	ug/kg
12862	479827	1348434	13.5	14	Toluene	12	U	ug/kg
12862	479827	1348434	16	16.5	Toluene	11.8	U	ug/kg
12862	479827	1348434	17.5	18	Toluene	0.37	J	ug/kg
12862	479827	1348434	19.5	20	Toluene	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	Toluene	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Toluene	11.6	UNV	ug/kg
12862	479827	1348434			Toluene	10	UNV	ug/L
12862	479827	1348434	4.5	5	trans-1,3-Dichloropropene	58.2	U	ug/kg
12862	479827	1348434	7.5	8	trans-1,3-Dichloropropene	62.6	U	ug/kg
12862	479827	1348434	9.5	10	trans-1,3-Dichloropropene	59.4	U	ug/kg
12862	479827	1348434	10.5	11	trans-1,3-Dichloropropene	57.8	U	ug/kg
12862	479827	1348434	11.5	12	trans-1,3-Dichloropropene	27.8	U	ug/kg
12862	479827	1348434	13.5	14	trans-1,3-Dichloropropene	12	U	ug/kg
12862	479827	1348434	16	16.5	trans-1,3-Dichloropropene	11.8	U	ug/kg
12862	479827	1348434	17.5	18	trans-1,3-Dichloropropene	10.9	U	ug/kg
12862	479827	1348434	19.5	20	trans-1,3-Dichloropropene	11.4	UNV	ug/kg
12862	479827	1348434	21.5	22	trans-1,3-Dichloropropene	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	trans-1,3-Dichloropropene	11.6	UNV	ug/kg
12862	479827	1348434			trans-1,3-Dichloropropene	10	UNV	ug/L
12862	479827	1348434	4.5	5	Trichloroethene	31.9	J	ug/kg
12862	479827	1348434	4.5	5	Trichloroethene	50	U	ug/L
12862	479827	1348434	7.5	8	Trichloroethene	35.7	J	ug/kg
12862	479827	1348434	7.5	8	Trichloroethene	50	U	ug/L
12862	479827	1348434	9.5	10	Trichloroethene	24.6	J	ug/kg
12862	479827	1348434	9.5	10	Trichloroethene	50	U	ug/L
12862	479827	1348434	10.5	11	Trichloroethene	60.7	-	ug/kg
12862	479827	1348434	10.5	11	Trichloroethene	50	U	ug/L

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12862	479827	1348434	11.5	12	Trichloroethene	38.3	-	ug/kg
12862	479827	1348434	11.5	12	Trichloroethene	50	U	ug/L
12862	479827	1348434	13.5	14	Trichloroethene	12	U	ug/kg
12862	479827	1348434	13.5	14	Trichloroethene	50	U	ug/L
12862	479827	1348434	16	16.5	Trichloroethene	11.8	U	ug/kg
12862	479827	1348434	16	16.5	Trichloroethene	50	U	ug/L
12862	479827	1348434	17.5	18	Trichloroethene	10.9	U	ug/kg
12862	479827	1348434	17.5	18	Trichloroethene	50	U	ug/L
12862	479827	1348434	19.5	20	Trichloroethene	11.4	UNV	ug/kg
12862	479827	1348434	19.5	20	Trichloroethene	50	UNV	ug/L
12862	479827	1348434	21.5	22	Trichloroethene	11.6	UNV	ug/kg
12862	479827	1348434	21.5	22	Trichloroethene	50	UNV	ug/L
12862	479827	1348434	23.5	24	Trichloroethene	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Trichloroethene	50	UNV	ug/L
12862	479827	1348434			Trichloroethene	10	UNV	ug/L
12862	479827	1348434	1	1.5	Uranium, Total	50.8	NV	mg/kg dry
12862	479827	1348434	2	2.5	Uranium, Total	67.1	NV	mg/kg dry
12862	479827	1348434	2.5	3	Uranium, Total	173	NV	mg/kg dry
12862	479827	1348434	3	3.5	Uranium, Total	101	NV	mg/kg dry
12862	479827	1348434	3.5	4	Uranium, Total	21.9	NV	mg/kg dry
12862	479827	1348434	5	5.5	Uranium, Total	1.81	NV	mg/kg dry
12862	479827	1348434	10	10.5	Uranium, Total	68.7	NV	mg/kg dry
12862	479827	1348434	13	13.5	Uranium, Total	9.11	NV	mg/kg dry
12862	479827	1348434	16	16.5	Uranium, Total	1.38	NV	mg/kg dry
12862	479827	1348434	19	19.5	Uranium, Total	1.4	NV	mg/kg dry
12862	479827	1348434	22	22.5	Uranium, Total	1.72	NV	mg/kg dry
12862	479827	1348434	24	24.5	Uranium, Total	1.76	NV	mg/kg dry
12862	479827	1348434	4.5	5	Vinyl chloride	58.2	U	ug/kg
12862	479827	1348434	4.5	5	Vinyl chloride	20	U	ug/L
12862	479827	1348434	7.5	8	Vinyl chloride	62.6	U	ug/kg
12862	479827	1348434	7.5	8	Vinyl chloride	20	U	ug/L
12862	479827	1348434	9.5	10	Vinyl chloride	59.4	U	ug/kg
12862	479827	1348434	9.5	10	Vinyl chloride	20	U	ug/L
12862	479827	1348434	10.5	11	Vinyl chloride	57.8	U	ug/kg
12862	479827	1348434	10.5	11	Vinyl chloride	20	U	ug/L
12862	479827	1348434	11.5	12	Vinyl chloride	27.8	U	ug/kg
12862	479827	1348434	11.5	12	Vinyl chloride	20	U	ug/L
12862	479827	1348434	13.5	14	Vinyl chloride	12	U	ug/kg
12862	479827	1348434	13.5	14	Vinyl chloride	20	U	ug/L
12862	479827	1348434	16	16.5	Vinyl chloride	11.8	U	ug/kg
12862	479827	1348434	16	16.5	Vinyl chloride	20	U	ug/L
12862	479827	1348434	17.5	18	Vinyl chloride	10.9	U	ug/kg
12862	479827	1348434	17.5	18	Vinyl chloride	20	U	ug/L
12862	479827	1348434	19.5	20	Vinyl chloride	11.4	UNV	ug/kg
12862	479827	1348434	19.5	20	Vinyl chloride	20	UNV	ug/L
12862	479827	1348434	21.5	22	Vinyl chloride	11.6	UNV	ug/kg
12862	479827	1348434	21.5	22	Vinyl chloride	20	UNV	ug/L
12862	479827	1348434	23.5	24	Vinyl chloride	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Vinyl chloride	20	UNV	ug/L
12862	479827	1348434			Vinyl chloride	10	UNV	ug/L
12862	479827	1348434	4.5	5	Xylenes, Total	58.2	U	ug/kg
12862	479827	1348434	7.5	8	Xylenes, Total	62.6	U	ug/kg
12862	479827	1348434	9.5	10	Xylenes, Total	59.4	U	ug/kg
12862	479827	1348434	10.5	11	Xylenes, Total	57.8	U	ug/kg
12862	479827	1348434	11.5	12	Xylenes, Total	27.8	U	ug/kg
12862	479827	1348434	13.5	14	Xylenes, Total	12	U	ug/kg
12862	479827	1348434	16	16.5	Xylenes, Total	11.8	U	ug/kg
12862	479827	1348434	17.5	18	Xylenes, Total	10.9	U	ug/kg
12862	479827	1348434	19.5	20	Xylenes, Total	11.4	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12862	479827	1348434	21.5	22	Xylenes, Total	11.6	UNV	ug/kg
12862	479827	1348434	23.5	24	Xylenes, Total	11.6	UNV	ug/kg
12862	479827	1348434			Xylenes, Total	10	UNV	ug/L
12862A	479827	1348434	2.5	3	1,1,1-Trichloroethane	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	1,1,2,2-Tetrachloroethane	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	1,1,2-Trichloroethane	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	1,1-Dichloroethane	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	1,1-Dichloroethene	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	1,1-Dichloroethene	70	UNV	ug/L
12862A	479827	1348434	2.5	3	1,2-Dichloroethane	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	1,2-Dichloroethane	50	UNV	ug/L
12862A	479827	1348434	2.5	3	1,2-Dichloroethene (Total)	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	1,2-Dichloropropane	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	2-Butanone	56.1	UNV	ug/kg
12862A	479827	1348434	2.5	3	2-Butanone	20000	UNV	ug/L
12862A	479827	1348434	2.5	3	2-Hexanone	56.1	UNV	ug/kg
12862A	479827	1348434	2.5	3	4-Methyl-2-pentanone	56.1	UNV	ug/kg
12862A	479827	1348434	2.5	3	Acetone	56.1	UNV	ug/kg
12862A	479827	1348434	2	2.5	Barium	60	NV	mg/kg
12862A	479827	1348434	2.5	3	Benzene	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Benzene	50	UNV	ug/L
12862A	479827	1348434	2.5	3	Bromodichloromethane	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Bromoform	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Bromomethane	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Carbon disulfide	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Carbon Tetrachloride	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Carbon Tetrachloride	50	UNV	ug/L
12862A	479827	1348434	2.5	3	Chlorobenzene	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Chlorobenzene	10000	UNV	ug/L
12862A	479827	1348434	2.5	3	Chloroethane	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Chloroform	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Chloroform	600	UNV	ug/L
12862A	479827	1348434	2.5	3	Chloromethane	11.2	UNV	ug/kg
12862A	479827	1348434	2	2.5	Chromium	14.5	NV	mg/kg
12862A	479827	1348434	2.5	3	cis-1,3-Dichloropropene	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Dibromochloromethane	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Ethylbenzene	11.2	UNV	ug/kg
12862A	479827	1348434	2	2.5	Gross Alpha	870	NV	pCi/g
12862A	479827	1348434	2	2.5	Gross Beta	420	NV	pCi/g
12862A	479827	1348434	2	2.5	Lead	0.114	NV	mg/L
12862A	479827	1348434	2	2.5	Lead	141	NV	mg/kg
12862A	479827	1348434	2.5	3	Methylene chloride	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Styrene	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Tetrachloroethene	14.8	NV	ug/kg
12862A	479827	1348434	2.5	3	Tetrachloroethene	6.9	NV	ug/L
12862A	479827	1348434	2.5	3	Toluene	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	trans-1,3-Dichloropropene	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Trichloroethene	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Trichloroethene	50	UNV	ug/L
12862A	479827	1348434	2.5	3	Vinyl chloride	11.2	UNV	ug/kg
12862A	479827	1348434	2.5	3	Vinyl chloride	20	UNV	ug/L
12862A	479827	1348434	2.5	3	Xylenes, Total	11.2	UNV	ug/kg
12862B	479827	1348434	1.5	2	1,1,1-Trichloroethane	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	1,1,2,2-Tetrachloroethane	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	1,1,2-Trichloroethane	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	1,1-Dichloroethane	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	1,1-Dichloroethene	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	1,2-Dichloroethane	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	1,2-Dichloroethene (Total)	11.4	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12862B	479827	1348434	1.5	2	1,2-Dichloropropane	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	2-Butanone	56.8	UNV	ug/kg
12862B	479827	1348434	1.5	2	2-Hexanone	56.8	UNV	ug/kg
12862B	479827	1348434	1.5	2	4-Methyl-2-pentanone	56.8	UNV	ug/kg
12862B	479827	1348434	1.5	2	Acetone	56.8	UNV	ug/kg
12862B	479827	1348434	1	1.5	Barium	133	J	mg/kg
12862B	479827	1348434	1.5	2	Benzene	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Bromodichloromethane	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Bromoform	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Bromomethane	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Carbon disulfide	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Carbon Tetrachloride	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Chlorobenzene	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Chloroethane	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Chloroform	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Chloromethane	11.4	UNV	ug/kg
12862B	479827	1348434	1	1.5	Chromium	21	-	mg/kg
12862B	479827	1348434	1.5	2	cis-1,3-Dichloropropene	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Dibromochloromethane	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Ethylbenzene	11.4	UNV	ug/kg
12862B	479827	1348434	1	1.5	Lead	26.6	J	mg/kg
12862B	479827	1348434	1.5	2	Methylene chloride	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Styrene	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Tetrachloroethene	7.2	NV	ug/kg
12862B	479827	1348434	1.5	2	Toluene	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	trans-1,3-Dichloropropene	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Trichloroethene	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Vinyl chloride	11.4	UNV	ug/kg
12862B	479827	1348434	1.5	2	Xylenes, Total	11.4	UNV	ug/kg
12863	479823	1348437	1	1.5	Technetium-99	1.7	UNV	pCi/g
12863	479823	1348437	1	1.5	Thorium, Total	255	NV	mg/kg dry
12863	479823	1348437	2	2.5	Thorium, Total	513	NV	mg/kg dry
12863	479823	1348437	2.5	3	Thorium, Total	1890	NV	mg/kg dry
12863	479823	1348437	3	3.5	Thorium, Total	2060	NV	mg/kg dry
12863	479823	1348437	3.5	4	Thorium, Total	666	NV	mg/kg dry
12863	479823	1348437	1	1.5	Uranium, Total	37.2	NV	mg/kg dry
12863	479823	1348437	2	2.5	Uranium, Total	175	NV	mg/kg dry
12863	479823	1348437	2.5	3	Uranium, Total	2390	NV	mg/kg dry
12863	479823	1348437	3	3.5	Uranium, Total	5310	NV	mg/kg dry
12863	479823	1348437	3.5	4	Uranium, Total	1050	NV	mg/kg dry
12863A	479823	1348437	1.5	2	1,1,1-Trichloroethane	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	1,1,1-Trichloroethane	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	1,1,1-Trichloroethane	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	1,1,1-Trichloroethane	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	1,1,2,2-Tetrachloroethane	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	1,1,2,2-Tetrachloroethane	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	1,1,2,2-Tetrachloroethane	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	1,1,2,2-Tetrachloroethane	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	1,1,2-Trichloroethane	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	1,1,2-Trichloroethane	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	1,1,2-Trichloroethane	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	1,1,2-Trichloroethane	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	1,1-Dichloroethane	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	1,1-Dichloroethane	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	1,1-Dichloroethane	364	NV	ug/kg
12863A	479823	1348437	3.5	4	1,1-Dichloroethane	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	1,1-Dichloroethene	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	1,1-Dichloroethene	6340	UNV	ug/kg
12863A	479823	1348437	2.5	3	1,1-Dichloroethene	70	UNV	ug/L

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863A	479823	1348437	3	3.5	1,1-Dichloroethene	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	1,1-Dichloroethene	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	1,2-Dichloroethane	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	1,2-Dichloroethane	6340	UNV	ug/kg
12863A	479823	1348437	2.5	3	1,2-Dichloroethane	50	UNV	ug/L
12863A	479823	1348437	3	3.5	1,2-Dichloroethane	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	1,2-Dichloroethane	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	1,2-Dichloroethene (Total)	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	1,2-Dichloroethene (Total)	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	1,2-Dichloroethene (Total)	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	1,2-Dichloroethene (Total)	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	1,2-Dichloropropane	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	1,2-Dichloropropane	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	1,2-Dichloropropane	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	1,2-Dichloropropane	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	2-Butanone	64	UNV	ug/kg
12863A	479823	1348437	2.5	3	2-Butanone	31700	UNV	ug/kg
12863A	479823	1348437	2.5	3	2-Butanone	20000	UNV	ug/L
12863A	479823	1348437	3	3.5	2-Butanone	29500	UNV	ug/kg
12863A	479823	1348437	3.5	4	2-Butanone	28400	UNV	ug/kg
12863A	479823	1348437	1.5	2	2-Hexanone	64	UNV	ug/kg
12863A	479823	1348437	2.5	3	2-Hexanone	31700	UNV	ug/kg
12863A	479823	1348437	3	3.5	2-Hexanone	29500	UNV	ug/kg
12863A	479823	1348437	3.5	4	2-Hexanone	28400	UNV	ug/kg
12863A	479823	1348437	1.5	2	4-Methyl-2-pentanone	64	UNV	ug/kg
12863A	479823	1348437	2.5	3	4-Methyl-2-pentanone	31700	UNV	ug/kg
12863A	479823	1348437	3	3.5	4-Methyl-2-pentanone	29500	UNV	ug/kg
12863A	479823	1348437	3.5	4	4-Methyl-2-pentanone	28400	UNV	ug/kg
12863A	479823	1348437	1.5	2	Acetone	64	UNV	ug/kg
12863A	479823	1348437	2.5	3	Acetone	31700	UNV	ug/kg
12863A	479823	1348437	3	3.5	Acetone	29500	UNV	ug/kg
12863A	479823	1348437	3.5	4	Acetone	28400	UNV	ug/kg
12863A	479823	1348437	2	2.5	Barium	65.2	NV	mg/kg
12863A	479823	1348437	1.5	2	Benzene	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Benzene	6340	UNV	ug/kg
12863A	479823	1348437	2.5	3	Benzene	50	UNV	ug/L
12863A	479823	1348437	3	3.5	Benzene	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Benzene	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Bromodichloromethane	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Bromodichloromethane	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	Bromodichloromethane	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Bromodichloromethane	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Bromoform	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Bromoform	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	Bromoform	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Bromoform	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Bromomethane	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Bromomethane	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	Bromomethane	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Bromomethane	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Carbon disulfide	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Carbon disulfide	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	Carbon disulfide	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Carbon disulfide	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Carbon Tetrachloride	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Carbon Tetrachloride	6340	UNV	ug/kg
12863A	479823	1348437	2.5	3	Carbon Tetrachloride	50	UNV	ug/L
12863A	479823	1348437	3	3.5	Carbon Tetrachloride	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Carbon Tetrachloride	5680	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863A	479823	1348437	1.5	2	Chlorobenzene	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Chlorobenzene	6340	UNV	ug/kg
12863A	479823	1348437	2.5	3	Chlorobenzene	10000	UNV	ug/L
12863A	479823	1348437	3	3.5	Chlorobenzene	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Chlorobenzene	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Chloroethane	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Chloroethane	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	Chloroethane	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Chloroethane	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Chloroform	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Chloroform	6340	UNV	ug/kg
12863A	479823	1348437	2.5	3	Chloroform	600	UNV	ug/L
12863A	479823	1348437	3	3.5	Chloroform	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Chloroform	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Chloromethane	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Chloromethane	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	Chloromethane	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Chloromethane	5680	UNV	ug/kg
12863A	479823	1348437	2	2.5	Chromium	10.5	NV	mg/kg
12863A	479823	1348437	1.5	2	cis-1,3-Dichloropropene	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	cis-1,3-Dichloropropene	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	cis-1,3-Dichloropropene	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	cis-1,3-Dichloropropene	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Dibromochloromethane	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Dibromochloromethane	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	Dibromochloromethane	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Dibromochloromethane	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Ethylbenzene	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Ethylbenzene	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	Ethylbenzene	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Ethylbenzene	5680	UNV	ug/kg
12863A	479823	1348437	3.5	4	Gross Alpha	680	NV	pCi/g
12863A	479823	1348437	3.5	4	Gross Beta	520	NV	pCi/g
12863A	479823	1348437	2	2.5	Lead	16.7	NV	mg/kg
12863A	479823	1348437	1.5	2	Methylene chloride	2.2	NV	ug/kg
12863A	479823	1348437	2.5	3	Methylene chloride	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	Methylene chloride	1260	NV	ug/kg
12863A	479823	1348437	3.5	4	Methylene chloride	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Styrene	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Styrene	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	Styrene	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Styrene	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Tetrachloroethene	58.5	NV	ug/kg
12863A	479823	1348437	2.5	3	Tetrachloroethene	3820	NV	ug/kg
12863A	479823	1348437	2.5	3	Tetrachloroethene	11.4	NV	ug/L
12863A	479823	1348437	3	3.5	Tetrachloroethene	4610	NV	ug/kg
12863A	479823	1348437	3.5	4	Tetrachloroethene	453	NV	ug/kg
12863A	479823	1348437	1.5	2	Toluene	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Toluene	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	Toluene	210	NV	ug/kg
12863A	479823	1348437	3.5	4	Toluene	230	NV	ug/kg
12863A	479823	1348437	1.5	2	trans-1,3-Dichloropropene	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	trans-1,3-Dichloropropene	6340	UNV	ug/kg
12863A	479823	1348437	3	3.5	trans-1,3-Dichloropropene	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	trans-1,3-Dichloropropene	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Trichloroethene	2.9	NV	ug/kg
12863A	479823	1348437	2.5	3	Trichloroethene	1430	NV	ug/kg
12863A	479823	1348437	2.5	3	Trichloroethene	50	UNV	ug/L
12863A	479823	1348437	3	3.5	Trichloroethene	5350	NV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863A	479823	1348437	3.5	4	Trichloroethene	2480	NV	ug/kg
12863A	479823	1348437	1.5	2	Vinyl chloride	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Vinyl chloride	6340	UNV	ug/kg
12863A	479823	1348437	2.5	3	Vinyl chloride	20	UNV	ug/L
12863A	479823	1348437	3	3.5	Vinyl chloride	5900	UNV	ug/kg
12863A	479823	1348437	3.5	4	Vinyl chloride	5680	UNV	ug/kg
12863A	479823	1348437	1.5	2	Xylenes, Total	12.8	UNV	ug/kg
12863A	479823	1348437	2.5	3	Xylenes, Total	17900	NV	ug/kg
12863A	479823	1348437	3	3.5	Xylenes, Total	40000	NV	ug/kg
12863A	479823	1348437	3.5	4	Xylenes, Total	15500	NV	ug/kg
12863B	479823	1348437	1.5	2	1,1,1-Trichloroethane	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	1,1,1-Trichloroethane	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	1,1,1-Trichloroethane	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	1,1,1-Trichloroethane	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	1,1,1-Trichloroethane	1300	U	ug/kg
12863B	479823	1348437	9.5	10	1,1,1-Trichloroethane	1220	U	ug/kg
12863B	479823	1348437	10.5	11	1,1,1-Trichloroethane	6000	U	ug/kg
12863B	479823	1348437	11.5	12	1,1,1-Trichloroethane	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	1,1,1-Trichloroethane	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	1,1,1-Trichloroethane	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	1,1,1-Trichloroethane	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	1,1,1-Trichloroethane	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	1,1,1-Trichloroethane	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	1,1,2,2-Tetrachloroethane	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	1,1,2,2-Tetrachloroethane	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	1,1,2,2-Tetrachloroethane	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	1,1,2,2-Tetrachloroethane	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	1,1,2,2-Tetrachloroethane	1300	U	ug/kg
12863B	479823	1348437	9.5	10	1,1,2,2-Tetrachloroethane	1220	U	ug/kg
12863B	479823	1348437	10.5	11	1,1,2,2-Tetrachloroethane	6000	U	ug/kg
12863B	479823	1348437	11.5	12	1,1,2,2-Tetrachloroethane	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	1,1,2,2-Tetrachloroethane	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	1,1,2,2-Tetrachloroethane	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	1,1,2,2-Tetrachloroethane	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	1,1,2,2-Tetrachloroethane	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	1,1,2,2-Tetrachloroethane	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	1,1,2-Trichloroethane	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	1,1,2-Trichloroethane	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	1,1,2-Trichloroethane	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	1,1,2-Trichloroethane	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	1,1,2-Trichloroethane	1300	U	ug/kg
12863B	479823	1348437	9.5	10	1,1,2-Trichloroethane	1220	U	ug/kg
12863B	479823	1348437	10.5	11	1,1,2-Trichloroethane	6000	U	ug/kg
12863B	479823	1348437	11.5	12	1,1,2-Trichloroethane	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	1,1,2-Trichloroethane	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	1,1,2-Trichloroethane	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	1,1,2-Trichloroethane	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	1,1,2-Trichloroethane	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	1,1,2-Trichloroethane	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	1,1-Dichloroethane	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	1,1-Dichloroethane	303	NV	ug/kg
12863B	479823	1348437	4.5	5	1,1-Dichloroethane	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	1,1-Dichloroethane	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	1,1-Dichloroethane	1300	U	ug/kg
12863B	479823	1348437	9.5	10	1,1-Dichloroethane	1220	U	ug/kg
12863B	479823	1348437	10.5	11	1,1-Dichloroethane	6000	U	ug/kg
12863B	479823	1348437	11.5	12	1,1-Dichloroethane	1.6	J	ug/kg
12863B	479823	1348437	16	16.5	1,1-Dichloroethane	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	1,1-Dichloroethane	11.2	U	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863B	479823	1348437	19.5	20	1,1-Dichloroethane	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	1,1-Dichloroethane	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	1,1-Dichloroethane	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	1,1-Dichloroethene	11	UNV	ug/kg
12863B	479823	1348437	1.5	2	1,1-Dichloroethene	70	UNV	ug/L
12863B	479823	1348437	3.5	4	1,1-Dichloroethene	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	1,1-Dichloroethene	58.1	UNV	ug/kg
12863B	479823	1348437	4.5	5	1,1-Dichloroethene	70	UNV	ug/L
12863B	479823	1348437	7.5	8	1,1-Dichloroethene	1280	UNV	ug/kg
12863B	479823	1348437	7.5	8	1,1-Dichloroethene	70	UNV	ug/L
12863B	479823	1348437	9	9.5	1,1-Dichloroethene	1300	U	ug/kg
12863B	479823	1348437	9.5	10	1,1-Dichloroethene	1220	U	ug/kg
12863B	479823	1348437	9.5	10	1,1-Dichloroethene	70	U	ug/L
12863B	479823	1348437	10.5	11	1,1-Dichloroethene	6000	U	ug/kg
12863B	479823	1348437	10.5	11	1,1-Dichloroethene	70	U	ug/L
12863B	479823	1348437	11.5	12	1,1-Dichloroethene	11.6	U	ug/kg
12863B	479823	1348437	11.5	12	1,1-Dichloroethene	70	U	ug/L
12863B	479823	1348437	13.5	14	1,1-Dichloroethene	70	U	ug/L
12863B	479823	1348437	16	16.5	1,1-Dichloroethene	11.8	U	ug/kg
12863B	479823	1348437	16	16.5	1,1-Dichloroethene	70	U	ug/L
12863B	479823	1348437	17.5	18	1,1-Dichloroethene	11.2	U	ug/kg
12863B	479823	1348437	17.5	18	1,1-Dichloroethene	70	U	ug/L
12863B	479823	1348437	19.5	20	1,1-Dichloroethene	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	1,1-Dichloroethene	70	U	ug/L
12863B	479823	1348437	21.5	22	1,1-Dichloroethene	11.5	U	ug/kg
12863B	479823	1348437	21.5	22	1,1-Dichloroethene	70	U	ug/L
12863B	479823	1348437	23.5	24	1,1-Dichloroethene	11.1	U	ug/kg
12863B	479823	1348437	23.5	24	1,1-Dichloroethene	70	U	ug/L
12863B	479823	1348437	1.5	2	1,2-Dichloroethane	11	UNV	ug/kg
12863B	479823	1348437	1.5	2	1,2-Dichloroethane	50	UNV	ug/L
12863B	479823	1348437	3.5	4	1,2-Dichloroethane	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	1,2-Dichloroethane	58.1	UNV	ug/kg
12863B	479823	1348437	4.5	5	1,2-Dichloroethane	50	UNV	ug/L
12863B	479823	1348437	7.5	8	1,2-Dichloroethane	1280	UNV	ug/kg
12863B	479823	1348437	7.5	8	1,2-Dichloroethane	50	UNV	ug/L
12863B	479823	1348437	9	9.5	1,2-Dichloroethane	1300	U	ug/kg
12863B	479823	1348437	9.5	10	1,2-Dichloroethane	1220	U	ug/kg
12863B	479823	1348437	9.5	10	1,2-Dichloroethane	50	U	ug/L
12863B	479823	1348437	10.5	11	1,2-Dichloroethane	6000	U	ug/kg
12863B	479823	1348437	10.5	11	1,2-Dichloroethane	50	U	ug/L
12863B	479823	1348437	11.5	12	1,2-Dichloroethane	11.6	U	ug/kg
12863B	479823	1348437	11.5	12	1,2-Dichloroethane	50	U	ug/L
12863B	479823	1348437	13.5	14	1,2-Dichloroethane	50	U	ug/L
12863B	479823	1348437	16	16.5	1,2-Dichloroethane	11.8	U	ug/kg
12863B	479823	1348437	16	16.5	1,2-Dichloroethane	50	U	ug/L
12863B	479823	1348437	17.5	18	1,2-Dichloroethane	11.2	U	ug/kg
12863B	479823	1348437	17.5	18	1,2-Dichloroethane	50	U	ug/L
12863B	479823	1348437	19.5	20	1,2-Dichloroethane	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	1,2-Dichloroethane	50	U	ug/L
12863B	479823	1348437	21.5	22	1,2-Dichloroethane	11.5	U	ug/kg
12863B	479823	1348437	21.5	22	1,2-Dichloroethane	50	U	ug/L
12863B	479823	1348437	23.5	24	1,2-Dichloroethane	11.1	U	ug/kg
12863B	479823	1348437	23.5	24	1,2-Dichloroethane	50	U	ug/L
12863B	479823	1348437	1.5	2	1,2-Dichloroethene (Total)	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	1,2-Dichloroethene (Total)	408	NV	ug/kg
12863B	479823	1348437	4.5	5	1,2-Dichloroethene (Total)	6.9	NV	ug/kg
12863B	479823	1348437	7.5	8	1,2-Dichloroethene (Total)	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	1,2-Dichloroethene (Total)	1300	U	ug/kg
12863B	479823	1348437	9.5	10	1,2-Dichloroethene (Total)	1220	U	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863B	479823	1348437	10.5	11	1,2-Dichloroethene (Total)	6000	U	ug/kg
12863B	479823	1348437	11.5	12	1,2-Dichloroethene (Total)	1.1	J	ug/kg
12863B	479823	1348437	16	16.5	1,2-Dichloroethene (Total)	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	1,2-Dichloroethene (Total)	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	1,2-Dichloroethene (Total)	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	1,2-Dichloroethene (Total)	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	1,2-Dichloroethene (Total)	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	1,2-Dichloropropane	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	1,2-Dichloropropane	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	1,2-Dichloropropane	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	1,2-Dichloropropane	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	1,2-Dichloropropane	1300	U	ug/kg
12863B	479823	1348437	9.5	10	1,2-Dichloropropane	1220	U	ug/kg
12863B	479823	1348437	10.5	11	1,2-Dichloropropane	6000	U	ug/kg
12863B	479823	1348437	11.5	12	1,2-Dichloropropane	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	1,2-Dichloropropane	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	1,2-Dichloropropane	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	1,2-Dichloropropane	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	1,2-Dichloropropane	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	1,2-Dichloropropane	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	2-Butanone	54.8	UNV	ug/kg
12863B	479823	1348437	1.5	2	2-Butanone	20000	UNV	ug/L
12863B	479823	1348437	3.5	4	2-Butanone	29100	UNV	ug/kg
12863B	479823	1348437	4.5	5	2-Butanone	290	UNV	ug/kg
12863B	479823	1348437	4.5	5	2-Butanone	20000	UNV	ug/L
12863B	479823	1348437	7.5	8	2-Butanone	522	NV	ug/kg
12863B	479823	1348437	7.5	8	2-Butanone	20000	UNV	ug/L
12863B	479823	1348437	9	9.5	2-Butanone	577	U	ug/kg
12863B	479823	1348437	9.5	10	2-Butanone	529	U	ug/kg
12863B	479823	1348437	9.5	10	2-Butanone	20000	U	ug/L
12863B	479823	1348437	10.5	11	2-Butanone	30000	U	ug/kg
12863B	479823	1348437	10.5	11	2-Butanone	20000	U	ug/L
12863B	479823	1348437	11.5	12	2-Butanone	14.8	J	ug/kg
12863B	479823	1348437	11.5	12	2-Butanone	20000	U	ug/L
12863B	479823	1348437	13.5	14	2-Butanone	20000	U	ug/L
12863B	479823	1348437	16	16.5	2-Butanone	59.2	U	ug/kg
12863B	479823	1348437	16	16.5	2-Butanone	20000	U	ug/L
12863B	479823	1348437	17.5	18	2-Butanone	56.3	U	ug/kg
12863B	479823	1348437	17.5	18	2-Butanone	20000	U	ug/L
12863B	479823	1348437	19.5	20	2-Butanone	55.9	U	ug/kg
12863B	479823	1348437	19.5	20	2-Butanone	20000	U	ug/L
12863B	479823	1348437	21.5	22	2-Butanone	57.4	U	ug/kg
12863B	479823	1348437	21.5	22	2-Butanone	20000	U	ug/L
12863B	479823	1348437	23.5	24	2-Butanone	55.4	U	ug/kg
12863B	479823	1348437	23.5	24	2-Butanone	20000	U	ug/L
12863B	479823	1348437	1.5	2	2-Hexanone	54.8	UNV	ug/kg
12863B	479823	1348437	3.5	4	2-Hexanone	29100	UNV	ug/kg
12863B	479823	1348437	4.5	5	2-Hexanone	290	UNV	ug/kg
12863B	479823	1348437	7.5	8	2-Hexanone	6380	UNV	ug/kg
12863B	479823	1348437	9	9.5	2-Hexanone	6510	U	ug/kg
12863B	479823	1348437	9.5	10	2-Hexanone	6110	U	ug/kg
12863B	479823	1348437	10.5	11	2-Hexanone	30000	U	ug/kg
12863B	479823	1348437	11.5	12	2-Hexanone	58	U	ug/kg
12863B	479823	1348437	16	16.5	2-Hexanone	59.2	U	ug/kg
12863B	479823	1348437	17.5	18	2-Hexanone	56.3	U	ug/kg
12863B	479823	1348437	19.5	20	2-Hexanone	55.9	U	ug/kg
12863B	479823	1348437	21.5	22	2-Hexanone	57.4	U	ug/kg
12863B	479823	1348437	23.5	24	2-Hexanone	55.4	U	ug/kg
12863B	479823	1348437	1.5	2	4-Methyl-2-pentanone	54.8	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863B	479823	1348437	3.5	4	4-Methyl-2-pentanone	29100	UNV	ug/kg
12863B	479823	1348437	4.5	5	4-Methyl-2-pentanone	290	UNV	ug/kg
12863B	479823	1348437	7.5	8	4-Methyl-2-pentanone	6380	UNV	ug/kg
12863B	479823	1348437	9	9.5	4-Methyl-2-pentanone	6510	U	ug/kg
12863B	479823	1348437	9.5	10	4-Methyl-2-pentanone	6110	U	ug/kg
12863B	479823	1348437	10.5	11	4-Methyl-2-pentanone	30000	U	ug/kg
12863B	479823	1348437	11.5	12	4-Methyl-2-pentanone	58	U	ug/kg
12863B	479823	1348437	16	16.5	4-Methyl-2-pentanone	59.2	U	ug/kg
12863B	479823	1348437	17.5	18	4-Methyl-2-pentanone	56.3	U	ug/kg
12863B	479823	1348437	19.5	20	4-Methyl-2-pentanone	55.9	U	ug/kg
12863B	479823	1348437	21.5	22	4-Methyl-2-pentanone	57.4	U	ug/kg
12863B	479823	1348437	23.5	24	4-Methyl-2-pentanone	55.4	U	ug/kg
12863B	479823	1348437	1.5	2	Acetone	54.8	UNV	ug/kg
12863B	479823	1348437	3.5	4	Acetone	29100	UNV	ug/kg
12863B	479823	1348437	4.5	5	Acetone	38.6	NV	ug/kg
12863B	479823	1348437	7.5	8	Acetone	6380	UNV	ug/kg
12863B	479823	1348437	9	9.5	Acetone	6510	U	ug/kg
12863B	479823	1348437	9.5	10	Acetone	6110	U	ug/kg
12863B	479823	1348437	10.5	11	Acetone	30000	U	ug/kg
12863B	479823	1348437	11.5	12	Acetone	22.5	U	ug/kg
12863B	479823	1348437	16	16.5	Acetone	7.7	U	ug/kg
12863B	479823	1348437	17.5	18	Acetone	7.6	U	ug/kg
12863B	479823	1348437	19.5	20	Acetone	9.7	U	ug/kg
12863B	479823	1348437	21.5	22	Acetone	9.5	U	ug/kg
12863B	479823	1348437	23.5	24	Acetone	14.6	U	ug/kg
12863B	479823	1348437	1	1.5	Barium	79.1	NV	mg/kg
12863B	479823	1348437	4	4.5	Barium	117	NV	mg/kg
12863B	479823	1348437	7	7.5	Barium	146	NV	mg/kg
12863B	479823	1348437	9	9.5	Barium	0.599	NV	mg/L
12863B	479823	1348437	9	9.5	Barium	139	NV	mg/kg
12863B	479823	1348437	10	10.5	Barium	1.15	NV	mg/L
12863B	479823	1348437	10	10.5	Barium	93.9	NV	mg/kg
12863B	479823	1348437	11	11.5	Barium	0.393	NV	mg/L
12863B	479823	1348437	11	11.5	Barium	24.2	NV	mg/kg
12863B	479823	1348437	13	13.5	Barium	45.2	NV	mg/kg
12863B	479823	1348437	15.5	16	Barium	76.9	NV	mg/kg
12863B	479823	1348437	17	17.5	Barium	55.3	NV	mg/kg
12863B	479823	1348437	19	19.5	Barium	49.4	NV	mg/kg
12863B	479823	1348437	21	21.5	Barium	88.5	NV	mg/kg
12863B	479823	1348437	23	23.5	Barium	92.8	NV	mg/kg
12863B	479823	1348437	24.5	25	Barium	81.8	NV	mg/kg
12863B	479823	1348437	1.5	2	Benzene	11	UNV	ug/kg
12863B	479823	1348437	1.5	2	Benzene	50	UNV	ug/L
12863B	479823	1348437	3.5	4	Benzene	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Benzene	58.1	UNV	ug/kg
12863B	479823	1348437	4.5	5	Benzene	50	UNV	ug/L
12863B	479823	1348437	7.5	8	Benzene	1280	UNV	ug/kg
12863B	479823	1348437	7.5	8	Benzene	50	UNV	ug/L
12863B	479823	1348437	9	9.5	Benzene	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Benzene	1220	U	ug/kg
12863B	479823	1348437	9.5	10	Benzene	50	U	ug/L
12863B	479823	1348437	10.5	11	Benzene	6000	U	ug/kg
12863B	479823	1348437	10.5	11	Benzene	50	U	ug/L
12863B	479823	1348437	11.5	12	Benzene	11.6	U	ug/kg
12863B	479823	1348437	11.5	12	Benzene	50	U	ug/L
12863B	479823	1348437	13.5	14	Benzene	50	U	ug/L
12863B	479823	1348437	16	16.5	Benzene	11.8	U	ug/kg
12863B	479823	1348437	16	16.5	Benzene	50	U	ug/L
12863B	479823	1348437	17.5	18	Benzene	11.2	U	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863B	479823	1348437	17.5	18	Benzene	50	U	ug/L
12863B	479823	1348437	19.5	20	Benzene	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Benzene	50	U	ug/L
12863B	479823	1348437	21.5	22	Benzene	11.5	U	ug/kg
12863B	479823	1348437	21.5	22	Benzene	50	U	ug/L
12863B	479823	1348437	23.5	24	Benzene	11.1	U	ug/kg
12863B	479823	1348437	23.5	24	Benzene	50	U	ug/L
12863B	479823	1348437	1.5	2	Bromodichloromethane	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	Bromodichloromethane	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Bromodichloromethane	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	Bromodichloromethane	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	Bromodichloromethane	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Bromodichloromethane	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Bromodichloromethane	6000	U	ug/kg
12863B	479823	1348437	11.5	12	Bromodichloromethane	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	Bromodichloromethane	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	Bromodichloromethane	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Bromodichloromethane	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	Bromodichloromethane	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	Bromodichloromethane	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	Bromoform	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	Bromoform	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Bromoform	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	Bromoform	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	Bromoform	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Bromoform	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Bromoform	6000	U	ug/kg
12863B	479823	1348437	11.5	12	Bromoform	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	Bromoform	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	Bromoform	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Bromoform	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	Bromoform	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	Bromoform	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	Bromomethane	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	Bromomethane	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Bromomethane	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	Bromomethane	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	Bromomethane	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Bromomethane	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Bromomethane	6000	U	ug/kg
12863B	479823	1348437	11.5	12	Bromomethane	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	Bromomethane	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	Bromomethane	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Bromomethane	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	Bromomethane	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	Bromomethane	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	Carbon disulfide	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	Carbon disulfide	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Carbon disulfide	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	Carbon disulfide	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	Carbon disulfide	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Carbon disulfide	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Carbon disulfide	6000	U	ug/kg
12863B	479823	1348437	11.5	12	Carbon disulfide	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	Carbon disulfide	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	Carbon disulfide	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Carbon disulfide	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	Carbon disulfide	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	Carbon disulfide	11.1	U	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863B	479823	1348437	1.5	2	Carbon Tetrachloride	11	UNV	ug/kg
12863B	479823	1348437	1.5	2	Carbon Tetrachloride	50	UNV	ug/L
12863B	479823	1348437	3.5	4	Carbon Tetrachloride	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Carbon Tetrachloride	58.1	UNV	ug/kg
12863B	479823	1348437	4.5	5	Carbon Tetrachloride	50	UNV	ug/L
12863B	479823	1348437	7.5	8	Carbon Tetrachloride	1280	UNV	ug/kg
12863B	479823	1348437	7.5	8	Carbon Tetrachloride	50	UNV	ug/L
12863B	479823	1348437	9	9.5	Carbon Tetrachloride	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Carbon Tetrachloride	1220	U	ug/kg
12863B	479823	1348437	9.5	10	Carbon Tetrachloride	50	U	ug/L
12863B	479823	1348437	10.5	11	Carbon Tetrachloride	6000	U	ug/kg
12863B	479823	1348437	10.5	11	Carbon Tetrachloride	50	U	ug/L
12863B	479823	1348437	11.5	12	Carbon Tetrachloride	11.6	U	ug/kg
12863B	479823	1348437	11.5	12	Carbon Tetrachloride	50	U	ug/L
12863B	479823	1348437	13.5	14	Carbon Tetrachloride	50	U	ug/L
12863B	479823	1348437	16	16.5	Carbon Tetrachloride	11.8	U	ug/kg
12863B	479823	1348437	16	16.5	Carbon Tetrachloride	50	U	ug/L
12863B	479823	1348437	17.5	18	Carbon Tetrachloride	11.2	U	ug/kg
12863B	479823	1348437	17.5	18	Carbon Tetrachloride	50	U	ug/L
12863B	479823	1348437	19.5	20	Carbon Tetrachloride	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Carbon Tetrachloride	50	U	ug/L
12863B	479823	1348437	21.5	22	Carbon Tetrachloride	11.5	U	ug/kg
12863B	479823	1348437	21.5	22	Carbon Tetrachloride	50	U	ug/L
12863B	479823	1348437	23.5	24	Carbon Tetrachloride	11.1	U	ug/kg
12863B	479823	1348437	23.5	24	Carbon Tetrachloride	50	U	ug/L
12863B	479823	1348437	1.5	2	Chlorobenzene	11	UNV	ug/kg
12863B	479823	1348437	1.5	2	Chlorobenzene	10000	UNV	ug/L
12863B	479823	1348437	3.5	4	Chlorobenzene	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Chlorobenzene	58.1	UNV	ug/kg
12863B	479823	1348437	4.5	5	Chlorobenzene	10000	UNV	ug/L
12863B	479823	1348437	7.5	8	Chlorobenzene	1280	UNV	ug/kg
12863B	479823	1348437	7.5	8	Chlorobenzene	10000	UNV	ug/L
12863B	479823	1348437	9	9.5	Chlorobenzene	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Chlorobenzene	1220	U	ug/kg
12863B	479823	1348437	9.5	10	Chlorobenzene	10000	U	ug/L
12863B	479823	1348437	10.5	11	Chlorobenzene	6000	U	ug/kg
12863B	479823	1348437	10.5	11	Chlorobenzene	10000	U	ug/L
12863B	479823	1348437	11.5	12	Chlorobenzene	11.6	U	ug/kg
12863B	479823	1348437	11.5	12	Chlorobenzene	10000	U	ug/L
12863B	479823	1348437	13.5	14	Chlorobenzene	10000	U	ug/L
12863B	479823	1348437	16	16.5	Chlorobenzene	11.8	U	ug/kg
12863B	479823	1348437	16	16.5	Chlorobenzene	10000	U	ug/L
12863B	479823	1348437	17.5	18	Chlorobenzene	11.2	U	ug/kg
12863B	479823	1348437	17.5	18	Chlorobenzene	10000	U	ug/L
12863B	479823	1348437	19.5	20	Chlorobenzene	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Chlorobenzene	10000	U	ug/L
12863B	479823	1348437	21.5	22	Chlorobenzene	11.5	U	ug/kg
12863B	479823	1348437	21.5	22	Chlorobenzene	10000	U	ug/L
12863B	479823	1348437	23.5	24	Chlorobenzene	11.1	U	ug/kg
12863B	479823	1348437	23.5	24	Chlorobenzene	10000	U	ug/L
12863B	479823	1348437	1.5	2	Chloroethane	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	Chloroethane	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Chloroethane	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	Chloroethane	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	Chloroethane	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Chloroethane	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Chloroethane	6000	U	ug/kg
12863B	479823	1348437	11.5	12	Chloroethane	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	Chloroethane	11.8	U	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863B	479823	1348437	17.5	18	Chloroethane	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Chloroethane	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	Chloroethane	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	Chloroethane	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	Chloroform	11	UNV	ug/kg
12863B	479823	1348437	1.5	2	Chloroform	600	UNV	ug/L
12863B	479823	1348437	3.5	4	Chloroform	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Chloroform	58.1	UNV	ug/kg
12863B	479823	1348437	4.5	5	Chloroform	600	UNV	ug/L
12863B	479823	1348437	7.5	8	Chloroform	1280	UNV	ug/kg
12863B	479823	1348437	7.5	8	Chloroform	600	UNV	ug/L
12863B	479823	1348437	9	9.5	Chloroform	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Chloroform	1220	U	ug/kg
12863B	479823	1348437	9.5	10	Chloroform	600	U	ug/L
12863B	479823	1348437	10.5	11	Chloroform	6000	U	ug/kg
12863B	479823	1348437	10.5	11	Chloroform	600	U	ug/L
12863B	479823	1348437	11.5	12	Chloroform	11.6	U	ug/kg
12863B	479823	1348437	11.5	12	Chloroform	600	U	ug/L
12863B	479823	1348437	13.5	14	Chloroform	600	U	ug/L
12863B	479823	1348437	16	16.5	Chloroform	11.8	U	ug/kg
12863B	479823	1348437	16	16.5	Chloroform	600	U	ug/L
12863B	479823	1348437	17.5	18	Chloroform	11.2	U	ug/kg
12863B	479823	1348437	17.5	18	Chloroform	600	U	ug/L
12863B	479823	1348437	19.5	20	Chloroform	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Chloroform	600	U	ug/L
12863B	479823	1348437	21.5	22	Chloroform	11.5	U	ug/kg
12863B	479823	1348437	21.5	22	Chloroform	600	U	ug/L
12863B	479823	1348437	23.5	24	Chloroform	11.1	U	ug/kg
12863B	479823	1348437	23.5	24	Chloroform	600	U	ug/L
12863B	479823	1348437	1.5	2	Chloromethane	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	Chloromethane	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Chloromethane	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	Chloromethane	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	Chloromethane	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Chloromethane	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Chloromethane	6000	U	ug/kg
12863B	479823	1348437	11.5	12	Chloromethane	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	Chloromethane	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	Chloromethane	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Chloromethane	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	Chloromethane	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	Chloromethane	11.1	U	ug/kg
12863B	479823	1348437	1	1.5	Chromium	10.8	NV	mg/kg
12863B	479823	1348437	4	4.5	Chromium	27.2	NV	mg/kg
12863B	479823	1348437	7	7.5	Chromium	34.9	NV	mg/kg
12863B	479823	1348437	9	9.5	Chromium	0.005	UNV	mg/L
12863B	479823	1348437	9	9.5	Chromium	24.2	NV	mg/kg
12863B	479823	1348437	10	10.5	Chromium	0.005	UNV	mg/L
12863B	479823	1348437	10	10.5	Chromium	20	NV	mg/kg
12863B	479823	1348437	11	11.5	Chromium	0.011	NV	mg/L
12863B	479823	1348437	11	11.5	Chromium	6.29	NV	mg/kg
12863B	479823	1348437	13	13.5	Chromium	13.9	NV	mg/kg
12863B	479823	1348437	15.5	16	Chromium	19.4	NV	mg/kg
12863B	479823	1348437	17	17.5	Chromium	10.2	NV	mg/kg
12863B	479823	1348437	19	19.5	Chromium	11.6	NV	mg/kg
12863B	479823	1348437	21	21.5	Chromium	18.2	NV	mg/kg
12863B	479823	1348437	23	23.5	Chromium	17.8	NV	mg/kg
12863B	479823	1348437	24.5	25	Chromium	13.2	NV	mg/kg
12863B	479823	1348437	1.5	2	cis-1,3-Dichloropropene	11	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863B	479823	1348437	3.5	4	cis-1,3-Dichloropropene	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	cis-1,3-Dichloropropene	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	cis-1,3-Dichloropropene	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	cis-1,3-Dichloropropene	1300	U	ug/kg
12863B	479823	1348437	9.5	10	cis-1,3-Dichloropropene	1220	U	ug/kg
12863B	479823	1348437	10.5	11	cis-1,3-Dichloropropene	6000	U	ug/kg
12863B	479823	1348437	11.5	12	cis-1,3-Dichloropropene	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	cis-1,3-Dichloropropene	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	cis-1,3-Dichloropropene	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	cis-1,3-Dichloropropene	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	cis-1,3-Dichloropropene	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	cis-1,3-Dichloropropene	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	Dibromochloromethane	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	Dibromochloromethane	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Dibromochloromethane	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	Dibromochloromethane	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	Dibromochloromethane	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Dibromochloromethane	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Dibromochloromethane	6000	U	ug/kg
12863B	479823	1348437	11.5	12	Dibromochloromethane	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	Dibromochloromethane	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	Dibromochloromethane	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Dibromochloromethane	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	Dibromochloromethane	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	Dibromochloromethane	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	Ethylbenzene	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	Ethylbenzene	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Ethylbenzene	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	Ethylbenzene	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	Ethylbenzene	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Ethylbenzene	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Ethylbenzene	6000	U	ug/kg
12863B	479823	1348437	11.5	12	Ethylbenzene	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	Ethylbenzene	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	Ethylbenzene	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Ethylbenzene	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	Ethylbenzene	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	Ethylbenzene	11.1	U	ug/kg
12863B	479823	1348437	3.5	4	Gross Alpha	4500	NV	pCi/g
12863B	479823	1348437	3.5	4	Gross Beta	4500	NV	pCi/g
12863B	479823	1348437	1	1.5	Lead	35.7	NV	mg/kg
12863B	479823	1348437	4	4.5	Lead	98	NV	mg/kg
12863B	479823	1348437	7	7.5	Lead	73.3	NV	mg/kg
12863B	479823	1348437	9	9.5	Lead	0.012	UNV	mg/L
12863B	479823	1348437	9	9.5	Lead	14.2	NV	mg/kg
12863B	479823	1348437	10	10.5	Lead	0.012	UNV	mg/L
12863B	479823	1348437	10	10.5	Lead	16	NV	mg/kg
12863B	479823	1348437	11	11.5	Lead	0.012	UNV	mg/L
12863B	479823	1348437	11	11.5	Lead	5.62	NV	mg/kg
12863B	479823	1348437	13	13.5	Lead	9.46	NV	mg/kg
12863B	479823	1348437	15.5	16	Lead	10.8	NV	mg/kg
12863B	479823	1348437	17	17.5	Lead	6.21	NV	mg/kg
12863B	479823	1348437	19	19.5	Lead	7.35	NV	mg/kg
12863B	479823	1348437	21	21.5	Lead	9.63	NV	mg/kg
12863B	479823	1348437	23	23.5	Lead	9.41	NV	mg/kg
12863B	479823	1348437	24.5	25	Lead	10.2	NV	mg/kg
12863B	479823	1348437	1.5	2	Methylene chloride	2.3	NV	ug/kg
12863B	479823	1348437	3.5	4	Methylene chloride	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Methylene chloride	58.1	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863B	479823	1348437	7.5	8	Methylene chloride	208	NV	ug/kg
12863B	479823	1348437	9	9.5	Methylene chloride	568	U	ug/kg
12863B	479823	1348437	9.5	10	Methylene chloride	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Methylene chloride	3200	J	ug/kg
12863B	479823	1348437	11.5	12	Methylene chloride	3.9	U	ug/kg
12863B	479823	1348437	16	16.5	Methylene chloride	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	Methylene chloride	3.5	U	ug/kg
12863B	479823	1348437	19.5	20	Methylene chloride	4.2	U	ug/kg
12863B	479823	1348437	21.5	22	Methylene chloride	3.2	U	ug/kg
12863B	479823	1348437	23.5	24	Methylene chloride	4.2	U	ug/kg
12863B	479823	1348437	12	12.5	Radium-226	0.895	NV	pCi/g
12863B	479823	1348437	16.5	17	Radium-226	0.866	NV	pCi/g
12863B	479823	1348437	20	20.5	Radium-226	0.951	NV	pCi/g
12863B	479823	1348437	24	24.5	Radium-226	0.904	NV	pCi/g
12863B	479823	1348437	12	12.5	Radium-228	0.943	NV	pCi/g
12863B	479823	1348437	16.5	17	Radium-228	0.616	NV	pCi/g
12863B	479823	1348437	20	20.5	Radium-228	0.589	NV	pCi/g
12863B	479823	1348437	24	24.5	Radium-228	0.617	NV	pCi/g
12863B	479823	1348437	1.5	2	Styrene	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	Styrene	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Styrene	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	Styrene	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	Styrene	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Styrene	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Styrene	6000	U	ug/kg
12863B	479823	1348437	11.5	12	Styrene	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	Styrene	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	Styrene	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Styrene	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	Styrene	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	Styrene	11.1	U	ug/kg
12863B	479823	1348437	10	10.5	Technetium-99	1.7	UNV	pCi/g
12863B	479823	1348437	20	20.5	Technetium-99	1.7	UNV	pCi/g
12863B	479823	1348437	1.5	2	Tetrachloroethene	3.4	NV	ug/kg
12863B	479823	1348437	1.5	2	Tetrachloroethene	70	UNV	ug/L
12863B	479823	1348437	3.5	4	Tetrachloroethene	728	NV	ug/kg
12863B	479823	1348437	4.5	5	Tetrachloroethene	59.4	NV	ug/kg
12863B	479823	1348437	4.5	5	Tetrachloroethene	76	NV	ug/L
12863B	479823	1348437	7.5	8	Tetrachloroethene	77.4	NV	ug/kg
12863B	479823	1348437	7.5	8	Tetrachloroethene	70	UNV	ug/L
12863B	479823	1348437	9	9.5	Tetrachloroethene	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Tetrachloroethene	1220	U	ug/kg
12863B	479823	1348437	9.5	10	Tetrachloroethene	70	U	ug/L
12863B	479823	1348437	10.5	11	Tetrachloroethene	6000	U	ug/kg
12863B	479823	1348437	10.5	11	Tetrachloroethene	70	U	ug/L
12863B	479823	1348437	11.5	12	Tetrachloroethene	3.5	J	ug/kg
12863B	479823	1348437	11.5	12	Tetrachloroethene	70	U	ug/L
12863B	479823	1348437	13.5	14	Tetrachloroethene	70	U	ug/L
12863B	479823	1348437	16	16.5	Tetrachloroethene	11.8	U	ug/kg
12863B	479823	1348437	16	16.5	Tetrachloroethene	70	U	ug/L
12863B	479823	1348437	17.5	18	Tetrachloroethene	11.2	U	ug/kg
12863B	479823	1348437	17.5	18	Tetrachloroethene	70	U	ug/L
12863B	479823	1348437	19.5	20	Tetrachloroethene	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Tetrachloroethene	70	U	ug/L
12863B	479823	1348437	21.5	22	Tetrachloroethene	11.5	U	ug/kg
12863B	479823	1348437	21.5	22	Tetrachloroethene	70	U	ug/L
12863B	479823	1348437	23.5	24	Tetrachloroethene	11.1	U	ug/kg
12863B	479823	1348437	23.5	24	Tetrachloroethene	70	U	ug/L
12863B	479823	1348437	3	3.5	Thorium, Total	970	NV	mg/kg dry

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863B	479823	1348437	3.5	4	Thorium, Total	7260	NV	mg/kg dry
12863B	479823	1348437	4	4.5	Thorium, Total	1770	NV	mg/kg dry
12863B	479823	1348437	4.5	5	Thorium, Total	69.3	NV	mg/kg dry
12863B	479823	1348437	5	5.5	Thorium, Total	61.3	NV	mg/kg dry
12863B	479823	1348437	5.5	6	Thorium, Total	105	NV	mg/kg dry
12863B	479823	1348437	6	6.5	Thorium, Total	60.2	NV	mg/kg dry
12863B	479823	1348437	6.5	7	Thorium, Total	139	NV	mg/kg dry
12863B	479823	1348437	7	7.5	Thorium, Total	165	NV	mg/kg dry
12863B	479823	1348437	7.5	8	Thorium, Total	279	NV	mg/kg dry
12863B	479823	1348437	8	8.5	Thorium, Total	202	NV	mg/kg dry
12863B	479823	1348437	10	10.5	Thorium, Total	15.4	NV	mg/kg dry
12863B	479823	1348437	13	13.5	Thorium, Total	4.42	NV	mg/kg dry
12863B	479823	1348437	16	16.5	Thorium, Total	3.57	NV	mg/kg dry
12863B	479823	1348437	19	19.5	Thorium, Total	4.09	NV	mg/kg dry
12863B	479823	1348437	22	22.5	Thorium, Total	5.9	NV	mg/kg dry
12863B	479823	1348437	24	24.5	Thorium, Total	3.84	NV	mg/kg dry
12863B	479823	1348437	1.5	2	Toluene	0.51	NV	ug/kg
12863B	479823	1348437	3.5	4	Toluene	231	NV	ug/kg
12863B	479823	1348437	4.5	5	Toluene	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	Toluene	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	Toluene	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Toluene	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Toluene	6000	U	ug/kg
12863B	479823	1348437	11.5	12	Toluene	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	Toluene	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	Toluene	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Toluene	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	Toluene	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	Toluene	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	trans-1,3-Dichloropropene	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	trans-1,3-Dichloropropene	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	trans-1,3-Dichloropropene	58.1	UNV	ug/kg
12863B	479823	1348437	7.5	8	trans-1,3-Dichloropropene	1280	UNV	ug/kg
12863B	479823	1348437	9	9.5	trans-1,3-Dichloropropene	1300	U	ug/kg
12863B	479823	1348437	9.5	10	trans-1,3-Dichloropropene	1220	U	ug/kg
12863B	479823	1348437	10.5	11	trans-1,3-Dichloropropene	6000	U	ug/kg
12863B	479823	1348437	11.5	12	trans-1,3-Dichloropropene	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	trans-1,3-Dichloropropene	11.8	U	ug/kg
12863B	479823	1348437	17.5	18	trans-1,3-Dichloropropene	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	trans-1,3-Dichloropropene	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	trans-1,3-Dichloropropene	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	trans-1,3-Dichloropropene	11.1	U	ug/kg
12863B	479823	1348437	1.5	2	Trichloroethene	1.2	NV	ug/kg
12863B	479823	1348437	1.5	2	Trichloroethene	4.6	NV	ug/L
12863B	479823	1348437	3.5	4	Trichloroethene	12300	NV	ug/kg
12863B	479823	1348437	4.5	5	Trichloroethene	33.3	NV	ug/kg
12863B	479823	1348437	4.5	5	Trichloroethene	21.7	NV	ug/L
12863B	479823	1348437	7.5	8	Trichloroethene	105	NV	ug/kg
12863B	479823	1348437	7.5	8	Trichloroethene	50	UNV	ug/L
12863B	479823	1348437	9	9.5	Trichloroethene	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Trichloroethene	1220	U	ug/kg
12863B	479823	1348437	9.5	10	Trichloroethene	50	U	ug/L
12863B	479823	1348437	10.5	11	Trichloroethene	6000	U	ug/kg
12863B	479823	1348437	10.5	11	Trichloroethene	50	U	ug/L
12863B	479823	1348437	11.5	12	Trichloroethene	2.3	J	ug/kg
12863B	479823	1348437	11.5	12	Trichloroethene	50	U	ug/L
12863B	479823	1348437	13.5	14	Trichloroethene	50	U	ug/L
12863B	479823	1348437	16	16.5	Trichloroethene	11.8	U	ug/kg
12863B	479823	1348437	16	16.5	Trichloroethene	50	U	ug/L

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863B	479823	1348437	17.5	18	Trichloroethene	11.2	U	ug/kg
12863B	479823	1348437	17.5	18	Trichloroethene	50	U	ug/L
12863B	479823	1348437	19.5	20	Trichloroethene	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Trichloroethene	50	U	ug/L
12863B	479823	1348437	21.5	22	Trichloroethene	11.5	U	ug/kg
12863B	479823	1348437	21.5	22	Trichloroethene	50	U	ug/L
12863B	479823	1348437	23.5	24	Trichloroethene	11.1	U	ug/kg
12863B	479823	1348437	23.5	24	Trichloroethene	50	U	ug/L
12863B	479823	1348437	3	3.5	Uranium, Total	430	NV	mg/kg dry
12863B	479823	1348437	3.5	4	Uranium, Total	39140	NV	mg/kg dry
12863B	479823	1348437	4	4.5	Uranium, Total	22000	NV	mg/kg dry
12863B	479823	1348437	4.5	5	Uranium, Total	1430	NV	mg/kg dry
12863B	479823	1348437	5	5.5	Uranium, Total	1009	NV	mg/kg dry
12863B	479823	1348437	5.5	6	Uranium, Total	673	NV	mg/kg dry
12863B	479823	1348437	6	6.5	Uranium, Total	174	NV	mg/kg dry
12863B	479823	1348437	6.5	7	Uranium, Total	348	NV	mg/kg dry
12863B	479823	1348437	7	7.5	Uranium, Total	369	NV	mg/kg dry
12863B	479823	1348437	7.5	8	Uranium, Total	550	NV	mg/kg dry
12863B	479823	1348437	8	8.5	Uranium, Total	256	NV	mg/kg dry
12863B	479823	1348437	10	10.5	Uranium, Total	204	NV	mg/kg dry
12863B	479823	1348437	13	13.5	Uranium, Total	19.3	NV	mg/kg dry
12863B	479823	1348437	16	16.5	Uranium, Total	1.67	NV	mg/kg dry
12863B	479823	1348437	19	19.5	Uranium, Total	1.6	NV	mg/kg dry
12863B	479823	1348437	22	22.5	Uranium, Total	1.45	NV	mg/kg dry
12863B	479823	1348437	24	24.5	Uranium, Total	1.31	NV	mg/kg dry
12863B	479823	1348437	1.5	2	Vinyl chloride	11	UNV	ug/kg
12863B	479823	1348437	1.5	2	Vinyl chloride	20	UNV	ug/L
12863B	479823	1348437	3.5	4	Vinyl chloride	5830	UNV	ug/kg
12863B	479823	1348437	4.5	5	Vinyl chloride	58.1	UNV	ug/kg
12863B	479823	1348437	4.5	5	Vinyl chloride	20	UNV	ug/L
12863B	479823	1348437	7.5	8	Vinyl chloride	1280	UNV	ug/kg
12863B	479823	1348437	7.5	8	Vinyl chloride	20	UNV	ug/L
12863B	479823	1348437	9	9.5	Vinyl chloride	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Vinyl chloride	1220	U	ug/kg
12863B	479823	1348437	9.5	10	Vinyl chloride	20	U	ug/L
12863B	479823	1348437	10.5	11	Vinyl chloride	6000	U	ug/kg
12863B	479823	1348437	10.5	11	Vinyl chloride	20	U	ug/L
12863B	479823	1348437	11.5	12	Vinyl chloride	1.1	J	ug/kg
12863B	479823	1348437	11.5	12	Vinyl chloride	20	U	ug/L
12863B	479823	1348437	13.5	14	Vinyl chloride	20	U	ug/L
12863B	479823	1348437	16	16.5	Vinyl chloride	11.8	U	ug/kg
12863B	479823	1348437	16	16.5	Vinyl chloride	20	U	ug/L
12863B	479823	1348437	17.5	18	Vinyl chloride	11.2	U	ug/kg
12863B	479823	1348437	17.5	18	Vinyl chloride	20	U	ug/L
12863B	479823	1348437	19.5	20	Vinyl chloride	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Vinyl chloride	20	U	ug/L
12863B	479823	1348437	21.5	22	Vinyl chloride	11.5	U	ug/kg
12863B	479823	1348437	21.5	22	Vinyl chloride	20	U	ug/L
12863B	479823	1348437	23.5	24	Vinyl chloride	11.1	U	ug/kg
12863B	479823	1348437	23.5	24	Vinyl chloride	20	U	ug/L
12863B	479823	1348437	1.5	2	Xylenes, Total	11	UNV	ug/kg
12863B	479823	1348437	3.5	4	Xylenes, Total	55600	NV	ug/kg
12863B	479823	1348437	4.5	5	Xylenes, Total	312	NV	ug/kg
12863B	479823	1348437	7.5	8	Xylenes, Total	717	NV	ug/kg
12863B	479823	1348437	9	9.5	Xylenes, Total	1300	U	ug/kg
12863B	479823	1348437	9.5	10	Xylenes, Total	1220	U	ug/kg
12863B	479823	1348437	10.5	11	Xylenes, Total	6000	U	ug/kg
12863B	479823	1348437	11.5	12	Xylenes, Total	11.6	U	ug/kg
12863B	479823	1348437	16	16.5	Xylenes, Total	11.8	U	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12863B	479823	1348437	17.5	18	Xylenes, Total	11.2	U	ug/kg
12863B	479823	1348437	19.5	20	Xylenes, Total	11.2	U	ug/kg
12863B	479823	1348437	21.5	22	Xylenes, Total	11.5	U	ug/kg
12863B	479823	1348437	23.5	24	Xylenes, Total	11.1	U	ug/kg
12863T	479823	1348437	3.5	4	Trichloroethene	55	NV	ug/L
12864	479837.33	1348444	0.5	1	1,1,1-Trichloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	1,1,1-Trichloroethane	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	1,1,1-Trichloroethane	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	1,1,1-Trichloroethane	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	1,1,1-Trichloroethane	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	1,1,1-Trichloroethane	1.5	NV	ug/kg
12864	479837.33	1348444	12.5	13	1,1,1-Trichloroethane	39.5	NV	ug/kg
12864	479837.33	1348444	14.5	15	1,1,1-Trichloroethane	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	1,1,1-Trichloroethane	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	1,1,1-Trichloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	1,1,1-Trichloroethane	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	1,1,1-Trichloroethane	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	1,1,1-Trichloroethane	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	1,1,2,2-Tetrachloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	1,1,2,2-Tetrachloroethane	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	1,1,2,2-Tetrachloroethane	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	1,1,2,2-Tetrachloroethane	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	1,1,2,2-Tetrachloroethane	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	1,1,2,2-Tetrachloroethane	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	1,1,2,2-Tetrachloroethane	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	1,1,2,2-Tetrachloroethane	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	1,1,2,2-Tetrachloroethane	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	1,1,2,2-Tetrachloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	1,1,2,2-Tetrachloroethane	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	1,1,2,2-Tetrachloroethane	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	1,1,2,2-Tetrachloroethane	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	1,1,2-Trichloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	1,1,2-Trichloroethane	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	1,1,2-Trichloroethane	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	1,1,2-Trichloroethane	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	1,1,2-Trichloroethane	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	1,1,2-Trichloroethane	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	1,1,2-Trichloroethane	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	1,1,2-Trichloroethane	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	1,1,2-Trichloroethane	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	1,1,2-Trichloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	1,1,2-Trichloroethane	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	1,1,2-Trichloroethane	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	1,1,2-Trichloroethane	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	1,1-Dichloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	1,1-Dichloroethane	5.8	NV	ug/kg
12864	479837.33	1348444	4.5	5	1,1-Dichloroethane	8.9	NV	ug/kg
12864	479837.33	1348444	6.5	7	1,1-Dichloroethane	4.9	NV	ug/kg
12864	479837.33	1348444	8.5	9	1,1-Dichloroethane	5.7	NV	ug/kg
12864	479837.33	1348444	10.5	11	1,1-Dichloroethane	6.6	NV	ug/kg
12864	479837.33	1348444	12.5	13	1,1-Dichloroethane	24.4	NV	ug/kg
12864	479837.33	1348444	14.5	15	1,1-Dichloroethane	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	1,1-Dichloroethane	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	1,1-Dichloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	1,1-Dichloroethane	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	1,1-Dichloroethane	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	1,1-Dichloroethane	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	1,1-Dichloroethene	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	1,1-Dichloroethene	12.4	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12864	479837.33	1348444	4.5	5	1,1-Dichloroethene	0.91	NV	ug/kg
12864	479837.33	1348444	6.5	7	1,1-Dichloroethene	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	1,1-Dichloroethene	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	1,1-Dichloroethene	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	1,1-Dichloroethene	3.8	NV	ug/kg
12864	479837.33	1348444	14.5	15	1,1-Dichloroethene	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	1,1-Dichloroethene	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	1,1-Dichloroethene	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	1,1-Dichloroethene	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	1,1-Dichloroethene	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	1,1-Dichloroethene	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	1,2-Dichloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	1,2-Dichloroethane	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	1,2-Dichloroethane	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	1,2-Dichloroethane	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	1,2-Dichloroethane	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	1,2-Dichloroethane	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	1,2-Dichloroethane	1.1	NV	ug/kg
12864	479837.33	1348444	14.5	15	1,2-Dichloroethane	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	1,2-Dichloroethane	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	1,2-Dichloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	1,2-Dichloroethane	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	1,2-Dichloroethane	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	1,2-Dichloroethane	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	1,2-Dichloroethene (Total)	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	1,2-Dichloroethene (Total)	3.3	NV	ug/kg
12864	479837.33	1348444	4.5	5	1,2-Dichloroethene (Total)	19.9	NV	ug/kg
12864	479837.33	1348444	6.5	7	1,2-Dichloroethene (Total)	3.7	NV	ug/kg
12864	479837.33	1348444	8.5	9	1,2-Dichloroethene (Total)	11.5	NV	ug/kg
12864	479837.33	1348444	10.5	11	1,2-Dichloroethene (Total)	17.8	NV	ug/kg
12864	479837.33	1348444	12.5	13	1,2-Dichloroethene (Total)	86.9	NV	ug/kg
12864	479837.33	1348444	14.5	15	1,2-Dichloroethene (Total)	1.1	NV	ug/kg
12864	479837.33	1348444	16.5	17	1,2-Dichloroethene (Total)	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	1,2-Dichloroethene (Total)	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	1,2-Dichloroethene (Total)	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	1,2-Dichloroethene (Total)	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	1,2-Dichloroethene (Total)	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	1,2-Dichloropropane	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	1,2-Dichloropropane	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	1,2-Dichloropropane	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	1,2-Dichloropropane	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	1,2-Dichloropropane	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	1,2-Dichloropropane	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	1,2-Dichloropropane	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	1,2-Dichloropropane	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	1,2-Dichloropropane	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	1,2-Dichloropropane	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	1,2-Dichloropropane	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	1,2-Dichloropropane	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	1,2-Dichloropropane	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	2-Butanone	56.9	UNV	ug/kg
12864	479837.33	1348444	2.5	3	2-Butanone	61.9	UNV	ug/kg
12864	479837.33	1348444	4.5	5	2-Butanone	9	NV	ug/kg
12864	479837.33	1348444	6.5	7	2-Butanone	6.2	NV	ug/kg
12864	479837.33	1348444	8.5	9	2-Butanone	59.2	UNV	ug/kg
12864	479837.33	1348444	10.5	11	2-Butanone	60.4	UNV	ug/kg
12864	479837.33	1348444	12.5	13	2-Butanone	59.5	UNV	ug/kg
12864	479837.33	1348444	14.5	15	2-Butanone	59.6	UNV	ug/kg
12864	479837.33	1348444	16.5	17	2-Butanone	54.9	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12864	479837.33	1348444	18.5	19	2-Butanone	57.3	UNV	ug/kg
12864	479837.33	1348444	20.5	21	2-Butanone	57.6	UNV	ug/kg
12864	479837.33	1348444	22.5	23	2-Butanone	56.7	UNV	ug/kg
12864	479837.33	1348444	24.5	25	2-Butanone	4.8	NV	ug/kg
12864	479837.33	1348444	0.5	1	2-Hexanone	56.9	UNV	ug/kg
12864	479837.33	1348444	2.5	3	2-Hexanone	61.9	UNV	ug/kg
12864	479837.33	1348444	4.5	5	2-Hexanone	61.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	2-Hexanone	61	UNV	ug/kg
12864	479837.33	1348444	8.5	9	2-Hexanone	59.2	UNV	ug/kg
12864	479837.33	1348444	10.5	11	2-Hexanone	60.4	UNV	ug/kg
12864	479837.33	1348444	12.5	13	2-Hexanone	59.5	UNV	ug/kg
12864	479837.33	1348444	14.5	15	2-Hexanone	59.6	UNV	ug/kg
12864	479837.33	1348444	16.5	17	2-Hexanone	54.9	UNV	ug/kg
12864	479837.33	1348444	18.5	19	2-Hexanone	57.3	UNV	ug/kg
12864	479837.33	1348444	20.5	21	2-Hexanone	57.6	UNV	ug/kg
12864	479837.33	1348444	22.5	23	2-Hexanone	56.7	UNV	ug/kg
12864	479837.33	1348444	24.5	25	2-Hexanone	54.2	UNV	ug/kg
12864	479837.33	1348444	0.5	1	4-Methyl-2-pentanone	56.9	UNV	ug/kg
12864	479837.33	1348444	2.5	3	4-Methyl-2-pentanone	61.9	UNV	ug/kg
12864	479837.33	1348444	4.5	5	4-Methyl-2-pentanone	61.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	4-Methyl-2-pentanone	61	UNV	ug/kg
12864	479837.33	1348444	8.5	9	4-Methyl-2-pentanone	59.2	UNV	ug/kg
12864	479837.33	1348444	10.5	11	4-Methyl-2-pentanone	60.4	UNV	ug/kg
12864	479837.33	1348444	12.5	13	4-Methyl-2-pentanone	59.5	UNV	ug/kg
12864	479837.33	1348444	14.5	15	4-Methyl-2-pentanone	59.6	UNV	ug/kg
12864	479837.33	1348444	16.5	17	4-Methyl-2-pentanone	54.9	UNV	ug/kg
12864	479837.33	1348444	18.5	19	4-Methyl-2-pentanone	57.3	UNV	ug/kg
12864	479837.33	1348444	20.5	21	4-Methyl-2-pentanone	57.6	UNV	ug/kg
12864	479837.33	1348444	22.5	23	4-Methyl-2-pentanone	56.7	UNV	ug/kg
12864	479837.33	1348444	24.5	25	4-Methyl-2-pentanone	54.2	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Acetone	56.9	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Acetone	16.6	NV	ug/kg
12864	479837.33	1348444	4.5	5	Acetone	6.3	NV	ug/kg
12864	479837.33	1348444	6.5	7	Acetone	39.9	NV	ug/kg
12864	479837.33	1348444	8.5	9	Acetone	10.4	NV	ug/kg
12864	479837.33	1348444	10.5	11	Acetone	60.4	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Acetone	59.5	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Acetone	59.6	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Acetone	16.5	NV	ug/kg
12864	479837.33	1348444	18.5	19	Acetone	57.3	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Acetone	7.7	NV	ug/kg
12864	479837.33	1348444	22.5	23	Acetone	11.6	NV	ug/kg
12864	479837.33	1348444	24.5	25	Acetone	24.3	NV	ug/kg
12864	479837.33	1348444	0	0.5	Barium	363	NV	mg/kg
12864	479837.33	1348444	2	2.5	Barium	95.6	NV	mg/kg
12864	479837.33	1348444	4	4.5	Barium	117	NV	mg/kg
12864	479837.33	1348444	6	6.5	Barium	100	NV	mg/kg
12864	479837.33	1348444	8	8.5	Barium	115	NV	mg/kg
12864	479837.33	1348444	10	10.5	Barium	57.5	NV	mg/kg
12864	479837.33	1348444	12	12.5	Barium	70.4	NV	mg/kg
12864	479837.33	1348444	14	14.5	Barium	70.9	NV	mg/kg
12864	479837.33	1348444	16	16.5	Barium	20.7	NV	mg/kg
12864	479837.33	1348444	18	18.5	Barium	51.5	NV	mg/kg
12864	479837.33	1348444	20	20.5	Barium	68.8	NV	mg/kg
12864	479837.33	1348444	22	22.5	Barium	90.7	NV	mg/kg
12864	479837.33	1348444	24	24.5	Barium	75.8	NV	mg/kg
12864	479837.33	1348444	0.5	1	Benzene	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Benzene	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Benzene	12.2	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12864	479837.33	1348444	6.5	7	Benzene	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Benzene	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Benzene	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Benzene	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Benzene	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Benzene	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Benzene	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Benzene	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Benzene	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Benzene	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Bromodichloromethane	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Bromodichloromethane	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Bromodichloromethane	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Bromodichloromethane	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Bromodichloromethane	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Bromodichloromethane	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Bromodichloromethane	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Bromodichloromethane	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Bromodichloromethane	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Bromodichloromethane	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Bromodichloromethane	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Bromodichloromethane	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Bromodichloromethane	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Bromoform	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Bromoform	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Bromoform	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Bromoform	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Bromoform	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Bromoform	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Bromoform	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Bromoform	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Bromoform	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Bromoform	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Bromoform	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Bromoform	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Bromoform	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Bromomethane	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Bromomethane	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Bromomethane	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Bromomethane	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Bromomethane	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Bromomethane	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Bromomethane	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Bromomethane	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Bromomethane	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Bromomethane	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Bromomethane	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Bromomethane	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Bromomethane	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Carbon disulfide	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Carbon disulfide	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Carbon disulfide	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Carbon disulfide	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Carbon disulfide	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Carbon disulfide	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Carbon disulfide	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Carbon disulfide	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Carbon disulfide	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Carbon disulfide	11.4	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12864	479837.33	1348444	20.5	21	Carbon disulfide	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Carbon disulfide	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Carbon disulfide	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Carbon Tetrachloride	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Carbon Tetrachloride	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Carbon Tetrachloride	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Carbon Tetrachloride	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Carbon Tetrachloride	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Carbon Tetrachloride	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Carbon Tetrachloride	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Carbon Tetrachloride	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Carbon Tetrachloride	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Carbon Tetrachloride	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Carbon Tetrachloride	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Carbon Tetrachloride	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Carbon Tetrachloride	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Chlorobenzene	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Chlorobenzene	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Chlorobenzene	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Chlorobenzene	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Chlorobenzene	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Chlorobenzene	0.63	NV	ug/kg
12864	479837.33	1348444	12.5	13	Chlorobenzene	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Chlorobenzene	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Chlorobenzene	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Chlorobenzene	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Chlorobenzene	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Chlorobenzene	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Chlorobenzene	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Chloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Chloroethane	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Chloroethane	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Chloroethane	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Chloroethane	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Chloroethane	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Chloroethane	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Chloroethane	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Chloroethane	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Chloroethane	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Chloroethane	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Chloroethane	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Chloroethane	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Chloroform	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Chloroform	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Chloroform	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Chloroform	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Chloroform	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Chloroform	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Chloroform	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Chloroform	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Chloroform	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Chloroform	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Chloroform	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Chloroform	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Chloroform	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Chloromethane	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Chloromethane	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Chloromethane	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Chloromethane	12.2	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12864	479837.33	1348444	8.5	9	Chloromethane	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Chloromethane	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Chloromethane	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Chloromethane	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Chloromethane	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Chloromethane	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Chloromethane	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Chloromethane	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Chloromethane	10.8	UNV	ug/kg
12864	479837.33	1348444	0	0.5	Chromium	0.02	NV	mg/L
12864	479837.33	1348444	0	0.5	Chromium	140	NV	mg/kg
12864	479837.33	1348444	2	2.5	Chromium	21.9	NV	mg/kg
12864	479837.33	1348444	4	4.5	Chromium	24.2	NV	mg/kg
12864	479837.33	1348444	6	6.5	Chromium	15.9	NV	mg/kg
12864	479837.33	1348444	8	8.5	Chromium	21.6	NV	mg/kg
12864	479837.33	1348444	10	10.5	Chromium	17.7	NV	mg/kg
12864	479837.33	1348444	12	12.5	Chromium	21.6	NV	mg/kg
12864	479837.33	1348444	14	14.5	Chromium	24	NV	mg/kg
12864	479837.33	1348444	16	16.5	Chromium	6.83	NV	mg/kg
12864	479837.33	1348444	18	18.5	Chromium	11.9	NV	mg/kg
12864	479837.33	1348444	20	20.5	Chromium	14.3	NV	mg/kg
12864	479837.33	1348444	22	22.5	Chromium	19.5	NV	mg/kg
12864	479837.33	1348444	24	24.5	Chromium	12.9	NV	mg/kg
12864	479837.33	1348444	0.5	1	cis-1,3-Dichloropropene	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	cis-1,3-Dichloropropene	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	cis-1,3-Dichloropropene	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	cis-1,3-Dichloropropene	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	cis-1,3-Dichloropropene	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	cis-1,3-Dichloropropene	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	cis-1,3-Dichloropropene	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	cis-1,3-Dichloropropene	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	cis-1,3-Dichloropropene	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	cis-1,3-Dichloropropene	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	cis-1,3-Dichloropropene	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	cis-1,3-Dichloropropene	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	cis-1,3-Dichloropropene	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Dibromochloromethane	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Dibromochloromethane	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Dibromochloromethane	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Dibromochloromethane	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Dibromochloromethane	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Dibromochloromethane	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Dibromochloromethane	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Dibromochloromethane	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Dibromochloromethane	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Dibromochloromethane	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Dibromochloromethane	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Dibromochloromethane	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Dibromochloromethane	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Ethylbenzene	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Ethylbenzene	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Ethylbenzene	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Ethylbenzene	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Ethylbenzene	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Ethylbenzene	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Ethylbenzene	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Ethylbenzene	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Ethylbenzene	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Ethylbenzene	11.4	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12864	479837.33	1348444	20.5	21	Ethylbenzene	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Ethylbenzene	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Ethylbenzene	10.8	UNV	ug/kg
12864	479837.33	1348444	0	0.5	Gross Alpha	7200	NV	pCi/g
12864	479837.33	1348444	1	1.5	Gross Alpha	80	NV	pCi/g
12864	479837.33	1348444	0	0.5	Gross Beta	4100	NV	pCi/g
12864	479837.33	1348444	1	1.5	Gross Beta	120	NV	pCi/g
12864	479837.33	1348444	0	0.5	Lead	1.2	NV	mg/L
12864	479837.33	1348444	0	0.5	Lead	12000	NV	mg/kg
12864	479837.33	1348444	2	2.5	Lead	12.2	NV	mg/kg
12864	479837.33	1348444	4	4.5	Lead	11.6	NV	mg/kg
12864	479837.33	1348444	6	6.5	Lead	14.9	NV	mg/kg
12864	479837.33	1348444	8	8.5	Lead	11	NV	mg/kg
12864	479837.33	1348444	10	10.5	Lead	8.84	NV	mg/kg
12864	479837.33	1348444	12	12.5	Lead	9.36	NV	mg/kg
12864	479837.33	1348444	14	14.5	Lead	11.1	NV	mg/kg
12864	479837.33	1348444	16	16.5	Lead	4.23	NV	mg/kg
12864	479837.33	1348444	18	18.5	Lead	6.88	NV	mg/kg
12864	479837.33	1348444	20	20.5	Lead	8.04	NV	mg/kg
12864	479837.33	1348444	22	22.5	Lead	10	NV	mg/kg
12864	479837.33	1348444	24	24.5	Lead	7.94	NV	mg/kg
12864	479837.33	1348444	0.5	1	Methylene chloride	2.1	NV	ug/kg
12864	479837.33	1348444	2.5	3	Methylene chloride	2.7	NV	ug/kg
12864	479837.33	1348444	4.5	5	Methylene chloride	3	NV	ug/kg
12864	479837.33	1348444	6.5	7	Methylene chloride	3.7	NV	ug/kg
12864	479837.33	1348444	8.5	9	Methylene chloride	2.7	NV	ug/kg
12864	479837.33	1348444	10.5	11	Methylene chloride	2.8	NV	ug/kg
12864	479837.33	1348444	12.5	13	Methylene chloride	3.6	NV	ug/kg
12864	479837.33	1348444	14.5	15	Methylene chloride	3.9	NV	ug/kg
12864	479837.33	1348444	16.5	17	Methylene chloride	1.9	NV	ug/kg
12864	479837.33	1348444	18.5	19	Methylene chloride	1.6	NV	ug/kg
12864	479837.33	1348444	20.5	21	Methylene chloride	1.6	NV	ug/kg
12864	479837.33	1348444	22.5	23	Methylene chloride	1.6	NV	ug/kg
12864	479837.33	1348444	24.5	25	Methylene chloride	2.7	NV	ug/kg
12864	479837.33	1348444	11.5	12	Radium-226	0.74	NV	pCi/g
12864	479837.33	1348444	15	15.5	Radium-226	1.06	NV	pCi/g
12864	479837.33	1348444	20	20.5	Radium-226	0.915	NV	pCi/g
12864	479837.33	1348444	24.5	25	Radium-226	0.887	NV	pCi/g
12864	479837.33	1348444	11.5	12	Radium-228	0.459	NV	pCi/g
12864	479837.33	1348444	15	15.5	Radium-228	0.688	NV	pCi/g
12864	479837.33	1348444	20	20.5	Radium-228	0.693	NV	pCi/g
12864	479837.33	1348444	24.5	25	Radium-228	0.525	NV	pCi/g
12864	479837.33	1348444	0.5	1	Styrene	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Styrene	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Styrene	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Styrene	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Styrene	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Styrene	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Styrene	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Styrene	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Styrene	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Styrene	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Styrene	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Styrene	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Styrene	10.8	UNV	ug/kg
12864	479837.33	1348444	0	0.5	Technetium-99	25	NV	pCi/g
12864	479837.33	1348444	5	5.5	Technetium-99	1.8	NV	pCi/g
12864	479837.33	1348444	10	10.5	Technetium-99	1.7	UNV	pCi/g
12864	479837.33	1348444	20	20.5	Technetium-99	1.7	UNV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12864	479837.33	1348444	0.5	1	Tetrachloroethene	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Tetrachloroethene	2.6	NV	ug/kg
12864	479837.33	1348444	4.5	5	Tetrachloroethene	24.8	NV	ug/kg
12864	479837.33	1348444	6.5	7	Tetrachloroethene	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Tetrachloroethene	6	NV	ug/kg
12864	479837.33	1348444	10.5	11	Tetrachloroethene	124	NV	ug/kg
12864	479837.33	1348444	12.5	13	Tetrachloroethene	80.6	NV	ug/kg
12864	479837.33	1348444	14.5	15	Tetrachloroethene	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Tetrachloroethene	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Tetrachloroethene	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Tetrachloroethene	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Tetrachloroethene	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Tetrachloroethene	10.8	UNV	ug/kg
12864	479837.33	1348444	0	0.5	Thorium, Total	1460	NV	mg/kg dry
12864	479837.33	1348444	0.5	1	Thorium, Total	446	NV	mg/kg dry
12864	479837.33	1348444	1	1.5	Thorium, Total	3210	NV	mg/kg dry
12864	479837.33	1348444	1.5	2	Thorium, Total	8.16	NV	mg/kg dry
12864	479837.33	1348444	5	5.5	Thorium, Total	8.5	NV	mg/kg dry
12864	479837.33	1348444	10	10.5	Thorium, Total	5.95	NV	mg/kg dry
12864	479837.33	1348444	13	13.5	Thorium, Total	5.66	NV	mg/kg dry
12864	479837.33	1348444	16	16.5	Thorium, Total	3.04	NV	mg/kg dry
12864	479837.33	1348444	19	19.5	Thorium, Total	5.54	NV	mg/kg dry
12864	479837.33	1348444	22	22.5	Thorium, Total	5.88	NV	mg/kg dry
12864	479837.33	1348444	24.5	25	Thorium, Total	4.84	NV	mg/kg dry
12864	479837.33	1348444	0.5	1	Toluene	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Toluene	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Toluene	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Toluene	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Toluene	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Toluene	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Toluene	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Toluene	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Toluene	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Toluene	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Toluene	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Toluene	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Toluene	2.5	NV	ug/kg
12864	479837.33	1348444	0.5	1	trans-1,3-Dichloropropene	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	trans-1,3-Dichloropropene	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	trans-1,3-Dichloropropene	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	trans-1,3-Dichloropropene	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	trans-1,3-Dichloropropene	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	trans-1,3-Dichloropropene	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	trans-1,3-Dichloropropene	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	trans-1,3-Dichloropropene	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	trans-1,3-Dichloropropene	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	trans-1,3-Dichloropropene	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	trans-1,3-Dichloropropene	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	trans-1,3-Dichloropropene	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	trans-1,3-Dichloropropene	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Trichloroethene	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Trichloroethene	4.7	NV	ug/kg
12864	479837.33	1348444	4.5	5	Trichloroethene	7.8	NV	ug/kg
12864	479837.33	1348444	6.5	7	Trichloroethene	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Trichloroethene	5	NV	ug/kg
12864	479837.33	1348444	10.5	11	Trichloroethene	13.9	NV	ug/kg
12864	479837.33	1348444	12.5	13	Trichloroethene	73.4	NV	ug/kg
12864	479837.33	1348444	14.5	15	Trichloroethene	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Trichloroethene	11	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12864	479837.33	1348444	18.5	19	Trichloroethene	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Trichloroethene	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Trichloroethene	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Trichloroethene	10.8	UNV	ug/kg
12864	479837.33	1348444	0	0.5	Uranium, Total	330	NV	mg/kg dry
12864	479837.33	1348444	0.5	1	Uranium, Total	126	NV	mg/kg dry
12864	479837.33	1348444	1	1.5	Uranium, Total	245	NV	mg/kg dry
12864	479837.33	1348444	1.5	2	Uranium, Total	77.7	NV	mg/kg dry
12864	479837.33	1348444	5	5.5	Uranium, Total	1.64	NV	mg/kg dry
12864	479837.33	1348444	10	10.5	Uranium, Total	18.5	NV	mg/kg dry
12864	479837.33	1348444	13	13.5	Uranium, Total	12.6	NV	mg/kg dry
12864	479837.33	1348444	16	16.5	Uranium, Total	2.9	NV	mg/kg dry
12864	479837.33	1348444	19	19.5	Uranium, Total	1.61	NV	mg/kg dry
12864	479837.33	1348444	22	22.5	Uranium, Total	1.64	NV	mg/kg dry
12864	479837.33	1348444	24.5	25	Uranium, Total	2.36	NV	mg/kg dry
12864	479837.33	1348444	0.5	1	Vinyl chloride	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Vinyl chloride	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Vinyl chloride	12.2	UNV	ug/kg
12864	479837.33	1348444	6.5	7	Vinyl chloride	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Vinyl chloride	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Vinyl chloride	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Vinyl chloride	3	NV	ug/kg
12864	479837.33	1348444	14.5	15	Vinyl chloride	1.2	NV	ug/kg
12864	479837.33	1348444	16.5	17	Vinyl chloride	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Vinyl chloride	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Vinyl chloride	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Vinyl chloride	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Vinyl chloride	10.8	UNV	ug/kg
12864	479837.33	1348444	0.5	1	Xylenes, Total	11.4	UNV	ug/kg
12864	479837.33	1348444	2.5	3	Xylenes, Total	12.4	UNV	ug/kg
12864	479837.33	1348444	4.5	5	Xylenes, Total	3.6	NV	ug/kg
12864	479837.33	1348444	6.5	7	Xylenes, Total	12.2	UNV	ug/kg
12864	479837.33	1348444	8.5	9	Xylenes, Total	11.8	UNV	ug/kg
12864	479837.33	1348444	10.5	11	Xylenes, Total	12.1	UNV	ug/kg
12864	479837.33	1348444	12.5	13	Xylenes, Total	11.9	UNV	ug/kg
12864	479837.33	1348444	14.5	15	Xylenes, Total	11.9	UNV	ug/kg
12864	479837.33	1348444	16.5	17	Xylenes, Total	11	UNV	ug/kg
12864	479837.33	1348444	18.5	19	Xylenes, Total	11.4	UNV	ug/kg
12864	479837.33	1348444	20.5	21	Xylenes, Total	11.5	UNV	ug/kg
12864	479837.33	1348444	22.5	23	Xylenes, Total	11.3	UNV	ug/kg
12864	479837.33	1348444	24.5	25	Xylenes, Total	10.8	UNV	ug/kg
12865	479826	1348448	1	1.5	1,1,1-Trichloroethane	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	1,1,1-Trichloroethane	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	1,1,1-Trichloroethane	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	1,1,1-Trichloroethane	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	1,1,1-Trichloroethane	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	1,1,1-Trichloroethane	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	1,1,1-Trichloroethane	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	1,1,1-Trichloroethane	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	1,1,1-Trichloroethane	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	1,1,1-Trichloroethane	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	1,1,1-Trichloroethane	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	1,1,1-Trichloroethane	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	1,1,1-Trichloroethane	30.2	NV	ug/kg
12865	479826	1348448	14.5	15	1,1,1-Trichloroethane	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	1,1,1-Trichloroethane	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	1,1,1-Trichloroethane	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	1,1,1-Trichloroethane	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	1,1,1-Trichloroethane	11.6	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	24.5	25	1,1,1-Trichloroethane	11	UNV	ug/kg
12865	479826	1348448	1	1.5	1,1,2,2-Tetrachloroethane	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	1,1,2,2-Tetrachloroethane	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	1,1,2,2-Tetrachloroethane	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	1,1,2,2-Tetrachloroethane	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	1,1,2,2-Tetrachloroethane	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	1,1,2,2-Tetrachloroethane	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	1,1,2,2-Tetrachloroethane	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	1,1,2,2-Tetrachloroethane	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	1,1,2,2-Tetrachloroethane	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	1,1,2,2-Tetrachloroethane	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	1,1,2,2-Tetrachloroethane	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	1,1,2,2-Tetrachloroethane	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	1,1,2,2-Tetrachloroethane	12	UNV	ug/kg
12865	479826	1348448	14.5	15	1,1,2,2-Tetrachloroethane	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	1,1,2,2-Tetrachloroethane	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	1,1,2,2-Tetrachloroethane	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	1,1,2,2-Tetrachloroethane	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	1,1,2,2-Tetrachloroethane	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	1,1,2,2-Tetrachloroethane	11	UNV	ug/kg
12865	479826	1348448	1	1.5	1,1,2-Trichloroethane	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	1,1,2-Trichloroethane	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	1,1,2-Trichloroethane	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	1,1,2-Trichloroethane	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	1,1,2-Trichloroethane	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	1,1,2-Trichloroethane	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	1,1,2-Trichloroethane	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	1,1,2-Trichloroethane	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	1,1,2-Trichloroethane	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	1,1,2-Trichloroethane	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	1,1,2-Trichloroethane	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	1,1,2-Trichloroethane	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	1,1,2-Trichloroethane	12	UNV	ug/kg
12865	479826	1348448	14.5	15	1,1,2-Trichloroethane	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	1,1,2-Trichloroethane	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	1,1,2-Trichloroethane	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	1,1,2-Trichloroethane	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	1,1,2-Trichloroethane	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	1,1,2-Trichloroethane	11	UNV	ug/kg
12865	479826	1348448	1	1.5	1,1-Dichloroethane	0.98	NV	ug/kg
12865	479826	1348448	2.5	3	1,1-Dichloroethane	65.4	NV	ug/kg
12865	479826	1348448	3	3.5	1,1-Dichloroethane	663	NV	ug/kg
12865	479826	1348448	4	4.5	1,1-Dichloroethane	644	NV	ug/kg
12865	479826	1348448	4.5	5	1,1-Dichloroethane	636	NV	ug/kg
12865	479826	1348448	6.5	7	1,1-Dichloroethane	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	1,1-Dichloroethane	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	1,1-Dichloroethane	306	NV	ug/kg
12865	479826	1348448	8.5	9	1,1-Dichloroethane	333	NV	ug/kg
12865	479826	1348448	10	10.5	1,1-Dichloroethane	459	NV	ug/kg
12865	479826	1348448	10.5	11	1,1-Dichloroethane	385	NV	ug/kg
12865	479826	1348448	11.5	12	1,1-Dichloroethane	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	1,1-Dichloroethane	31.2	NV	ug/kg
12865	479826	1348448	14.5	15	1,1-Dichloroethane	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	1,1-Dichloroethane	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	1,1-Dichloroethane	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	1,1-Dichloroethane	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	1,1-Dichloroethane	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	1,1-Dichloroethane	11	UNV	ug/kg
12865	479826	1348448	1	1.5	1,1-Dichloroethene	12.1	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	2.5	3	1,1-Dichloroethene	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	1,1-Dichloroethene	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	1,1-Dichloroethene	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	1,1-Dichloroethene	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	1,1-Dichloroethene	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	1,1-Dichloroethene	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	1,1-Dichloroethene	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	1,1-Dichloroethene	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	1,1-Dichloroethene	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	1,1-Dichloroethene	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	1,1-Dichloroethene	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	1,1-Dichloroethene	4.4	NV	ug/kg
12865	479826	1348448	14.5	15	1,1-Dichloroethene	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	1,1-Dichloroethene	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	1,1-Dichloroethene	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	1,1-Dichloroethene	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	1,1-Dichloroethene	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	1,1-Dichloroethene	11	UNV	ug/kg
12865	479826	1348448	1	1.5	1,2-Dichloroethane	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	1,2-Dichloroethane	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	1,2-Dichloroethane	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	1,2-Dichloroethane	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	1,2-Dichloroethane	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	1,2-Dichloroethane	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	1,2-Dichloroethane	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	1,2-Dichloroethane	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	1,2-Dichloroethane	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	1,2-Dichloroethane	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	1,2-Dichloroethane	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	1,2-Dichloroethane	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	1,2-Dichloroethane	1.1	NV	ug/kg
12865	479826	1348448	14.5	15	1,2-Dichloroethane	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	1,2-Dichloroethane	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	1,2-Dichloroethane	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	1,2-Dichloroethane	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	1,2-Dichloroethane	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	1,2-Dichloroethane	11	UNV	ug/kg
12865	479826	1348448	1	1.5	1,2-Dichloroethene (Total)	0.87	NV	ug/kg
12865	479826	1348448	2.5	3	1,2-Dichloroethene (Total)	26.9	NV	ug/kg
12865	479826	1348448	3	3.5	1,2-Dichloroethene (Total)	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	1,2-Dichloroethene (Total)	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	1,2-Dichloroethene (Total)	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	1,2-Dichloroethene (Total)	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	1,2-Dichloroethene (Total)	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	1,2-Dichloroethene (Total)	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	1,2-Dichloroethene (Total)	339	NV	ug/kg
12865	479826	1348448	10	10.5	1,2-Dichloroethene (Total)	1420	NV	ug/kg
12865	479826	1348448	10.5	11	1,2-Dichloroethene (Total)	1340	NV	ug/kg
12865	479826	1348448	11.5	12	1,2-Dichloroethene (Total)	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	1,2-Dichloroethene (Total)	168	NV	ug/kg
12865	479826	1348448	14.5	15	1,2-Dichloroethene (Total)	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	1,2-Dichloroethene (Total)	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	1,2-Dichloroethene (Total)	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	1,2-Dichloroethene (Total)	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	1,2-Dichloroethene (Total)	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	1,2-Dichloroethene (Total)	11	UNV	ug/kg
12865	479826	1348448	1	1.5	1,2-Dichloropropane	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	1,2-Dichloropropane	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	1,2-Dichloropropane	6070	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	4	4.5	1,2-Dichloropropane	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	1,2-Dichloropropane	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	1,2-Dichloropropane	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	1,2-Dichloropropane	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	1,2-Dichloropropane	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	1,2-Dichloropropane	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	1,2-Dichloropropane	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	1,2-Dichloropropane	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	1,2-Dichloropropane	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	1,2-Dichloropropane	12	UNV	ug/kg
12865	479826	1348448	14.5	15	1,2-Dichloropropane	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	1,2-Dichloropropane	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	1,2-Dichloropropane	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	1,2-Dichloropropane	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	1,2-Dichloropropane	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	1,2-Dichloropropane	11	UNV	ug/kg
12865	479826	1348448	1	1.5	2-Butanone	60.6	UNV	ug/kg
12865	479826	1348448	2.5	3	2-Butanone	63.2	UNV	ug/kg
12865	479826	1348448	3	3.5	2-Butanone	30400	UNV	ug/kg
12865	479826	1348448	4	4.5	2-Butanone	29400	UNV	ug/kg
12865	479826	1348448	4.5	5	2-Butanone	29800	UNV	ug/kg
12865	479826	1348448	6.5	7	2-Butanone	594	NV	ug/kg
12865	479826	1348448	7.5	8	2-Butanone	30800	UNV	ug/kg
12865	479826	1348448	8	8.5	2-Butanone	30400	UNV	ug/kg
12865	479826	1348448	8.5	9	2-Butanone	30400	UNV	ug/kg
12865	479826	1348448	10	10.5	2-Butanone	30000	UNV	ug/kg
12865	479826	1348448	10.5	11	2-Butanone	30300	UNV	ug/kg
12865	479826	1348448	11.5	12	2-Butanone	518	NV	ug/kg
12865	479826	1348448	12.5	13	2-Butanone	60.1	UNV	ug/kg
12865	479826	1348448	14.5	15	2-Butanone	54.5	UNV	ug/kg
12865	479826	1348448	16.5	17	2-Butanone	57	UNV	ug/kg
12865	479826	1348448	18.5	19	2-Butanone	58.4	UNV	ug/kg
12865	479826	1348448	20.5	21	2-Butanone	58.4	UNV	ug/kg
12865	479826	1348448	22.5	23	2-Butanone	58.1	UNV	ug/kg
12865	479826	1348448	24.5	25	2-Butanone	55.3	UNV	ug/kg
12865	479826	1348448	1	1.5	2-Hexanone	60.6	UNV	ug/kg
12865	479826	1348448	2.5	3	2-Hexanone	63.2	UNV	ug/kg
12865	479826	1348448	3	3.5	2-Hexanone	30400	UNV	ug/kg
12865	479826	1348448	4	4.5	2-Hexanone	29400	UNV	ug/kg
12865	479826	1348448	4.5	5	2-Hexanone	29800	UNV	ug/kg
12865	479826	1348448	6.5	7	2-Hexanone	6040	UNV	ug/kg
12865	479826	1348448	7.5	8	2-Hexanone	30800	UNV	ug/kg
12865	479826	1348448	8	8.5	2-Hexanone	30400	UNV	ug/kg
12865	479826	1348448	8.5	9	2-Hexanone	30400	UNV	ug/kg
12865	479826	1348448	10	10.5	2-Hexanone	30000	UNV	ug/kg
12865	479826	1348448	10.5	11	2-Hexanone	30300	UNV	ug/kg
12865	479826	1348448	11.5	12	2-Hexanone	5630	UNV	ug/kg
12865	479826	1348448	12.5	13	2-Hexanone	60.1	UNV	ug/kg
12865	479826	1348448	14.5	15	2-Hexanone	54.5	UNV	ug/kg
12865	479826	1348448	16.5	17	2-Hexanone	57	UNV	ug/kg
12865	479826	1348448	18.5	19	2-Hexanone	58.4	UNV	ug/kg
12865	479826	1348448	20.5	21	2-Hexanone	58.4	UNV	ug/kg
12865	479826	1348448	22.5	23	2-Hexanone	58.1	UNV	ug/kg
12865	479826	1348448	24.5	25	2-Hexanone	55.3	UNV	ug/kg
12865	479826	1348448	1	1.5	4-Methyl-2-pentanone	60.6	UNV	ug/kg
12865	479826	1348448	2.5	3	4-Methyl-2-pentanone	63.2	UNV	ug/kg
12865	479826	1348448	3	3.5	4-Methyl-2-pentanone	30400	UNV	ug/kg
12865	479826	1348448	4	4.5	4-Methyl-2-pentanone	29400	UNV	ug/kg
12865	479826	1348448	4.5	5	4-Methyl-2-pentanone	29800	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	6.5	7	4-Methyl-2-pentanone	6040	UNV	ug/kg
12865	479826	1348448	7.5	8	4-Methyl-2-pentanone	30800	UNV	ug/kg
12865	479826	1348448	8	8.5	4-Methyl-2-pentanone	30400	UNV	ug/kg
12865	479826	1348448	8.5	9	4-Methyl-2-pentanone	30400	UNV	ug/kg
12865	479826	1348448	10	10.5	4-Methyl-2-pentanone	30000	UNV	ug/kg
12865	479826	1348448	10.5	11	4-Methyl-2-pentanone	30300	UNV	ug/kg
12865	479826	1348448	11.5	12	4-Methyl-2-pentanone	5630	UNV	ug/kg
12865	479826	1348448	12.5	13	4-Methyl-2-pentanone	60.1	UNV	ug/kg
12865	479826	1348448	14.5	15	4-Methyl-2-pentanone	54.5	UNV	ug/kg
12865	479826	1348448	16.5	17	4-Methyl-2-pentanone	57	UNV	ug/kg
12865	479826	1348448	18.5	19	4-Methyl-2-pentanone	58.4	UNV	ug/kg
12865	479826	1348448	20.5	21	4-Methyl-2-pentanone	58.4	UNV	ug/kg
12865	479826	1348448	22.5	23	4-Methyl-2-pentanone	58.1	UNV	ug/kg
12865	479826	1348448	24.5	25	4-Methyl-2-pentanone	55.3	UNV	ug/kg
12865	479826	1348448	1	1.5	Acetone	60.6	UNV	ug/kg
12865	479826	1348448	2.5	3	Acetone	63.2	UNV	ug/kg
12865	479826	1348448	3	3.5	Acetone	30400	UNV	ug/kg
12865	479826	1348448	4	4.5	Acetone	29400	UNV	ug/kg
12865	479826	1348448	4.5	5	Acetone	29800	UNV	ug/kg
12865	479826	1348448	6.5	7	Acetone	6040	UNV	ug/kg
12865	479826	1348448	7.5	8	Acetone	30800	UNV	ug/kg
12865	479826	1348448	8	8.5	Acetone	30400	UNV	ug/kg
12865	479826	1348448	8.5	9	Acetone	30400	UNV	ug/kg
12865	479826	1348448	10	10.5	Acetone	30000	UNV	ug/kg
12865	479826	1348448	10.5	11	Acetone	30300	UNV	ug/kg
12865	479826	1348448	11.5	12	Acetone	5630	UNV	ug/kg
12865	479826	1348448	12.5	13	Acetone	60.1	UNV	ug/kg
12865	479826	1348448	14.5	15	Acetone	18.8	NV	ug/kg
12865	479826	1348448	16.5	17	Acetone	25.4	NV	ug/kg
12865	479826	1348448	18.5	19	Acetone	58.4	UNV	ug/kg
12865	479826	1348448	20.5	21	Acetone	58.4	UNV	ug/kg
12865	479826	1348448	22.5	23	Acetone	58.1	UNV	ug/kg
12865	479826	1348448	24.5	25	Acetone	55.3	UNV	ug/kg
12865	479826	1348448	0.5	1	Barium	93.8	NV	mg/kg
12865	479826	1348448	2	2.5	Barium	104	NV	mg/kg
12865	479826	1348448	4	4.5	Barium	118	NV	mg/kg
12865	479826	1348448	6	6.5	Barium	97.6	NV	mg/kg
12865	479826	1348448	8	8.5	Barium	113	NV	mg/kg
12865	479826	1348448	10	10.5	Barium	73.4	NV	mg/kg
12865	479826	1348448	12	12.5	Barium	55.1	NV	mg/kg
12865	479826	1348448	14	14.5	Barium	68.6	NV	mg/kg
12865	479826	1348448	16	16.5	Barium	110	NV	mg/kg
12865	479826	1348448	18	18.5	Barium	73.8	NV	mg/kg
12865	479826	1348448	20	20.5	Barium	95.3	NV	mg/kg
12865	479826	1348448	22	22.5	Barium	64.7	NV	mg/kg
12865	479826	1348448	24	24.5	Barium	82.7	NV	mg/kg
12865	479826	1348448	1	1.5	Benzene	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Benzene	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Benzene	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Benzene	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Benzene	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Benzene	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Benzene	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Benzene	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Benzene	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Benzene	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Benzene	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Benzene	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Benzene	12	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	14.5	15	Benzene	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Benzene	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Benzene	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Benzene	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Benzene	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Benzene	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Bromodichloromethane	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Bromodichloromethane	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Bromodichloromethane	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Bromodichloromethane	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Bromodichloromethane	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Bromodichloromethane	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Bromodichloromethane	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Bromodichloromethane	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Bromodichloromethane	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Bromodichloromethane	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Bromodichloromethane	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Bromodichloromethane	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Bromodichloromethane	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Bromodichloromethane	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Bromodichloromethane	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Bromodichloromethane	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Bromodichloromethane	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Bromodichloromethane	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Bromodichloromethane	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Bromoform	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Bromoform	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Bromoform	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Bromoform	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Bromoform	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Bromoform	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Bromoform	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Bromoform	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Bromoform	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Bromoform	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Bromoform	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Bromoform	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Bromoform	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Bromoform	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Bromoform	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Bromoform	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Bromoform	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Bromoform	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Bromoform	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Bromomethane	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Bromomethane	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Bromomethane	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Bromomethane	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Bromomethane	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Bromomethane	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Bromomethane	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Bromomethane	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Bromomethane	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Bromomethane	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Bromomethane	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Bromomethane	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Bromomethane	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Bromomethane	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Bromomethane	11.4	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	18.5	19	Bromomethane	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Bromomethane	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Bromomethane	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Bromomethane	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Carbon disulfide	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Carbon disulfide	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Carbon disulfide	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Carbon disulfide	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Carbon disulfide	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Carbon disulfide	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Carbon disulfide	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Carbon disulfide	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Carbon disulfide	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Carbon disulfide	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Carbon disulfide	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Carbon disulfide	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Carbon disulfide	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Carbon disulfide	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Carbon disulfide	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Carbon disulfide	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Carbon disulfide	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Carbon disulfide	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Carbon disulfide	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Carbon Tetrachloride	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Carbon Tetrachloride	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Carbon Tetrachloride	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Carbon Tetrachloride	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Carbon Tetrachloride	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Carbon Tetrachloride	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Carbon Tetrachloride	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Carbon Tetrachloride	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Carbon Tetrachloride	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Carbon Tetrachloride	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Carbon Tetrachloride	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Carbon Tetrachloride	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Carbon Tetrachloride	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Carbon Tetrachloride	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Carbon Tetrachloride	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Carbon Tetrachloride	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Carbon Tetrachloride	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Carbon Tetrachloride	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Carbon Tetrachloride	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Chlorobenzene	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Chlorobenzene	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Chlorobenzene	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Chlorobenzene	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Chlorobenzene	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Chlorobenzene	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Chlorobenzene	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Chlorobenzene	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Chlorobenzene	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Chlorobenzene	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Chlorobenzene	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Chlorobenzene	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Chlorobenzene	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Chlorobenzene	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Chlorobenzene	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Chlorobenzene	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Chlorobenzene	11.7	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	22.5	23	Chlorobenzene	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Chlorobenzene	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Chloroethane	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Chloroethane	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Chloroethane	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Chloroethane	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Chloroethane	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Chloroethane	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Chloroethane	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Chloroethane	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Chloroethane	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Chloroethane	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Chloroethane	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Chloroethane	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Chloroethane	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Chloroethane	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Chloroethane	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Chloroethane	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Chloroethane	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Chloroethane	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Chloroethane	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Chloroform	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Chloroform	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Chloroform	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Chloroform	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Chloroform	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Chloroform	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Chloroform	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Chloroform	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Chloroform	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Chloroform	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Chloroform	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Chloroform	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Chloroform	1.2	NV	ug/kg
12865	479826	1348448	14.5	15	Chloroform	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Chloroform	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Chloroform	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Chloroform	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Chloroform	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Chloroform	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Chloromethane	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Chloromethane	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Chloromethane	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Chloromethane	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Chloromethane	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Chloromethane	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Chloromethane	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Chloromethane	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Chloromethane	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Chloromethane	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Chloromethane	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Chloromethane	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Chloromethane	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Chloromethane	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Chloromethane	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Chloromethane	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Chloromethane	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Chloromethane	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Chloromethane	11	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	0.5	1	Chromium	22.4	NV	mg/kg
12865	479826	1348448	2	2.5	Chromium	30.1	NV	mg/kg
12865	479826	1348448	4	4.5	Chromium	23.4	NV	mg/kg
12865	479826	1348448	6	6.5	Chromium	20.3	NV	mg/kg
12865	479826	1348448	8	8.5	Chromium	23.2	NV	mg/kg
12865	479826	1348448	10	10.5	Chromium	17.1	NV	mg/kg
12865	479826	1348448	12	12.5	Chromium	15.5	NV	mg/kg
12865	479826	1348448	14	14.5	Chromium	19.9	NV	mg/kg
12865	479826	1348448	16	16.5	Chromium	18.8	NV	mg/kg
12865	479826	1348448	18	18.5	Chromium	15.1	NV	mg/kg
12865	479826	1348448	20	20.5	Chromium	19.4	NV	mg/kg
12865	479826	1348448	22	22.5	Chromium	13.3	NV	mg/kg
12865	479826	1348448	24	24.5	Chromium	13.9	NV	mg/kg
12865	479826	1348448	1	1.5	cis-1,3-Dichloropropene	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	cis-1,3-Dichloropropene	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	cis-1,3-Dichloropropene	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	cis-1,3-Dichloropropene	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	cis-1,3-Dichloropropene	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	cis-1,3-Dichloropropene	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	cis-1,3-Dichloropropene	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	cis-1,3-Dichloropropene	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	cis-1,3-Dichloropropene	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	cis-1,3-Dichloropropene	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	cis-1,3-Dichloropropene	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	cis-1,3-Dichloropropene	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	cis-1,3-Dichloropropene	12	UNV	ug/kg
12865	479826	1348448	14.5	15	cis-1,3-Dichloropropene	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	cis-1,3-Dichloropropene	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	cis-1,3-Dichloropropene	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	cis-1,3-Dichloropropene	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	cis-1,3-Dichloropropene	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	cis-1,3-Dichloropropene	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Dibromochloromethane	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Dibromochloromethane	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Dibromochloromethane	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Dibromochloromethane	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Dibromochloromethane	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Dibromochloromethane	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Dibromochloromethane	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Dibromochloromethane	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Dibromochloromethane	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Dibromochloromethane	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Dibromochloromethane	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Dibromochloromethane	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Dibromochloromethane	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Dibromochloromethane	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Dibromochloromethane	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Dibromochloromethane	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Dibromochloromethane	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Dibromochloromethane	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Dibromochloromethane	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Ethylbenzene	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Ethylbenzene	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Ethylbenzene	268	NV	ug/kg
12865	479826	1348448	4	4.5	Ethylbenzene	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Ethylbenzene	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Ethylbenzene	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Ethylbenzene	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Ethylbenzene	6090	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	8.5	9	Ethylbenzene	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Ethylbenzene	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Ethylbenzene	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Ethylbenzene	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Ethylbenzene	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Ethylbenzene	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Ethylbenzene	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Ethylbenzene	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Ethylbenzene	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Ethylbenzene	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Ethylbenzene	11	UNV	ug/kg
12865	479826	1348448	0.5	1	Gross Alpha	17000	NV	pCi/g
12865	479826	1348448	0.5	1	Gross Beta	10000	NV	pCi/g
12865	479826	1348448	0.5	1	Lead	15.5	NV	mg/kg
12865	479826	1348448	2	2.5	Lead	20.4	NV	mg/kg
12865	479826	1348448	4	4.5	Lead	12.6	NV	mg/kg
12865	479826	1348448	6	6.5	Lead	13.5	NV	mg/kg
12865	479826	1348448	8	8.5	Lead	11.8	NV	mg/kg
12865	479826	1348448	10	10.5	Lead	9.24	NV	mg/kg
12865	479826	1348448	12	12.5	Lead	8.87	NV	mg/kg
12865	479826	1348448	14	14.5	Lead	10	NV	mg/kg
12865	479826	1348448	16	16.5	Lead	11.1	NV	mg/kg
12865	479826	1348448	18	18.5	Lead	8.16	NV	mg/kg
12865	479826	1348448	20	20.5	Lead	8.88	NV	mg/kg
12865	479826	1348448	22	22.5	Lead	10.3	NV	mg/kg
12865	479826	1348448	24	24.5	Lead	7.64	NV	mg/kg
12865	479826	1348448	1	1.5	Methylene chloride	3.2	NV	ug/kg
12865	479826	1348448	2.5	3	Methylene chloride	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Methylene chloride	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Methylene chloride	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Methylene chloride	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Methylene chloride	274	NV	ug/kg
12865	479826	1348448	7.5	8	Methylene chloride	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Methylene chloride	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Methylene chloride	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Methylene chloride	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Methylene chloride	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Methylene chloride	177	NV	ug/kg
12865	479826	1348448	12.5	13	Methylene chloride	2.3	NV	ug/kg
12865	479826	1348448	14.5	15	Methylene chloride	2.1	NV	ug/kg
12865	479826	1348448	16.5	17	Methylene chloride	2.5	NV	ug/kg
12865	479826	1348448	18.5	19	Methylene chloride	1.8	NV	ug/kg
12865	479826	1348448	20.5	21	Methylene chloride	2.4	NV	ug/kg
12865	479826	1348448	22.5	23	Methylene chloride	2	NV	ug/kg
12865	479826	1348448	24.5	25	Methylene chloride	2.9	NV	ug/kg
12865	479826	1348448	11.5	12	Radium-226	10.9	NV	pCi/g
12865	479826	1348448	15	15.5	Radium-226	1.17	NV	pCi/g
12865	479826	1348448	20	20.5	Radium-226	0.98	NV	pCi/g
12865	479826	1348448	24.5	25	Radium-226	0.89	NV	pCi/g
12865	479826	1348448	11.5	12	Radium-228	0.707	NV	pCi/g
12865	479826	1348448	15	15.5	Radium-228	1.01	NV	pCi/g
12865	479826	1348448	20	20.5	Radium-228	0.723	NV	pCi/g
12865	479826	1348448	24.5	25	Radium-228	0.608	NV	pCi/g
12865	479826	1348448	1	1.5	Styrene	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Styrene	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	Styrene	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Styrene	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Styrene	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Styrene	1210	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	7.5	8	Styrene	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Styrene	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Styrene	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Styrene	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Styrene	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Styrene	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Styrene	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Styrene	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Styrene	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Styrene	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Styrene	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Styrene	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Styrene	11	UNV	ug/kg
12865	479826	1348448	0.5	1	Technetium-99	1.8	NV	pCi/g
12865	479826	1348448	10	10.5	Technetium-99	10	NV	pCi/g
12865	479826	1348448	20	20.5	Technetium-99	1.7	UNV	pCi/g
12865	479826	1348448	1	1.5	Tetrachloroethene	16.8	NV	ug/kg
12865	479826	1348448	2.5	3	Tetrachloroethene	6.2	NV	ug/kg
12865	479826	1348448	3	3.5	Tetrachloroethene	4770	NV	ug/kg
12865	479826	1348448	4	4.5	Tetrachloroethene	2480	NV	ug/kg
12865	479826	1348448	4.5	5	Tetrachloroethene	3960	NV	ug/kg
12865	479826	1348448	6.5	7	Tetrachloroethene	160	NV	ug/kg
12865	479826	1348448	7.5	8	Tetrachloroethene	13200	NV	ug/kg
12865	479826	1348448	8	8.5	Tetrachloroethene	20100	NV	ug/kg
12865	479826	1348448	8.5	9	Tetrachloroethene	20900	NV	ug/kg
12865	479826	1348448	10	10.5	Tetrachloroethene	34700	NV	ug/kg
12865	479826	1348448	10.5	11	Tetrachloroethene	20200	NV	ug/kg
12865	479826	1348448	11.5	12	Tetrachloroethene	196	NV	ug/kg
12865	479826	1348448	12.5	13	Tetrachloroethene	530	NV	ug/kg
12865	479826	1348448	14.5	15	Tetrachloroethene	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Tetrachloroethene	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Tetrachloroethene	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Tetrachloroethene	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Tetrachloroethene	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Tetrachloroethene	11	UNV	ug/kg
12865	479826	1348448	0.5	1	Thorium, Total	2400	NV	mg/kg dry
12865	479826	1348448	1	1.5	Thorium, Total	211	NV	mg/kg dry
12865	479826	1348448	5	5.5	Thorium, Total	9.84	NV	mg/kg dry
12865	479826	1348448	10	10.5	Thorium, Total	6.53	NV	mg/kg dry
12865	479826	1348448	11	11.5	Thorium, Total	4.47	NV	mg/kg dry
12865	479826	1348448	11.5	12	Thorium, Total	5.19	NV	mg/kg dry
12865	479826	1348448	12	12.5	Thorium, Total	4.06	NV	mg/kg dry
12865	479826	1348448	13	13.5	Thorium, Total	5.4	NV	mg/kg dry
12865	479826	1348448	16	16.5	Thorium, Total	6.91	NV	mg/kg dry
12865	479826	1348448	19	19.5	Thorium, Total	6.24	NV	mg/kg dry
12865	479826	1348448	22	22.5	Thorium, Total	5.87	NV	mg/kg dry
12865	479826	1348448	24.5	25	Thorium, Total	5.18	NV	mg/kg dry
12865	479826	1348448	1	1.5	Toluene	1.6	NV	ug/kg
12865	479826	1348448	2.5	3	Toluene	0.54	NV	ug/kg
12865	479826	1348448	3	3.5	Toluene	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Toluene	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Toluene	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Toluene	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Toluene	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Toluene	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Toluene	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Toluene	232	NV	ug/kg
12865	479826	1348448	10.5	11	Toluene	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Toluene	1130	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	12.5	13	Toluene	12	UNV	ug/kg
12865	479826	1348448	14.5	15	Toluene	0.38	NV	ug/kg
12865	479826	1348448	16.5	17	Toluene	0.45	NV	ug/kg
12865	479826	1348448	18.5	19	Toluene	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Toluene	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Toluene	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Toluene	11	UNV	ug/kg
12865	479826	1348448	1	1.5	trans-1,3-Dichloropropene	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	trans-1,3-Dichloropropene	12.6	UNV	ug/kg
12865	479826	1348448	3	3.5	trans-1,3-Dichloropropene	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	trans-1,3-Dichloropropene	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	trans-1,3-Dichloropropene	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	trans-1,3-Dichloropropene	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	trans-1,3-Dichloropropene	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	trans-1,3-Dichloropropene	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	trans-1,3-Dichloropropene	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	trans-1,3-Dichloropropene	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	trans-1,3-Dichloropropene	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	trans-1,3-Dichloropropene	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	trans-1,3-Dichloropropene	12	UNV	ug/kg
12865	479826	1348448	14.5	15	trans-1,3-Dichloropropene	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	trans-1,3-Dichloropropene	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	trans-1,3-Dichloropropene	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	trans-1,3-Dichloropropene	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	trans-1,3-Dichloropropene	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	trans-1,3-Dichloropropene	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Trichloroethene	4.7	NV	ug/kg
12865	479826	1348448	2.5	3	Trichloroethene	13.9	NV	ug/kg
12865	479826	1348448	3	3.5	Trichloroethene	1250	NV	ug/kg
12865	479826	1348448	4	4.5	Trichloroethene	922	NV	ug/kg
12865	479826	1348448	4.5	5	Trichloroethene	1350	NV	ug/kg
12865	479826	1348448	6.5	7	Trichloroethene	59.2	NV	ug/kg
12865	479826	1348448	7.5	8	Trichloroethene	982	NV	ug/kg
12865	479826	1348448	8	8.5	Trichloroethene	1600	NV	ug/kg
12865	479826	1348448	8.5	9	Trichloroethene	1930	NV	ug/kg
12865	479826	1348448	10	10.5	Trichloroethene	25700	NV	ug/kg
12865	479826	1348448	10.5	11	Trichloroethene	25400	NV	ug/kg
12865	479826	1348448	11.5	12	Trichloroethene	73.5	NV	ug/kg
12865	479826	1348448	12.5	13	Trichloroethene	211	NV	ug/kg
12865	479826	1348448	14.5	15	Trichloroethene	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Trichloroethene	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Trichloroethene	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Trichloroethene	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Trichloroethene	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Trichloroethene	11	UNV	ug/kg
12865	479826	1348448	0.5	1	Uranium, Total	46.4	NV	mg/kg dry
12865	479826	1348448	1	1.5	Uranium, Total	74.3	NV	mg/kg dry
12865	479826	1348448	5	5.5	Uranium, Total	472	NV	mg/kg dry
12865	479826	1348448	10	10.5	Uranium, Total	958	NV	mg/kg dry
12865	479826	1348448	11	11.5	Uranium, Total	344	NV	mg/kg dry
12865	479826	1348448	11.5	12	Uranium, Total	718	NV	mg/kg dry
12865	479826	1348448	12	12.5	Uranium, Total	41.3	NV	mg/kg dry
12865	479826	1348448	13	13.5	Uranium, Total	15.8	NV	mg/kg dry
12865	479826	1348448	16	16.5	Uranium, Total	2.53	NV	mg/kg dry
12865	479826	1348448	19	19.5	Uranium, Total	2.06	NV	mg/kg dry
12865	479826	1348448	22	22.5	Uranium, Total	2.09	NV	mg/kg dry
12865	479826	1348448	24.5	25	Uranium, Total	2.08	NV	mg/kg dry
12865	479826	1348448	1	1.5	Vinyl chloride	12.1	UNV	ug/kg
12865	479826	1348448	2.5	3	Vinyl chloride	12.6	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12865	479826	1348448	3	3.5	Vinyl chloride	6070	UNV	ug/kg
12865	479826	1348448	4	4.5	Vinyl chloride	5880	UNV	ug/kg
12865	479826	1348448	4.5	5	Vinyl chloride	5960	UNV	ug/kg
12865	479826	1348448	6.5	7	Vinyl chloride	1210	UNV	ug/kg
12865	479826	1348448	7.5	8	Vinyl chloride	6160	UNV	ug/kg
12865	479826	1348448	8	8.5	Vinyl chloride	6090	UNV	ug/kg
12865	479826	1348448	8.5	9	Vinyl chloride	6070	UNV	ug/kg
12865	479826	1348448	10	10.5	Vinyl chloride	6010	UNV	ug/kg
12865	479826	1348448	10.5	11	Vinyl chloride	6060	UNV	ug/kg
12865	479826	1348448	11.5	12	Vinyl chloride	1130	UNV	ug/kg
12865	479826	1348448	12.5	13	Vinyl chloride	2	NV	ug/kg
12865	479826	1348448	14.5	15	Vinyl chloride	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Vinyl chloride	11.4	UNV	ug/kg
12865	479826	1348448	18.5	19	Vinyl chloride	11.7	UNV	ug/kg
12865	479826	1348448	20.5	21	Vinyl chloride	11.7	UNV	ug/kg
12865	479826	1348448	22.5	23	Vinyl chloride	11.6	UNV	ug/kg
12865	479826	1348448	24.5	25	Vinyl chloride	11	UNV	ug/kg
12865	479826	1348448	1	1.5	Xylenes, Total	0.67	NV	ug/kg
12865	479826	1348448	2.5	3	Xylenes, Total	19.1	NV	ug/kg
12865	479826	1348448	3	3.5	Xylenes, Total	45000	NV	ug/kg
12865	479826	1348448	4	4.5	Xylenes, Total	27900	NV	ug/kg
12865	479826	1348448	4.5	5	Xylenes, Total	32000	NV	ug/kg
12865	479826	1348448	6.5	7	Xylenes, Total	632	NV	ug/kg
12865	479826	1348448	7.5	8	Xylenes, Total	16500	NV	ug/kg
12865	479826	1348448	8	8.5	Xylenes, Total	34900	NV	ug/kg
12865	479826	1348448	8.5	9	Xylenes, Total	37200	NV	ug/kg
12865	479826	1348448	10	10.5	Xylenes, Total	121000	NV	ug/kg
12865	479826	1348448	10.5	11	Xylenes, Total	106000	NV	ug/kg
12865	479826	1348448	11.5	12	Xylenes, Total	1300	NV	ug/kg
12865	479826	1348448	12.5	13	Xylenes, Total	46.7	NV	ug/kg
12865	479826	1348448	14.5	15	Xylenes, Total	10.9	UNV	ug/kg
12865	479826	1348448	16.5	17	Xylenes, Total	0.59	NV	ug/kg
12865	479826	1348448	18.5	19	Xylenes, Total	0.76	NV	ug/kg
12865	479826	1348448	20.5	21	Xylenes, Total	0.54	NV	ug/kg
12865	479826	1348448	22.5	23	Xylenes, Total	0.51	NV	ug/kg
12865	479826	1348448	24.5	25	Xylenes, Total	11	UNV	ug/kg
12865T	479826	1348448	8	8.5	Tetrachloroethene	160	NV	ug/L
12865T	479826	1348448	8.5	9	Tetrachloroethene	230	NV	ug/L
12865T	479826	1348448	10	10.5	Tetrachloroethene	180	NV	ug/L
12865T	479826	1348448	10.5	11	Tetrachloroethene	44	NV	ug/L
12865T	479826	1348448	10	10.5	Trichloroethene	110	NV	ug/L
12865T	479826	1348448	10.5	11	Trichloroethene	120	NV	ug/L
12866	479816.76	1348442.45	1	1.5	1,1,1-Trichloroethane	1.9	NV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,1,1-Trichloroethane	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,1,1-Trichloroethane	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,1,1-Trichloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,1,1-Trichloroethane	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,1,1-Trichloroethane	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	1,1,1-Trichloroethane	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	1,1,1-Trichloroethane	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,1,1-Trichloroethane	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,1,1-Trichloroethane	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	1,1,1-Trichloroethane	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	1,1,1-Trichloroethane	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	1,1,1-Trichloroethane	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	1,1,1-Trichloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	1,1,1-Trichloroethane	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	1,1,1-Trichloroethane	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	1,1,1-Trichloroethane	12.2	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	16.5	17	1,1,1-Trichloroethane	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	1,1,1-Trichloroethane	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	1,1,1-Trichloroethane	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	1,1,1-Trichloroethane	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	1,1,1-Trichloroethane	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,1,2,2-Tetrachloroethane	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,1,2,2-Tetrachloroethane	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,1,2,2-Tetrachloroethane	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,1,2,2-Tetrachloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,1,2,2-Tetrachloroethane	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,1,2,2-Tetrachloroethane	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	1,1,2,2-Tetrachloroethane	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	1,1,2,2-Tetrachloroethane	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,1,2,2-Tetrachloroethane	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,1,2,2-Tetrachloroethane	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	1,1,2,2-Tetrachloroethane	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	1,1,2,2-Tetrachloroethane	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	1,1,2,2-Tetrachloroethane	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	1,1,2,2-Tetrachloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	1,1,2,2-Tetrachloroethane	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	1,1,2,2-Tetrachloroethane	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	1,1,2,2-Tetrachloroethane	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	1,1,2,2-Tetrachloroethane	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	1,1,2,2-Tetrachloroethane	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	1,1,2,2-Tetrachloroethane	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	1,1,2,2-Tetrachloroethane	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	1,1,2,2-Tetrachloroethane	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,1,2-Trichloroethane	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,1,2-Trichloroethane	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,1,2-Trichloroethane	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,1,2-Trichloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,1,2-Trichloroethane	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,1,2-Trichloroethane	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	1,1,2-Trichloroethane	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	1,1,2-Trichloroethane	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,1,2-Trichloroethane	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,1,2-Trichloroethane	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	1,1,2-Trichloroethane	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	1,1,2-Trichloroethane	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	1,1,2-Trichloroethane	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	1,1,2-Trichloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	1,1,2-Trichloroethane	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	1,1,2-Trichloroethane	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	1,1,2-Trichloroethane	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	1,1,2-Trichloroethane	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	1,1,2-Trichloroethane	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	1,1,2-Trichloroethane	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	1,1,2-Trichloroethane	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	1,1,2-Trichloroethane	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,1-Dichloroethane	1.7	NV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,1-Dichloroethane	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,1-Dichloroethane	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,1-Dichloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,1-Dichloroethane	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,1-Dichloroethane	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	1,1-Dichloroethane	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	1,1-Dichloroethane	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,1-Dichloroethane	1230	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,1-Dichloroethane	19.1	NV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	6.5	7	1,1-Dichloroethane	14.6	NV	ug/kg
12866	479816.76	1348442.45	8.5	9	1,1-Dichloroethane	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	1,1-Dichloroethane	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	1,1-Dichloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	1,1-Dichloroethane	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	1,1-Dichloroethane	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	1,1-Dichloroethane	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	1,1-Dichloroethane	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	1,1-Dichloroethane	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	1,1-Dichloroethane	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	1,1-Dichloroethane	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	1,1-Dichloroethane	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,1-Dichloroethene	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,1-Dichloroethene	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,1-Dichloroethene	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,1-Dichloroethene	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,1-Dichloroethene	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,1-Dichloroethene	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	1,1-Dichloroethene	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	1,1-Dichloroethene	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,1-Dichloroethene	1.6	NV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,1-Dichloroethene	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	1,1-Dichloroethene	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	1,1-Dichloroethene	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	1,1-Dichloroethene	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	1,1-Dichloroethene	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	1,1-Dichloroethene	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	1,1-Dichloroethene	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	1,1-Dichloroethene	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	1,1-Dichloroethene	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	1,1-Dichloroethene	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	1,1-Dichloroethene	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	1,1-Dichloroethene	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	1,1-Dichloroethene	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,2-Dichloroethane	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,2-Dichloroethane	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,2-Dichloroethane	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,2-Dichloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,2-Dichloroethane	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,2-Dichloroethane	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	1,2-Dichloroethane	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	1,2-Dichloroethane	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,2-Dichloroethane	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,2-Dichloroethane	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	1,2-Dichloroethane	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	1,2-Dichloroethane	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	1,2-Dichloroethane	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	1,2-Dichloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	1,2-Dichloroethane	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	1,2-Dichloroethane	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	1,2-Dichloroethane	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	1,2-Dichloroethane	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	1,2-Dichloroethane	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	1,2-Dichloroethane	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	1,2-Dichloroethane	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	1,2-Dichloroethane	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,2-Dichloroethene (Total)	1120	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,2-Dichloroethene (Total)	3.8	NV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,2-Dichloroethene (Total)	12100	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	2.5	3	1,2-Dichloroethene (Total)	144	NV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,2-Dichloroethene (Total)	11700	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,2-Dichloroethene (Total)	139	NV	ug/kg
12866	479816.76	1348442.45	4	4.5	1,2-Dichloroethene (Total)	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	1,2-Dichloroethene (Total)	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,2-Dichloroethene (Total)	1230	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,2-Dichloroethene (Total)	73.2	NV	ug/kg
12866	479816.76	1348442.45	6.5	7	1,2-Dichloroethene (Total)	76.3	NV	ug/kg
12866	479816.76	1348442.45	8.5	9	1,2-Dichloroethene (Total)	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	1,2-Dichloroethene (Total)	2200	NV	ug/kg
12866	479816.76	1348442.45	11	11.5	1,2-Dichloroethene (Total)	2300	NV	ug/kg
12866	479816.76	1348442.45	11.5	12	1,2-Dichloroethene (Total)	1980	NV	ug/kg
12866	479816.76	1348442.45	12.5	13	1,2-Dichloroethene (Total)	2.2	NV	ug/kg
12866	479816.76	1348442.45	14.5	15	1,2-Dichloroethene (Total)	1	NV	ug/kg
12866	479816.76	1348442.45	16.5	17	1,2-Dichloroethene (Total)	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	1,2-Dichloroethene (Total)	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	1,2-Dichloroethene (Total)	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	1,2-Dichloroethene (Total)	2.1	NV	ug/kg
12866	479816.76	1348442.45	24.5	25	1,2-Dichloroethene (Total)	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,2-Dichloropropane	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	1,2-Dichloropropane	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,2-Dichloropropane	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	1,2-Dichloropropane	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,2-Dichloropropane	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	1,2-Dichloropropane	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	1,2-Dichloropropane	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	1,2-Dichloropropane	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,2-Dichloropropane	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	1,2-Dichloropropane	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	1,2-Dichloropropane	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	1,2-Dichloropropane	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	1,2-Dichloropropane	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	1,2-Dichloropropane	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	1,2-Dichloropropane	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	1,2-Dichloropropane	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	1,2-Dichloropropane	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	1,2-Dichloropropane	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	1,2-Dichloropropane	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	1,2-Dichloropropane	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	1,2-Dichloropropane	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	1,2-Dichloropropane	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	2-Butanone	400	NV	ug/kg
12866	479816.76	1348442.45	1	1.5	2-Butanone	608	NV	ug/kg
12866	479816.76	1348442.45	2.5	3	2-Butanone	480	NV	ug/kg
12866	479816.76	1348442.45	2.5	3	2-Butanone	60600	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	2-Butanone	5840	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	2-Butanone	58400	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	2-Butanone	5450	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	2-Butanone	503	NV	ug/kg
12866	479816.76	1348442.45	6	6.5	2-Butanone	10.5	NV	ug/kg
12866	479816.76	1348442.45	6	6.5	2-Butanone	6130	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	2-Butanone	24.9	NV	ug/kg
12866	479816.76	1348442.45	8.5	9	2-Butanone	67.4	NV	ug/kg
12866	479816.76	1348442.45	10.5	11	2-Butanone	59400	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	2-Butanone	60400	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	2-Butanone	58800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	2-Butanone	15.9	NV	ug/kg
12866	479816.76	1348442.45	14.5	15	2-Butanone	60.9	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	2-Butanone	57	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	18.5	19	2-Butanone	57.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	2-Butanone	57.8	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	2-Butanone	59.5	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	2-Butanone	55.3	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	2-Hexanone	56.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	2-Hexanone	5620	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	2-Hexanone	6060	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	2-Hexanone	60600	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	2-Hexanone	5840	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	2-Hexanone	58400	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	2-Hexanone	5450	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	2-Hexanone	6310	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	2-Hexanone	61.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	2-Hexanone	6130	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	2-Hexanone	313	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	2-Hexanone	316	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	2-Hexanone	59400	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	2-Hexanone	60400	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	2-Hexanone	58800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	2-Hexanone	56.7	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	2-Hexanone	60.9	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	2-Hexanone	57	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	2-Hexanone	57.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	2-Hexanone	57.8	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	2-Hexanone	59.5	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	2-Hexanone	55.3	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	4-Methyl-2-pentanone	56.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	4-Methyl-2-pentanone	5620	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	4-Methyl-2-pentanone	6060	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	4-Methyl-2-pentanone	60600	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	4-Methyl-2-pentanone	5840	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	4-Methyl-2-pentanone	58400	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	4-Methyl-2-pentanone	5450	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	4-Methyl-2-pentanone	6310	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	4-Methyl-2-pentanone	61.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	4-Methyl-2-pentanone	6130	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	4-Methyl-2-pentanone	313	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	4-Methyl-2-pentanone	316	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	4-Methyl-2-pentanone	59400	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	4-Methyl-2-pentanone	60400	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	4-Methyl-2-pentanone	58800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	4-Methyl-2-pentanone	56.7	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	4-Methyl-2-pentanone	60.9	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	4-Methyl-2-pentanone	57	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	4-Methyl-2-pentanone	57.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	4-Methyl-2-pentanone	57.8	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	4-Methyl-2-pentanone	59.5	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	4-Methyl-2-pentanone	55.3	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Acetone	31.1	NV	ug/kg
12866	479816.76	1348442.45	1	1.5	Acetone	5620	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Acetone	6060	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Acetone	60600	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Acetone	5840	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Acetone	58400	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Acetone	5450	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Acetone	6310	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Acetone	6130	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Acetone	8.4	NV	ug/kg
12866	479816.76	1348442.45	6.5	7	Acetone	24.2	NV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	8.5	9	Acetone	61.1	NV	ug/kg
12866	479816.76	1348442.45	10.5	11	Acetone	59400	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Acetone	60400	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Acetone	58800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Acetone	4.2	NV	ug/kg
12866	479816.76	1348442.45	14.5	15	Acetone	60.9	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Acetone	57	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Acetone	15.5	NV	ug/kg
12866	479816.76	1348442.45	20.5	21	Acetone	11.3	NV	ug/kg
12866	479816.76	1348442.45	22.5	23	Acetone	7.4	NV	ug/kg
12866	479816.76	1348442.45	24.5	25	Acetone	13	NV	ug/kg
12866	479816.76	1348442.45	0.5	1	Barium	123	NV	mg/kg
12866	479816.76	1348442.45	2	2.5	Barium	142	NV	mg/kg
12866	479816.76	1348442.45	4	4.5	Barium	250	NV	mg/kg
12866	479816.76	1348442.45	6	6.5	Barium	238	NV	mg/kg
12866	479816.76	1348442.45	8	8.5	Barium	139	NV	mg/kg
12866	479816.76	1348442.45	10	10.5	Barium	67	NV	mg/kg
12866	479816.76	1348442.45	12	12.5	Barium	41.4	NV	mg/kg
12866	479816.76	1348442.45	14	14.5	Barium	52.4	NV	mg/kg
12866	479816.76	1348442.45	16	16.5	Barium	72	NV	mg/kg
12866	479816.76	1348442.45	18	18.5	Barium	69.2	NV	mg/kg
12866	479816.76	1348442.45	20	20.5	Barium	64.6	NV	mg/kg
12866	479816.76	1348442.45	22	22.5	Barium	109	NV	mg/kg
12866	479816.76	1348442.45	24	24.5	Barium	83.1	NV	mg/kg
12866	479816.76	1348442.45	1	1.5	Benzene	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Benzene	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Benzene	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Benzene	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Benzene	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Benzene	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Benzene	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Benzene	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Benzene	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Benzene	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Benzene	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Benzene	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Benzene	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Benzene	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Benzene	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Benzene	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Benzene	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Benzene	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Benzene	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Benzene	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Benzene	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Benzene	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Bromodichloromethane	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Bromodichloromethane	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Bromodichloromethane	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Bromodichloromethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Bromodichloromethane	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Bromodichloromethane	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Bromodichloromethane	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Bromodichloromethane	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Bromodichloromethane	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Bromodichloromethane	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Bromodichloromethane	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Bromodichloromethane	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Bromodichloromethane	11900	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	11	11.5	Bromodichloromethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Bromodichloromethane	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Bromodichloromethane	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Bromodichloromethane	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Bromodichloromethane	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Bromodichloromethane	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Bromodichloromethane	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Bromodichloromethane	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Bromodichloromethane	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Bromoform	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Bromoform	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Bromoform	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Bromoform	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Bromoform	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Bromoform	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Bromoform	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Bromoform	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Bromoform	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Bromoform	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Bromoform	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Bromoform	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Bromoform	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Bromoform	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Bromoform	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Bromoform	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Bromoform	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Bromoform	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Bromoform	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Bromoform	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Bromoform	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Bromoform	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Bromomethane	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Bromomethane	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Bromomethane	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Bromomethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Bromomethane	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Bromomethane	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Bromomethane	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Bromomethane	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Bromomethane	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Bromomethane	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Bromomethane	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Bromomethane	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Bromomethane	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Bromomethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Bromomethane	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Bromomethane	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Bromomethane	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Bromomethane	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Bromomethane	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Bromomethane	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Bromomethane	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Bromomethane	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Carbon disulfide	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Carbon disulfide	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Carbon disulfide	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Carbon disulfide	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Carbon disulfide	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Carbon disulfide	11700	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	4	4.5	Carbon disulfide	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Carbon disulfide	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Carbon disulfide	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Carbon disulfide	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Carbon disulfide	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Carbon disulfide	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Carbon disulfide	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Carbon disulfide	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Carbon disulfide	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Carbon disulfide	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Carbon disulfide	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Carbon disulfide	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Carbon disulfide	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Carbon disulfide	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Carbon disulfide	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Carbon disulfide	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Carbon Tetrachloride	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Carbon Tetrachloride	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Carbon Tetrachloride	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Carbon Tetrachloride	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Carbon Tetrachloride	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Carbon Tetrachloride	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Carbon Tetrachloride	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Carbon Tetrachloride	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Carbon Tetrachloride	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Carbon Tetrachloride	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Carbon Tetrachloride	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Carbon Tetrachloride	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Carbon Tetrachloride	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Carbon Tetrachloride	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Carbon Tetrachloride	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Carbon Tetrachloride	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Carbon Tetrachloride	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Carbon Tetrachloride	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Carbon Tetrachloride	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Carbon Tetrachloride	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Carbon Tetrachloride	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Carbon Tetrachloride	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Chlorobenzene	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Chlorobenzene	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Chlorobenzene	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Chlorobenzene	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Chlorobenzene	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Chlorobenzene	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Chlorobenzene	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Chlorobenzene	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Chlorobenzene	0.7	NV	ug/kg
12866	479816.76	1348442.45	6	6.5	Chlorobenzene	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Chlorobenzene	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Chlorobenzene	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Chlorobenzene	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Chlorobenzene	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Chlorobenzene	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Chlorobenzene	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Chlorobenzene	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Chlorobenzene	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Chlorobenzene	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Chlorobenzene	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Chlorobenzene	11.9	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	24.5	25	Chlorobenzene	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Chloroethane	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Chloroethane	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Chloroethane	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Chloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Chloroethane	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Chloroethane	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Chloroethane	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Chloroethane	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Chloroethane	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Chloroethane	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Chloroethane	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Chloroethane	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Chloroethane	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Chloroethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Chloroethane	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Chloroethane	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Chloroethane	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Chloroethane	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Chloroethane	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Chloroethane	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Chloroethane	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Chloroethane	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Chloroform	1120	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Chloroform	2.4	NV	ug/kg
12866	479816.76	1348442.45	2.5	3	Chloroform	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Chloroform	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Chloroform	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Chloroform	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Chloroform	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Chloroform	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Chloroform	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Chloroform	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Chloroform	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Chloroform	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Chloroform	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Chloroform	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Chloroform	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Chloroform	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Chloroform	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Chloroform	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Chloroform	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Chloroform	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Chloroform	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Chloroform	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Chloromethane	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Chloromethane	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Chloromethane	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Chloromethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Chloromethane	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Chloromethane	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Chloromethane	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Chloromethane	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Chloromethane	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Chloromethane	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Chloromethane	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Chloromethane	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Chloromethane	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Chloromethane	12100	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	11.5	12	Chloromethane	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Chloromethane	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Chloromethane	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Chloromethane	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Chloromethane	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Chloromethane	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Chloromethane	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Chloromethane	11.1	UNV	ug/kg
12866	479816.76	1348442.45	0.5	1	Chromium	24.4	NV	mg/kg
12866	479816.76	1348442.45	2	2.5	Chromium	26	NV	mg/kg
12866	479816.76	1348442.45	4	4.5	Chromium	38.7	NV	mg/kg
12866	479816.76	1348442.45	6	6.5	Chromium	29	NV	mg/kg
12866	479816.76	1348442.45	8	8.5	Chromium	33.3	NV	mg/kg
12866	479816.76	1348442.45	10	10.5	Chromium	14.7	NV	mg/kg
12866	479816.76	1348442.45	12	12.5	Chromium	12.8	NV	mg/kg
12866	479816.76	1348442.45	14	14.5	Chromium	17.5	NV	mg/kg
12866	479816.76	1348442.45	16	16.5	Chromium	22.7	NV	mg/kg
12866	479816.76	1348442.45	18	18.5	Chromium	16.7	NV	mg/kg
12866	479816.76	1348442.45	20	20.5	Chromium	15.8	NV	mg/kg
12866	479816.76	1348442.45	22	22.5	Chromium	23.2	NV	mg/kg
12866	479816.76	1348442.45	24	24.5	Chromium	17.4	NV	mg/kg
12866	479816.76	1348442.45	1	1.5	cis-1,3-Dichloropropene	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	cis-1,3-Dichloropropene	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	cis-1,3-Dichloropropene	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	cis-1,3-Dichloropropene	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	cis-1,3-Dichloropropene	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	cis-1,3-Dichloropropene	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	cis-1,3-Dichloropropene	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	cis-1,3-Dichloropropene	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	cis-1,3-Dichloropropene	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	cis-1,3-Dichloropropene	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	cis-1,3-Dichloropropene	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	cis-1,3-Dichloropropene	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	cis-1,3-Dichloropropene	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	cis-1,3-Dichloropropene	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	cis-1,3-Dichloropropene	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	cis-1,3-Dichloropropene	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	cis-1,3-Dichloropropene	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	cis-1,3-Dichloropropene	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	cis-1,3-Dichloropropene	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	cis-1,3-Dichloropropene	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	cis-1,3-Dichloropropene	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	cis-1,3-Dichloropropene	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Dibromochloromethane	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Dibromochloromethane	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Dibromochloromethane	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Dibromochloromethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Dibromochloromethane	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Dibromochloromethane	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Dibromochloromethane	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Dibromochloromethane	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Dibromochloromethane	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Dibromochloromethane	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Dibromochloromethane	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Dibromochloromethane	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Dibromochloromethane	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Dibromochloromethane	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Dibromochloromethane	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Dibromochloromethane	11.3	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	14.5	15	Dibromochloromethane	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Dibromochloromethane	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Dibromochloromethane	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Dibromochloromethane	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Dibromochloromethane	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Dibromochloromethane	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Ethylbenzene	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Ethylbenzene	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Ethylbenzene	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Ethylbenzene	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Ethylbenzene	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Ethylbenzene	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Ethylbenzene	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Ethylbenzene	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Ethylbenzene	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Ethylbenzene	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Ethylbenzene	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Ethylbenzene	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Ethylbenzene	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Ethylbenzene	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Ethylbenzene	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Ethylbenzene	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Ethylbenzene	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Ethylbenzene	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Ethylbenzene	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Ethylbenzene	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Ethylbenzene	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Ethylbenzene	11.1	UNV	ug/kg
12866	479816.76	1348442.45	0.5	1	Gross Alpha	890	NV	pCi/g
12866	479816.76	1348442.45	0.5	1	Gross Alpha	31	NV	pCi/g
12866	479816.76	1348442.45	4	4.5	Gross Alpha	480	NV	pCi/g
12866	479816.76	1348442.45	0.5	1	Gross Beta	640	NV	pCi/g
12866	479816.76	1348442.45	0.5	1	Gross Beta	33	NV	pCi/g
12866	479816.76	1348442.45	4	4.5	Gross Beta	390	NV	pCi/g
12866	479816.76	1348442.45	0.5	1	Lead	18.6	NV	mg/kg
12866	479816.76	1348442.45	2	2.5	Lead	16	NV	mg/kg
12866	479816.76	1348442.45	3	3.5	Lead	0.015	NV	mg/L
12866	479816.76	1348442.45	4	4.5	Lead	241	NV	mg/kg
12866	479816.76	1348442.45	6	6.5	Lead	22.3	NV	mg/kg
12866	479816.76	1348442.45	8	8.5	Lead	18.5	NV	mg/kg
12866	479816.76	1348442.45	10	10.5	Lead	9.15	NV	mg/kg
12866	479816.76	1348442.45	12	12.5	Lead	7.94	NV	mg/kg
12866	479816.76	1348442.45	14	14.5	Lead	8.64	NV	mg/kg
12866	479816.76	1348442.45	16	16.5	Lead	9.41	NV	mg/kg
12866	479816.76	1348442.45	18	18.5	Lead	9.47	NV	mg/kg
12866	479816.76	1348442.45	20	20.5	Lead	7.79	NV	mg/kg
12866	479816.76	1348442.45	22	22.5	Lead	9.93	NV	mg/kg
12866	479816.76	1348442.45	24	24.5	Lead	7.74	NV	mg/kg
12866	479816.76	1348442.45	1	1.5	Methylene chloride	1120	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Methylene chloride	2.4	NV	ug/kg
12866	479816.76	1348442.45	2.5	3	Methylene chloride	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Methylene chloride	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Methylene chloride	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Methylene chloride	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Methylene chloride	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Methylene chloride	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Methylene chloride	1230	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Methylene chloride	2.4	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Methylene chloride	10.7	NV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	8.5	9	Methylene chloride	11	NV	ug/kg
12866	479816.76	1348442.45	10.5	11	Methylene chloride	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Methylene chloride	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Methylene chloride	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Methylene chloride	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Methylene chloride	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Methylene chloride	1.7	NV	ug/kg
12866	479816.76	1348442.45	18.5	19	Methylene chloride	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Methylene chloride	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Methylene chloride	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Methylene chloride	2.4	NV	ug/kg
12866	479816.76	1348442.45	11.5	12	Radium-226	0.742	NV	pCi/g
12866	479816.76	1348442.45	15	15.5	Radium-226	1.26	NV	pCi/g
12866	479816.76	1348442.45	20	20.5	Radium-226	0.993	NV	pCi/g
12866	479816.76	1348442.45	24.5	25	Radium-226	0.958	NV	pCi/g
12866	479816.76	1348442.45	11.5	12	Radium-228	0.5	NV	pCi/g
12866	479816.76	1348442.45	15	15.5	Radium-228	0.798	NV	pCi/g
12866	479816.76	1348442.45	20	20.5	Radium-228	0.719	NV	pCi/g
12866	479816.76	1348442.45	24.5	25	Radium-228	0.693	NV	pCi/g
12866	479816.76	1348442.45	1	1.5	Styrene	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Styrene	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Styrene	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Styrene	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Styrene	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Styrene	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Styrene	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Styrene	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Styrene	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Styrene	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Styrene	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Styrene	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Styrene	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Styrene	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Styrene	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Styrene	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Styrene	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Styrene	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Styrene	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Styrene	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Styrene	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Styrene	11.1	UNV	ug/kg
12866	479816.76	1348442.45	0.5	1	Technetium-99	1.7	UNV	pCi/g
12866	479816.76	1348442.45	10	10.5	Technetium-99	1.7	UNV	pCi/g
12866	479816.76	1348442.45	20	20.5	Technetium-99	1.6	UNV	pCi/g
12866	479816.76	1348442.45	1	1.5	Tetrachloroethene	2980	NV	ug/kg
12866	479816.76	1348442.45	1	1.5	Tetrachloroethene	4440	NV	ug/kg
12866	479816.76	1348442.45	2.5	3	Tetrachloroethene	728	NV	ug/kg
12866	479816.76	1348442.45	2.5	3	Tetrachloroethene	888	NV	ug/kg
12866	479816.76	1348442.45	3	3.5	Tetrachloroethene	11700	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Tetrachloroethene	538	NV	ug/kg
12866	479816.76	1348442.45	4	4.5	Tetrachloroethene	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Tetrachloroethene	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Tetrachloroethene	129	NV	ug/kg
12866	479816.76	1348442.45	6	6.5	Tetrachloroethene	57.7	NV	ug/kg
12866	479816.76	1348442.45	6.5	7	Tetrachloroethene	142	NV	ug/kg
12866	479816.76	1348442.45	8.5	9	Tetrachloroethene	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Tetrachloroethene	50400	NV	ug/kg
12866	479816.76	1348442.45	11	11.5	Tetrachloroethene	11800	NV	ug/kg
12866	479816.76	1348442.45	11.5	12	Tetrachloroethene	8440	NV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	12.5	13	Tetrachloroethene	10.5	NV	ug/kg
12866	479816.76	1348442.45	14.5	15	Tetrachloroethene	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Tetrachloroethene	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Tetrachloroethene	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Tetrachloroethene	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Tetrachloroethene	1.4	NV	ug/kg
12866	479816.76	1348442.45	24.5	25	Tetrachloroethene	1.8	NV	ug/kg
12866	479816.76	1348442.45	0.5	1	Thorium, Total	47.5	NV	mg/kg dry
12866	479816.76	1348442.45	5	5.5	Thorium, Total	6.66	NV	mg/kg dry
12866	479816.76	1348442.45	10	10.5	Thorium, Total	7.77	NV	mg/kg dry
12866	479816.76	1348442.45	13	13.5	Thorium, Total	4.94	NV	mg/kg dry
12866	479816.76	1348442.45	16	16.5	Thorium, Total	5.1	NV	mg/kg dry
12866	479816.76	1348442.45	19	19.5	Thorium, Total	5.53	NV	mg/kg dry
12866	479816.76	1348442.45	22	22.5	Thorium, Total	6.46	NV	mg/kg dry
12866	479816.76	1348442.45	24.5	25	Thorium, Total	5.69	NV	mg/kg dry
12866	479816.76	1348442.45	1	1.5	Toluene	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Toluene	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Toluene	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Toluene	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Toluene	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Toluene	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Toluene	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Toluene	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Toluene	0.64	NV	ug/kg
12866	479816.76	1348442.45	6	6.5	Toluene	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Toluene	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Toluene	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Toluene	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Toluene	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Toluene	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Toluene	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Toluene	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Toluene	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Toluene	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Toluene	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Toluene	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Toluene	0.48	NV	ug/kg
12866	479816.76	1348442.45	1	1.5	trans-1,3-Dichloropropene	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	trans-1,3-Dichloropropene	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	trans-1,3-Dichloropropene	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	trans-1,3-Dichloropropene	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	trans-1,3-Dichloropropene	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	trans-1,3-Dichloropropene	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	trans-1,3-Dichloropropene	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	trans-1,3-Dichloropropene	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	trans-1,3-Dichloropropene	12.3	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	trans-1,3-Dichloropropene	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	trans-1,3-Dichloropropene	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	trans-1,3-Dichloropropene	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	trans-1,3-Dichloropropene	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	trans-1,3-Dichloropropene	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	trans-1,3-Dichloropropene	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	trans-1,3-Dichloropropene	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	trans-1,3-Dichloropropene	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	trans-1,3-Dichloropropene	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	trans-1,3-Dichloropropene	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	trans-1,3-Dichloropropene	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	trans-1,3-Dichloropropene	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	trans-1,3-Dichloropropene	11.1	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	1	1.5	Trichloroethene	1180	NV	ug/kg
12866	479816.76	1348442.45	1	1.5	Trichloroethene	725	NV	ug/kg
12866	479816.76	1348442.45	2.5	3	Trichloroethene	2340	NV	ug/kg
12866	479816.76	1348442.45	2.5	3	Trichloroethene	2740	NV	ug/kg
12866	479816.76	1348442.45	3	3.5	Trichloroethene	1480	NV	ug/kg
12866	479816.76	1348442.45	3	3.5	Trichloroethene	1720	NV	ug/kg
12866	479816.76	1348442.45	4	4.5	Trichloroethene	67.3	NV	ug/kg
12866	479816.76	1348442.45	4.5	5	Trichloroethene	283	NV	ug/kg
12866	479816.76	1348442.45	6	6.5	Trichloroethene	139	NV	ug/kg
12866	479816.76	1348442.45	6	6.5	Trichloroethene	148	NV	ug/kg
12866	479816.76	1348442.45	6.5	7	Trichloroethene	117	NV	ug/kg
12866	479816.76	1348442.45	8.5	9	Trichloroethene	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Trichloroethene	27500	NV	ug/kg
12866	479816.76	1348442.45	11	11.5	Trichloroethene	29700	NV	ug/kg
12866	479816.76	1348442.45	11.5	12	Trichloroethene	26300	NV	ug/kg
12866	479816.76	1348442.45	12.5	13	Trichloroethene	2.3	NV	ug/kg
12866	479816.76	1348442.45	14.5	15	Trichloroethene	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Trichloroethene	0.85	NV	ug/kg
12866	479816.76	1348442.45	18.5	19	Trichloroethene	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Trichloroethene	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Trichloroethene	1.4	NV	ug/kg
12866	479816.76	1348442.45	24.5	25	Trichloroethene	1	NV	ug/kg
12866	479816.76	1348442.45	0.5	1	Uranium, Total	421	NV	mg/kg dry
12866	479816.76	1348442.45	5	5.5	Uranium, Total	174	NV	mg/kg dry
12866	479816.76	1348442.45	10	10.5	Uranium, Total	133	NV	mg/kg dry
12866	479816.76	1348442.45	13	13.5	Uranium, Total	19.4	NV	mg/kg dry
12866	479816.76	1348442.45	16	16.5	Uranium, Total	2.77	NV	mg/kg dry
12866	479816.76	1348442.45	19	19.5	Uranium, Total	1.88	NV	mg/kg dry
12866	479816.76	1348442.45	22	22.5	Uranium, Total	2	NV	mg/kg dry
12866	479816.76	1348442.45	24.5	25	Uranium, Total	2.46	NV	mg/kg dry
12866	479816.76	1348442.45	1	1.5	Vinyl chloride	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Vinyl chloride	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Vinyl chloride	1210	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Vinyl chloride	12100	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Vinyl chloride	1170	UNV	ug/kg
12866	479816.76	1348442.45	3	3.5	Vinyl chloride	11700	UNV	ug/kg
12866	479816.76	1348442.45	4	4.5	Vinyl chloride	1090	UNV	ug/kg
12866	479816.76	1348442.45	4.5	5	Vinyl chloride	1260	UNV	ug/kg
12866	479816.76	1348442.45	6	6.5	Vinyl chloride	1.5	NV	ug/kg
12866	479816.76	1348442.45	6	6.5	Vinyl chloride	1230	UNV	ug/kg
12866	479816.76	1348442.45	6.5	7	Vinyl chloride	62.6	UNV	ug/kg
12866	479816.76	1348442.45	8.5	9	Vinyl chloride	63.1	UNV	ug/kg
12866	479816.76	1348442.45	10.5	11	Vinyl chloride	11900	UNV	ug/kg
12866	479816.76	1348442.45	11	11.5	Vinyl chloride	12100	UNV	ug/kg
12866	479816.76	1348442.45	11.5	12	Vinyl chloride	11800	UNV	ug/kg
12866	479816.76	1348442.45	12.5	13	Vinyl chloride	11.3	UNV	ug/kg
12866	479816.76	1348442.45	14.5	15	Vinyl chloride	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Vinyl chloride	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Vinyl chloride	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Vinyl chloride	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Vinyl chloride	11.9	UNV	ug/kg
12866	479816.76	1348442.45	24.5	25	Vinyl chloride	11.1	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Xylenes, Total	11.2	UNV	ug/kg
12866	479816.76	1348442.45	1	1.5	Xylenes, Total	1120	UNV	ug/kg
12866	479816.76	1348442.45	2.5	3	Xylenes, Total	14600	NV	ug/kg
12866	479816.76	1348442.45	2.5	3	Xylenes, Total	16900	NV	ug/kg
12866	479816.76	1348442.45	3	3.5	Xylenes, Total	11100	NV	ug/kg
12866	479816.76	1348442.45	3	3.5	Xylenes, Total	13600	NV	ug/kg
12866	479816.76	1348442.45	4	4.5	Xylenes, Total	2340	NV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12866	479816.76	1348442.45	4.5	5	Xylenes, Total	742	NV	ug/kg
12866	479816.76	1348442.45	6	6.5	Xylenes, Total	155	NV	ug/kg
12866	479816.76	1348442.45	6	6.5	Xylenes, Total	77.8	NV	ug/kg
12866	479816.76	1348442.45	6.5	7	Xylenes, Total	178	NV	ug/kg
12866	479816.76	1348442.45	8.5	9	Xylenes, Total	39.1	NV	ug/kg
12866	479816.76	1348442.45	10.5	11	Xylenes, Total	86000	NV	ug/kg
12866	479816.76	1348442.45	11	11.5	Xylenes, Total	61800	NV	ug/kg
12866	479816.76	1348442.45	11.5	12	Xylenes, Total	60800	NV	ug/kg
12866	479816.76	1348442.45	12.5	13	Xylenes, Total	10	NV	ug/kg
12866	479816.76	1348442.45	14.5	15	Xylenes, Total	12.2	UNV	ug/kg
12866	479816.76	1348442.45	16.5	17	Xylenes, Total	11.4	UNV	ug/kg
12866	479816.76	1348442.45	18.5	19	Xylenes, Total	11.5	UNV	ug/kg
12866	479816.76	1348442.45	20.5	21	Xylenes, Total	11.6	UNV	ug/kg
12866	479816.76	1348442.45	22.5	23	Xylenes, Total	1.7	NV	ug/kg
12866	479816.76	1348442.45	24.5	25	Xylenes, Total	2.4	NV	ug/kg
12866A	479816.76	138442.45	1	1.5	Thorium, Total	17.9	NV	mg/kg dry
12866A	479816.76	138442.45	1	1.5	Uranium, Total	204	NV	mg/kg dry
12866T	479816.76	1348442.45	4	4.5	Lead	0.043	UNV	mg/L
12866T	479816.76	1348442.45	10.5	11	Tetrachloroethene	510	NV	ug/L
12866T	479816.76	1348442.45	10.5	11	Trichloroethene	130	NV	ug/L
12866T	479816.76	1348442.45	11	11.5	Trichloroethene	310	NV	ug/L
12866T	479816.76	1348442.45	11.5	12	Trichloroethene	440	NV	ug/L
12867	479818	1348431.5	2.5	3	1,1,1-Trichloroethane	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,1,1-Trichloroethane	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,1,1-Trichloroethane	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	1,1,1-Trichloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,1,1-Trichloroethane	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,1,1-Trichloroethane	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	1,1,1-Trichloroethane	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	1,1,1-Trichloroethane	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	1,1,1-Trichloroethane	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	1,1,1-Trichloroethane	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,1,1-Trichloroethane	10.3	NV	ug/kg
12867	479818	1348431.5	12.5	13	1,1,1-Trichloroethane	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	1,1,1-Trichloroethane	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	1,1,1-Trichloroethane	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	1,1,1-Trichloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	1,1,1-Trichloroethane	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	1,1,1-Trichloroethane	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	1,1,1-Trichloroethane	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	1,1,2,2-Tetrachloroethane	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,1,2,2-Tetrachloroethane	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,1,2,2-Tetrachloroethane	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	1,1,2,2-Tetrachloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,1,2,2-Tetrachloroethane	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,1,2,2-Tetrachloroethane	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	1,1,2,2-Tetrachloroethane	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	1,1,2,2-Tetrachloroethane	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	1,1,2,2-Tetrachloroethane	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	1,1,2,2-Tetrachloroethane	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,1,2,2-Tetrachloroethane	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,1,2,2-Tetrachloroethane	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	1,1,2,2-Tetrachloroethane	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	1,1,2,2-Tetrachloroethane	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	1,1,2,2-Tetrachloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	1,1,2,2-Tetrachloroethane	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	1,1,2,2-Tetrachloroethane	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	1,1,2,2-Tetrachloroethane	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	1,1,2-Trichloroethane	11.8	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12867	479818	1348431.5	4.5	5	1,1,2-Trichloroethane	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,1,2-Trichloroethane	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	1,1,2-Trichloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,1,2-Trichloroethane	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,1,2-Trichloroethane	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	1,1,2-Trichloroethane	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	1,1,2-Trichloroethane	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	1,1,2-Trichloroethane	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	1,1,2-Trichloroethane	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,1,2-Trichloroethane	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,1,2-Trichloroethane	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	1,1,2-Trichloroethane	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	1,1,2-Trichloroethane	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	1,1,2-Trichloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	1,1,2-Trichloroethane	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	1,1,2-Trichloroethane	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	1,1,2-Trichloroethane	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	1,1-Dichloroethane	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,1-Dichloroethane	1.2	NV	ug/kg
12867	479818	1348431.5	4.5	5	1,1-Dichloroethane	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	1,1-Dichloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,1-Dichloroethane	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,1-Dichloroethane	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	1,1-Dichloroethane	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	1,1-Dichloroethane	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	1,1-Dichloroethane	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	1,1-Dichloroethane	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,1-Dichloroethane	1200	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,1-Dichloroethane	5.9	NV	ug/kg
12867	479818	1348431.5	14.5	15	1,1-Dichloroethane	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	1,1-Dichloroethane	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	1,1-Dichloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	1,1-Dichloroethane	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	1,1-Dichloroethane	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	1,1-Dichloroethane	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	1,1-Dichloroethene	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,1-Dichloroethene	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,1-Dichloroethene	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	1,1-Dichloroethene	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,1-Dichloroethene	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,1-Dichloroethene	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	1,1-Dichloroethene	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	1,1-Dichloroethene	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	1,1-Dichloroethene	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	1,1-Dichloroethene	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,1-Dichloroethene	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,1-Dichloroethene	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	1,1-Dichloroethene	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	1,1-Dichloroethene	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	1,1-Dichloroethene	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	1,1-Dichloroethene	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	1,1-Dichloroethene	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	1,1-Dichloroethene	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	1,2-Dichloroethane	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,2-Dichloroethane	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,2-Dichloroethane	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	1,2-Dichloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,2-Dichloroethane	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,2-Dichloroethane	30.3	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12867	479818	1348431.5	10	10.5	1,2-Dichloroethane	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	1,2-Dichloroethane	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	1,2-Dichloroethane	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	1,2-Dichloroethane	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,2-Dichloroethane	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,2-Dichloroethane	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	1,2-Dichloroethane	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	1,2-Dichloroethane	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	1,2-Dichloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	1,2-Dichloroethane	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	1,2-Dichloroethane	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	1,2-Dichloroethane	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	1,2-Dichloroethene (Total)	27.2	NV	ug/kg
12867	479818	1348431.5	4.5	5	1,2-Dichloroethene (Total)	19.7	NV	ug/kg
12867	479818	1348431.5	4.5	5	1,2-Dichloroethene (Total)	52.4	NV	ug/kg
12867	479818	1348431.5	6.5	7	1,2-Dichloroethene (Total)	86.5	NV	ug/kg
12867	479818	1348431.5	8.5	9	1,2-Dichloroethene (Total)	4.1	NV	ug/kg
12867	479818	1348431.5	8.5	9	1,2-Dichloroethene (Total)	4.2	NV	ug/kg
12867	479818	1348431.5	10	10.5	1,2-Dichloroethene (Total)	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	1,2-Dichloroethene (Total)	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	1,2-Dichloroethene (Total)	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	1,2-Dichloroethene (Total)	1.4	NV	ug/kg
12867	479818	1348431.5	12.5	13	1,2-Dichloroethene (Total)	45.3	NV	ug/kg
12867	479818	1348431.5	12.5	13	1,2-Dichloroethene (Total)	70	NV	ug/kg
12867	479818	1348431.5	14.5	15	1,2-Dichloroethene (Total)	0.76	NV	ug/kg
12867	479818	1348431.5	16.5	17	1,2-Dichloroethene (Total)	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	1,2-Dichloroethene (Total)	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	1,2-Dichloroethene (Total)	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	1,2-Dichloroethene (Total)	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	1,2-Dichloroethene (Total)	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	1,2-Dichloropropane	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,2-Dichloropropane	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	1,2-Dichloropropane	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	1,2-Dichloropropane	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,2-Dichloropropane	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	1,2-Dichloropropane	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	1,2-Dichloropropane	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	1,2-Dichloropropane	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	1,2-Dichloropropane	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	1,2-Dichloropropane	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,2-Dichloropropane	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	1,2-Dichloropropane	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	1,2-Dichloropropane	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	1,2-Dichloropropane	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	1,2-Dichloropropane	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	1,2-Dichloropropane	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	1,2-Dichloropropane	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	1,2-Dichloropropane	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	2-Butanone	58.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	2-Butanone	309	UNV	ug/kg
12867	479818	1348431.5	4.5	5	2-Butanone	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	2-Butanone	11.7	NV	ug/kg
12867	479818	1348431.5	8.5	9	2-Butanone	151	UNV	ug/kg
12867	479818	1348431.5	8.5	9	2-Butanone	60.6	UNV	ug/kg
12867	479818	1348431.5	10	10.5	2-Butanone	29300	UNV	ug/kg
12867	479818	1348431.5	10.5	11	2-Butanone	28300	UNV	ug/kg
12867	479818	1348431.5	11	11.5	2-Butanone	27800	UNV	ug/kg
12867	479818	1348431.5	11.5	12	2-Butanone	55.5	UNV	ug/kg
12867	479818	1348431.5	12.5	13	2-Butanone	60	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12867	479818	1348431.5	12.5	13	2-Butanone	6000	UNV	ug/kg
12867	479818	1348431.5	14.5	15	2-Butanone	58.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	2-Butanone	61.4	UNV	ug/kg
12867	479818	1348431.5	18.5	19	2-Butanone	59.6	UNV	ug/kg
12867	479818	1348431.5	20.5	21	2-Butanone	58.4	UNV	ug/kg
12867	479818	1348431.5	22.5	23	2-Butanone	57.4	UNV	ug/kg
12867	479818	1348431.5	24.5	25	2-Butanone	55	UNV	ug/kg
12867	479818	1348431.5	2.5	3	2-Hexanone	58.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	2-Hexanone	309	UNV	ug/kg
12867	479818	1348431.5	4.5	5	2-Hexanone	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	2-Hexanone	59.4	UNV	ug/kg
12867	479818	1348431.5	8.5	9	2-Hexanone	151	UNV	ug/kg
12867	479818	1348431.5	8.5	9	2-Hexanone	60.6	UNV	ug/kg
12867	479818	1348431.5	10	10.5	2-Hexanone	29300	UNV	ug/kg
12867	479818	1348431.5	10.5	11	2-Hexanone	28300	UNV	ug/kg
12867	479818	1348431.5	11	11.5	2-Hexanone	27800	UNV	ug/kg
12867	479818	1348431.5	11.5	12	2-Hexanone	55.5	UNV	ug/kg
12867	479818	1348431.5	12.5	13	2-Hexanone	60	UNV	ug/kg
12867	479818	1348431.5	12.5	13	2-Hexanone	6000	UNV	ug/kg
12867	479818	1348431.5	14.5	15	2-Hexanone	58.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	2-Hexanone	61.4	UNV	ug/kg
12867	479818	1348431.5	18.5	19	2-Hexanone	59.6	UNV	ug/kg
12867	479818	1348431.5	20.5	21	2-Hexanone	58.4	UNV	ug/kg
12867	479818	1348431.5	22.5	23	2-Hexanone	57.4	UNV	ug/kg
12867	479818	1348431.5	24.5	25	2-Hexanone	55	UNV	ug/kg
12867	479818	1348431.5	2.5	3	4-Methyl-2-pentanone	58.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	4-Methyl-2-pentanone	309	UNV	ug/kg
12867	479818	1348431.5	4.5	5	4-Methyl-2-pentanone	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	4-Methyl-2-pentanone	59.4	UNV	ug/kg
12867	479818	1348431.5	8.5	9	4-Methyl-2-pentanone	151	UNV	ug/kg
12867	479818	1348431.5	8.5	9	4-Methyl-2-pentanone	60.6	UNV	ug/kg
12867	479818	1348431.5	10	10.5	4-Methyl-2-pentanone	29300	UNV	ug/kg
12867	479818	1348431.5	10.5	11	4-Methyl-2-pentanone	28300	UNV	ug/kg
12867	479818	1348431.5	11	11.5	4-Methyl-2-pentanone	27800	UNV	ug/kg
12867	479818	1348431.5	11.5	12	4-Methyl-2-pentanone	55.5	UNV	ug/kg
12867	479818	1348431.5	12.5	13	4-Methyl-2-pentanone	60	UNV	ug/kg
12867	479818	1348431.5	12.5	13	4-Methyl-2-pentanone	6000	UNV	ug/kg
12867	479818	1348431.5	14.5	15	4-Methyl-2-pentanone	58.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	4-Methyl-2-pentanone	61.4	UNV	ug/kg
12867	479818	1348431.5	18.5	19	4-Methyl-2-pentanone	59.6	UNV	ug/kg
12867	479818	1348431.5	20.5	21	4-Methyl-2-pentanone	58.4	UNV	ug/kg
12867	479818	1348431.5	22.5	23	4-Methyl-2-pentanone	57.4	UNV	ug/kg
12867	479818	1348431.5	24.5	25	4-Methyl-2-pentanone	55	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Acetone	25.4	NV	ug/kg
12867	479818	1348431.5	4.5	5	Acetone	32.2	NV	ug/kg
12867	479818	1348431.5	4.5	5	Acetone	42.6	NV	ug/kg
12867	479818	1348431.5	6.5	7	Acetone	75.9	NV	ug/kg
12867	479818	1348431.5	8.5	9	Acetone	151	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Acetone	60.6	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Acetone	29300	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Acetone	28300	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Acetone	27800	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Acetone	38.5	NV	ug/kg
12867	479818	1348431.5	12.5	13	Acetone	5.6	NV	ug/kg
12867	479818	1348431.5	12.5	13	Acetone	6000	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Acetone	22.3	NV	ug/kg
12867	479818	1348431.5	16.5	17	Acetone	17	NV	ug/kg
12867	479818	1348431.5	18.5	19	Acetone	8.4	NV	ug/kg
12867	479818	1348431.5	20.5	21	Acetone	14.1	NV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12867	479818	1348431.5	22.5	23	Acetone	14.4	NV	ug/kg
12867	479818	1348431.5	24.5	25	Acetone	18.1	NV	ug/kg
12867	479818	1348431.5	2	2.5	Barium	93.3	NV	mg/kg
12867	479818	1348431.5	4	4.5	Barium	205	NV	mg/kg
12867	479818	1348431.5	6	6.5	Barium	130	NV	mg/kg
12867	479818	1348431.5	8	8.5	Barium	95.1	NV	mg/kg
12867	479818	1348431.5	10	10.5	Barium	66.9	NV	mg/kg
12867	479818	1348431.5	12	12.5	Barium	40.6	NV	mg/kg
12867	479818	1348431.5	14	14.5	Barium	57.7	NV	mg/kg
12867	479818	1348431.5	16	16.5	Barium	65.3	NV	mg/kg
12867	479818	1348431.5	18	18.5	Barium	42.5	NV	mg/kg
12867	479818	1348431.5	20	20.5	Barium	52.2	NV	mg/kg
12867	479818	1348431.5	22	22.5	Barium	94.7	NV	mg/kg
12867	479818	1348431.5	24	24.5	Barium	90.6	NV	mg/kg
12867	479818	1348431.5	2.5	3	Benzene	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Benzene	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Benzene	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Benzene	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Benzene	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Benzene	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Benzene	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Benzene	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Benzene	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Benzene	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Benzene	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Benzene	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Benzene	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Benzene	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Benzene	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Benzene	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Benzene	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Benzene	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Bromodichloromethane	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Bromodichloromethane	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Bromodichloromethane	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Bromodichloromethane	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Bromodichloromethane	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Bromodichloromethane	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Bromodichloromethane	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Bromodichloromethane	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Bromodichloromethane	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Bromodichloromethane	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Bromodichloromethane	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Bromodichloromethane	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Bromodichloromethane	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Bromodichloromethane	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Bromodichloromethane	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Bromodichloromethane	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Bromodichloromethane	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Bromodichloromethane	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Bromoform	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Bromoform	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Bromoform	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Bromoform	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Bromoform	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Bromoform	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Bromoform	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Bromoform	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Bromoform	5560	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12867	479818	1348431.5	11.5	12	Bromoform	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Bromoform	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Bromoform	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Bromoform	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Bromoform	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Bromoform	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Bromoform	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Bromoform	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Bromoform	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Bromomethane	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Bromomethane	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Bromomethane	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Bromomethane	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Bromomethane	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Bromomethane	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Bromomethane	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Bromomethane	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Bromomethane	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Bromomethane	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Bromomethane	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Bromomethane	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Bromomethane	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Bromomethane	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Bromomethane	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Bromomethane	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Bromomethane	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Bromomethane	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Carbon disulfide	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Carbon disulfide	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Carbon disulfide	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Carbon disulfide	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Carbon disulfide	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Carbon disulfide	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Carbon disulfide	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Carbon disulfide	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Carbon disulfide	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Carbon disulfide	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Carbon disulfide	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Carbon disulfide	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Carbon disulfide	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Carbon disulfide	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Carbon disulfide	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Carbon disulfide	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Carbon disulfide	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Carbon disulfide	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Carbon Tetrachloride	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Carbon Tetrachloride	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Carbon Tetrachloride	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Carbon Tetrachloride	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Carbon Tetrachloride	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Carbon Tetrachloride	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Carbon Tetrachloride	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Carbon Tetrachloride	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Carbon Tetrachloride	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Carbon Tetrachloride	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Carbon Tetrachloride	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Carbon Tetrachloride	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Carbon Tetrachloride	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Carbon Tetrachloride	12.3	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12867	479818	1348431.5	18.5	19	Carbon Tetrachloride	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Carbon Tetrachloride	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Carbon Tetrachloride	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Carbon Tetrachloride	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Chlorobenzene	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Chlorobenzene	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Chlorobenzene	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Chlorobenzene	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Chlorobenzene	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Chlorobenzene	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Chlorobenzene	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Chlorobenzene	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Chlorobenzene	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Chlorobenzene	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Chlorobenzene	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Chlorobenzene	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Chlorobenzene	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Chlorobenzene	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Chlorobenzene	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Chlorobenzene	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Chlorobenzene	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Chlorobenzene	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Chloroethane	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Chloroethane	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Chloroethane	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Chloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Chloroethane	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Chloroethane	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Chloroethane	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Chloroethane	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Chloroethane	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Chloroethane	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Chloroethane	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Chloroethane	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Chloroethane	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Chloroethane	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Chloroethane	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Chloroethane	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Chloroethane	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Chloroethane	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Chloroform	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Chloroform	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Chloroform	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Chloroform	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Chloroform	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Chloroform	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Chloroform	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Chloroform	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Chloroform	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Chloroform	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Chloroform	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Chloroform	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Chloroform	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Chloroform	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Chloroform	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Chloroform	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Chloroform	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Chloroform	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Chloromethane	11.8	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12867	479818	1348431.5	4.5	5	Chloromethane	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Chloromethane	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Chloromethane	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Chloromethane	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Chloromethane	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Chloromethane	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Chloromethane	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Chloromethane	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Chloromethane	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Chloromethane	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Chloromethane	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Chloromethane	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Chloromethane	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Chloromethane	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Chloromethane	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Chloromethane	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Chloromethane	11	UNV	ug/kg
12867	479818	1348431.5	2	2.5	Chromium	23.9	NV	mg/kg
12867	479818	1348431.5	4	4.5	Chromium	36.4	NV	mg/kg
12867	479818	1348431.5	6	6.5	Chromium	27	NV	mg/kg
12867	479818	1348431.5	8	8.5	Chromium	22.9	NV	mg/kg
12867	479818	1348431.5	10	10.5	Chromium	11.5	NV	mg/kg
12867	479818	1348431.5	12	12.5	Chromium	11.4	NV	mg/kg
12867	479818	1348431.5	14	14.5	Chromium	17.7	NV	mg/kg
12867	479818	1348431.5	16	16.5	Chromium	18.3	NV	mg/kg
12867	479818	1348431.5	18	18.5	Chromium	15	NV	mg/kg
12867	479818	1348431.5	20	20.5	Chromium	12.5	NV	mg/kg
12867	479818	1348431.5	22	22.5	Chromium	18.9	NV	mg/kg
12867	479818	1348431.5	24	24.5	Chromium	16.5	NV	mg/kg
12867	479818	1348431.5	2.5	3	cis-1,3-Dichloropropene	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	cis-1,3-Dichloropropene	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	cis-1,3-Dichloropropene	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	cis-1,3-Dichloropropene	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	cis-1,3-Dichloropropene	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	cis-1,3-Dichloropropene	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	cis-1,3-Dichloropropene	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	cis-1,3-Dichloropropene	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	cis-1,3-Dichloropropene	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	cis-1,3-Dichloropropene	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	cis-1,3-Dichloropropene	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	cis-1,3-Dichloropropene	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	cis-1,3-Dichloropropene	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	cis-1,3-Dichloropropene	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	cis-1,3-Dichloropropene	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	cis-1,3-Dichloropropene	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	cis-1,3-Dichloropropene	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	cis-1,3-Dichloropropene	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Dibromochloromethane	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Dibromochloromethane	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Dibromochloromethane	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Dibromochloromethane	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Dibromochloromethane	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Dibromochloromethane	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Dibromochloromethane	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Dibromochloromethane	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Dibromochloromethane	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Dibromochloromethane	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Dibromochloromethane	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Dibromochloromethane	1200	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12867	479818	1348431.5	14.5	15	Dibromochloromethane	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Dibromochloromethane	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Dibromochloromethane	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Dibromochloromethane	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Dibromochloromethane	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Dibromochloromethane	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Ethylbenzene	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Ethylbenzene	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Ethylbenzene	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Ethylbenzene	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Ethylbenzene	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Ethylbenzene	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Ethylbenzene	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Ethylbenzene	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Ethylbenzene	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Ethylbenzene	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Ethylbenzene	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Ethylbenzene	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Ethylbenzene	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Ethylbenzene	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Ethylbenzene	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Ethylbenzene	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Ethylbenzene	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Ethylbenzene	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Gross Alpha	9.4	UNV	pCi/g
12867	479818	1348431.5	2.5	3	Gross Beta	16	UNV	pCi/g
12867	479818	1348431.5	2	2.5	Lead	9.7	NV	mg/kg
12867	479818	1348431.5	4	4.5	Lead	19.7	NV	mg/kg
12867	479818	1348431.5	6	6.5	Lead	13.1	NV	mg/kg
12867	479818	1348431.5	8	8.5	Lead	14	NV	mg/kg
12867	479818	1348431.5	10	10.5	Lead	7.83	NV	mg/kg
12867	479818	1348431.5	12	12.5	Lead	6.29	NV	mg/kg
12867	479818	1348431.5	14	14.5	Lead	8.85	NV	mg/kg
12867	479818	1348431.5	16	16.5	Lead	8.98	NV	mg/kg
12867	479818	1348431.5	18	18.5	Lead	5.59	NV	mg/kg
12867	479818	1348431.5	20	20.5	Lead	7.53	NV	mg/kg
12867	479818	1348431.5	22	22.5	Lead	8.57	NV	mg/kg
12867	479818	1348431.5	24	24.5	Lead	8.53	NV	mg/kg
12867	479818	1348431.5	2.5	3	Methylene chloride	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Methylene chloride	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Methylene chloride	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Methylene chloride	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Methylene chloride	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Methylene chloride	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Methylene chloride	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Methylene chloride	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Methylene chloride	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Methylene chloride	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Methylene chloride	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Methylene chloride	888	NV	ug/kg
12867	479818	1348431.5	14.5	15	Methylene chloride	3.8	NV	ug/kg
12867	479818	1348431.5	16.5	17	Methylene chloride	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Methylene chloride	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Methylene chloride	2	NV	ug/kg
12867	479818	1348431.5	22.5	23	Methylene chloride	1.6	NV	ug/kg
12867	479818	1348431.5	24.5	25	Methylene chloride	1.5	NV	ug/kg
12867	479818	1348431.5	11.5	12	Radium-226	0.696	NV	pCi/g
12867	479818	1348431.5	15	15.5	Radium-226	0.862	NV	pCi/g
12867	479818	1348431.5	20	20.5	Radium-226	0.738	NV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12867	479818	1348431.5	24.5	25	Radium-226	0.948	NV	pCi/g
12867	479818	1348431.5	11.5	12	Radium-228	0.56	NV	pCi/g
12867	479818	1348431.5	15	15.5	Radium-228	0.651	NV	pCi/g
12867	479818	1348431.5	20	20.5	Radium-228	0.471	NV	pCi/g
12867	479818	1348431.5	24.5	25	Radium-228	0.661	NV	pCi/g
12867	479818	1348431.5	2.5	3	Styrene	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Styrene	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Styrene	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Styrene	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Styrene	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Styrene	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Styrene	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Styrene	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Styrene	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Styrene	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Styrene	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Styrene	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Styrene	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Styrene	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Styrene	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Styrene	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Styrene	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Styrene	11	UNV	ug/kg
12867	479818	1348431.5	2	2.5	Technetium-99	2.3	NV	pCi/g
12867	479818	1348431.5	10	10.5	Technetium-99	13	NV	pCi/g
12867	479818	1348431.5	20	20.5	Technetium-99	1.7	UNV	pCi/g
12867	479818	1348431.5	2.5	3	Tetrachloroethene	13.2	NV	ug/kg
12867	479818	1348431.5	4.5	5	Tetrachloroethene	150	NV	ug/kg
12867	479818	1348431.5	4.5	5	Tetrachloroethene	242	NV	ug/kg
12867	479818	1348431.5	6.5	7	Tetrachloroethene	6.6	NV	ug/kg
12867	479818	1348431.5	8.5	9	Tetrachloroethene	143	NV	ug/kg
12867	479818	1348431.5	8.5	9	Tetrachloroethene	145	NV	ug/kg
12867	479818	1348431.5	10	10.5	Tetrachloroethene	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Tetrachloroethene	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Tetrachloroethene	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Tetrachloroethene	10.4	NV	ug/kg
12867	479818	1348431.5	12.5	13	Tetrachloroethene	2960	NV	ug/kg
12867	479818	1348431.5	12.5	13	Tetrachloroethene	500	NV	ug/kg
12867	479818	1348431.5	14.5	15	Tetrachloroethene	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Tetrachloroethene	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Tetrachloroethene	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Tetrachloroethene	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Tetrachloroethene	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Tetrachloroethene	11	UNV	ug/kg
12867	479818	1348431.5	2	2.5	Thorium, Total	173	NV	mg/kg dry
12867	479818	1348431.5	5	5.5	Thorium, Total	6.35	NV	mg/kg dry
12867	479818	1348431.5	10	10.5	Thorium, Total	4.77	NV	mg/kg dry
12867	479818	1348431.5	13	13.5	Thorium, Total	5.24	NV	mg/kg dry
12867	479818	1348431.5	16	16.5	Thorium, Total	7.34	NV	mg/kg dry
12867	479818	1348431.5	19	19.5	Thorium, Total	4.77	NV	mg/kg dry
12867	479818	1348431.5	22	22.5	Thorium, Total	5.3	NV	mg/kg dry
12867	479818	1348431.5	24.5	25	Thorium, Total	4.76	NV	mg/kg dry
12867	479818	1348431.5	2.5	3	Toluene	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Toluene	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Toluene	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Toluene	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Toluene	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Toluene	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Toluene	5860	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12867	479818	1348431.5	10.5	11	Toluene	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Toluene	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Toluene	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Toluene	0.46	NV	ug/kg
12867	479818	1348431.5	12.5	13	Toluene	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Toluene	1	NV	ug/kg
12867	479818	1348431.5	16.5	17	Toluene	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Toluene	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Toluene	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Toluene	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Toluene	0.69	NV	ug/kg
12867	479818	1348431.5	2.5	3	trans-1,3-Dichloropropene	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	trans-1,3-Dichloropropene	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	trans-1,3-Dichloropropene	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	trans-1,3-Dichloropropene	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	trans-1,3-Dichloropropene	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	trans-1,3-Dichloropropene	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	trans-1,3-Dichloropropene	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	trans-1,3-Dichloropropene	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	trans-1,3-Dichloropropene	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	trans-1,3-Dichloropropene	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	trans-1,3-Dichloropropene	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	trans-1,3-Dichloropropene	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	trans-1,3-Dichloropropene	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	trans-1,3-Dichloropropene	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	trans-1,3-Dichloropropene	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	trans-1,3-Dichloropropene	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	trans-1,3-Dichloropropene	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	trans-1,3-Dichloropropene	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Trichloroethene	15.3	NV	ug/kg
12867	479818	1348431.5	4.5	5	Trichloroethene	16.4	NV	ug/kg
12867	479818	1348431.5	4.5	5	Trichloroethene	39.7	NV	ug/kg
12867	479818	1348431.5	6.5	7	Trichloroethene	19.9	NV	ug/kg
12867	479818	1348431.5	8.5	9	Trichloroethene	7	NV	ug/kg
12867	479818	1348431.5	8.5	9	Trichloroethene	7.1	NV	ug/kg
12867	479818	1348431.5	10	10.5	Trichloroethene	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Trichloroethene	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Trichloroethene	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Trichloroethene	1.4	NV	ug/kg
12867	479818	1348431.5	12.5	13	Trichloroethene	151	NV	ug/kg
12867	479818	1348431.5	12.5	13	Trichloroethene	65.7	NV	ug/kg
12867	479818	1348431.5	14.5	15	Trichloroethene	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Trichloroethene	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Trichloroethene	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Trichloroethene	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Trichloroethene	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Trichloroethene	11	UNV	ug/kg
12867	479818	1348431.5	2	2.5	Uranium, Total	80.5	NV	mg/kg dry
12867	479818	1348431.5	5	5.5	Uranium, Total	1.34	NV	mg/kg dry
12867	479818	1348431.5	10	10.5	Uranium, Total	149	NV	mg/kg dry
12867	479818	1348431.5	13	13.5	Uranium, Total	11.9	NV	mg/kg dry
12867	479818	1348431.5	16	16.5	Uranium, Total	1.86	NV	mg/kg dry
12867	479818	1348431.5	19	19.5	Uranium, Total	1.72	NV	mg/kg dry
12867	479818	1348431.5	22	22.5	Uranium, Total	1.36	NV	mg/kg dry
12867	479818	1348431.5	24.5	25	Uranium, Total	2.12	NV	mg/kg dry
12867	479818	1348431.5	2.5	3	Vinyl chloride	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Vinyl chloride	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Vinyl chloride	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Vinyl chloride	11.9	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12867	479818	1348431.5	8.5	9	Vinyl chloride	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Vinyl chloride	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Vinyl chloride	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Vinyl chloride	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Vinyl chloride	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Vinyl chloride	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Vinyl chloride	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Vinyl chloride	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Vinyl chloride	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Vinyl chloride	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Vinyl chloride	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Vinyl chloride	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Vinyl chloride	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Vinyl chloride	11	UNV	ug/kg
12867	479818	1348431.5	2.5	3	Xylenes, Total	11.8	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Xylenes, Total	12.4	UNV	ug/kg
12867	479818	1348431.5	4.5	5	Xylenes, Total	61.8	UNV	ug/kg
12867	479818	1348431.5	6.5	7	Xylenes, Total	11.9	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Xylenes, Total	12.1	UNV	ug/kg
12867	479818	1348431.5	8.5	9	Xylenes, Total	30.3	UNV	ug/kg
12867	479818	1348431.5	10	10.5	Xylenes, Total	5860	UNV	ug/kg
12867	479818	1348431.5	10.5	11	Xylenes, Total	5660	UNV	ug/kg
12867	479818	1348431.5	11	11.5	Xylenes, Total	5560	UNV	ug/kg
12867	479818	1348431.5	11.5	12	Xylenes, Total	11.1	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Xylenes, Total	12	UNV	ug/kg
12867	479818	1348431.5	12.5	13	Xylenes, Total	1200	UNV	ug/kg
12867	479818	1348431.5	14.5	15	Xylenes, Total	11.8	UNV	ug/kg
12867	479818	1348431.5	16.5	17	Xylenes, Total	12.3	UNV	ug/kg
12867	479818	1348431.5	18.5	19	Xylenes, Total	11.9	UNV	ug/kg
12867	479818	1348431.5	20.5	21	Xylenes, Total	11.7	UNV	ug/kg
12867	479818	1348431.5	22.5	23	Xylenes, Total	11.5	UNV	ug/kg
12867	479818	1348431.5	24.5	25	Xylenes, Total	11	UNV	ug/kg
12868	479827	1348430	1	1.5	1,1,1-Trichloroethane	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	1,1,1-Trichloroethane	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	1,1,1-Trichloroethane	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	1,1,1-Trichloroethane	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	1,1,1-Trichloroethane	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	1,1,1-Trichloroethane	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	1,1,1-Trichloroethane	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	1,1,1-Trichloroethane	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	1,1,1-Trichloroethane	20.9	NV	ug/kg
12868	479827	1348430	14.5	15	1,1,1-Trichloroethane	12	UNV	ug/kg
12868	479827	1348430	16.5	17	1,1,1-Trichloroethane	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	1,1,1-Trichloroethane	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	1,1,1-Trichloroethane	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	1,1,1-Trichloroethane	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	1,1,1-Trichloroethane	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	1,1,2,2-Tetrachloroethane	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	1,1,2,2-Tetrachloroethane	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	1,1,2,2-Tetrachloroethane	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	1,1,2,2-Tetrachloroethane	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	1,1,2,2-Tetrachloroethane	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	1,1,2,2-Tetrachloroethane	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	1,1,2,2-Tetrachloroethane	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	1,1,2,2-Tetrachloroethane	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	1,1,2,2-Tetrachloroethane	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	1,1,2,2-Tetrachloroethane	12	UNV	ug/kg
12868	479827	1348430	16.5	17	1,1,2,2-Tetrachloroethane	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	1,1,2,2-Tetrachloroethane	11.2	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12868	479827	1348430	20.5	21	1,1,2,2-Tetrachloroethane	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	1,1,2,2-Tetrachloroethane	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	1,1,2,2-Tetrachloroethane	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	1,1,2-Trichloroethane	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	1,1,2-Trichloroethane	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	1,1,2-Trichloroethane	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	1,1,2-Trichloroethane	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	1,1,2-Trichloroethane	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	1,1,2-Trichloroethane	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	1,1,2-Trichloroethane	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	1,1,2-Trichloroethane	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	1,1,2-Trichloroethane	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	1,1,2-Trichloroethane	12	UNV	ug/kg
12868	479827	1348430	16.5	17	1,1,2-Trichloroethane	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	1,1,2-Trichloroethane	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	1,1,2-Trichloroethane	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	1,1,2-Trichloroethane	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	1,1,2-Trichloroethane	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	1,1-Dichloroethane	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	1,1-Dichloroethane	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	1,1-Dichloroethane	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	1,1-Dichloroethane	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	1,1-Dichloroethane	1.8	NV	ug/kg
12868	479827	1348430	8.5	9	1,1-Dichloroethane	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	1,1-Dichloroethane	1.3	NV	ug/kg
12868	479827	1348430	10.5	11	1,1-Dichloroethane	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	1,1-Dichloroethane	25.3	NV	ug/kg
12868	479827	1348430	14.5	15	1,1-Dichloroethane	12	UNV	ug/kg
12868	479827	1348430	16.5	17	1,1-Dichloroethane	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	1,1-Dichloroethane	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	1,1-Dichloroethane	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	1,1-Dichloroethane	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	1,1-Dichloroethane	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	1,1-Dichloroethene	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	1,1-Dichloroethene	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	1,1-Dichloroethene	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	1,1-Dichloroethene	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	1,1-Dichloroethene	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	1,1-Dichloroethene	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	1,1-Dichloroethene	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	1,1-Dichloroethene	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	1,1-Dichloroethene	1.7	NV	ug/kg
12868	479827	1348430	14.5	15	1,1-Dichloroethene	12	UNV	ug/kg
12868	479827	1348430	16.5	17	1,1-Dichloroethene	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	1,1-Dichloroethene	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	1,1-Dichloroethene	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	1,1-Dichloroethene	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	1,1-Dichloroethene	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	1,2-Dichloroethane	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	1,2-Dichloroethane	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	1,2-Dichloroethane	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	1,2-Dichloroethane	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	1,2-Dichloroethane	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	1,2-Dichloroethane	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	1,2-Dichloroethane	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	1,2-Dichloroethane	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	1,2-Dichloroethane	1	NV	ug/kg
12868	479827	1348430	14.5	15	1,2-Dichloroethane	12	UNV	ug/kg
12868	479827	1348430	16.5	17	1,2-Dichloroethane	12.3	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12868	479827	1348430	18.5	19	1,2-Dichloroethane	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	1,2-Dichloroethane	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	1,2-Dichloroethane	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	1,2-Dichloroethane	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	1,2-Dichloroethene (Total)	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	1,2-Dichloroethene (Total)	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	1,2-Dichloroethene (Total)	255	NV	ug/kg
12868	479827	1348430	6.5	7	1,2-Dichloroethene (Total)	69.5	NV	ug/kg
12868	479827	1348430	8.5	9	1,2-Dichloroethene (Total)	106	NV	ug/kg
12868	479827	1348430	8.5	9	1,2-Dichloroethene (Total)	210	NV	ug/kg
12868	479827	1348430	10.5	11	1,2-Dichloroethene (Total)	29.3	NV	ug/kg
12868	479827	1348430	10.5	11	1,2-Dichloroethene (Total)	31.3	NV	ug/kg
12868	479827	1348430	12.5	13	1,2-Dichloroethene (Total)	91	NV	ug/kg
12868	479827	1348430	14.5	15	1,2-Dichloroethene (Total)	12	UNV	ug/kg
12868	479827	1348430	16.5	17	1,2-Dichloroethene (Total)	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	1,2-Dichloroethene (Total)	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	1,2-Dichloroethene (Total)	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	1,2-Dichloroethene (Total)	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	1,2-Dichloroethene (Total)	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	1,2-Dichloropropane	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	1,2-Dichloropropane	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	1,2-Dichloropropane	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	1,2-Dichloropropane	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	1,2-Dichloropropane	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	1,2-Dichloropropane	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	1,2-Dichloropropane	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	1,2-Dichloropropane	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	1,2-Dichloropropane	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	1,2-Dichloropropane	12	UNV	ug/kg
12868	479827	1348430	16.5	17	1,2-Dichloropropane	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	1,2-Dichloropropane	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	1,2-Dichloropropane	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	1,2-Dichloropropane	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	1,2-Dichloropropane	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	2-Butanone	61.5	UNV	ug/kg
12868	479827	1348430	2.5	3	2-Butanone	53.7	UNV	ug/kg
12868	479827	1348430	4.5	5	2-Butanone	569	NV	ug/kg
12868	479827	1348430	6.5	7	2-Butanone	63.4	UNV	ug/kg
12868	479827	1348430	8.5	9	2-Butanone	157	UNV	ug/kg
12868	479827	1348430	8.5	9	2-Butanone	62.9	UNV	ug/kg
12868	479827	1348430	10.5	11	2-Butanone	162	UNV	ug/kg
12868	479827	1348430	10.5	11	2-Butanone	58.2	UNV	ug/kg
12868	479827	1348430	12.5	13	2-Butanone	19.6	NV	ug/kg
12868	479827	1348430	14.5	15	2-Butanone	60	UNV	ug/kg
12868	479827	1348430	16.5	17	2-Butanone	61.3	UNV	ug/kg
12868	479827	1348430	18.5	19	2-Butanone	56.2	UNV	ug/kg
12868	479827	1348430	20.5	21	2-Butanone	57.3	UNV	ug/kg
12868	479827	1348430	22.5	23	2-Butanone	57.8	UNV	ug/kg
12868	479827	1348430	24.5	25	2-Butanone	55.6	UNV	ug/kg
12868	479827	1348430	1	1.5	2-Hexanone	61.5	UNV	ug/kg
12868	479827	1348430	2.5	3	2-Hexanone	53.7	UNV	ug/kg
12868	479827	1348430	4.5	5	2-Hexanone	6120	UNV	ug/kg
12868	479827	1348430	6.5	7	2-Hexanone	63.4	UNV	ug/kg
12868	479827	1348430	8.5	9	2-Hexanone	157	UNV	ug/kg
12868	479827	1348430	8.5	9	2-Hexanone	62.9	UNV	ug/kg
12868	479827	1348430	10.5	11	2-Hexanone	162	UNV	ug/kg
12868	479827	1348430	10.5	11	2-Hexanone	58.2	UNV	ug/kg
12868	479827	1348430	12.5	13	2-Hexanone	60.5	UNV	ug/kg
12868	479827	1348430	14.5	15	2-Hexanone	60	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12868	479827	1348430	16.5	17	2-Hexanone	61.3	UNV	ug/kg
12868	479827	1348430	18.5	19	2-Hexanone	56.2	UNV	ug/kg
12868	479827	1348430	20.5	21	2-Hexanone	57.3	UNV	ug/kg
12868	479827	1348430	22.5	23	2-Hexanone	57.8	UNV	ug/kg
12868	479827	1348430	24.5	25	2-Hexanone	55.6	UNV	ug/kg
12868	479827	1348430	1	1.5	4-Methyl-2-pentanone	61.5	UNV	ug/kg
12868	479827	1348430	2.5	3	4-Methyl-2-pentanone	53.7	UNV	ug/kg
12868	479827	1348430	4.5	5	4-Methyl-2-pentanone	6120	UNV	ug/kg
12868	479827	1348430	6.5	7	4-Methyl-2-pentanone	63.4	UNV	ug/kg
12868	479827	1348430	8.5	9	4-Methyl-2-pentanone	157	UNV	ug/kg
12868	479827	1348430	8.5	9	4-Methyl-2-pentanone	62.9	UNV	ug/kg
12868	479827	1348430	10.5	11	4-Methyl-2-pentanone	162	UNV	ug/kg
12868	479827	1348430	10.5	11	4-Methyl-2-pentanone	58.2	UNV	ug/kg
12868	479827	1348430	12.5	13	4-Methyl-2-pentanone	60.5	UNV	ug/kg
12868	479827	1348430	14.5	15	4-Methyl-2-pentanone	60	UNV	ug/kg
12868	479827	1348430	16.5	17	4-Methyl-2-pentanone	61.3	UNV	ug/kg
12868	479827	1348430	18.5	19	4-Methyl-2-pentanone	56.2	UNV	ug/kg
12868	479827	1348430	20.5	21	4-Methyl-2-pentanone	57.3	UNV	ug/kg
12868	479827	1348430	22.5	23	4-Methyl-2-pentanone	57.8	UNV	ug/kg
12868	479827	1348430	24.5	25	4-Methyl-2-pentanone	55.6	UNV	ug/kg
12868	479827	1348430	1	1.5	Acetone	61.5	UNV	ug/kg
12868	479827	1348430	2.5	3	Acetone	53.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Acetone	6120	UNV	ug/kg
12868	479827	1348430	6.5	7	Acetone	18.6	NV	ug/kg
12868	479827	1348430	8.5	9	Acetone	157	UNV	ug/kg
12868	479827	1348430	8.5	9	Acetone	62.9	UNV	ug/kg
12868	479827	1348430	10.5	11	Acetone	13.4	NV	ug/kg
12868	479827	1348430	10.5	11	Acetone	162	UNV	ug/kg
12868	479827	1348430	12.5	13	Acetone	27.8	NV	ug/kg
12868	479827	1348430	14.5	15	Acetone	9	NV	ug/kg
12868	479827	1348430	16.5	17	Acetone	8.6	NV	ug/kg
12868	479827	1348430	18.5	19	Acetone	9.3	NV	ug/kg
12868	479827	1348430	20.5	21	Acetone	14.6	NV	ug/kg
12868	479827	1348430	22.5	23	Acetone	9.6	NV	ug/kg
12868	479827	1348430	24.5	25	Acetone	27.6	NV	ug/kg
12868	479827	1348430	0.5	1	Barium	192	NV	mg/kg
12868	479827	1348430	2	2.5	Barium	61.6	NV	mg/kg
12868	479827	1348430	4	4.5	Barium	50.8	NV	mg/kg
12868	479827	1348430	6	6.5	Barium	135	NV	mg/kg
12868	479827	1348430	8	8.5	Barium	116	NV	mg/kg
12868	479827	1348430	10	10.5	Barium	66.4	NV	mg/kg
12868	479827	1348430	12	12.5	Barium	48.6	NV	mg/kg
12868	479827	1348430	14	14.5	Barium	49.7	NV	mg/kg
12868	479827	1348430	16	16.5	Barium	22.8	NV	mg/kg
12868	479827	1348430	18	18.5	Barium	100	NV	mg/kg
12868	479827	1348430	20	20.5	Barium	57.8	NV	mg/kg
12868	479827	1348430	22	22.5	Barium	72.3	NV	mg/kg
12868	479827	1348430	24	24.5	Barium	79.3	NV	mg/kg
12868	479827	1348430	1	1.5	Benzene	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Benzene	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Benzene	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Benzene	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Benzene	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Benzene	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Benzene	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Benzene	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Benzene	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Benzene	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Benzene	12.3	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12868	479827	1348430	18.5	19	Benzene	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Benzene	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Benzene	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Benzene	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Bromodichloromethane	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Bromodichloromethane	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Bromodichloromethane	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Bromodichloromethane	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Bromodichloromethane	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Bromodichloromethane	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Bromodichloromethane	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Bromodichloromethane	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Bromodichloromethane	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Bromodichloromethane	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Bromodichloromethane	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Bromodichloromethane	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Bromodichloromethane	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Bromodichloromethane	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Bromodichloromethane	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Bromoform	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Bromoform	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Bromoform	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Bromoform	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Bromoform	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Bromoform	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Bromoform	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Bromoform	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Bromoform	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Bromoform	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Bromoform	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Bromoform	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Bromoform	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Bromoform	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Bromoform	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Bromomethane	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Bromomethane	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Bromomethane	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Bromomethane	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Bromomethane	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Bromomethane	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Bromomethane	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Bromomethane	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Bromomethane	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Bromomethane	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Bromomethane	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Bromomethane	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Bromomethane	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Bromomethane	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Bromomethane	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Carbon disulfide	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Carbon disulfide	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Carbon disulfide	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Carbon disulfide	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Carbon disulfide	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Carbon disulfide	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Carbon disulfide	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Carbon disulfide	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Carbon disulfide	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Carbon disulfide	12	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12868	479827	1348430	16.5	17	Carbon disulfide	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Carbon disulfide	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Carbon disulfide	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Carbon disulfide	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Carbon disulfide	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Carbon Tetrachloride	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Carbon Tetrachloride	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Carbon Tetrachloride	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Carbon Tetrachloride	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Carbon Tetrachloride	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Carbon Tetrachloride	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Carbon Tetrachloride	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Carbon Tetrachloride	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Carbon Tetrachloride	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Carbon Tetrachloride	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Carbon Tetrachloride	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Carbon Tetrachloride	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Carbon Tetrachloride	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Carbon Tetrachloride	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Carbon Tetrachloride	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Chlorobenzene	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Chlorobenzene	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Chlorobenzene	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Chlorobenzene	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Chlorobenzene	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Chlorobenzene	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Chlorobenzene	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Chlorobenzene	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Chlorobenzene	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Chlorobenzene	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Chlorobenzene	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Chlorobenzene	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Chlorobenzene	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Chlorobenzene	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Chlorobenzene	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Chloroethane	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Chloroethane	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Chloroethane	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Chloroethane	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Chloroethane	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Chloroethane	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Chloroethane	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Chloroethane	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Chloroethane	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Chloroethane	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Chloroethane	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Chloroethane	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Chloroethane	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Chloroethane	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Chloroethane	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Chloroform	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Chloroform	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Chloroform	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Chloroform	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Chloroform	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Chloroform	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Chloroform	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Chloroform	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Chloroform	12.1	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12868	479827	1348430	14.5	15	Chloroform	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Chloroform	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Chloroform	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Chloroform	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Chloroform	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Chloroform	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Chloromethane	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Chloromethane	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Chloromethane	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Chloromethane	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Chloromethane	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Chloromethane	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Chloromethane	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Chloromethane	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Chloromethane	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Chloromethane	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Chloromethane	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Chloromethane	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Chloromethane	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Chloromethane	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Chloromethane	11.1	UNV	ug/kg
12868	479827	1348430	0.5	1	Chromium	21.9	NV	mg/kg
12868	479827	1348430	2	2.5	Chromium	7.21	NV	mg/kg
12868	479827	1348430	4	4.5	Chromium	7.76	NV	mg/kg
12868	479827	1348430	6	6.5	Chromium	24.2	NV	mg/kg
12868	479827	1348430	8	8.5	Chromium	22.5	NV	mg/kg
12868	479827	1348430	10	10.5	Chromium	19.6	NV	mg/kg
12868	479827	1348430	12	12.5	Chromium	11.6	NV	mg/kg
12868	479827	1348430	14	14.5	Chromium	15.5	NV	mg/kg
12868	479827	1348430	16	16.5	Chromium	6.6	NV	mg/kg
12868	479827	1348430	18	18.5	Chromium	23.3	NV	mg/kg
12868	479827	1348430	20	20.5	Chromium	13.8	NV	mg/kg
12868	479827	1348430	22	22.5	Chromium	13.7	NV	mg/kg
12868	479827	1348430	24	24.5	Chromium	14.1	NV	mg/kg
12868	479827	1348430	1	1.5	cis-1,3-Dichloropropene	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	cis-1,3-Dichloropropene	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	cis-1,3-Dichloropropene	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	cis-1,3-Dichloropropene	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	cis-1,3-Dichloropropene	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	cis-1,3-Dichloropropene	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	cis-1,3-Dichloropropene	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	cis-1,3-Dichloropropene	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	cis-1,3-Dichloropropene	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	cis-1,3-Dichloropropene	12	UNV	ug/kg
12868	479827	1348430	16.5	17	cis-1,3-Dichloropropene	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	cis-1,3-Dichloropropene	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	cis-1,3-Dichloropropene	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	cis-1,3-Dichloropropene	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	cis-1,3-Dichloropropene	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Dibromochloromethane	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Dibromochloromethane	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Dibromochloromethane	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Dibromochloromethane	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Dibromochloromethane	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Dibromochloromethane	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Dibromochloromethane	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Dibromochloromethane	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Dibromochloromethane	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Dibromochloromethane	12	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12868	479827	1348430	16.5	17	Dibromochloromethane	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Dibromochloromethane	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Dibromochloromethane	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Dibromochloromethane	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Dibromochloromethane	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Ethylbenzene	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Ethylbenzene	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Ethylbenzene	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Ethylbenzene	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Ethylbenzene	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Ethylbenzene	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Ethylbenzene	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Ethylbenzene	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Ethylbenzene	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Ethylbenzene	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Ethylbenzene	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Ethylbenzene	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Ethylbenzene	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Ethylbenzene	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Ethylbenzene	11.1	UNV	ug/kg
12868	479827	1348430	0.5	1	Gross Alpha	320	NV	pCi/g
12868	479827	1348430	1.5	2	Gross Alpha	57	NV	pCi/g
12868	479827	1348430	2	2.5	Gross Alpha	270	NV	pCi/g
12868	479827	1348430	4	4.5	Gross Alpha	62	NV	pCi/g
12868	479827	1348430	0.5	1	Gross Beta	180	NV	pCi/g
12868	479827	1348430	1.5	2	Gross Beta	43	NV	pCi/g
12868	479827	1348430	2	2.5	Gross Beta	180	NV	pCi/g
12868	479827	1348430	4	4.5	Gross Beta	43	NV	pCi/g
12868	479827	1348430	0.5	1	Lead	0.032	NV	mg/L
12868	479827	1348430	0.5	1	Lead	111	NV	mg/kg
12868	479827	1348430	2	2.5	Lead	12.7	NV	mg/kg
12868	479827	1348430	4	4.5	Lead	15.5	NV	mg/kg
12868	479827	1348430	6	6.5	Lead	18	NV	mg/kg
12868	479827	1348430	8	8.5	Lead	12.3	NV	mg/kg
12868	479827	1348430	10	10.5	Lead	10.1	NV	mg/kg
12868	479827	1348430	12	12.5	Lead	8.07	NV	mg/kg
12868	479827	1348430	14	14.5	Lead	8.49	NV	mg/kg
12868	479827	1348430	16	16.5	Lead	5.87	NV	mg/kg
12868	479827	1348430	18	18.5	Lead	10.3	NV	mg/kg
12868	479827	1348430	20	20.5	Lead	7.88	NV	mg/kg
12868	479827	1348430	22	22.5	Lead	13.2	NV	mg/kg
12868	479827	1348430	24	24.5	Lead	8.54	NV	mg/kg
12868	479827	1348430	1	1.5	Methylene chloride	2.3	NV	ug/kg
12868	479827	1348430	2.5	3	Methylene chloride	3.6	NV	ug/kg
12868	479827	1348430	4.5	5	Methylene chloride	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Methylene chloride	5	NV	ug/kg
12868	479827	1348430	8.5	9	Methylene chloride	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Methylene chloride	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Methylene chloride	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Methylene chloride	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Methylene chloride	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Methylene chloride	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Methylene chloride	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Methylene chloride	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Methylene chloride	2.7	NV	ug/kg
12868	479827	1348430	22.5	23	Methylene chloride	2.8	NV	ug/kg
12868	479827	1348430	24.5	25	Methylene chloride	7	NV	ug/kg
12868	479827	1348430	11.5	12	Radium-226	0.721	NV	pCi/g
12868	479827	1348430	15	15.5	Radium-226	1.02	NV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12868	479827	1348430	20	20.5	Radium-226	0.827	NV	pCi/g
12868	479827	1348430	24.5	25	Radium-226	0.887	NV	pCi/g
12868	479827	1348430	11.5	12	Radium-228	2.37	NV	pCi/g
12868	479827	1348430	15	15.5	Radium-228	0.772	NV	pCi/g
12868	479827	1348430	20	20.5	Radium-228	0.675	NV	pCi/g
12868	479827	1348430	24.5	25	Radium-228	0.754	NV	pCi/g
12868	479827	1348430	1	1.5	Styrene	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Styrene	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Styrene	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Styrene	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Styrene	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Styrene	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Styrene	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Styrene	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Styrene	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Styrene	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Styrene	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Styrene	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Styrene	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Styrene	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Styrene	11.1	UNV	ug/kg
12868	479827	1348430	0.5	1	Technetium-99	1.5	UNV	pCi/g
12868	479827	1348430	10	10.5	Technetium-99	1.8	UNV	pCi/g
12868	479827	1348430	20	20.5	Technetium-99	1.8	UNV	pCi/g
12868	479827	1348430	1	1.5	Tetrachloroethene	0.67	NV	ug/kg
12868	479827	1348430	2.5	3	Tetrachloroethene	16.6	NV	ug/kg
12868	479827	1348430	4.5	5	Tetrachloroethene	8220	NV	ug/kg
12868	479827	1348430	6.5	7	Tetrachloroethene	3.8	NV	ug/kg
12868	479827	1348430	8.5	9	Tetrachloroethene	139	NV	ug/kg
12868	479827	1348430	8.5	9	Tetrachloroethene	259	NV	ug/kg
12868	479827	1348430	10.5	11	Tetrachloroethene	224	NV	ug/kg
12868	479827	1348430	10.5	11	Tetrachloroethene	226	NV	ug/kg
12868	479827	1348430	12.5	13	Tetrachloroethene	108	NV	ug/kg
12868	479827	1348430	14.5	15	Tetrachloroethene	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Tetrachloroethene	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Tetrachloroethene	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Tetrachloroethene	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Tetrachloroethene	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Tetrachloroethene	11.1	UNV	ug/kg
12868	479827	1348430	0.5	1	Thorium, Total	43.2	NV	mg/kg dry
12868	479827	1348430	5	5.5	Thorium, Total	9.55	NV	mg/kg dry
12868	479827	1348430	10	10.5	Thorium, Total	6.48	NV	mg/kg dry
12868	479827	1348430	13	13.5	Thorium, Total	3.88	NV	mg/kg dry
12868	479827	1348430	16	16.5	Thorium, Total	6.37	NV	mg/kg dry
12868	479827	1348430	19	19.5	Thorium, Total	81.5	NV	mg/kg dry
12868	479827	1348430	22	22.5	Thorium, Total	4.69	NV	mg/kg dry
12868	479827	1348430	24.5	25	Thorium, Total	4.79	NV	mg/kg dry
12868	479827	1348430	1	1.5	Toluene	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Toluene	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Toluene	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Toluene	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Toluene	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Toluene	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Toluene	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Toluene	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Toluene	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Toluene	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Toluene	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Toluene	11.2	UNV	ug/kg

000370

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12868	479827	1348430	20.5	21	Toluene	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Toluene	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Toluene	0.7	NV	ug/kg
12868	479827	1348430	1	1.5	trans-1,3-Dichloropropene	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	trans-1,3-Dichloropropene	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	trans-1,3-Dichloropropene	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	trans-1,3-Dichloropropene	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	trans-1,3-Dichloropropene	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	trans-1,3-Dichloropropene	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	trans-1,3-Dichloropropene	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	trans-1,3-Dichloropropene	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	trans-1,3-Dichloropropene	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	trans-1,3-Dichloropropene	12	UNV	ug/kg
12868	479827	1348430	16.5	17	trans-1,3-Dichloropropene	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	trans-1,3-Dichloropropene	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	trans-1,3-Dichloropropene	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	trans-1,3-Dichloropropene	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	trans-1,3-Dichloropropene	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Trichloroethene	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Trichloroethene	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Trichloroethene	204	NV	ug/kg
12868	479827	1348430	6.5	7	Trichloroethene	1.6	NV	ug/kg
12868	479827	1348430	8.5	9	Trichloroethene	124	NV	ug/kg
12868	479827	1348430	8.5	9	Trichloroethene	62.6	NV	ug/kg
12868	479827	1348430	10.5	11	Trichloroethene	37.1	NV	ug/kg
12868	479827	1348430	10.5	11	Trichloroethene	42.7	NV	ug/kg
12868	479827	1348430	12.5	13	Trichloroethene	60.6	NV	ug/kg
12868	479827	1348430	14.5	15	Trichloroethene	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Trichloroethene	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Trichloroethene	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Trichloroethene	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Trichloroethene	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Trichloroethene	11.1	UNV	ug/kg
12868	479827	1348430	0.5	1	Uranium, Total	16.2	NV	mg/kg dry
12868	479827	1348430	5	5.5	Uranium, Total	42.3	NV	mg/kg dry
12868	479827	1348430	10	10.5	Uranium, Total	42.7	NV	mg/kg dry
12868	479827	1348430	13	13.5	Uranium, Total	1.9	NV	mg/kg dry
12868	479827	1348430	16	16.5	Uranium, Total	1.96	NV	mg/kg dry
12868	479827	1348430	19	19.5	Uranium, Total	1.88	NV	mg/kg dry
12868	479827	1348430	22	22.5	Uranium, Total	2.06	NV	mg/kg dry
12868	479827	1348430	24.5	25	Uranium, Total	1.28	NV	mg/kg dry
12868	479827	1348430	1	1.5	Vinyl chloride	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Vinyl chloride	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Vinyl chloride	1220	UNV	ug/kg
12868	479827	1348430	6.5	7	Vinyl chloride	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Vinyl chloride	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Vinyl chloride	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Vinyl chloride	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Vinyl chloride	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Vinyl chloride	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Vinyl chloride	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Vinyl chloride	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Vinyl chloride	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Vinyl chloride	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Vinyl chloride	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Vinyl chloride	11.1	UNV	ug/kg
12868	479827	1348430	1	1.5	Xylenes, Total	12.3	UNV	ug/kg
12868	479827	1348430	2.5	3	Xylenes, Total	10.7	UNV	ug/kg
12868	479827	1348430	4.5	5	Xylenes, Total	1220	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12868	479827	1348430	6.5	7	Xylenes, Total	12.7	UNV	ug/kg
12868	479827	1348430	8.5	9	Xylenes, Total	12.6	UNV	ug/kg
12868	479827	1348430	8.5	9	Xylenes, Total	31.4	UNV	ug/kg
12868	479827	1348430	10.5	11	Xylenes, Total	11.6	UNV	ug/kg
12868	479827	1348430	10.5	11	Xylenes, Total	32.4	UNV	ug/kg
12868	479827	1348430	12.5	13	Xylenes, Total	12.1	UNV	ug/kg
12868	479827	1348430	14.5	15	Xylenes, Total	12	UNV	ug/kg
12868	479827	1348430	16.5	17	Xylenes, Total	12.3	UNV	ug/kg
12868	479827	1348430	18.5	19	Xylenes, Total	11.2	UNV	ug/kg
12868	479827	1348430	20.5	21	Xylenes, Total	11.5	UNV	ug/kg
12868	479827	1348430	22.5	23	Xylenes, Total	11.6	UNV	ug/kg
12868	479827	1348430	24.5	25	Xylenes, Total	11.1	UNV	ug/kg
12869	479836	1348433.5	1	1.5	1,1,1-Trichloroethane	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	1,1,1-Trichloroethane	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	1,1,1-Trichloroethane	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	1,1,1-Trichloroethane	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	1,1,1-Trichloroethane	0.82	NV	ug/kg
12869	479836	1348433.5	10.5	11	1,1,1-Trichloroethane	930	NV	ug/kg
12869	479836	1348433.5	12.5	13	1,1,1-Trichloroethane	184	NV	ug/kg
12869	479836	1348433.5	12.5	13	1,1,1-Trichloroethane	438	NV	ug/kg
12869	479836	1348433.5	14.5	15	1,1,1-Trichloroethane	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	1,1,1-Trichloroethane	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	1,1,1-Trichloroethane	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	1,1,1-Trichloroethane	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	1,1,1-Trichloroethane	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	1,1,1-Trichloroethane	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	1,1,2,2-Tetrachloroethane	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	1,1,2,2-Tetrachloroethane	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	1,1,2,2-Tetrachloroethane	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	1,1,2,2-Tetrachloroethane	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	1,1,2,2-Tetrachloroethane	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	1,1,2,2-Tetrachloroethane	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	1,1,2,2-Tetrachloroethane	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	1,1,2,2-Tetrachloroethane	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	1,1,2,2-Tetrachloroethane	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	1,1,2,2-Tetrachloroethane	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	1,1,2,2-Tetrachloroethane	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	1,1,2,2-Tetrachloroethane	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	1,1,2,2-Tetrachloroethane	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	1,1,2,2-Tetrachloroethane	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	1,1,2-Trichloroethane	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	1,1,2-Trichloroethane	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	1,1,2-Trichloroethane	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	1,1,2-Trichloroethane	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	1,1,2-Trichloroethane	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	1,1,2-Trichloroethane	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	1,1,2-Trichloroethane	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	1,1,2-Trichloroethane	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	1,1,2-Trichloroethane	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	1,1,2-Trichloroethane	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	1,1,2-Trichloroethane	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	1,1,2-Trichloroethane	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	1,1,2-Trichloroethane	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	1,1,2-Trichloroethane	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	1,1-Dichloroethane	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	1,1-Dichloroethane	1.3	NV	ug/kg
12869	479836	1348433.5	4.5	5	1,1-Dichloroethane	2.4	NV	ug/kg
12869	479836	1348433.5	6.5	7	1,1-Dichloroethane	1.1	NV	ug/kg
12869	479836	1348433.5	8.5	9	1,1-Dichloroethane	6.3	NV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12869	479836	1348433.5	10.5	11	1,1-Dichloroethane	3800	NV	ug/kg
12869	479836	1348433.5	12.5	13	1,1-Dichloroethane	63	NV	ug/kg
12869	479836	1348433.5	12.5	13	1,1-Dichloroethane	68.5	NV	ug/kg
12869	479836	1348433.5	14.5	15	1,1-Dichloroethane	5.8	NV	ug/kg
12869	479836	1348433.5	16.5	17	1,1-Dichloroethane	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	1,1-Dichloroethane	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	1,1-Dichloroethane	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	1,1-Dichloroethane	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	1,1-Dichloroethane	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	1,1-Dichloroethene	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	1,1-Dichloroethene	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	1,1-Dichloroethene	0.96	NV	ug/kg
12869	479836	1348433.5	6.5	7	1,1-Dichloroethene	1	NV	ug/kg
12869	479836	1348433.5	8.5	9	1,1-Dichloroethene	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	1,1-Dichloroethene	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	1,1-Dichloroethene	12.4	NV	ug/kg
12869	479836	1348433.5	12.5	13	1,1-Dichloroethene	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	1,1-Dichloroethene	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	1,1-Dichloroethene	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	1,1-Dichloroethene	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	1,1-Dichloroethene	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	1,1-Dichloroethene	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	1,1-Dichloroethene	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	1,2-Dichloroethane	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	1,2-Dichloroethane	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	1,2-Dichloroethane	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	1,2-Dichloroethane	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	1,2-Dichloroethane	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	1,2-Dichloroethane	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	1,2-Dichloroethane	0.95	NV	ug/kg
12869	479836	1348433.5	12.5	13	1,2-Dichloroethane	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	1,2-Dichloroethane	3.5	NV	ug/kg
12869	479836	1348433.5	16.5	17	1,2-Dichloroethane	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	1,2-Dichloroethane	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	1,2-Dichloroethane	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	1,2-Dichloroethane	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	1,2-Dichloroethane	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	1,2-Dichloroethene (Total)	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	1,2-Dichloroethene (Total)	4.3	NV	ug/kg
12869	479836	1348433.5	4.5	5	1,2-Dichloroethene (Total)	139	NV	ug/kg
12869	479836	1348433.5	6.5	7	1,2-Dichloroethene (Total)	260	NV	ug/kg
12869	479836	1348433.5	8.5	9	1,2-Dichloroethene (Total)	23.8	NV	ug/kg
12869	479836	1348433.5	10.5	11	1,2-Dichloroethene (Total)	11400	NV	ug/kg
12869	479836	1348433.5	12.5	13	1,2-Dichloroethene (Total)	243	NV	ug/kg
12869	479836	1348433.5	12.5	13	1,2-Dichloroethene (Total)	254	NV	ug/kg
12869	479836	1348433.5	14.5	15	1,2-Dichloroethene (Total)	20.6	NV	ug/kg
12869	479836	1348433.5	16.5	17	1,2-Dichloroethene (Total)	0.84	NV	ug/kg
12869	479836	1348433.5	18.5	19	1,2-Dichloroethene (Total)	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	1,2-Dichloroethene (Total)	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	1,2-Dichloroethene (Total)	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	1,2-Dichloroethene (Total)	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	1,2-Dichloropropane	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	1,2-Dichloropropane	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	1,2-Dichloropropane	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	1,2-Dichloropropane	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	1,2-Dichloropropane	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	1,2-Dichloropropane	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	1,2-Dichloropropane	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	1,2-Dichloropropane	1200	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12869	479836	1348433.5	14.5	15	1,2-Dichloropropane	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	1,2-Dichloropropane	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	1,2-Dichloropropane	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	1,2-Dichloropropane	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	1,2-Dichloropropane	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	1,2-Dichloropropane	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	2-Butanone	61.6	UNV	ug/kg
12869	479836	1348433.5	2.5	3	2-Butanone	60.4	UNV	ug/kg
12869	479836	1348433.5	4.5	5	2-Butanone	62.8	UNV	ug/kg
12869	479836	1348433.5	6.5	7	2-Butanone	15	NV	ug/kg
12869	479836	1348433.5	8.5	9	2-Butanone	62.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	2-Butanone	57700	UNV	ug/kg
12869	479836	1348433.5	12.5	13	2-Butanone	60	UNV	ug/kg
12869	479836	1348433.5	12.5	13	2-Butanone	6000	UNV	ug/kg
12869	479836	1348433.5	14.5	15	2-Butanone	58.5	UNV	ug/kg
12869	479836	1348433.5	16.5	17	2-Butanone	62.8	UNV	ug/kg
12869	479836	1348433.5	18.5	19	2-Butanone	7.1	NV	ug/kg
12869	479836	1348433.5	20.5	21	2-Butanone	57.4	UNV	ug/kg
12869	479836	1348433.5	22.5	23	2-Butanone	58	UNV	ug/kg
12869	479836	1348433.5	24.5	25	2-Butanone	4.7	NV	ug/kg
12869	479836	1348433.5	1	1.5	2-Hexanone	61.6	UNV	ug/kg
12869	479836	1348433.5	2.5	3	2-Hexanone	60.4	UNV	ug/kg
12869	479836	1348433.5	4.5	5	2-Hexanone	62.8	UNV	ug/kg
12869	479836	1348433.5	6.5	7	2-Hexanone	63.5	UNV	ug/kg
12869	479836	1348433.5	8.5	9	2-Hexanone	62.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	2-Hexanone	57700	UNV	ug/kg
12869	479836	1348433.5	12.5	13	2-Hexanone	60	UNV	ug/kg
12869	479836	1348433.5	12.5	13	2-Hexanone	6000	UNV	ug/kg
12869	479836	1348433.5	14.5	15	2-Hexanone	58.5	UNV	ug/kg
12869	479836	1348433.5	16.5	17	2-Hexanone	62.8	UNV	ug/kg
12869	479836	1348433.5	18.5	19	2-Hexanone	59.1	UNV	ug/kg
12869	479836	1348433.5	20.5	21	2-Hexanone	57.4	UNV	ug/kg
12869	479836	1348433.5	22.5	23	2-Hexanone	58	UNV	ug/kg
12869	479836	1348433.5	24.5	25	2-Hexanone	56.1	UNV	ug/kg
12869	479836	1348433.5	1	1.5	4-Methyl-2-pentanone	61.6	UNV	ug/kg
12869	479836	1348433.5	2.5	3	4-Methyl-2-pentanone	60.4	UNV	ug/kg
12869	479836	1348433.5	4.5	5	4-Methyl-2-pentanone	62.8	UNV	ug/kg
12869	479836	1348433.5	6.5	7	4-Methyl-2-pentanone	63.5	UNV	ug/kg
12869	479836	1348433.5	8.5	9	4-Methyl-2-pentanone	62.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	4-Methyl-2-pentanone	57700	UNV	ug/kg
12869	479836	1348433.5	12.5	13	4-Methyl-2-pentanone	60	UNV	ug/kg
12869	479836	1348433.5	12.5	13	4-Methyl-2-pentanone	6000	UNV	ug/kg
12869	479836	1348433.5	14.5	15	4-Methyl-2-pentanone	58.5	UNV	ug/kg
12869	479836	1348433.5	16.5	17	4-Methyl-2-pentanone	62.8	UNV	ug/kg
12869	479836	1348433.5	18.5	19	4-Methyl-2-pentanone	59.1	UNV	ug/kg
12869	479836	1348433.5	20.5	21	4-Methyl-2-pentanone	57.4	UNV	ug/kg
12869	479836	1348433.5	22.5	23	4-Methyl-2-pentanone	58	UNV	ug/kg
12869	479836	1348433.5	24.5	25	4-Methyl-2-pentanone	56.1	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Acetone	60.5	NV	ug/kg
12869	479836	1348433.5	2.5	3	Acetone	45.3	NV	ug/kg
12869	479836	1348433.5	4.5	5	Acetone	35.1	NV	ug/kg
12869	479836	1348433.5	6.5	7	Acetone	59.8	NV	ug/kg
12869	479836	1348433.5	8.5	9	Acetone	58	NV	ug/kg
12869	479836	1348433.5	10.5	11	Acetone	15200	NV	ug/kg
12869	479836	1348433.5	12.5	13	Acetone	31.2	NV	ug/kg
12869	479836	1348433.5	12.5	13	Acetone	6000	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Acetone	15.6	NV	ug/kg
12869	479836	1348433.5	16.5	17	Acetone	19	NV	ug/kg
12869	479836	1348433.5	18.5	19	Acetone	45.6	NV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12869	479836	1348433.5	20.5	21	Acetone	22.6	NV	ug/kg
12869	479836	1348433.5	22.5	23	Acetone	14.2	NV	ug/kg
12869	479836	1348433.5	24.5	25	Acetone	20.7	NV	ug/kg
12869	479836	1348433.5	0.5	1	Barium	121	NV	mg/kg
12869	479836	1348433.5	2	2.5	Barium	161	NV	mg/kg
12869	479836	1348433.5	4	4.5	Barium	89.1	NV	mg/kg
12869	479836	1348433.5	6	6.5	Barium	117	NV	mg/kg
12869	479836	1348433.5	8	8.5	Barium	135	NV	mg/kg
12869	479836	1348433.5	10	10.5	Barium	165	NV	mg/kg
12869	479836	1348433.5	12	12.5	Barium	70.2	NV	mg/kg
12869	479836	1348433.5	14	14.5	Barium	60.1	NV	mg/kg
12869	479836	1348433.5	16	16.5	Barium	50.1	NV	mg/kg
12869	479836	1348433.5	18	18.5	Barium	91.9	NV	mg/kg
12869	479836	1348433.5	20	20.5	Barium	29.6	NV	mg/kg
12869	479836	1348433.5	22	22.5	Barium	76.7	NV	mg/kg
12869	479836	1348433.5	24	24.5	Barium	60.9	NV	mg/kg
12869	479836	1348433.5	1	1.5	Benzene	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Benzene	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Benzene	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Benzene	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Benzene	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Benzene	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Benzene	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Benzene	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Benzene	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Benzene	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Benzene	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Benzene	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Benzene	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Benzene	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Bromodichloromethane	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Bromodichloromethane	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Bromodichloromethane	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Bromodichloromethane	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Bromodichloromethane	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Bromodichloromethane	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Bromodichloromethane	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Bromodichloromethane	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Bromodichloromethane	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Bromodichloromethane	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Bromodichloromethane	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Bromodichloromethane	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Bromodichloromethane	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Bromodichloromethane	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Bromoform	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Bromoform	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Bromoform	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Bromoform	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Bromoform	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Bromoform	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Bromoform	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Bromoform	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Bromoform	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Bromoform	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Bromoform	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Bromoform	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Bromoform	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Bromoform	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Bromomethane	12.3	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12869	479836	1348433.5	2.5	3	Bromomethane	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Bromomethane	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Bromomethane	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Bromomethane	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Bromomethane	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Bromomethane	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Bromomethane	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Bromomethane	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Bromomethane	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Bromomethane	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Bromomethane	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Bromomethane	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Bromomethane	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Carbon disulfide	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Carbon disulfide	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Carbon disulfide	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Carbon disulfide	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Carbon disulfide	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Carbon disulfide	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Carbon disulfide	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Carbon disulfide	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Carbon disulfide	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Carbon disulfide	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Carbon disulfide	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Carbon disulfide	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Carbon disulfide	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Carbon disulfide	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Carbon Tetrachloride	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Carbon Tetrachloride	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Carbon Tetrachloride	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Carbon Tetrachloride	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Carbon Tetrachloride	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Carbon Tetrachloride	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Carbon Tetrachloride	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Carbon Tetrachloride	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Carbon Tetrachloride	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Carbon Tetrachloride	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Carbon Tetrachloride	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Carbon Tetrachloride	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Carbon Tetrachloride	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Carbon Tetrachloride	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Chlorobenzene	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Chlorobenzene	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Chlorobenzene	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Chlorobenzene	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Chlorobenzene	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Chlorobenzene	520	NV	ug/kg
12869	479836	1348433.5	12.5	13	Chlorobenzene	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Chlorobenzene	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Chlorobenzene	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Chlorobenzene	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Chlorobenzene	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Chlorobenzene	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Chlorobenzene	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Chlorobenzene	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Chloroethane	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Chloroethane	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Chloroethane	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Chloroethane	2.9	NV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12869	479836	1348433.5	8.5	9	Chloroethane	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Chloroethane	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Chloroethane	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Chloroethane	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Chloroethane	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Chloroethane	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Chloroethane	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Chloroethane	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Chloroethane	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Chloroethane	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Chloroform	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Chloroform	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Chloroform	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Chloroform	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Chloroform	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Chloroform	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Chloroform	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Chloroform	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Chloroform	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Chloroform	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Chloroform	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Chloroform	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Chloroform	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Chloroform	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Chloromethane	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Chloromethane	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Chloromethane	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Chloromethane	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Chloromethane	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Chloromethane	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Chloromethane	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Chloromethane	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Chloromethane	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Chloromethane	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Chloromethane	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Chloromethane	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Chloromethane	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Chloromethane	11.2	UNV	ug/kg
12869	479836	1348433.5	0.5	1	Chromium	19.8	NV	mg/kg
12869	479836	1348433.5	2	2.5	Chromium	29.9	NV	mg/kg
12869	479836	1348433.5	4	4.5	Chromium	23.2	NV	mg/kg
12869	479836	1348433.5	6	6.5	Chromium	23.3	NV	mg/kg
12869	479836	1348433.5	8	8.5	Chromium	31.6	NV	mg/kg
12869	479836	1348433.5	10	10.5	Chromium	12	NV	mg/kg
12869	479836	1348433.5	12	12.5	Chromium	18	NV	mg/kg
12869	479836	1348433.5	14	14.5	Chromium	17.8	NV	mg/kg
12869	479836	1348433.5	16	16.5	Chromium	14	NV	mg/kg
12869	479836	1348433.5	18	18.5	Chromium	22.3	NV	mg/kg
12869	479836	1348433.5	20	20.5	Chromium	9.61	NV	mg/kg
12869	479836	1348433.5	22	22.5	Chromium	20.8	NV	mg/kg
12869	479836	1348433.5	24	24.5	Chromium	13.6	NV	mg/kg
12869	479836	1348433.5	1	1.5	cis-1,3-Dichloropropene	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	cis-1,3-Dichloropropene	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	cis-1,3-Dichloropropene	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	cis-1,3-Dichloropropene	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	cis-1,3-Dichloropropene	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	cis-1,3-Dichloropropene	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	cis-1,3-Dichloropropene	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	cis-1,3-Dichloropropene	1200	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12869	479836	1348433.5	14.5	15	cis-1,3-Dichloropropene	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	cis-1,3-Dichloropropene	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	cis-1,3-Dichloropropene	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	cis-1,3-Dichloropropene	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	cis-1,3-Dichloropropene	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	cis-1,3-Dichloropropene	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Dibromochloromethane	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Dibromochloromethane	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Dibromochloromethane	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Dibromochloromethane	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Dibromochloromethane	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Dibromochloromethane	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Dibromochloromethane	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Dibromochloromethane	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Dibromochloromethane	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Dibromochloromethane	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Dibromochloromethane	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Dibromochloromethane	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Dibromochloromethane	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Dibromochloromethane	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Ethylbenzene	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Ethylbenzene	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Ethylbenzene	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Ethylbenzene	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Ethylbenzene	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Ethylbenzene	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Ethylbenzene	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Ethylbenzene	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Ethylbenzene	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Ethylbenzene	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Ethylbenzene	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Ethylbenzene	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Ethylbenzene	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Ethylbenzene	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Gross Alpha	58	NV	pCi/g
12869	479836	1348433.5	1	1.5	Gross Beta	55	NV	pCi/g
12869	479836	1348433.5	0.5	1	Lead	10.1	NV	mg/kg
12869	479836	1348433.5	2	2.5	Lead	15.7	NV	mg/kg
12869	479836	1348433.5	4	4.5	Lead	11.2	NV	mg/kg
12869	479836	1348433.5	6	6.5	Lead	12.8	NV	mg/kg
12869	479836	1348433.5	8	8.5	Lead	14.1	NV	mg/kg
12869	479836	1348433.5	10	10.5	Lead	8.74	NV	mg/kg
12869	479836	1348433.5	12	12.5	Lead	10.1	NV	mg/kg
12869	479836	1348433.5	14	14.5	Lead	10.3	NV	mg/kg
12869	479836	1348433.5	16	16.5	Lead	9.02	NV	mg/kg
12869	479836	1348433.5	18	18.5	Lead	11.4	NV	mg/kg
12869	479836	1348433.5	20	20.5	Lead	5.86	NV	mg/kg
12869	479836	1348433.5	22	22.5	Lead	9.05	NV	mg/kg
12869	479836	1348433.5	24	24.5	Lead	7.78	NV	mg/kg
12869	479836	1348433.5	1	1.5	Methylene chloride	3.2	NV	ug/kg
12869	479836	1348433.5	2.5	3	Methylene chloride	3.2	NV	ug/kg
12869	479836	1348433.5	4.5	5	Methylene chloride	3.3	NV	ug/kg
12869	479836	1348433.5	6.5	7	Methylene chloride	3.5	NV	ug/kg
12869	479836	1348433.5	8.5	9	Methylene chloride	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Methylene chloride	2700	NV	ug/kg
12869	479836	1348433.5	12.5	13	Methylene chloride	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Methylene chloride	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Methylene chloride	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Methylene chloride	12.6	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12869	479836	1348433.5	18.5	19	Methylene chloride	3.1	NV	ug/kg
12869	479836	1348433.5	20.5	21	Methylene chloride	2.5	NV	ug/kg
12869	479836	1348433.5	22.5	23	Methylene chloride	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Methylene chloride	2.5	NV	ug/kg
12869	479836	1348433.5	11.5	12	Radium-226	0.61	NV	pCi/g
12869	479836	1348433.5	15	15.5	Radium-226	0.958	NV	pCi/g
12869	479836	1348433.5	20	20.5	Radium-226	0.747	NV	pCi/g
12869	479836	1348433.5	24.5	25	Radium-226	0.807	NV	pCi/g
12869	479836	1348433.5	11.5	12	Radium-228	0.452	NV	pCi/g
12869	479836	1348433.5	15	15.5	Radium-228	0.685	NV	pCi/g
12869	479836	1348433.5	20	20.5	Radium-228	0.366	NV	pCi/g
12869	479836	1348433.5	24.5	25	Radium-228	0.516	NV	pCi/g
12869	479836	1348433.5	1	1.5	Styrene	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Styrene	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Styrene	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Styrene	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Styrene	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Styrene	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Styrene	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Styrene	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Styrene	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Styrene	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Styrene	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Styrene	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Styrene	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Styrene	11.2	UNV	ug/kg
12869	479836	1348433.5	0.5	1	Technetium-99	2.1	NV	pCi/g
12869	479836	1348433.5	10	10.5	Technetium-99	1.8	UNV	pCi/g
12869	479836	1348433.5	20	20.5	Technetium-99	1.6	UNV	pCi/g
12869	479836	1348433.5	1	1.5	Tetrachloroethene	8.7	NV	ug/kg
12869	479836	1348433.5	2.5	3	Tetrachloroethene	14.7	NV	ug/kg
12869	479836	1348433.5	4.5	5	Tetrachloroethene	77.6	NV	ug/kg
12869	479836	1348433.5	6.5	7	Tetrachloroethene	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Tetrachloroethene	46.4	NV	ug/kg
12869	479836	1348433.5	10.5	11	Tetrachloroethene	69500	NV	ug/kg
12869	479836	1348433.5	12.5	13	Tetrachloroethene	1270	NV	ug/kg
12869	479836	1348433.5	12.5	13	Tetrachloroethene	206	NV	ug/kg
12869	479836	1348433.5	14.5	15	Tetrachloroethene	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Tetrachloroethene	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Tetrachloroethene	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Tetrachloroethene	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Tetrachloroethene	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Tetrachloroethene	11.2	UNV	ug/kg
12869	479836	1348433.5	0.5	1	Thorium, Total	33.2	NV	mg/kg dry
12869	479836	1348433.5	5	5.5	Thorium, Total	7.36	NV	mg/kg dry
12869	479836	1348433.5	10	10.5	Thorium, Total	5.63	NV	mg/kg dry
12869	479836	1348433.5	13	13.5	Thorium, Total	4.6	NV	mg/kg dry
12869	479836	1348433.5	16	16.5	Thorium, Total	6.42	NV	mg/kg dry
12869	479836	1348433.5	19	19.5	Thorium, Total	4.35	NV	mg/kg dry
12869	479836	1348433.5	22	22.5	Thorium, Total	5.45	NV	mg/kg dry
12869	479836	1348433.5	24.5	25	Thorium, Total	4.47	NV	mg/kg dry
12869	479836	1348433.5	1	1.5	Toluene	1.1	NV	ug/kg
12869	479836	1348433.5	2.5	3	Toluene	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Toluene	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	Toluene	0.95	NV	ug/kg
12869	479836	1348433.5	8.5	9	Toluene	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Toluene	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Toluene	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Toluene	1200	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12869	479836	1348433.5	14.5	15	Toluene	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Toluene	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Toluene	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Toluene	0.44	NV	ug/kg
12869	479836	1348433.5	22.5	23	Toluene	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Toluene	0.54	NV	ug/kg
12869	479836	1348433.5	1	1.5	trans-1,3-Dichloropropene	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	trans-1,3-Dichloropropene	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	trans-1,3-Dichloropropene	12.6	UNV	ug/kg
12869	479836	1348433.5	6.5	7	trans-1,3-Dichloropropene	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	trans-1,3-Dichloropropene	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	trans-1,3-Dichloropropene	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	trans-1,3-Dichloropropene	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	trans-1,3-Dichloropropene	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	trans-1,3-Dichloropropene	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	trans-1,3-Dichloropropene	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	trans-1,3-Dichloropropene	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	trans-1,3-Dichloropropene	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	trans-1,3-Dichloropropene	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	trans-1,3-Dichloropropene	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Trichloroethene	0.74	NV	ug/kg
12869	479836	1348433.5	2.5	3	Trichloroethene	4.5	NV	ug/kg
12869	479836	1348433.5	4.5	5	Trichloroethene	20.2	NV	ug/kg
12869	479836	1348433.5	6.5	7	Trichloroethene	0.7	NV	ug/kg
12869	479836	1348433.5	8.5	9	Trichloroethene	14.8	NV	ug/kg
12869	479836	1348433.5	10.5	11	Trichloroethene	8800	NV	ug/kg
12869	479836	1348433.5	12.5	13	Trichloroethene	1070	NV	ug/kg
12869	479836	1348433.5	12.5	13	Trichloroethene	471	NV	ug/kg
12869	479836	1348433.5	14.5	15	Trichloroethene	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Trichloroethene	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Trichloroethene	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Trichloroethene	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Trichloroethene	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Trichloroethene	11.2	UNV	ug/kg
12869	479836	1348433.5	0.5	1	Uranium, Total	179	NV	mg/kg dry
12869	479836	1348433.5	5	5.5	Uranium, Total	1.42	NV	mg/kg dry
12869	479836	1348433.5	10	10.5	Uranium, Total	13.5	NV	mg/kg dry
12869	479836	1348433.5	13	13.5	Uranium, Total	21.9	NV	mg/kg dry
12869	479836	1348433.5	16	16.5	Uranium, Total	25.9	NV	mg/kg dry
12869	479836	1348433.5	19	19.5	Uranium, Total	1.71	NV	mg/kg dry
12869	479836	1348433.5	22	22.5	Uranium, Total	1.47	NV	mg/kg dry
12869	479836	1348433.5	24.5	25	Uranium, Total	1.97	NV	mg/kg dry
12869	479836	1348433.5	1	1.5	Vinyl chloride	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Vinyl chloride	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Vinyl chloride	2.7	NV	ug/kg
12869	479836	1348433.5	6.5	7	Vinyl chloride	21	NV	ug/kg
12869	479836	1348433.5	8.5	9	Vinyl chloride	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Vinyl chloride	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Vinyl chloride	1200	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Vinyl chloride	2.6	NV	ug/kg
12869	479836	1348433.5	14.5	15	Vinyl chloride	3.1	NV	ug/kg
12869	479836	1348433.5	16.5	17	Vinyl chloride	2.9	NV	ug/kg
12869	479836	1348433.5	18.5	19	Vinyl chloride	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Vinyl chloride	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Vinyl chloride	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Vinyl chloride	11.2	UNV	ug/kg
12869	479836	1348433.5	1	1.5	Xylenes, Total	12.3	UNV	ug/kg
12869	479836	1348433.5	2.5	3	Xylenes, Total	12.1	UNV	ug/kg
12869	479836	1348433.5	4.5	5	Xylenes, Total	12.6	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12869	479836	1348433.5	6.5	7	Xylenes, Total	12.7	UNV	ug/kg
12869	479836	1348433.5	8.5	9	Xylenes, Total	12.5	UNV	ug/kg
12869	479836	1348433.5	10.5	11	Xylenes, Total	11500	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Xylenes, Total	12	UNV	ug/kg
12869	479836	1348433.5	12.5	13	Xylenes, Total	1200	UNV	ug/kg
12869	479836	1348433.5	14.5	15	Xylenes, Total	11.7	UNV	ug/kg
12869	479836	1348433.5	16.5	17	Xylenes, Total	12.6	UNV	ug/kg
12869	479836	1348433.5	18.5	19	Xylenes, Total	11.8	UNV	ug/kg
12869	479836	1348433.5	20.5	21	Xylenes, Total	11.5	UNV	ug/kg
12869	479836	1348433.5	22.5	23	Xylenes, Total	11.6	UNV	ug/kg
12869	479836	1348433.5	24.5	25	Xylenes, Total	11.2	UNV	ug/kg
12870	479775.72	1348468.81	1	1.5	Technetium-99	1.6	UNV	pCi/g
12870	479775.72	1348468.81	2	2.5	Technetium-99	1.6	UNV	pCi/g
12870	479775.72	1348468.81	3	3.5	Technetium-99	1.3	UNV	pCi/g
12870	479775.72	1348468.81	4	4.5	Technetium-99	1.6	UNV	pCi/g
12870	479775.72	1348468.81	5	5.5	Technetium-99	1.6	UNV	pCi/g
12870	479775.72	1348468.81	7	7.5	Technetium-99	1.2	UNV	pCi/g
12870	479775.72	1348468.81	10	10.5	Technetium-99	1.6	UNV	pCi/g
12870	479775.72	1348468.81	12	12.5	Technetium-99	1.4	UNV	pCi/g
12870	479775.72	1348468.81	15	15.5	Technetium-99	1.5	UNV	pCi/g
12870	479775.72	1348468.81	18	18.5	Technetium-99	1.4	UNV	pCi/g
12870	479775.72	1348468.81	21	21.5	Technetium-99	1.6	UNV	pCi/g
12870	479775.72	1348468.81	24.5	25	Technetium-99	1.6	UNV	pCi/g
12870	479775.72	1348468.81	1	1.5	Thorium, Total	11.2	NV	mg/kg dry
12870	479775.72	1348468.81	2	2.5	Thorium, Total	5.26	NV	mg/kg dry
12870	479775.72	1348468.81	3	3.5	Thorium, Total	7.35	NV	mg/kg dry
12870	479775.72	1348468.81	4	4.5	Thorium, Total	6.5	NV	mg/kg dry
12870	479775.72	1348468.81	5	5.5	Thorium, Total	7.56	NV	mg/kg dry
12870	479775.72	1348468.81	7	7.5	Thorium, Total	8.8	NV	mg/kg dry
12870	479775.72	1348468.81	10	10.5	Thorium, Total	5.85	NV	mg/kg dry
12870	479775.72	1348468.81	12	12.5	Thorium, Total	3.94	NV	mg/kg dry
12870	479775.72	1348468.81	15	15.5	Thorium, Total	5.1	NV	mg/kg dry
12870	479775.72	1348468.81	18	18.5	Thorium, Total	2.59	NV	mg/kg dry
12870	479775.72	1348468.81	21	21.5	Thorium, Total	4.95	NV	mg/kg dry
12870	479775.72	1348468.81	24.5	25	Thorium, Total	4.03	NV	mg/kg dry
12870	479775.72	1348468.81	1	1.5	Uranium, Total	77.7	NV	mg/kg dry
12870	479775.72	1348468.81	2	2.5	Uranium, Total	13.6	NV	mg/kg dry
12870	479775.72	1348468.81	3	3.5	Uranium, Total	5.03	NV	mg/kg dry
12870	479775.72	1348468.81	4	4.5	Uranium, Total	1.48	NV	mg/kg dry
12870	479775.72	1348468.81	5	5.5	Uranium, Total	1.57	NV	mg/kg dry
12870	479775.72	1348468.81	7	7.5	Uranium, Total	1.36	NV	mg/kg dry
12870	479775.72	1348468.81	10	10.5	Uranium, Total	196	NV	mg/kg dry
12870	479775.72	1348468.81	12	12.5	Uranium, Total	159	NV	mg/kg dry
12870	479775.72	1348468.81	15	15.5	Uranium, Total	160	NV	mg/kg dry
12870	479775.72	1348468.81	18	18.5	Uranium, Total	63.3	NV	mg/kg dry
12870	479775.72	1348468.81	21	21.5	Uranium, Total	1.8	NV	mg/kg dry
12870	479775.72	1348468.81	24.5	25	Uranium, Total	1.86	NV	mg/kg dry
12871	479785.72	1348469.81	1	1.5	Technetium-99	1.6	UNV	pCi/g
12871	479785.72	1348469.81	2	2.5	Technetium-99	1.6	UNV	pCi/g
12871	479785.72	1348469.81	3	3.5	Technetium-99	1.6	UNV	pCi/g
12871	479785.72	1348469.81	4	4.5	Technetium-99	1.5	UNV	pCi/g
12871	479785.72	1348469.81	5	5.5	Technetium-99	1.8	UNV	pCi/g
12871	479785.72	1348469.81	7	7.5	Technetium-99	1.5	UNV	pCi/g
12871	479785.72	1348469.81	10	10.5	Technetium-99	1.7	UNV	pCi/g
12871	479785.72	1348469.81	12	12.5	Technetium-99	1.7	UNV	pCi/g
12871	479785.72	1348469.81	15	15.5	Technetium-99	1.6	UNV	pCi/g
12871	479785.72	1348469.81	18	18.5	Technetium-99	1.5	UNV	pCi/g
12871	479785.72	1348469.81	21	21.5	Technetium-99	1.7	UNV	pCi/g
12871	479785.72	1348469.81	24.5	25	Technetium-99	1.6	UNV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12871	479785.72	1348469.81	1	1.5	Thorium, Total	7.99	NV	mg/kg dry
12871	479785.72	1348469.81	2	2.5	Thorium, Total	6.58	NV	mg/kg dry
12871	479785.72	1348469.81	3	3.5	Thorium, Total	7.83	NV	mg/kg dry
12871	479785.72	1348469.81	4	4.5	Thorium, Total	6.85	NV	mg/kg dry
12871	479785.72	1348469.81	5	5.5	Thorium, Total	7.24	NV	mg/kg dry
12871	479785.72	1348469.81	7	7.5	Thorium, Total	8.4	NV	mg/kg dry
12871	479785.72	1348469.81	10	10.5	Thorium, Total	5.99	NV	mg/kg dry
12871	479785.72	1348469.81	12	12.5	Thorium, Total	4.46	NV	mg/kg dry
12871	479785.72	1348469.81	15	15.5	Thorium, Total	3.01	NV	mg/kg
12871	479785.72	1348469.81	18	18.5	Thorium, Total	6.41	NV	mg/kg dry
12871	479785.72	1348469.81	21	21.5	Thorium, Total	2.59	NV	mg/kg dry
12871	479785.72	1348469.81	24.5	25	Thorium, Total	4.13	NV	mg/kg dry
12871	479785.72	1348469.81	1	1.5	Uranium, Total	6.61	NV	mg/kg dry
12871	479785.72	1348469.81	2	2.5	Uranium, Total	1.38	NV	mg/kg dry
12871	479785.72	1348469.81	3	3.5	Uranium, Total	1.32	NV	mg/kg dry
12871	479785.72	1348469.81	4	4.5	Uranium, Total	1.29	NV	mg/kg dry
12871	479785.72	1348469.81	5	5.5	Uranium, Total	1.61	NV	mg/kg dry
12871	479785.72	1348469.81	7	7.5	Uranium, Total	1.52	NV	mg/kg dry
12871	479785.72	1348469.81	10	10.5	Uranium, Total	164	NV	mg/kg dry
12871	479785.72	1348469.81	12	12.5	Uranium, Total	109	NV	mg/kg dry
12871	479785.72	1348469.81	15	15.5	Uranium, Total	82	NV	mg/kg
12871	479785.72	1348469.81	18	18.5	Uranium, Total	10.7	NV	mg/kg dry
12871	479785.72	1348469.81	21	21.5	Uranium, Total	75.9	NV	mg/kg dry
12871	479785.72	1348469.81	24.5	25	Uranium, Total	3.99	NV	mg/kg dry
12872	479775.72	1348494.81	1.5	2	1,1,1-Trichloroethane	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	1,1,1-Trichloroethane	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	1,1,1-Trichloroethane	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	1,1,2,2-Tetrachloroethane	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	1,1,2,2-Tetrachloroethane	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	1,1,2,2-Tetrachloroethane	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	1,1,2-Trichloroethane	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	1,1,2-Trichloroethane	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	1,1,2-Trichloroethane	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	1,1-Dichloroethane	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	1,1-Dichloroethane	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	1,1-Dichloroethane	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	1,1-Dichloroethene	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	1,1-Dichloroethene	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	1,1-Dichloroethene	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	1,2-Dichloroethane	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	1,2-Dichloroethane	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	1,2-Dichloroethane	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	1,2-Dichloroethene (Total)	0.96	NV	ug/kg
12872	479775.72	1348494.81	2	2.5	1,2-Dichloroethene (Total)	7.4	NV	ug/kg
12872	479775.72	1348494.81	2.5	3	1,2-Dichloroethene (Total)	2.5	NV	ug/kg
12872	479775.72	1348494.81	1.5	2	1,2-Dichloropropane	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	1,2-Dichloropropane	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	1,2-Dichloropropane	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	2-Butanone	23.8	NV	ug/kg
12872	479775.72	1348494.81	2	2.5	2-Butanone	37.5	NV	ug/kg
12872	479775.72	1348494.81	2.5	3	2-Butanone	49.3	NV	ug/kg
12872	479775.72	1348494.81	1.5	2	2-Hexanone	54.8	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	2-Hexanone	55.4	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	2-Hexanone	54.6	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	4-Methyl-2-pentanone	54.8	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	4-Methyl-2-pentanone	55.4	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	4-Methyl-2-pentanone	54.6	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Acetone	54.8	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Acetone	55.4	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12872	479775.72	1348494.81	2.5	3	Acetone	54.6	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Benzene	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Benzene	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Benzene	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Bromodichloromethane	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Bromodichloromethane	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Bromodichloromethane	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Bromoform	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Bromoform	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Bromoform	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Bromomethane	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Bromomethane	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Bromomethane	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Carbon disulfide	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Carbon disulfide	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Carbon disulfide	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Carbon Tetrachloride	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Carbon Tetrachloride	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Carbon Tetrachloride	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Chlorobenzene	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Chlorobenzene	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Chlorobenzene	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Chloroethane	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Chloroethane	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Chloroethane	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Chloroform	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Chloroform	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Chloroform	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Chloromethane	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Chloromethane	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Chloromethane	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	cis-1,3-Dichloropropene	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	cis-1,3-Dichloropropene	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	cis-1,3-Dichloropropene	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Dibromochloromethane	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Dibromochloromethane	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Dibromochloromethane	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Ethylbenzene	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Ethylbenzene	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Ethylbenzene	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1	1.5	Gross Alpha	21	NV	pCi/g
12872	479775.72	1348494.81	1	1.5	Gross Beta	18	NV	pCi/g
12872	479775.72	1348494.81	1.5	2	Methylene chloride	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Methylene chloride	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Methylene chloride	6.2	NV	ug/kg
12872	479775.72	1348494.81	1.5	2	Styrene	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Styrene	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Styrene	10.9	UNV	ug/kg
12872	479775.72	1348494.81	0.5	1	Technetium-99	1.6	UNV	pCi/g
12872	479775.72	1348494.81	1.5	2	Technetium-99	1.7	UNV	pCi/g
12872	479775.72	1348494.81	2	2.5	Technetium-99	1.7	UNV	pCi/g
12872	479775.72	1348494.81	3	3.5	Technetium-99	1.8	UNV	pCi/g
12872	479775.72	1348494.81	4	4.5	Technetium-99	1.5	UNV	pCi/g
12872	479775.72	1348494.81	5	5.5	Technetium-99	1.5	UNV	pCi/g
12872	479775.72	1348494.81	7	7.5	Technetium-99	1.8	UNV	pCi/g
12872	479775.72	1348494.81	10	10.5	Technetium-99	1.7	UNV	pCi/g
12872	479775.72	1348494.81	12	12.5	Technetium-99	1.6	UNV	pCi/g
12872	479775.72	1348494.81	15	15.5	Technetium-99	1.8	UNV	pCi/g
12872	479775.72	1348494.81	18	18.5	Technetium-99	1.6	UNV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12872	479775.72	1348494.81	21	21.5	Technetium-99	1.7	UNV	pCi/g
12872	479775.72	1348494.81	24.5	25	Technetium-99	1.8	UNV	pCi/g
12872	479775.72	1348494.81	1.5	2	Tetrachloroethene	4.1	NV	ug/kg
12872	479775.72	1348494.81	2	2.5	Tetrachloroethene	46.8	NV	ug/kg
12872	479775.72	1348494.81	2.5	3	Tetrachloroethene	16.8	NV	ug/kg
12872	479775.72	1348494.81	0.5	1	Thorium, Total	6.38	NV	mg/kg dry
12872	479775.72	1348494.81	1.5	2	Thorium, Total	7.65	NV	mg/kg dry
12872	479775.72	1348494.81	2	2.5	Thorium, Total	7.49	NV	mg/kg dry
12872	479775.72	1348494.81	3	3.5	Thorium, Total	7.97	NV	mg/kg dry
12872	479775.72	1348494.81	4	4.5	Thorium, Total	7.28	NV	mg/kg dry
12872	479775.72	1348494.81	5	5.5	Thorium, Total	9.51	NV	mg/kg dry
12872	479775.72	1348494.81	7	7.5	Thorium, Total	9.05	NV	mg/kg dry
12872	479775.72	1348494.81	10	10.5	Thorium, Total	6.1	NV	mg/kg dry
12872	479775.72	1348494.81	12	12.5	Thorium, Total	4.87	NV	mg/kg dry
12872	479775.72	1348494.81	15	15.5	Thorium, Total	4.63	NV	mg/kg
12872	479775.72	1348494.81	18	18.5	Thorium, Total	6.02	NV	mg/kg dry
12872	479775.72	1348494.81	21	21.5	Thorium, Total	5.4	NV	mg/kg dry
12872	479775.72	1348494.81	24.5	25	Thorium, Total	5.25	NV	mg/kg dry
12872	479775.72	1348494.81	1.5	2	Toluene	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Toluene	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Toluene	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	trans-1,3-Dichloropropene	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	trans-1,3-Dichloropropene	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	trans-1,3-Dichloropropene	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Trichloroethene	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Trichloroethene	1.3	NV	ug/kg
12872	479775.72	1348494.81	2.5	3	Trichloroethene	10.9	UNV	ug/kg
12872	479775.72	1348494.81	0.5	1	Uranium, Total	40.7	NV	mg/kg dry
12872	479775.72	1348494.81	1.5	2	Uranium, Total	12.8	NV	mg/kg dry
12872	479775.72	1348494.81	2	2.5	Uranium, Total	13.5	NV	mg/kg dry
12872	479775.72	1348494.81	3	3.5	Uranium, Total	36.8	NV	mg/kg dry
12872	479775.72	1348494.81	4	4.5	Uranium, Total	2.46	NV	mg/kg dry
12872	479775.72	1348494.81	5	5.5	Uranium, Total	1.72	NV	mg/kg dry
12872	479775.72	1348494.81	7	7.5	Uranium, Total	1.51	NV	mg/kg dry
12872	479775.72	1348494.81	10	10.5	Uranium, Total	167	NV	mg/kg dry
12872	479775.72	1348494.81	12	12.5	Uranium, Total	34.1	NV	mg/kg dry
12872	479775.72	1348494.81	15	15.5	Uranium, Total	96	NV	mg/kg
12872	479775.72	1348494.81	18	18.5	Uranium, Total	7.9	NV	mg/kg dry
12872	479775.72	1348494.81	21	21.5	Uranium, Total	1.97	NV	mg/kg dry
12872	479775.72	1348494.81	24.5	25	Uranium, Total	2.67	NV	mg/kg dry
12872	479775.72	1348494.81	1.5	2	Vinyl chloride	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Vinyl chloride	11.1	UNV	ug/kg
12872	479775.72	1348494.81	2.5	3	Vinyl chloride	10.9	UNV	ug/kg
12872	479775.72	1348494.81	1.5	2	Xylenes, Total	11	UNV	ug/kg
12872	479775.72	1348494.81	2	2.5	Xylenes, Total	0.75	NV	ug/kg
12872	479775.72	1348494.81	2.5	3	Xylenes, Total	0.43	NV	ug/kg
12873	479760.72	1348469.81	1	1.5	Technetium-99	2.11	J	pCi/g
12873	479760.72	1348469.81	2	2.5	Technetium-99	1.86	U	pCi/g
12873	479760.72	1348469.81	3	3.5	Technetium-99	1.9	U	pCi/g
12873	479760.72	1348469.81	4	4.5	Technetium-99	1.92	U	pCi/g
12873	479760.72	1348469.81	5	5.5	Technetium-99	1.95	U	pCi/g
12873	479760.72	1348469.81	7	7.5	Technetium-99	1.93	U	pCi/g
12873	479760.72	1348469.81	10	10.5	Technetium-99	1.94	U	pCi/g
12873	479760.72	1348469.81	12	12.5	Technetium-99	2.62	J	pCi/g
12873	479760.72	1348469.81	15	15.5	Technetium-99	1.86	U	pCi/g
12873	479760.72	1348469.81	18	18.5	Technetium-99	1.81	U	pCi/g
12873	479760.72	1348469.81	21	21.5	Technetium-99	2.73	UJ	pCi/g
12873	479760.72	1348469.81	24.5	25	Technetium-99	2.08	U	pCi/g
12873	479760.72	1348469.81	1	1.5	Thorium, Total	8.01	J	mg/kg dry

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12873	479760.72	1348469.81	2	2.5	Thorium, Total	9.02	J	mg/kg dry
12873	479760.72	1348469.81	3	3.5	Thorium, Total	8.72	J	mg/kg dry
12873	479760.72	1348469.81	4	4.5	Thorium, Total	6.71	J	mg/kg dry
12873	479760.72	1348469.81	5	5.5	Thorium, Total	6.61	J	mg/kg
12873	479760.72	1348469.81	7	7.5	Thorium, Total	8.08	J	mg/kg dry
12873	479760.72	1348469.81	10	10.5	Thorium, Total	6.26	J	mg/kg
12873	479760.72	1348469.81	12	12.5	Thorium, Total	6.43	J	mg/kg dry
12873	479760.72	1348469.81	15	15.5	Thorium, Total	4.48	J	mg/kg dry
12873	479760.72	1348469.81	18	18.5	Thorium, Total	2.86	J	mg/kg dry
12873	479760.72	1348469.81	21	21.5	Thorium, Total	2.54	J	mg/kg dry
12873	479760.72	1348469.81	24.5	25	Thorium, Total	4.53	J	mg/kg dry
12873	479760.72	1348469.81	1	1.5	Uranium, Total	46.1	J	mg/kg dry
12873	479760.72	1348469.81	2	2.5	Uranium, Total	3.03	J	mg/kg dry
12873	479760.72	1348469.81	3	3.5	Uranium, Total	2.08	J	mg/kg dry
12873	479760.72	1348469.81	4	4.5	Uranium, Total	3.3	J	mg/kg dry
12873	479760.72	1348469.81	5	5.5	Uranium, Total	1.7	J	mg/kg dry
12873	479760.72	1348469.81	7	7.5	Uranium, Total	1.51	J	mg/kg dry
12873	479760.72	1348469.81	10	10.5	Uranium, Total	146	J	mg/kg dry
12873	479760.72	1348469.81	12	12.5	Uranium, Total	42.2	J	mg/kg dry
12873	479760.72	1348469.81	15	15.5	Uranium, Total	3.84	J	mg/kg dry
12873	479760.72	1348469.81	18	18.5	Uranium, Total	1.48	J	mg/kg dry
12873	479760.72	1348469.81	21	21.5	Uranium, Total	25.2	J	mg/kg dry
12873	479760.72	1348469.81	24.5	25	Uranium, Total	2	J	mg/kg dry
12873A	479760.72	1348469.81			1,1,1-Trichloroethane	10	UNV	ug/L
12873A	479760.72	1348469.81			1,1,2,2-Tetrachloroethane	10	UNV	ug/L
12873A	479760.72	1348469.81			1,1,2-Trichloroethane	10	UNV	ug/L
12873A	479760.72	1348469.81			1,1-Dichloroethane	10	UNV	ug/L
12873A	479760.72	1348469.81			1,1-Dichloroethene	10	UNV	ug/L
12873A	479760.72	1348469.81			1,2-Dichloroethane	10	UNV	ug/L
12873A	479760.72	1348469.81			1,2-Dichloroethene (Total)	10	UNV	ug/L
12873A	479760.72	1348469.81			1,2-Dichloropropane	10	UNV	ug/L
12873A	479760.72	1348469.81			2-Butanone	50	UNV	ug/L
12873A	479760.72	1348469.81			2-Hexanone	50	UNV	ug/L
12873A	479760.72	1348469.81			4-Methyl-2-pentanone	50	UNV	ug/L
12873A	479760.72	1348469.81			Acetone	13.8	NV	ug/L
12873A	479760.72	1348469.81			Benzene	10	UNV	ug/L
12873A	479760.72	1348469.81			Bromodichloromethane	10	UNV	ug/L
12873A	479760.72	1348469.81			Bromoform	10	UNV	ug/L
12873A	479760.72	1348469.81			Bromomethane	10	UNV	ug/L
12873A	479760.72	1348469.81			Carbon disulfide	10	UNV	ug/L
12873A	479760.72	1348469.81			Carbon Tetrachloride	10	UNV	ug/L
12873A	479760.72	1348469.81			Chlorobenzene	10	UNV	ug/L
12873A	479760.72	1348469.81			Chloroethane	10	UNV	ug/L
12873A	479760.72	1348469.81			Chloroform	10	UNV	ug/L
12873A	479760.72	1348469.81			Chloromethane	10	UNV	ug/L
12873A	479760.72	1348469.81			cis-1,3-Dichloropropene	10	UNV	ug/L
12873A	479760.72	1348469.81			Dibromochloromethane	10	UNV	ug/L
12873A	479760.72	1348469.81			Ethylbenzene	10	UNV	ug/L
12873A	479760.72	1348469.81			Methylene chloride	10	UNV	ug/L
12873A	479760.72	1348469.81			Styrene	10	UNV	ug/L
12873A	479760.72	1348469.81			Tetrachloroethene	10	UNV	ug/L
12873A	479760.72	1348469.81			Toluene	10	UNV	ug/L
12873A	479760.72	1348469.81			trans-1,3-Dichloropropene	10	UNV	ug/L
12873A	479760.72	1348469.81			Trichloroethene	10	UNV	ug/L
12873A	479760.72	1348469.81			Vinyl chloride	10	UNV	ug/L
12873A	479760.72	1348469.81			Xylenes, Total	10	UNV	ug/L
12874	479175.72	1348454.81	1	1.5	Technetium-99	0.12	UNV	pCi/g
12874	479175.72	1348454.81	2	2.5	Technetium-99	0.56	UNV	pCi/g
12874	479175.72	1348454.81	3	3.5	Technetium-99	0.3	UNV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
12874	479175.72	1348454.81	4	4.5	Technetium-99	0.93	UNV	pCi/g
12874	479175.72	1348454.81	5	5.5	Technetium-99	0.26	UNV	pCi/g
12874	479175.72	1348454.81	7	7.5	Technetium-99	-0.46	UNV	pCi/g
12874	479175.72	1348454.81	10	10.5	Technetium-99	0.24	UNV	pCi/g
12874	479175.72	1348454.81	12	12.5	Technetium-99	0.88	UNV	pCi/g
12874	479175.72	1348454.81	15	15.5	Technetium-99	-0.22	UNV	pCi/g
12874	479175.72	1348454.81	18	18.5	Technetium-99	0.49	UNV	pCi/g
12874	479175.72	1348454.81	21	21.5	Technetium-99	-0.23	NV	pCi/g
12874	479175.72	1348454.81	24.5	25	Technetium-99	0.24	UNV	pCi/g
12874	479175.72	1348454.81	1	1.5	Thorium, Total	7.55	NV	mg/kg dry
12874	479175.72	1348454.81	2	2.5	Thorium, Total	5.78	NV	mg/kg dry
12874	479175.72	1348454.81	3	3.5	Thorium, Total	5.67	NV	mg/kg dry
12874	479175.72	1348454.81	4	4.5	Thorium, Total	6.35	NV	mg/kg dry
12874	479175.72	1348454.81	5	5.5	Thorium, Total	7.95	NV	mg/kg dry
12874	479175.72	1348454.81	7	7.5	Thorium, Total	8.75	NV	mg/kg dry
12874	479175.72	1348454.81	10	10.5	Thorium, Total	5.98	NV	mg/kg dry
12874	479175.72	1348454.81	12	12.5	Thorium, Total	4.23	NV	mg/kg dry
12874	479175.72	1348454.81	15	15.5	Thorium, Total	3.25	NV	mg/kg dry
12874	479175.72	1348454.81	18	18.5	Thorium, Total	6.57	NV	mg/kg dry
12874	479175.72	1348454.81	21	21.5	Thorium, Total	2.52	NV	mg/kg dry
12874	479175.72	1348454.81	24.5	25	Thorium, Total	4.36	NV	mg/kg dry
12874	479175.72	1348454.81	1	1.5	Uranium, Total	41.9	NV	mg/kg dry
12874	479175.72	1348454.81	2	2.5	Uranium, Total	4.73	NV	mg/kg dry
12874	479175.72	1348454.81	3	3.5	Uranium, Total	30.1	NV	mg/kg dry
12874	479175.72	1348454.81	4	4.5	Uranium, Total	44.5	NV	mg/kg dry
12874	479175.72	1348454.81	5	5.5	Uranium, Total	1.84	NV	mg/kg dry
12874	479175.72	1348454.81	7	7.5	Uranium, Total	1.58	NV	mg/kg dry
12874	479175.72	1348454.81	10	10.5	Uranium, Total	213	NV	mg/kg dry
12874	479175.72	1348454.81	12	12.5	Uranium, Total	93.2	NV	mg/kg dry
12874	479175.72	1348454.81	15	15.5	Uranium, Total	20.8	NV	mg/kg dry
12874	479175.72	1348454.81	18	18.5	Uranium, Total	49.1	NV	mg/kg dry
12874	479175.72	1348454.81	21	21.5	Uranium, Total	10.3	NV	mg/kg dry
12874	479175.72	1348454.81	24.5	25	Uranium, Total	2.23	NV	mg/kg dry
A3A-006-2	480020	1349807	0	1	1,1-Dichloroethene	10	U	ug/kg
A3A-006-2	480020	1349807	3	4	1,1-Dichloroethene	70	U	ug/L
A3A-006-2	480020	1349807	0	1	1,2-Dichloroethene (Total)	10	U	ug/kg
A3A-006-2	480020	1349807	3	4	1,2-Dichloroethene (Total)	50	U	ug/L
A3A-006-2	480020	1349807	3	4	1,4-Dichlorobenzene	2000	UJ	ug/L
A3A-006-2	480020	1349807	3	4	2,4,5-TP (Silvex)	100	U	ug/L
A3A-006-2	480020	1349807	3	4	2,4,5-Trichlorophenol	80000	UJ	ug/L
A3A-006-2	480020	1349807	3	4	2,4,6-Trichlorophenol	400	UJ	ug/L
A3A-006-2	480020	1349807	3	4	2,4-D	1000	U	ug/L
A3A-006-2	480020	1349807	3	4	2,4-Dinitrotoluene	26	UJ	ug/L
A3A-006-2	480020	1349807	3	4	2-Butanone	20000	U	ug/L
A3A-006-2	480020	1349807	3	4	4-Nitroaniline	830	U	ug/kg
A3A-006-2	480020	1349807	3	4	alpha-Chlordane	1.6	U	ug/kg
A3A-006-2	480020	1349807	3	4	Arsenic	0.0342	U	mg/L
A3A-006-2	480020	1349807	3	4	Barium	0.379	-	mg/L
A3A-006-2	480020	1349807	3	4	Benzene	50	U	ug/L
A3A-006-2	480020	1349807	3	4	bis(2-Chloroisopropyl) ether	330	U	ug/kg
A3A-006-2	480020	1349807	0	1	Bromodichloromethane	10	U	ug/kg
A3A-006-2	480020	1349807	3	4	Cadmium	0.0014	U	mg/L
A3A-006-2	480020	1349807	3	4	Carbazole	330	U	ug/kg
A3A-006-2	480020	1349807	3	4	Carbon Tetrachloride	50	U	ug/L
A3A-006-2	480020	1349807	3	4	Chlordane	3	U	ug/L
A3A-006-2	480020	1349807	3	4	Chlorobenzene	10000	U	ug/L
A3A-006-2	480020	1349807	0	1	Chloroethane	10	UJ	ug/kg
A3A-006-2	480020	1349807	3	4	Chloroform	13	J	ug/L
A3A-006-2	480020	1349807	3	4	Chromium	0.0038	U	mg/L

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A3A-006-2	480020	1349807	3	4	Endrin	2	UJ	ug/L
A3A-006-2	480020	1349807	3	4	gamma-BHC (Lindane)	40	U	ug/L
A3A-006-2	480020	1349807	3	4	Gross Alpha	11	UNV	pCi/g
A3A-006-2	480020	1349807	3	4	Gross Beta	18	UNV	pCi/g
A3A-006-2	480020	1349807	3	4	Heptachlor	0.8	U	ug/L
A3A-006-2	480020	1349807	3	4	Heptachlor epoxide	0.8	U	ug/L
A3A-006-2	480020	1349807	3	4	Hexachlorobenzene	26	UJ	ug/L
A3A-006-2	480020	1349807	3	4	Hexachlorobutadiene	100	UJ	ug/L
A3A-006-2	480020	1349807	3	4	Hexachloroethane	600	UJ	ug/L
A3A-006-2	480020	1349807	3	4	Lead	0.0058	U	mg/L
A3A-006-2	480020	1349807	3	4	m,p-Methylphenol	40000	UJ	ug/L
A3A-006-2	480020	1349807	3	4	Mercury	0.00001	U	mg/L
A3A-006-2	480020	1349807	3	4	Methoxychlor	0.5	U	ug/L
A3A-006-2	480020	1349807	3	4	Nitrobenzene	400	UJ	ug/L
A3A-006-2	480020	1349807	3	4	o-Methylphenol	40000	UJ	ug/L
A3A-006-2	480020	1349807	3	4	Pentachlorophenol	20000	UJ	ug/L
A3A-006-2	480020	1349807	3	4	Pyridine	1000	UJ	ug/L
A3A-006-2	480020	1349807	3	4	Selenium	0.188	-	mg/L
A3A-006-2	480020	1349807	3	4	Silver	0.0022	U	mg/L
A3A-006-2	480020	1349807	3	4	Technetium-99	1.54	U	pCi/g dry
A3A-006-2	480020	1349807	0	1	Tetrachloroethene	10	U	ug/kg
A3A-006-2	480020	1349807	3	4	Tetrachloroethene	70	U	ug/L
A3A-006-2	480020	1349807	3	4	Toxaphene	159	UJ	ug/kg
A3A-006-2	480020	1349807	3	4	Toxaphene	50	UJ	ug/L
A3A-006-2	480020	1349807	0	1	Trichloroethene	10	U	ug/kg
A3A-006-2	480020	1349807	3	4	Trichloroethene	50	U	ug/L
A3A-006-2	480020	1349807	3	4	Uranium, Total	4.84	-	mg/kg dry
A3A-006-2	480020	1349807	0	1	Vinyl chloride	10	U	ug/kg
A3A-006-2	480020	1349807	3	4	Vinyl chloride	20	U	ug/L
A3B-FRL-5			5	5.5	Thorium, Total	2.66	NV	mg/kg dry
A3B-FRL-5			10	10.5	Thorium, Total	2.64	NV	mg/kg dry
A3B-PIP-01	481368.04	1348454.71	0	0.5	Technetium-99	1.06	UNV	pCi/g
A3B-PIP-01	481368.04	1348454.71	1	1.5	Technetium-99	1.75	UNV	pCi/g
A3B-PIP-01	481368.04	1348454.71	3	3.5	Technetium-99	1.53	UNV	pCi/g
A3B-PIP-01	481368.04	1348454.71	6	6.5	Technetium-99	0.957	UNV	pCi/g
A3B-PIP-01	481368.04	1348454.71	0	0.5	Uranium, Total	3.06	UNV	mg/kg
A3B-PIP-01	481368.04	1348454.71	1	1.5	Uranium, Total	6.16	NV	mg/kg
A3B-PIP-01	481368.04	1348454.71	3	3.5	Uranium, Total	5.15	NV	mg/kg
A3B-PIP-01	481368.04	1348454.71	6	6.5	Uranium, Total	3.76	UNV	mg/kg
A3B-PIP-02	481373.04	1348454.71	0	0.5	Technetium-99	1.5	UNV	pCi/g
A3B-PIP-02	481373.04	1348454.71	1	1.5	Technetium-99	1.71	UNV	pCi/g
A3B-PIP-02	481373.04	1348454.71	3	3.5	Technetium-99	1.3	UNV	pCi/g
A3B-PIP-02	481373.04	1348454.71	6	6.5	Technetium-99	1.64	UNV	pCi/g
A3B-PIP-02	481373.04	1348454.71	0	0.5	Uranium, Total	5.7	NV	mg/kg
A3B-PIP-02	481373.04	1348454.71	1	1.5	Uranium, Total	3.79	UNV	mg/kg
A3B-PIP-02	481373.04	1348454.71	3	3.5	Uranium, Total	3.79	UNV	mg/kg
A3B-PIP-02	481373.04	1348454.71	6	6.5	Uranium, Total	3.2	UNV	mg/kg
A3B-PIP-03	481368.04	1348459.71	0	0.5	Technetium-99	1.51	UNV	pCi/g
A3B-PIP-03	481368.04	1348459.71	1	1.5	Technetium-99	1.36	UNV	pCi/g
A3B-PIP-03	481368.04	1348459.71	3	3.5	Technetium-99	1.34	UNV	pCi/g
A3B-PIP-03	481368.04	1348459.71	6	6.5	Technetium-99	1.4	UNV	pCi/g
A3B-PIP-03	481368.04	1348459.71	0	0.5	Uranium, Total	3.61	NV	mg/kg
A3B-PIP-03	481368.04	1348459.71	1	1.5	Uranium, Total	3.79	UNV	mg/kg
A3B-PIP-03	481368.04	1348459.71	3	3.5	Uranium, Total	5.51	NV	mg/kg
A3B-PIP-03	481368.04	1348459.71	6	6.5	Uranium, Total	6.53	UNV	mg/kg
A3B-PIP-04	481363.04	1348454.71	0	0.5	Technetium-99	1.65	UNV	pCi/g
A3B-PIP-04	481363.04	1348454.71	1	1.5	Technetium-99	1.58	UNV	pCi/g
A3B-PIP-04	481363.04	1348454.71	3	3.5	Technetium-99	1.57	UNV	pCi/g
A3B-PIP-04	481363.04	1348454.71	6	6.5	Technetium-99	1.63	UNV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A3B-P1P-04	481363.04	1348454.71	0	0.5	Uranium, Total	3.49	UNV	mg/kg
A3B-P1P-04	481363.04	1348454.71	1	1.5	Uranium, Total	3.75	NV	mg/kg
A3B-P1P-04	481363.04	1348454.71	3	3.5	Uranium, Total	4.05	NV	mg/kg
A3B-P1P-04	481363.04	1348454.71	6	6.5	Uranium, Total	5.79	NV	mg/kg
A3B-P1P-05	481368.04	1348449.71	0	0.5	Technetium-99	1.43	UNV	pCi/g
A3B-P1P-05	481368.04	1348449.71	1	1.5	Technetium-99	1.53	UNV	pCi/g
A3B-P1P-05	481368.04	1348449.71	3	3.5	Technetium-99	1.35	UNV	pCi/g
A3B-P1P-05	481368.04	1348449.71	6	6.5	Technetium-99	1.48	UNV	pCi/g
A3B-P1P-05	481368.04	1348449.71	0	0.5	Uranium, Total	5.85	NV	mg/kg
A3B-P1P-05	481368.04	1348449.71	1	1.5	Uranium, Total	3.85	NV	mg/kg
A3B-P1P-05	481368.04	1348449.71	3	3.5	Uranium, Total	3.78	UNV	mg/kg
A3B-P1P-05	481368.04	1348449.71	6	6.5	Uranium, Total	6.07	NV	mg/kg
A3B-P1P-06	481383.04	1348454.71	0	0.5	Technetium-99	1.46	UNV	pCi/g
A3B-P1P-06	481383.04	1348454.71	1	1.5	Technetium-99	1.22	UNV	pCi/g
A3B-P1P-06	481383.04	1348454.71	3	3.5	Technetium-99	1.42	UNV	pCi/g
A3B-P1P-06	481383.04	1348454.71	6	6.5	Technetium-99	1.51	UNV	pCi/g
A3B-P1P-06	481383.04	1348454.71	0	0.5	Uranium, Total	6.36	NV	mg/kg
A3B-P1P-06	481383.04	1348454.71	1	1.5	Uranium, Total	2.46	UNV	mg/kg
A3B-P1P-06	481383.04	1348454.71	3	3.5	Uranium, Total	4.46	NV	mg/kg
A3B-P1P-06	481383.04	1348454.71	6	6.5	Uranium, Total	3.34	UNV	mg/kg
A3B-P1P-07	481368.04	1348469.71	0	0.5	Technetium-99	1.22	UNV	pCi/g
A3B-P1P-07	481368.04	1348469.71	1	1.5	Technetium-99	1.29	UNV	pCi/g
A3B-P1P-07	481368.04	1348469.71	3	3.5	Technetium-99	1.35	UNV	pCi/g
A3B-P1P-07	481368.04	1348469.71	6	6.5	Technetium-99	1.26	UNV	pCi/g
A3B-P1P-07	481368.04	1348469.71	0	0.5	Uranium, Total	3.89	NV	mg/kg
A3B-P1P-07	481368.04	1348469.71	1	1.5	Uranium, Total	2.39	UNV	mg/kg
A3B-P1P-07	481368.04	1348469.71	3	3.5	Uranium, Total	2.4	UNV	mg/kg
A3B-P1P-07	481368.04	1348469.71	6	6.5	Uranium, Total	4.79	NV	mg/kg
A3B-P1P-08	481353.04	1348454.71	0	0.5	Technetium-99	1.45	UNV	pCi/g
A3B-P1P-08	481353.04	1348454.71	1	1.5	Technetium-99	1.4	UNV	pCi/g
A3B-P1P-08	481353.04	1348454.71	3	3.5	Technetium-99	1.31	UNV	pCi/g
A3B-P1P-08	481353.04	1348454.71	6	6.5	Technetium-99	1.67	UNV	pCi/g
A3B-P1P-08	481353.04	1348454.71	0	0.5	Uranium, Total	3.18	UNV	mg/kg
A3B-P1P-08	481353.04	1348454.71	1	1.5	Uranium, Total	3.56	NV	mg/kg
A3B-P1P-08	481353.04	1348454.71	3	3.5	Uranium, Total	2.67	UNV	mg/kg
A3B-P1P-08	481353.04	1348454.71	6	6.5	Uranium, Total	3.74	UNV	mg/kg
A3B-P1P-09	481368.04	1348439.71	0	0.5	Technetium-99	1.37	UNV	pCi/g
A3B-P1P-09	481368.04	1348439.71	1	1.5	Technetium-99	1.59	UNV	pCi/g
A3B-P1P-09	481368.04	1348439.71	3	3.5	Technetium-99	1.5	UNV	pCi/g
A3B-P1P-09	481368.04	1348439.71	6	6.5	Technetium-99	1.34	UNV	pCi/g
A3B-P1P-09	481368.04	1348439.71	0	0.5	Uranium, Total	3.77	NV	mg/kg
A3B-P1P-09	481368.04	1348439.71	1	1.5	Uranium, Total	1.97	NV	mg/kg
A3B-P1P-09	481368.04	1348439.71	3	3.5	Uranium, Total	3.74	NV	mg/kg
A3B-P1P-09	481368.04	1348439.71	6	6.5	Uranium, Total	3.04	NV	mg/kg
A3B-P1P-10	481197.1	1348408.97	2	2.5	Technetium-99	9.19	-	pCi/g
A3B-P1P-10	481197.1	1348408.97	3	3.5	Technetium-99	2.79	-	pCi/g
A3B-P1P-10	481197.1	1348408.97	5	5.5	Technetium-99	2.4	U	pCi/g
A3B-P1P-10	481197.1	1348408.97	8	8.5	Technetium-99	2.01	U	pCi/g
A3B-P1P-10	481197.1	1348408.97	2	2.5	Uranium, Total	5.43	-	mg/kg dry
A3B-P1P-10	481197.1	1348408.97	3	3.5	Uranium, Total	1.76	-	mg/kg dry
A3B-P1P-10	481197.1	1348408.97	5	5.5	Uranium, Total	1.24	-	mg/kg dry
A3B-P1P-10	481197.1	1348408.97	8	8.5	Uranium, Total	1.72	-	mg/kg dry
A3B-P1P-11	481202.53	1348409.1	1.5	2	Technetium-99	74.4	-	pCi/g
A3B-P1P-11	481202.53	1348409.1	2.5	3	Technetium-99	3.25	-	pCi/g
A3B-P1P-11	481202.53	1348409.1	4.5	5	Technetium-99	2.04	U	pCi/g
A3B-P1P-11	481202.53	1348409.1	7.5	8	Technetium-99	1.76	U	pCi/g
A3B-P1P-11	481202.53	1348409.1	1.5	2	Uranium, Total	73	-	mg/kg dry
A3B-P1P-11	481202.53	1348409.1	2.5	3	Uranium, Total	2.75	-	mg/kg dry
A3B-P1P-11	481202.53	1348409.1	4.5	5	Uranium, Total	1.41	-	mg/kg dry

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A3B-PIP-11	481202.53	1348409.1	7.5	8	Uranium, Total	1.56	-	mg/kg dry
A3B-PIP-12	481197.53	1348414.1	1.5	2	Technetium-99	11.9	-	pCi/g
A3B-PIP-12	481197.53	1348414.1	2.5	3	Technetium-99	1.95	U	pCi/g
A3B-PIP-12	481197.53	1348414.1	4.5	5	Technetium-99	1.56	U	pCi/g
A3B-PIP-12	481197.53	1348414.1	7.5	8	Technetium-99	2.02	U	pCi/g
A3B-PIP-12	481197.53	1348414.1	1.5	2	Uranium, Total	2.71	-	mg/kg dry
A3B-PIP-12	481197.53	1348414.1	2.5	3	Uranium, Total	1.55	-	mg/kg dry
A3B-PIP-12	481197.53	1348414.1	4.5	5	Uranium, Total	1.4	-	mg/kg dry
A3B-PIP-12	481197.53	1348414.1	7.5	8	Uranium, Total	1.24	-	mg/kg dry
A3B-PIP-13	481192.53	1348409.1	2	2.5	Technetium-99	3.62	-	pCi/g
A3B-PIP-13	481192.53	1348409.1	3	3.5	Technetium-99	2.11	U	pCi/g
A3B-PIP-13	481192.53	1348409.1	5	5.5	Technetium-99	2.16	U	pCi/g
A3B-PIP-13	481192.53	1348409.1	8	8.5	Technetium-99	1.91	U	pCi/g
A3B-PIP-13	481192.53	1348409.1	2	2.5	Uranium, Total	4.75	-	mg/kg dry
A3B-PIP-13	481192.53	1348409.1	3	3.5	Uranium, Total	3.47	-	mg/kg dry
A3B-PIP-13	481192.53	1348409.1	5	5.5	Uranium, Total	1.48	-	mg/kg dry
A3B-PIP-13	481192.53	1348409.1	8	8.5	Uranium, Total	1.74	-	mg/kg dry
A3B-PIP-14	481197.53	1348404.1	2	2.5	Technetium-99	2.23	U	pCi/g
A3B-PIP-14	481197.53	1348404.1	3	3.5	Technetium-99	2.14	J	pCi/g
A3B-PIP-14	481197.53	1348404.1	5	5.5	Technetium-99	1.6	U	pCi/g
A3B-PIP-14	481197.53	1348404.1	8	8.5	Technetium-99	1.75	U	pCi/g
A3B-PIP-14	481197.53	1348404.1	2	2.5	Uranium, Total	3.8	-	mg/kg dry
A3B-PIP-14	481197.53	1348404.1	3	3.5	Uranium, Total	1.67	-	mg/kg dry
A3B-PIP-14	481197.53	1348404.1	5	5.5	Uranium, Total	1.31	-	mg/kg dry
A3B-PIP-14	481197.53	1348404.1	8	8.5	Uranium, Total	1.66	-	mg/kg dry
A3B-PIP-15	481212.53	1348409.1	0	0.5	Technetium-99	1.33	UNV	pCi/g
A3B-PIP-15	481212.53	1348409.1	1	1.5	Technetium-99	1.59	NV	pCi/g
A3B-PIP-15	481212.53	1348409.1	3	3.5	Technetium-99	1.71	UNV	pCi/g
A3B-PIP-15	481212.53	1348409.1	6	6.5	Technetium-99	1.5	UNV	pCi/g
A3B-PIP-15	481212.53	1348409.1	0	0.5	Uranium, Total	3.73	UNV	mg/kg
A3B-PIP-15	481212.53	1348409.1	1	1.5	Uranium, Total	5.03	NV	mg/kg
A3B-PIP-15	481212.53	1348409.1	3	3.5	Uranium, Total	5.92	NV	mg/kg
A3B-PIP-15	481212.53	1348409.1	6	6.5	Uranium, Total	4.67	NV	mg/kg
A4B-AT-1	480741.8	1348982	0	0.5	Gross Alpha	56	NV	pCi/g
A4B-AT-1	480741.8	1348982	0	0.5	Gross Beta	48	NV	pCi/g
A4B-AT-1	480741.8	1348982	0	0.5	Technetium-99	1.42	UNV	pCi/g
A4B-AT-1	480741.8	1348982	6.5	7	Technetium-99	1.51	UNV	pCi/g
A4B-AT-2	480447.9	1348400	0	0.5	Gross Alpha	39	NV	pCi/g
A4B-AT-2	480447.9	1348400	0	0.5	Gross Beta	26	NV	pCi/g
A4B-AT-2	480447.9	1348400	0	0.5	Technetium-99	2.06	U	pCi/g
A4B-AT-2	480447.9	1348400	6.5	7	Technetium-99	2	U	pCi/g
A4B-AT-3	480454.4	1348491	0	0.5	Gross Alpha	28	NV	pCi/g
A4B-AT-3	480454.4	1348491	0	0.5	Gross Beta	16	UNV	pCi/g
A4B-AT-3	480454.4	1348491	0	0.5	Technetium-99	1.97	U	pCi/g
A4B-AT-3	480454.4	1348491	6.5	7	Technetium-99	2.11	U	pCi/g
A4B-AT-4	480447.6	1348662	0.5	1	Gross Alpha	14	NV	pCi/g
A4B-AT-4	480447.6	1348662	0.5	1	Gross Beta	13	NV	pCi/g
A4B-AT-4	480447.6	1348662	0.5	1	Technetium-99	4.97	NV	pCi/g
A4B-AT-4	480447.6	1348662	7	7.5	Technetium-99	1.47	UNV	pCi/g
A4B-AT-5	480532.1	1349154	1	1.5	Gross Alpha	26	NV	pCi/g
A4B-AT-5	480532.1	1349154	1	1.5	Gross Beta	19	NV	pCi/g
A4B-AT-5	480532.1	1349154	1	1.5	Technetium-99	4.59	NV	pCi/g
A4B-AT-5	480532.1	1349154	7.5	8	Technetium-99	2.07	NV	pCi/g
A4B-AT-6	480298.7	1348958	0.5	1	Gross Alpha	37	NV	pCi/g
A4B-AT-6	480298.7	1348958	0.5	1	Gross Beta	42	NV	pCi/g
A4B-AT-6	480298.7	1348958	0.5	1	Technetium-99	1.54	UNV	pCi/g
A4B-AT-6	480298.7	1348958	7	7.5	Technetium-99	1.08	UNV	pCi/g
A4B-AT-7	479997.8	1348578	0.5	1	Gross Alpha	26	NV	pCi/g
A4B-AT-7	479997.8	1348578	0.5	1	Gross Beta	36	NV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A4B-AT-7	479997.8	1348578	0.5	1	Technetium-99	2.11	U	pCi/g
A4B-AT-7	479997.8	1348578	6.5	7	Technetium-99	2.22	U	pCi/g
A4B-FRL-1	480059	1348858	1	1.5	Beryllium	1.7	-	mg/kg
A4B-FRL-1	480059	1348858	11	11.5	Beryllium	0.49	-	mg/kg
A4B-FRL-1	480059	1348858	13	13.5	Beryllium	0.53	-	mg/kg
A4B-FRL-1	480059	1348858	1	1.5	Technetium-99	1.75	UNV	pCi/g
A4B-FRL-1	480059	1348858	11	11.5	Technetium-99	2.28	UNV	pCi/g
A4B-FRL-1	480059	1348858	13	13.5	Technetium-99	1.92	UNV	pCi/g
A4B-FRL-2	480063	1348861.8	7	7.5	Beryllium	0.69	-	mg/kg
A4B-FRL-2	480063	1348861.8	17	17.5	Beryllium	0.17	J	mg/kg
A4B-FRL-2	480063	1348861.8	19	19.5	Beryllium	0.43	-	mg/kg
A4B-FRL-2	480063	1348861.8	7	7.5	Technetium-99	1.81	UNV	pCi/g
A4B-FRL-2	480063	1348861.8	17	17.5	Technetium-99	1.32	UNV	pCi/g
A4B-FRL-2	480063	1348861.8	19	19.5	Technetium-99	2.71	UNV	pCi/g
A4B-FRL-3	480805	1348893.5	0.5	1	Arsenic	8	NV	mg/kg
A4B-FRL-3	480805	1348893.5	6.5	7	Arsenic	8.3	NV	mg/kg
A4B-FRL-3	480805	1348893.5	17.5	18	Arsenic	4.6	NV	mg/kg
A4B-FRL-3	480805	1348893.5	19.5	20	Arsenic	5	NV	mg/kg
A4B-FRL-3	480805	1348893.5	0.5	1	Beryllium	0.74	NV	mg/kg
A4B-FRL-3	480805	1348893.5	6.5	7	Beryllium	0.61	NV	mg/kg
A4B-FRL-3	480805	1348893.5	17.5	18	Beryllium	0.18	NV	mg/kg
A4B-FRL-3	480805	1348893.5	19.5	20	Beryllium	0.55	NV	mg/kg
A4B-FRL-3	480805	1348893.5	0.5	1	Technetium-99	2.11	UNV	pCi/g
A4B-FRL-3	480805	1348893.5	6.5	7	Technetium-99	2.33	UNV	pCi/g
A4B-FRL-3	480805	1348893.5	17.5	18	Technetium-99	1.53	UNV	pCi/g
A4B-FRL-3	480805	1348893.5	19.5	20	Technetium-99	1.49	UNV	pCi/g
A4B-FRL-4	480809.1	1348897.3	0	0.5	Arsenic	6	NV	mg/kg
A4B-FRL-4	480809.1	1348897.3	6	6.5	Arsenic	10.1	NV	mg/kg
A4B-FRL-4	480809.1	1348897.3	17	17.5	Arsenic	5.2	NV	mg/kg
A4B-FRL-4	480809.1	1348897.3	19	19.5	Arsenic	6.6	NV	mg/kg
A4B-FRL-4	480809.1	1348897.3	0	0.5	Beryllium	0.33	NV	mg/kg
A4B-FRL-4	480809.1	1348897.3	6	6.5	Beryllium	0.89	NV	mg/kg
A4B-FRL-4	480809.1	1348897.3	17	17.5	Beryllium	0.68	NV	mg/kg
A4B-FRL-4	480809.1	1348897.3	19	19.5	Beryllium	0.84	NV	mg/kg
A4B-FRL-4	480809.1	1348897.3	0	0.5	Technetium-99	1.82	UNV	pCi/g
A4B-FRL-4	480809.1	1348897.3	6	6.5	Technetium-99	2.11	UNV	pCi/g
A4B-FRL-4	480809.1	1348897.3	17	17.5	Technetium-99	2.56	UNV	pCi/g
A4B-FRL-4	480809.1	1348897.3	19	19.5	Technetium-99	1.77	UNV	pCi/g
A4B-LAB-01	479887.37	1348769.29	4	4.5	Technetium-99	0.119	UNV	pCi/g
A4B-LAB-01	479887.37	1348769.29	5	5.5	Technetium-99	0.163	UNV	pCi/g
A4B-LAB-01	479887.37	1348769.29	7.5	8	Technetium-99	1.28	NV	pCi/g
A4B-LAB-01	479887.37	1348769.29	4	4.5	Uranium, Total	1.86	UNV	mg/kg
A4B-LAB-01	479887.37	1348769.29	5	5.5	Uranium, Total	0	UNV	mg/kg
A4B-LAB-01	479887.37	1348769.29	7.5	8	Uranium, Total	15.3	NV	mg/kg
A4B-LAB-02	479892.37	1348769.29	2	2.5	Technetium-99	1.76	NV	pCi/g
A4B-LAB-02	479892.37	1348769.29	3	3.5	Technetium-99	0.783	NV	pCi/g
A4B-LAB-02	479892.37	1348769.29	5.5	6	Technetium-99	-0.019	UNV	pCi/g
A4B-LAB-02	479892.37	1348769.29	2	2.5	Uranium, Total	33.2	NV	mg/kg
A4B-LAB-02	479892.37	1348769.29	3	3.5	Uranium, Total	31	NV	mg/kg
A4B-LAB-02	479892.37	1348769.29	5.5	6	Uranium, Total	5.51	NV	mg/kg
A4B-LAB-03B	479889.37	1348770.29	4	4.5	Technetium-99	0.426	UNV	pCi/g
A4B-LAB-03B	479889.37	1348770.29	5	5.5	Technetium-99	-0.0878	UNV	pCi/g
A4B-LAB-03B	479889.37	1348770.29	7.5	8	Technetium-99	-0.0815	UNV	pCi/g
A4B-LAB-03B	479889.37	1348770.29	4	4.5	Uranium, Total	8.36	NV	mg/kg
A4B-LAB-03B	479889.37	1348770.29	5	5.5	Uranium, Total	15.4	NV	mg/kg
A4B-LAB-03B	479889.37	1348770.29	7.5	8	Uranium, Total	3.88	NV	mg/kg
A4B-LAB-04	479882.37	1348769.29	0.5	1	Technetium-99	1.22	UNV	pCi/g
A4B-LAB-04	479882.37	1348769.29	1.5	2	Technetium-99	1.46	UNV	pCi/g
A4B-LAB-04	479882.37	1348769.29	4	4.5	Technetium-99	1.5	UNV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A4B-LAB-04	479882.37	1348769.29	0.5	1	Uranium, Total	13.7	NV	mg/kg dry
A4B-LAB-04	479882.37	1348769.29	1.5	2	Uranium, Total	17.1	NV	mg/kg dry
A4B-LAB-04	479882.37	1348769.29	4	4.5	Uranium, Total	20.9	NV	mg/kg dry
A4B-LAB-05B	479887.87	1348763.29	6	6.5	Technetium-99	-0.0656	UNV	pCi/g
A4B-LAB-05B	479887.87	1348763.29	7	7.5	Technetium-99	0.188	UNV	pCi/g
A4B-LAB-05B	479887.87	1348763.29	6	6.5	Uranium, Total	15.9	NV	mg/kg
A4B-LAB-05B	479887.87	1348763.29	7	7.5	Uranium, Total	5.77	NV	mg/kg
A4B-LAB-05C	479887.87	1348761.29	9.5	10	Technetium-99	-0.242	UNV	pCi/g
A4B-LAB-05C	479887.87	1348761.29	9.5	10	Uranium, Total	2.62	NV	mg/kg
A4B-LAB-06	479866.04	1348855.9	0	0.5	Technetium-99	1.97	NV	pCi/g
A4B-LAB-06	479866.04	1348855.9	1	1.5	Technetium-99	1.76	UNV	pCi/g
A4B-LAB-06	479866.04	1348855.9	3.5	4	Technetium-99	1.7	UNV	pCi/g
A4B-LAB-06	479866.04	1348855.9	0	0.5	Uranium, Total	111	NV	mg/kg dry
A4B-LAB-06	479866.04	1348855.9	1	1.5	Uranium, Total	15.6	NV	mg/kg dry
A4B-LAB-06	479866.04	1348855.9	3.5	4	Uranium, Total	2.16	NV	mg/kg dry
A4B-LAB-07	479870.75	1348856.12	0	0.5	Technetium-99	1.84	NV	pCi/g
A4B-LAB-07	479870.75	1348856.12	1	1.5	Technetium-99	1.87	UNV	pCi/g
A4B-LAB-07	479870.75	1348856.12	3.5	4	Technetium-99	1.39	UNV	pCi/g
A4B-LAB-07	479870.75	1348856.12	0	0.5	Uranium, Total	142	NV	mg/kg dry
A4B-LAB-07	479870.75	1348856.12	1	1.5	Uranium, Total	27.8	NV	mg/kg dry
A4B-LAB-07	479870.75	1348856.12	3.5	4	Uranium, Total	3.49	NV	mg/kg dry
A4B-LAB-08	479871.6	1348866.1	0	0.5	Technetium-99	3.02	NV	pCi/g
A4B-LAB-08	479871.6	1348866.1	1	1.5	Technetium-99	1.69	UNV	pCi/g
A4B-LAB-08	479871.6	1348866.1	3.5	4	Technetium-99	1.38	UNV	pCi/g
A4B-LAB-08	479871.6	1348866.1	0	0.5	Uranium, Total	226	NV	mg/kg dry
A4B-LAB-08	479871.6	1348866.1	1	1.5	Uranium, Total	21.6	NV	mg/kg dry
A4B-LAB-08	479871.6	1348866.1	3.5	4	Uranium, Total	7.47	NV	mg/kg dry
A4B-LAB-09	479850.3	1348860.86	0	0.5	Technetium-99	2.06	UNV	pCi/g
A4B-LAB-09	479850.3	1348860.86	1	1.5	Technetium-99	1.94	UNV	pCi/g
A4B-LAB-09	479850.3	1348860.86	3.5	4	Technetium-99	1.21	UNV	pCi/g
A4B-LAB-09	479850.3	1348860.86	0	0.5	Uranium, Total	276	NV	mg/kg dry
A4B-LAB-09	479850.3	1348860.86	1	1.5	Uranium, Total	55.2	NV	mg/kg dry
A4B-LAB-09	479850.3	1348860.86	3.5	4	Uranium, Total	1.99	NV	mg/kg dry
A4B-LAB-10	479865.99	1348848.86	0	0.5	Technetium-99	1.72	UNV	pCi/g
A4B-LAB-10	479865.99	1348848.86	1	1.5	Technetium-99	1.77	UNV	pCi/g
A4B-LAB-10	479865.99	1348848.86	3.5	4	Technetium-99	1.69	UNV	pCi/g
A4B-LAB-10	479865.99	1348848.86	0	0.5	Uranium, Total	53.2	NV	mg/kg dry
A4B-LAB-10	479865.99	1348848.86	1	1.5	Uranium, Total	10.7	NV	mg/kg dry
A4B-LAB-10	479865.99	1348848.86	3.5	4	Uranium, Total	3.37	NV	mg/kg dry
A4B-LAB-11	479735.37	1348766.99	0.5	1	Technetium-99	1.71	UNV	pCi/g
A4B-LAB-11	479735.37	1348766.99	2	2.5	Technetium-99	1.74	UNV	pCi/g
A4B-LAB-11	479735.37	1348766.99	4.5	5	Technetium-99	1.86	UNV	pCi/g
A4B-LAB-11	479735.37	1348766.99	7.5	8	Technetium-99	1.55	UNV	pCi/g
A4B-LAB-11	479735.37	1348766.99	10.5	11	Technetium-99	2.23	UNV	pCi/g
A4B-LAB-11	479735.37	1348766.99	0.5	1	Uranium, Total	36.5	NV	mg/kg dry
A4B-LAB-11	479735.37	1348766.99	2	2.5	Uranium, Total	14.5	NV	mg/kg dry
A4B-LAB-11	479735.37	1348766.99	4.5	5	Uranium, Total	18.7	NV	mg/kg dry
A4B-LAB-11	479735.37	1348766.99	7.5	8	Uranium, Total	4	NV	mg/kg dry
A4B-LAB-11	479735.37	1348766.99	10.5	11	Uranium, Total	3.96	NV	mg/kg dry
A4B-LAB-12	479720.37	1348751.99	0.5	1	Technetium-99	1.85	UNV	pCi/g
A4B-LAB-12	479720.37	1348751.99	2	2.5	Technetium-99	1.38	UNV	pCi/g
A4B-LAB-12	479720.37	1348751.99	4.5	5	Technetium-99	2.3	UNV	pCi/g
A4B-LAB-12	479720.37	1348751.99	7.5	8	Technetium-99	1.67	UNV	pCi/g
A4B-LAB-12	479720.37	1348751.99	10.5	11	Technetium-99	1.81	UNV	pCi/g
A4B-LAB-12	479720.37	1348751.99	0.5	1	Uranium, Total	20.1	NV	mg/kg dry
A4B-LAB-12	479720.37	1348751.99	2	2.5	Uranium, Total	7.51	NV	mg/kg dry
A4B-LAB-12	479720.37	1348751.99	4.5	5	Uranium, Total	1.15	NV	mg/kg dry
A4B-LAB-12	479720.37	1348751.99	7.5	8	Uranium, Total	2.68	NV	mg/kg dry
A4B-LAB-12	479720.37	1348751.99	10.5	11	Uranium, Total	1.53	NV	mg/kg dry

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A4B-LAB-13	479712.56	1348769.46	4	4.5	Technetium-99	1.64	UNV	pCi/g
A4B-LAB-13	479712.56	1348769.46	5.5	6	Technetium-99	1.76	UNV	pCi/g
A4B-LAB-13	479712.56	1348769.46	8	8.5	Technetium-99	1.43	UNV	pCi/g
A4B-LAB-13	479712.56	1348769.46	11	11.5	Technetium-99	1.5	UNV	pCi/g
A4B-LAB-13	479712.56	1348769.46	14	14.5	Technetium-99	1.65	UNV	pCi/g
A4B-LAB-13	479712.56	1348769.46	4	4.5	Uranium, Total	6.97	NV	mg/kg dry
A4B-LAB-13	479712.56	1348769.46	5.5	6	Uranium, Total	1.77	NV	mg/kg dry
A4B-LAB-13	479712.56	1348769.46	8	8.5	Uranium, Total	1.82	NV	mg/kg dry
A4B-LAB-13	479712.56	1348769.46	11	11.5	Uranium, Total	1.82	NV	mg/kg dry
A4B-LAB-13	479712.56	1348769.46	14	14.5	Uranium, Total	3.61	NV	mg/kg dry
A4B-LAB-14	479699.87	1348779.15	4	4.5	Technetium-99	1.6	UNV	pCi/g
A4B-LAB-14	479699.87	1348779.15	5.5	6	Technetium-99	1.4	UNV	pCi/g
A4B-LAB-14	479699.87	1348779.15	8	8.5	Technetium-99	2.01	UNV	pCi/g
A4B-LAB-14	479699.87	1348779.15	11	11.5	Technetium-99	1.36	UNV	pCi/g
A4B-LAB-14	479699.87	1348779.15	14	14.5	Technetium-99	1.71	UNV	pCi/g
A4B-LAB-14	479699.87	1348779.15	4	4.5	Uranium, Total	5.04	NV	mg/kg dry
A4B-LAB-14	479699.87	1348779.15	5.5	6	Uranium, Total	1.74	NV	mg/kg dry
A4B-LAB-14	479699.87	1348779.15	8	8.8	Uranium, Total	1.9	NV	mg/kg dry
A4B-LAB-14	479699.87	1348779.15	11	11.5	Uranium, Total	1.61	NV	mg/kg dry
A4B-LAB-14	479699.87	1348779.15	14	14.5	Uranium, Total	1.71	NV	mg/kg dry
A4B-LAB-15	479690.16	1348771.32	1	1.5	Technetium-99	1.7	U	pCi/g
A4B-LAB-15	479690.16	1348771.32	2.5	3	Technetium-99	1.44	U	pCi/g
A4B-LAB-15	479690.16	1348771.32	5	5.5	Technetium-99	1.47	U	pCi/g
A4B-LAB-15	479690.16	1348771.32	8	8.5	Technetium-99	1.6	U	pCi/g
A4B-LAB-15	479690.16	1348771.32	11	11.5	Technetium-99	1.72	U	pCi/g
A4B-LAB-15	479690.16	1348771.32	1	1.5	Uranium, Total	21.4	-	mg/kg dry
A4B-LAB-15	479690.16	1348771.32	2.5	3	Uranium, Total	9.87	-	mg/kg dry
A4B-LAB-15	479690.16	1348771.32	5	5.5	Uranium, Total	1.59	-	mg/kg dry
A4B-LAB-15	479690.16	1348771.32	8	8.5	Uranium, Total	2.81	-	mg/kg dry
A4B-LAB-15	479690.16	1348771.32	11	11.5	Uranium, Total	2.4	-	mg/kg dry
A4B-LAB-16	479684.87	1348794.15	0	0.5	Technetium-99	1.84	UNV	pCi/g
A4B-LAB-16	479684.87	1348794.15	1.5	2	Technetium-99	1.58	UNV	pCi/g
A4B-LAB-16	479684.87	1348794.15	4	4.5	Technetium-99	1.73	UNV	pCi/g
A4B-LAB-16	479684.87	1348794.15	7	7.5	Technetium-99	1.6	UNV	pCi/g
A4B-LAB-16	479684.87	1348794.15	10	10.5	Technetium-99	2.2	UNV	pCi/g
A4B-LAB-16	479684.87	1348794.15	0	0.5	Uranium, Total	112	NV	mg/kg dry
A4B-LAB-16	479684.87	1348794.15	1.5	2	Uranium, Total	10.3	NV	mg/kg dry
A4B-LAB-16	479684.87	1348794.15	4	4.5	Uranium, Total	7.81	NV	mg/kg dry
A4B-LAB-16	479684.87	1348794.15	7	7.5	Uranium, Total	2.49	NV	mg/kg dry
A4B-LAB-16	479684.87	1348794.15	10	10.5	Uranium, Total	1.75	NV	mg/kg dry
A4B-LAB-17	479669.87	1348779.15	0	0.5	Technetium-99	1.44	U	pCi/g
A4B-LAB-17	479669.87	1348779.15	1.5	2	Technetium-99	1.41	U	pCi/g
A4B-LAB-17	479669.87	1348779.15	4	4.5	Technetium-99	2.16	U	pCi/g
A4B-LAB-17	479669.87	1348779.15	7	7.5	Technetium-99	1.9	U	pCi/g
A4B-LAB-17	479669.87	1348779.15	10	10.5	Technetium-99	1.87	U	pCi/g
A4B-LAB-17	479669.87	1348779.15	0	0.5	Uranium, Total	28.1	-	mg/kg dry
A4B-LAB-17	479669.87	1348779.15	1.5	2	Uranium, Total	10.2	-	mg/kg dry
A4B-LAB-17	479669.87	1348779.15	4	4.5	Uranium, Total	2.58	-	mg/kg dry
A4B-LAB-17	479669.87	1348779.15	7	7.5	Uranium, Total	1.77	-	mg/kg dry
A4B-LAB-17	479669.87	1348779.15	10	10.5	Uranium, Total	2.9	-	mg/kg dry
A4B-LAB-18	479872.37	1348779.15	0.5	1	Technetium-99	1.6	UNV	pCi/g
A4B-LAB-18	479872.37	1348779.15	2	2.5	Technetium-99	2.03	NV	pCi/g
A4B-LAB-18	479872.37	1348779.15	4.5	5	Technetium-99	1.77	UNV	pCi/g
A4B-LAB-18	479872.37	1348779.15	7.5	8	Technetium-99	22	NV	pCi/g
A4B-LAB-18	479872.37	1348779.15	10.5	11	Technetium-99	1.82	UNV	pCi/g
A4B-LAB-18	479872.37	1348779.15	0.5	1	Uranium, Total	4.52	NV	mg/kg dry
A4B-LAB-18	479872.37	1348779.15	2	2.5	Uranium, Total	2.72	NV	mg/kg dry
A4B-LAB-18	479872.37	1348779.15	4.5	5	Uranium, Total	70.5	NV	mg/kg dry
A4B-LAB-18	479872.37	1348779.15	7.5	8	Uranium, Total	15.3	NV	mg/kg dry

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A4B-LAB-18	479872.37	1348779.15	10.5	11	Uranium, Total	1.88	NV	mg/kg dry
A4B-LAB-19	479721.4	1348767	2.5	3	Technetium-99	1.46	UNV	pCi/g
A4B-LAB-19	479721.4	1348767	4.5	5	Technetium-99	1.81	UNV	pCi/g
A4B-LAB-19	479721.4	1348767	7.5	8	Technetium-99	1.2	UNV	pCi/g
A4B-LAB-19	479721.4	1348767	2.5	3	Uranium, Total	7.08	NV	mg/kg dry
A4B-LAB-19	479721.4	1348767	4.5	5	Uranium, Total	9.02	NV	mg/kg dry
A4B-LAB-19	479721.4	1348767	7.5	8	Uranium, Total	8.32	NV	mg/kg dry
A4B-LAB-20	479695.4	1348769	3	3.5	Technetium-99	1.82	UNV	pCi/g
A4B-LAB-20	479695.4	1348769	5	5.5	Technetium-99	1.44	UNV	pCi/g
A4B-LAB-20	479695.4	1348769	8	8.5	Technetium-99	1.44	UNV	pCi/g
A4B-LAB-20	479695.4	1348769	3	3.5	Uranium, Total	5.04	NV	mg/kg dry
A4B-LAB-20	479695.4	1348769	5	5.5	Uranium, Total	45.3	NV	mg/kg dry
A4B-LAB-20	479695.4	1348769	8	8.5	Uranium, Total	4.34	NV	mg/kg dry
A4B-P2-01	480759.21	1348769.48	2	2.5	Gross Alpha	80	NV	pCi/g
A4B-P2-01	480759.21	1348769.48	2	2.5	Gross Beta	69	NV	pCi/g
A4B-P2-01	480759.21	1348769.48	2	2.5	Technetium-99	5.7	NV	pCi/g
A4B-P2-01	480759.21	1348769.48	3	3.5	Technetium-99	2.06	UNV	pCi/g
A4B-P2-01	480759.21	1348769.48	4	4.5	Technetium-99	1.11	UNV	pCi/g
A4B-P2-01	480759.21	1348769.48	6	6.5	Technetium-99	1.49	UNV	pCi/g
A4B-P2-01	480759.21	1348769.48	2	2.5	Uranium, Total	234	NV	mg/kg dry
A4B-P2-01	480759.21	1348769.48	3	3.5	Uranium, Total	3.1	NV	mg/kg dry
A4B-P2-01	480759.21	1348769.48	4	4.5	Uranium, Total	49.2	NV	mg/kg dry
A4B-P2-01	480759.21	1348769.48	6	6.5	Uranium, Total	85.9	NV	mg/kg dry
A4B-P2-02	480764.21	1348769.48	1	1.5	Technetium-99	36	NV	pCi/g
A4B-P2-02	480764.21	1348769.48	2	2.5	Technetium-99	2.18	UNV	pCi/g
A4B-P2-02	480764.21	1348769.48	3	3.5	Technetium-99	1.57	UNV	pCi/g
A4B-P2-02	480764.21	1348769.48	5	5.5	Technetium-99	1.35	UNV	pCi/g
A4B-P2-02	480764.21	1348769.48	1	1.5	Uranium, Total	1420	NV	mg/kg dry
A4B-P2-02	480764.21	1348769.48	2	2.5	Uranium, Total	4.89	NV	mg/kg dry
A4B-P2-02	480764.21	1348769.48	3	3.5	Uranium, Total	6.24	NV	mg/kg dry
A4B-P2-02	480764.21	1348769.48	5	5.5	Uranium, Total	95.7	NV	mg/kg dry
A4B-P2-03	480759.21	1348774.48	1.5	2	Gross Alpha	1600	NV	pCi/g
A4B-P2-03	480759.21	1348774.48	1.5	2	Gross Alpha	770	NV	pCi/g
A4B-P2-03	480759.21	1348774.48	1.5	2	Gross Beta	1100	NV	pCi/g
A4B-P2-03	480759.21	1348774.48	1.5	2	Gross Beta	550	NV	pCi/g
A4B-P2-03	480759.21	1348774.48	1.5	2	Technetium-99	11.6	NV	pCi/g
A4B-P2-03	480759.21	1348774.48	2.5	3	Technetium-99	1.54	UNV	pCi/g
A4B-P2-03	480759.21	1348774.48	3.5	4	Technetium-99	1.39	UNV	pCi/g
A4B-P2-03	480759.21	1348774.48	5.5	6	Technetium-99	1.63	NV	pCi/g
A4B-P2-03	480759.21	1348774.48	1.5	2	Uranium, Total	1350	NV	mg/kg dry
A4B-P2-03	480759.21	1348774.48	2.5	3	Uranium, Total	4.84	UNV	mg/kg dry
A4B-P2-03	480759.21	1348774.48	3.5	4	Uranium, Total	3.14	NV	mg/kg dry
A4B-P2-03	480759.21	1348774.48	5.5	6	Uranium, Total	84.8	NV	mg/kg dry
A4B-P2-04	480754.21	1348769.48	0.5	1	Technetium-99	60.9	NV	pCi/g
A4B-P2-04	480754.21	1348769.48	1.5	2	Technetium-99	1.83	UNV	pCi/g
A4B-P2-04	480754.21	1348769.48	2.5	3	Technetium-99	1.35	UNV	pCi/g
A4B-P2-04	480754.21	1348769.48	4.5	5	Technetium-99	1.61	UNV	pCi/g
A4B-P2-04	480754.21	1348769.48	0.5	1	Uranium, Total	435	NV	mg/kg dry
A4B-P2-04	480754.21	1348769.48	1.5	2	Uranium, Total	38.9	NV	mg/kg dry
A4B-P2-04	480754.21	1348769.48	2.5	3	Uranium, Total	3.33	NV	mg/kg dry
A4B-P2-04	480754.21	1348769.48	4.5	5	Uranium, Total	47.4	NV	mg/kg dry
A4B-P2-05	480759.21	1348764.48	6	6.5	Technetium-99	1.36	UNV	pCi/g
A4B-P2-05	480759.21	1348764.48	7	7.5	Technetium-99	2.05	UNV	pCi/g
A4B-P2-05	480759.21	1348764.48	8	8.5	Technetium-99	1.61	UNV	pCi/g
A4B-P2-05	480759.21	1348764.48	10	10.5	Technetium-99	1.8	UNV	pCi/g
A4B-P2-05	480759.21	1348764.48	6	6.5	Uranium, Total	333	NV	mg/kg dry
A4B-P2-05	480759.21	1348764.48	7	7.5	Uranium, Total	376	NV	mg/kg dry
A4B-P2-05	480759.21	1348764.48	8	8.5	Uranium, Total	203	NV	mg/kg dry
A4B-P2-05	480759.21	1348764.48	10	10.5	Uranium, Total	92	NV	mg/kg dry

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A4B-P2-11	480748.39	1348886.28	0.5	1	Technetium-99	2.6	UNV	pCi/g
A4B-P2-11	480748.39	1348886.28	1.5	2	Technetium-99	2.18	UNV	pCi/g
A4B-P2-11	480748.39	1348886.28	3.5	4	Technetium-99	2.55	UNV	pCi/g
A4B-P2-11	480748.39	1348886.28	0.5	1	Uranium, Total	143	NV	mg/kg
A4B-P2-11	480748.39	1348886.28	1.5	2	Uranium, Total	7.13	NV	mg/kg
A4B-P2-11	480748.39	1348886.28	3.5	4	Uranium, Total	49.6	NV	mg/kg
A4B-P2-12	480740.4	1348901.28	0.5	1	Technetium-99	2.55	UNV	pCi/g
A4B-P2-12	480740.4	1348901.28	1.5	2	Technetium-99	1.83	UNV	pCi/g
A4B-P2-12	480740.4	1348901.28	3.5	4	Technetium-99	2.67	UNV	pCi/g
A4B-P2-12	480740.4	1348901.28	0.5	1	Uranium, Total	43.4	NV	mg/kg
A4B-P2-12	480740.4	1348901.28	1.5	2	Uranium, Total	38.3	NV	mg/kg
A4B-P2-12	480740.4	1348901.28	3.5	4	Uranium, Total	26.9	NV	mg/kg
A4B-P2-13	480696.4	1348889	0.5	1	Technetium-99	6.86	NV	pCi/g
A4B-P2-13	480696.4	1348889	1.5	2	Technetium-99	1.8	UNV	pCi/g
A4B-P2-13	480696.4	1348889	3.5	4	Technetium-99	1.79	UNV	pCi/g
A4B-P2-13	480696.4	1348889	0.5	1	Uranium, Total	804	NV	mg/kg
A4B-P2-13	480696.4	1348889	1.5	2	Uranium, Total	22.7	NV	mg/kg
A4B-P2-13	480696.4	1348889	3.5	4	Uranium, Total	147	NV	mg/kg
A4B-P2-14	480740.4	1348871.28	0.5	1	Technetium-99	5.95	NV	pCi/g
A4B-P2-14	480740.4	1348871.28	1.5	2	Technetium-99	2.69	UNV	pCi/g
A4B-P2-14	480740.4	1348871.28	3.5	4	Technetium-99	2.46	UNV	pCi/g
A4B-P2-14	480740.4	1348871.28	0.5	1	Uranium, Total	80.6	NV	mg/kg
A4B-P2-14	480740.4	1348871.28	1.5	2	Uranium, Total	10.9	NV	mg/kg
A4B-P2-14	480740.4	1348871.28	3.5	4	Uranium, Total	15.9	NV	mg/kg
A4B-P2-15	480627.99	1348744.21	0.5	1	Technetium-99	1.57	NV	pCi/g
A4B-P2-15	480627.99	1348744.21	1.5	2	Technetium-99	1.18	UNV	pCi/g
A4B-P2-15	480627.99	1348744.21	3.5	4	Technetium-99	1.01	UNV	pCi/g
A4B-P2-15	480627.99	1348744.21	0.5	1	Uranium, Total	1600	NV	mg/kg
A4B-P2-15	480627.99	1348744.21	1.5	2	Uranium, Total	312	NV	mg/kg
A4B-P2-15	480627.99	1348744.21	3.5	4	Uranium, Total	99.2	NV	mg/kg
A4B-P2-16	480632.99	1348744.21	1	1.5	Technetium-99	5.17	NV	pCi/g
A4B-P2-16	480632.99	1348744.21	2	2.5	Technetium-99	1.6	NV	pCi/g
A4B-P2-16	480632.99	1348744.21	4	4.5	Technetium-99	2.5	NV	pCi/g
A4B-P2-16	480632.99	1348744.21	1	1.5	Uranium, Total	101	NV	mg/kg
A4B-P2-16	480632.99	1348744.21	2	2.5	Uranium, Total	6.32	NV	mg/kg
A4B-P2-16	480632.99	1348744.21	4	4.5	Uranium, Total	13.7	NV	mg/kg
A4B-P2-17	480627.99	1348749.21	0.5	1	Technetium-99	1.8	NV	pCi/g
A4B-P2-17	480627.99	1348749.21	1.5	2	Technetium-99	1.2	UNV	pCi/g
A4B-P2-17	480627.99	1348749.21	3.5	4	Technetium-99	1.27	UNV	pCi/g
A4B-P2-17	480627.99	1348749.21	0.5	1	Uranium, Total	579	NV	mg/kg
A4B-P2-17	480627.99	1348749.21	1.5	2	Uranium, Total	111	NV	mg/kg
A4B-P2-17	480627.99	1348749.21	3.5	4	Uranium, Total	7.01	NV	mg/kg
A4B-P2-18	480622.99	1348744.21	0.5	1	Technetium-99	1.6	UNV	pCi/g
A4B-P2-18	480622.99	1348744.21	1.5	2	Technetium-99	1.41	UNV	pCi/g
A4B-P2-18	480622.99	1348744.21	3.5	4	Technetium-99	1.39	UNV	pCi/g
A4B-P2-18	480622.99	1348744.21	0.5	1	Uranium, Total	189	NV	mg/kg
A4B-P2-18	480622.99	1348744.21	1.5	2	Uranium, Total	25.2	NV	mg/kg
A4B-P2-18	480622.99	1348744.21	3.5	4	Uranium, Total	5.8	NV	mg/kg
A4B-P2-19	480627.99	1348739.21	0.5	1	Technetium-99	1.35	UNV	pCi/g
A4B-P2-19	480627.99	1348739.21	1.5	2	Technetium-99	1.42	UNV	pCi/g
A4B-P2-19	480627.99	1348739.21	3.5	4	Technetium-99	0.94	UNV	pCi/g
A4B-P2-19	480627.99	1348739.21	0.5	1	Uranium, Total	350	NV	mg/kg
A4B-P2-19	480627.99	1348739.21	1.5	2	Uranium, Total	115	NV	mg/kg
A4B-P2-19	480627.99	1348739.21	3.5	4	Uranium, Total	117	NV	mg/kg
A4B-P2-20	480627.99	1348759.21	0.5	1	Technetium-99	1.49	UNV	pCi/g
A4B-P2-20	480627.99	1348759.21	1.5	2	Technetium-99	1.07	UNV	pCi/g
A4B-P2-20	480627.99	1348759.21	3.5	4	Technetium-99	1.28	UNV	pCi/g
A4B-P2-20	480627.99	1348759.21	0.5	1	Uranium, Total	938	NV	mg/kg
A4B-P2-20	480627.99	1348759.21	1.5	2	Uranium, Total	267	NV	mg/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A4B-P2-20	480627.99	1348759.21	3.5	4	Uranium, Total	211	NV	mg/kg
A4B-P2-21	480612.99	1348744.21	0.5	1	Technetium-99	1.72	UNV	pCi/g
A4B-P2-21	480612.99	1348744.21	1.5	2	Technetium-99	1.44	UNV	pCi/g
A4B-P2-21	480612.99	1348744.21	3.5	4	Technetium-99	1.66	UNV	pCi/g
A4B-P2-21	480612.99	1348744.21	0.5	1	Uranium, Total	213	NV	mg/kg
A4B-P2-21	480612.99	1348744.21	1.5	2	Uranium, Total	7.97	NV	mg/kg
A4B-P2-21	480612.99	1348744.21	3.5	4	Uranium, Total	4.82	NV	mg/kg
A4B-P2-22	480627.99	1348729.21	0.5	1	Technetium-99	1.26	UNV	pCi/g
A4B-P2-22	480627.99	1348729.21	1.5	2	Technetium-99	1.44	UNV	pCi/g
A4B-P2-22	480627.99	1348729.21	3.5	4	Technetium-99	1.53	UNV	pCi/g
A4B-P2-22	480627.99	1348729.21	0.5	1	Uranium, Total	74.7	NV	mg/kg
A4B-P2-22	480627.99	1348729.21	1.5	2	Uranium, Total	77.7	NV	mg/kg
A4B-P2-22	480627.99	1348729.21	3.5	4	Uranium, Total	7.83	NV	mg/kg
A4B-P2-23	480642.99	1348744.07	1	1.5	Technetium-99	5.94	NV	pCi/g
A4B-P2-23	480642.99	1348744.07	2	2.5	Technetium-99	352	NV	pCi/g
A4B-P2-23	480642.99	1348744.07	4	4.5	Technetium-99	9.94	NV	pCi/g
A4B-P2-23	480642.99	1348744.07	1	1.5	Uranium, Total	456	NV	mg/kg
A4B-P2-23	480642.99	1348744.07	2	2.5	Uranium, Total	137	NV	mg/kg
A4B-P2-23	480642.99	1348744.07	4	4.5	Uranium, Total	5.29	NV	mg/kg
A4B-P2-24	480774.21	1348769.48	1	1.5	Technetium-99	1.73	NV	pCi/g
A4B-P2-24	480774.21	1348769.48	2	2.5	Technetium-99	1.55	UNV	pCi/g
A4B-P2-24	480774.21	1348769.48	3	3.5	Technetium-99	1.42	UNV	pCi/g
A4B-P2-24	480774.21	1348769.48	5	5.5	Technetium-99	1.78	NV	pCi/g
A4B-P2-24	480774.21	1348769.48	1	1.5	Uranium, Total	93.1	NV	mg/kg
A4B-P2-24	480774.21	1348769.48	2	2.5	Uranium, Total	3.29	UNV	mg/kg
A4B-P2-24	480774.21	1348769.48	3	3.5	Uranium, Total	4.74	NV	mg/kg
A4B-P2-24	480774.21	1348769.48	5	5.5	Uranium, Total	37.1	NV	mg/kg
A4B-P2-25	480759.21	1348784.48	6	6.5	Technetium-99	1.31	UNV	pCi/g
A4B-P2-25	480759.21	1348784.48	7	7.5	Technetium-99	1.19	UNV	pCi/g
A4B-P2-25	480759.21	1348784.48	8	8.5	Technetium-99	1.28	UNV	pCi/g
A4B-P2-25	480759.21	1348784.48	10	10.5	Technetium-99	1.26	UNV	pCi/g
A4B-P2-25	480759.21	1348784.48	6	6.5	Uranium, Total	122	NV	mg/kg
A4B-P2-25	480759.21	1348784.48	7	7.5	Uranium, Total	40.9	NV	mg/kg
A4B-P2-25	480759.21	1348784.48	8	8.5	Uranium, Total	38.9	NV	mg/kg
A4B-P2-25	480759.21	1348784.48	10	10.5	Uranium, Total	13.6	NV	mg/kg
A4B-P2-26	480745.7	1348769.5	1.5	2	Technetium-99	1.24	UNV	pCi/g
A4B-P2-26	480745.7	1348769.5	2.5	3	Technetium-99	1.22	UNV	pCi/g
A4B-P2-26	480745.7	1348769.5	3.5	4	Technetium-99	1.35	UNV	pCi/g
A4B-P2-26	480745.7	1348769.5	5.5	6	Technetium-99	1.1	UNV	pCi/g
A4B-P2-26	480745.7	1348769.5	1.5	2	Uranium, Total	8.05	NV	mg/kg
A4B-P2-26	480745.7	1348769.5	2.5	3	Uranium, Total	4.58	UNV	mg/kg
A4B-P2-26	480745.7	1348769.5	3.5	4	Uranium, Total	87.2	NV	mg/kg
A4B-P2-26	480745.7	1348769.5	5.5	6	Uranium, Total	119	NV	mg/kg
A4B-P8-01	480336.43	1349048.67	7	7.5	Technetium-99	94.1	NV	pCi/g
A4B-P8-01	480336.43	1349048.67	8	8.5	Technetium-99	34.7	NV	pCi/g
A4B-P8-01	480336.43	1349048.67	10	10.5	Technetium-99	3.41	NV	pCi/g
A4B-P8-01	480336.43	1349048.67	13	13.5	Technetium-99	6.4	NV	pCi/g
A4B-P8-01	480336.43	1349048.67	15.5	16	Technetium-99	1.64	UNV	pCi/g
A4B-P8-01	480336.43	1349048.67	7	7.5	Uranium, Total	3344	NV	mg/kg dry
A4B-P8-01	480336.43	1349048.67	8	8.5	Uranium, Total	222	NV	mg/kg dry
A4B-P8-01	480336.43	1349048.67	10	10.5	Uranium, Total	28	NV	mg/kg dry
A4B-P8-01	480336.43	1349048.67	13	13.5	Uranium, Total	11.1	NV	mg/kg dry
A4B-P8-01	480336.43	1349048.67	15.5	16	Uranium, Total	3.15	NV	mg/kg dry
A4B-P8-02	480341.43	1349048.67	7	7.5	Technetium-99	2.8	NV	pCi/g
A4B-P8-02	480341.43	1349048.67	8	8.5	Technetium-99	2.65	NV	pCi/g
A4B-P8-02	480341.43	1349048.67	10	10.5	Technetium-99	3.35	NV	pCi/g
A4B-P8-02	480341.43	1349048.67	13	13.5	Technetium-99	1.65	UNV	pCi/g
A4B-P8-02	480341.43	1349048.67	15.5	16	Technetium-99	7.68	NV	pCi/g
A4B-P8-02	480341.43	1349048.67	7	7.5	Uranium, Total	58.6	NV	mg/kg dry

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A4B-P8-02	480341.43	1349048.67	8	8.5	Uranium, Total	35.6	NV	mg/kg dry
A4B-P8-02	480341.43	1349048.67	10	10.5	Uranium, Total	30.6	NV	mg/kg dry
A4B-P8-02	480341.43	1349048.67	13	13.5	Uranium, Total	33.1	NV	mg/kg dry
A4B-P8-02	480341.43	1349048.67	15.5	16	Uranium, Total	23	NV	mg/kg dry
A4B-P8-03	480336.43	1349053.67	7	7.5	Technetium-99	8.54	NV	pCi/g
A4B-P8-03	480336.43	1349053.67	8	8.5	Technetium-99	11.7	NV	pCi/g
A4B-P8-03	480336.43	1349053.67	10	10.5	Technetium-99	2.28	NV	pCi/g
A4B-P8-03	480336.43	1349053.67	13	13.5	Technetium-99	2.84	NV	pCi/g
A4B-P8-03	480336.43	1349053.67	15.5	16	Technetium-99	7.64	NV	pCi/g
A4B-P8-03	480336.43	1349053.67	7	7.5	Uranium, Total	44.4	NV	mg/kg dry
A4B-P8-03	480336.43	1349053.67	8	8.5	Uranium, Total	55	NV	mg/kg dry
A4B-P8-03	480336.43	1349053.67	10	10.5	Uranium, Total	29.5	NV	mg/kg dry
A4B-P8-03	480336.43	1349053.67	13	13.5	Uranium, Total	15.5	NV	mg/kg dry
A4B-P8-03	480336.43	1349053.67	15.5	16	Uranium, Total	5.52	NV	mg/kg dry
A4B-P8-04	480331.43	1349048.67	7	7.5	Technetium-99	7.24	NV	pCi/g
A4B-P8-04	480331.43	1349048.67	8	8.5	Technetium-99	35.7	NV	pCi/g
A4B-P8-04	480331.43	1349048.67	10	10.5	Technetium-99	2.68	NV	pCi/g
A4B-P8-04	480331.43	1349048.67	13	13.5	Technetium-99	13.6	NV	pCi/g
A4B-P8-04	480331.43	1349048.67	15.5	16	Technetium-99	1.7	UNV	pCi/g
A4B-P8-04	480331.43	1349048.67	7	7.5	Uranium, Total	68.8	NV	mg/kg dry
A4B-P8-04	480331.43	1349048.67	8	8.5	Uranium, Total	32.7	NV	mg/kg dry
A4B-P8-04	480331.43	1349048.67	10	10.5	Uranium, Total	33.4	NV	mg/kg dry
A4B-P8-04	480331.43	1349048.67	13	13.5	Uranium, Total	8.83	NV	mg/kg dry
A4B-P8-04	480331.43	1349048.67	15.5	16	Uranium, Total	1.43	NV	mg/kg dry
A4B-P8-05	480336.43	1349043.67	7	7.5	Technetium-99	9.43	NV	pCi/g
A4B-P8-05	480336.43	1349043.67	8	8.5	Technetium-99	2.24	UNV	pCi/g
A4B-P8-05	480336.43	1349043.67	10	10.5	Technetium-99	1.91	UNV	pCi/g
A4B-P8-05	480336.43	1349043.67	13	13.5	Technetium-99	3.36	NV	pCi/g
A4B-P8-05	480336.43	1349043.67	15.5	16	Technetium-99	1.98	UNV	pCi/g
A4B-P8-05	480336.43	1349043.67	7	7.5	Uranium, Total	114	NV	mg/kg dry
A4B-P8-05	480336.43	1349043.67	8	8.5	Uranium, Total	47.5	NV	mg/kg dry
A4B-P8-05	480336.43	1349043.67	10	10.5	Uranium, Total	32.3	NV	mg/kg dry
A4B-P8-05	480336.43	1349043.67	13	13.5	Uranium, Total	28.3	NV	mg/kg dry
A4B-P8-05	480336.43	1349043.67	15.5	16	Uranium, Total	2.68	NV	mg/kg dry
A4B-P8-06	480351.43	1349048.67	7	7.5	Technetium-99	9.59	NV	pCi/g
A4B-P8-06	480351.43	1349048.67	8	8.5	Technetium-99	8.86	NV	pCi/g
A4B-P8-06	480351.43	1349048.67	10	10.5	Technetium-99	1.81	NV	pCi/g
A4B-P8-06	480351.43	1349048.67	13	13.5	Technetium-99	2.61	NV	pCi/g
A4B-P8-06	480351.43	1349048.67	15.5	16	Technetium-99	9.1	NV	pCi/g
A4B-P8-06	480351.43	1349048.67	7	7.5	Uranium, Total	39	NV	mg/kg dry
A4B-P8-06	480351.43	1349048.67	8	8.5	Uranium, Total	59.7	NV	mg/kg dry
A4B-P8-06	480351.43	1349048.67	10	10.5	Uranium, Total	35.3	NV	mg/kg dry
A4B-P8-06	480351.43	1349048.67	13	13.5	Uranium, Total	44.8	NV	mg/kg dry
A4B-P8-06	480351.43	1349048.67	15.5	16	Uranium, Total	13.6	NV	mg/kg dry
A4B-P8-07	480336.43	1349063.67	6.5	7	Technetium-99	7.41	NV	pCi/g
A4B-P8-07	480336.43	1349063.67	7.5	8	Technetium-99	77.2	NV	pCi/g
A4B-P8-07	480336.43	1349063.67	9.5	10	Technetium-99	2.03	NV	pCi/g
A4B-P8-07	480336.43	1349063.67	12.5	13	Technetium-99	2.72	NV	pCi/g
A4B-P8-07	480336.43	1349063.67	15	15.5	Technetium-99	1.79	NV	pCi/g
A4B-P8-07	480336.43	1349063.67	6.5	7	Uranium, Total	48.8	NV	mg/kg dry
A4B-P8-07	480336.43	1349063.67	7.5	8	Uranium, Total	39.9	NV	mg/kg dry
A4B-P8-07	480336.43	1349063.67	9.5	10	Uranium, Total	14.2	NV	mg/kg dry
A4B-P8-07	480336.43	1349063.67	12.5	13	Uranium, Total	1.77	NV	mg/kg dry
A4B-P8-07	480336.43	1349063.67	15	15.5	Uranium, Total	3.31	NV	mg/kg dry
A4B-P8-08	480321.43	1349048.67	7	7.5	Technetium-99	1.75	UNV	pCi/g
A4B-P8-08	480321.43	1349048.67	8	8.5	Technetium-99	21.5	NV	pCi/g
A4B-P8-08	480321.43	1349048.67	10	10.5	Technetium-99	5.82	NV	pCi/g
A4B-P8-08	480321.43	1349048.67	13	13.5	Technetium-99	3.65	NV	pCi/g
A4B-P8-08	480321.43	1349048.67	15.5	16	Technetium-99	1.32	UNV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A4B-P8-08	480321.43	1349048.67	7	7.5	Uranium, Total	1.88	NV	mg/kg dry
A4B-P8-08	480321.43	1349048.67	8	8.5	Uranium, Total	14.3	NV	mg/kg dry
A4B-P8-08	480321.43	1349048.67	10	10.5	Uranium, Total	44.6	NV	mg/kg dry
A4B-P8-08	480321.43	1349048.67	13	13.5	Uranium, Total	3.01	NV	mg/kg dry
A4B-P8-08	480321.43	1349048.67	15.5	16	Uranium, Total	1.63	NV	mg/kg dry
A4B-P8-09A	480336.43	1349033.67	7	7.5	Technetium-99	32	NV	pCi/g
A4B-P8-09A	480336.43	1349033.67	8	8.5	Technetium-99	1.99	UNV	pCi/g
A4B-P8-09A	480336.43	1349033.67	10	10.5	Technetium-99	1.84	UNV	pCi/g
A4B-P8-09A	480336.43	1349033.67	13	13.5	Technetium-99	2.07	UNV	pCi/g
A4B-P8-09A	480336.43	1349033.67	15.5	16	Technetium-99	1.97	UNV	pCi/g
A4B-P8-09A	480336.43	1349033.67	7	7.5	Uranium, Total	136	NV	mg/kg dry
A4B-P8-09A	480336.43	1349033.67	8	8.5	Uranium, Total	139	NV	mg/kg dry
A4B-P8-09A	480336.43	1349033.67	10	10.5	Uranium, Total	54	NV	mg/kg dry
A4B-P8-09A	480336.43	1349033.67	13	13.5	Uranium, Total	18.2	NV	mg/kg dry
A4B-P8-09A	480336.43	1349033.67	15.5	16	Uranium, Total	2.18	NV	mg/kg dry
A4B-P8-15	480336.43	1349073.67	6	6.5	Technetium-99	1.42	UNV	pCi/g
A4B-P8-15	480336.43	1349073.67	7	7.5	Technetium-99	1.21	UNV	pCi/g
A4B-P8-15	480336.43	1349073.67	9	9.5	Technetium-99	1.33	UNV	pCi/g
A4B-P8-15	480336.43	1349073.67	12	12.5	Technetium-99	1.23	UNV	pCi/g
A4B-P8-15	480336.43	1349073.67	14	14.5	Technetium-99	11	NV	pCi/g
A4B-P8-15	480336.43	1349073.67	6	6.5	Uranium, Total	17.6	NV	mg/kg
A4B-P8-15	480336.43	1349073.67	7	7.5	Uranium, Total	14.1	NV	mg/kg
A4B-P8-15	480336.43	1349073.67	9	9.5	Uranium, Total	45.7	NV	mg/kg
A4B-P8-15	480336.43	1349073.67	12	12.5	Uranium, Total	6.14	NV	mg/kg
A4B-P8-15	480336.43	1349073.67	14	14.5	Uranium, Total	3.96	NV	mg/kg
A4B-P8-16	480336.43	1349023.67	7	7.5	Technetium-99	5.08	NV	pCi/g
A4B-P8-16	480336.43	1349023.67	8	8.5	Technetium-99	2.87	NV	pCi/g
A4B-P8-16	480336.43	1349023.67	10	10.5	Technetium-99	1.18	UNV	pCi/g
A4B-P8-16	480336.43	1349023.67	13	13.5	Technetium-99	7.62	NV	pCi/g
A4B-P8-16	480336.43	1349023.67	15	15.5	Technetium-99	18.4	NV	pCi/g
A4B-P8-16	480336.43	1349023.67	7	7.5	Uranium, Total	526	NV	mg/kg
A4B-P8-16	480336.43	1349023.67	8	8.5	Uranium, Total	155	NV	mg/kg
A4B-P8-16	480336.43	1349023.67	10	10.5	Uranium, Total	59.9	NV	mg/kg
A4B-P8-16	480336.43	1349023.67	13	13.5	Uranium, Total	60	NV	mg/kg
A4B-P8-16	480336.43	1349023.67	15	15.5	Uranium, Total	10.7	NV	mg/kg
A4B-WI-1	480001.9	1348466.34	1.5	2	Technetium-99	1.5	J	pCi/g
A4B-WI-1	480001.9	1348466.34	5.5	6	Technetium-99	1.5	U	pCi/g
A4B-WI-1	480001.9	1348466.34	10	10.5	Technetium-99	1.6	U	pCi/g
A4B-WI-1	480001.9	1348466.34	14.5	15	Technetium-99	1.8	U	pCi/g
A4B-WI-1	480001.9	1348466.34	18.5	19	Technetium-99	1.6	U	pCi/g
A4B-WI-1	480001.9	1348466.34	1.5	2	Thorium, Total	6.27	-	mg/kg
A4B-WI-1	480001.9	1348466.34	5.5	6	Thorium, Total	8.55	-	mg/kg
A4B-WI-1	480001.9	1348466.34	10	10.5	Thorium, Total	10	-	mg/kg
A4B-WI-1	480001.9	1348466.34	14.5	15	Thorium, Total	6.45	-	mg/kg
A4B-WI-1	480001.9	1348466.34	18.5	19	Thorium, Total	8.03	-	mg/kg
A4B-WI-1	480001.9	1348466.34	1.5	2	Uranium, Total	11.9	-	mg/kg
A4B-WI-1	480001.9	1348466.34	5.5	6	Uranium, Total	1.72	-	mg/kg
A4B-WI-1	480001.9	1348466.34	10	10.5	Uranium, Total	1.54	-	mg/kg
A4B-WI-1	480001.9	1348466.34	14.5	15	Uranium, Total	2.9	-	mg/kg
A4B-WI-1	480001.9	1348466.34	18.5	19	Uranium, Total	2.15	-	mg/kg
A4B-WI-2	480059.46	1348448.51	1	1.5	Technetium-99	1.1	NV	pCi/g
A4B-WI-2	480059.46	1348448.51	4.5	5	Technetium-99	1.1	UNV	pCi/g
A4B-WI-2	480059.46	1348448.51	1	1.5	Thorium, Total	7.3	NV	mg/kg
A4B-WI-2	480059.46	1348448.51	4.5	5	Thorium, Total	8.29	NV	mg/kg
A4B-WI-2	480059.46	1348448.51	1	1.5	Uranium, Total	22.5	NV	mg/kg
A4B-WI-2	480059.46	1348448.51	4.5	5	Uranium, Total	1.74	NV	mg/kg
A5A-1	479842.29	1349149.91	0	0.5	Aroclor-1254	14.3	UNV	ug/kg
A5A-1	479842.29	1349149.91	0	0.5	Aroclor-1260	10.7	NV	ug/kg
A5A-1	479842.29	1349149.91	0	0.5	Arsenic	6.95	NV	mg/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-1	479842.29	1349149.91	0	0.5	Beryllium	0.698	NV	mg/kg
A5A-1	479842.29	1349149.91	0	0.5	Radium-226	1.14	NV	pCi/g
A5A-1	479842.29	1349149.91	0	0.5	Radium-228	0.996	NV	pCi/g
A5A-1	479842.29	1349149.91	0	0.5	Thorium-228	1.01	NV	pCi/g
A5A-1	479842.29	1349149.91	0	0.5	Thorium-232	0.996	NV	pCi/g
A5A-1	479842.29	1349149.91	0	0.5	Uranium, Total	40.8	NV	mg/kg
A5A-10	479628.27	1349418.21	0	0.5	Radium-226	0.983	NV	pCi/g
A5A-10	479628.27	1349418.21	0	0.5	Radium-228	1.05	NV	pCi/g
A5A-10	479628.27	1349418.21	0	0.5	Thorium-228	1.05	NV	pCi/g
A5A-10	479628.27	1349418.21	0	0.5	Thorium-232	1.05	NV	pCi/g
A5A-10	479628.27	1349418.21	0	0.5	Uranium, Total	76.2	NV	mg/kg
A5A-11	479496.79	1349205.46	0	0.5	Radium-226	1.11	NV	pCi/g
A5A-11	479496.79	1349205.46	0	0.5	Radium-228	0.895	NV	pCi/g
A5A-11	479496.79	1349205.46	0	0.5	Thorium-228	0.899	NV	pCi/g
A5A-11	479496.79	1349205.46	0	0.5	Thorium-232	0.895	NV	pCi/g
A5A-11	479496.79	1349205.46	0	0.5	Uranium, Total	26.5	NV	mg/kg
A5A-12	479507.53	1349447.09	0	0.5	Radium-226	1.22	NV	pCi/g
A5A-12	479507.53	1349447.09	0	0.5	Radium-228	1.05	NV	pCi/g
A5A-12	479507.53	1349447.09	0	0.5	Thorium-228	1.07	NV	pCi/g
A5A-12	479507.53	1349447.09	0	0.5	Thorium-232	1.05	NV	pCi/g
A5A-12	479507.53	1349447.09	0	0.5	Uranium, Total	60.6	NV	mg/kg
A5A-13	479582.49	1349591.36	0	0.5	Aroclor-1254	11.4	NV	ug/kg
A5A-13	479582.49	1349591.36	0	0.5	Aroclor-1260	14.8	UNV	ug/kg
A5A-13	479582.49	1349591.36	0	0.5	Arsenic	5.61	NV	mg/kg
A5A-13	479582.49	1349591.36	0	0.5	Beryllium	0.648	NV	mg/kg
A5A-13	479582.49	1349591.36	0	0.5	Radium-226	1.14	NV	pCi/g
A5A-13	479582.49	1349591.36	0	0.5	Radium-228	0.795	NV	pCi/g
A5A-13	479582.49	1349591.36	0	0.5	Thorium-228	0.804	NV	pCi/g
A5A-13	479582.49	1349591.36	0	0.5	Thorium-232	0.795	NV	pCi/g
A5A-13	479582.49	1349591.36	0	0.5	Uranium, Total	11.9	NV	mg/kg
A5A-14	479486.39	1349495.57	0.5	1	Radium-226	0.754	NV	pCi/g
A5A-14	479486.39	1349495.57	1.5	2	Radium-226	1.28	NV	pCi/g
A5A-14	479486.39	1349495.57	0.5	1	Radium-228	0.66	NV	pCi/g
A5A-14	479486.39	1349495.57	1.5	2	Radium-228	1.01	NV	pCi/g
A5A-14	479486.39	1349495.57	0.5	1	Thorium-228	0.668	NV	pCi/g
A5A-14	479486.39	1349495.57	1.5	2	Thorium-228	1.13	NV	pCi/g
A5A-14	479486.39	1349495.57	0.5	1	Thorium-232	0.66	NV	pCi/g
A5A-14	479486.39	1349495.57	1.5	2	Thorium-232	1.01	NV	pCi/g
A5A-14	479486.39	1349495.57	0.5	1	Uranium, Total	9	NV	mg/kg
A5A-14	479486.39	1349495.57	1.5	2	Uranium, Total	5.74	NV	mg/kg
A5A-15	479525.85	1349676.42	0.5	1	Radium-226	0.962	NV	pCi/g
A5A-15	479525.85	1349676.42	1.5	2	Radium-226	1.55	NV	pCi/g
A5A-15	479525.85	1349676.42	0.5	1	Radium-228	0.974	NV	pCi/g
A5A-15	479525.85	1349676.42	1.5	2	Radium-228	1.26	NV	pCi/g
A5A-15	479525.85	1349676.42	0.5	1	Thorium-228	0.977	NV	pCi/g
A5A-15	479525.85	1349676.42	1.5	2	Thorium-228	1.28	NV	pCi/g
A5A-15	479525.85	1349676.42	0.5	1	Thorium-232	0.974	NV	pCi/g
A5A-15	479525.85	1349676.42	1.5	2	Thorium-232	1.26	NV	pCi/g
A5A-15	479525.85	1349676.42	0.5	1	Uranium, Total	26.8	NV	mg/kg
A5A-15	479525.85	1349676.42	1.5	2	Uranium, Total	6.68	NV	mg/kg
A5A-16	479500.92	1349780.99	0	0.5	Radium-226	0.933	J	pCi/g
A5A-16	479500.92	1349780.99	0	0.5	Radium-228	0.722	-	pCi/g
A5A-16	479500.92	1349780.99	0	0.5	Thorium-228	0.793	-	pCi/g
A5A-16	479500.92	1349780.99	0	0.5	Thorium-232	0.722	-	pCi/g
A5A-16	479500.92	1349780.99	0	0.5	Uranium, Total	10.3	-	mg/kg
A5A-17	479544.32	1349838.65	2	2.5	Aroclor-1254	15.4	UNV	ug/kg
A5A-17	479544.32	1349838.65	3	3.5	Aroclor-1254	14.7	UNV	ug/kg
A5A-17	479544.32	1349838.65	2	2.5	Aroclor-1260	15.4	UNV	ug/kg
A5A-17	479544.32	1349838.65	3	3.5	Aroclor-1260	14.7	UNV	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-17	479544.32	1349838.65	2	2.5	Arsenic	5.45	NV	mg/kg
A5A-17	479544.32	1349838.65	3	3.5	Arsenic	4.04	NV	mg/kg
A5A-17	479544.32	1349838.65	2	2.5	Beryllium	0.571	NV	mg/kg
A5A-17	479544.32	1349838.65	3	3.5	Beryllium	0.392	NV	mg/kg
A5A-17	479544.32	1349838.65	2	2.5	Radium-226	0.819	NV	pCi/g
A5A-17	479544.32	1349838.65	3	3.5	Radium-226	0.752	NV	pCi/g
A5A-17	479544.32	1349838.65	2	2.5	Radium-228	0.789	NV	pCi/g
A5A-17	479544.32	1349838.65	3	3.5	Radium-228	0.698	NV	pCi/g
A5A-17	479544.32	1349838.65	2	2.5	Thorium-228	0.768	NV	pCi/g
A5A-17	479544.32	1349838.65	3	3.5	Thorium-228	0.705	NV	pCi/g
A5A-17	479544.32	1349838.65	2	2.5	Thorium-232	0.789	NV	pCi/g
A5A-17	479544.32	1349838.65	3	3.5	Thorium-232	0.698	NV	pCi/g
A5A-17	479544.32	1349838.65	2	2.5	Uranium, Total	7.27	NV	mg/kg
A5A-17	479544.32	1349838.65	3	3.5	Uranium, Total	5.17	NV	mg/kg
A5A-18	479508.63	1349931.55	0	0.5	Radium-226	1.09	NV	pCi/g
A5A-18	479508.63	1349931.55	0	0.5	Radium-228	0.957	NV	pCi/g
A5A-18	479508.63	1349931.55	0	0.5	Thorium-228	0.927	NV	pCi/g
A5A-18	479508.63	1349931.55	0	0.5	Thorium-232	0.957	NV	pCi/g
A5A-18	479508.63	1349931.55	0	0.5	Uranium, Total	36.5	NV	mg/kg
A5A-19	479558.29	1350089.72	0	0.5	Radium-226	1.16	J	pCi/g
A5A-19	479558.29	1350089.72	0	0.5	Radium-228	0.916	-	pCi/g
A5A-19	479558.29	1350089.72	0	0.5	Thorium-228	0.925	-	pCi/g
A5A-19	479558.29	1350089.72	0	0.5	Thorium-232	0.916	-	pCi/g
A5A-19	479558.29	1350089.72	0	0.5	Uranium, Total	30.5	-	mg/kg
A5A-2	479681.05	1349180.31	0	0.5	Radium-226	0.84	NV	pCi/g
A5A-2	479681.05	1349180.31	0	0.5	Radium-228	0.838	NV	pCi/g
A5A-2	479681.05	1349180.31	0	0.5	Thorium-228	0.842	NV	pCi/g
A5A-2	479681.05	1349180.31	0	0.5	Thorium-232	0.838	NV	pCi/g
A5A-2	479681.05	1349180.31	0	0.5	Uranium, Total	14.5	NV	mg/kg
A5A-20	479482.11	1350191.78	0	0.5	Radium-226	1.13	NV	pCi/g
A5A-20	479482.11	1350191.78	0	0.5	Radium-228	1.1	NV	pCi/g
A5A-20	479482.11	1350191.78	0	0.5	Thorium-228	1.1	NV	pCi/g
A5A-20	479482.11	1350191.78	0	0.5	Thorium-232	1.1	NV	pCi/g
A5A-20	479482.11	1350191.78	0	0.5	Uranium, Total	49.1	NV	mg/kg
A5A-21	479612.76	1350245.46	0	0.5	Aroclor-1254	15.2	UNV	ug/kg
A5A-21	479612.76	1350245.46	0	0.5	Aroclor-1260	15.2	UNV	ug/kg
A5A-21	479612.76	1350245.46	0	0.5	Arsenic	6.82	NV	mg/kg
A5A-21	479612.76	1350245.46	0	0.5	Beryllium	0.556	NV	mg/kg
A5A-21	479612.76	1350245.46	0	0.5	Gross Alpha	27	NV	pCi/g
A5A-21	479612.76	1350245.46	0	0.5	Gross Beta	36	NV	pCi/g
A5A-21	479612.76	1350245.46	0	0.5	Radium-226	1.25	NV	pCi/g
A5A-21	479612.76	1350245.46	0	0.5	Radium-228	1.14	NV	pCi/g
A5A-21	479612.76	1350245.46	0	0.5	Thorium-228	1.12	NV	pCi/g
A5A-21	479612.76	1350245.46	0	0.5	Thorium-232	1.14	NV	pCi/g
A5A-21	479612.76	1350245.46	0	0.5	Uranium, Total	39	NV	mg/kg
A5A-22	479505.66	1350233.57	0	0.5	Radium-226	1.15	NV	pCi/g
A5A-22	479505.66	1350233.57	0	0.5	Radium-228	0.974	NV	pCi/g
A5A-22	479505.66	1350233.57	0	0.5	Thorium-228	0.976	NV	pCi/g
A5A-22	479505.66	1350233.57	0	0.5	Thorium-232	0.974	NV	pCi/g
A5A-22	479505.66	1350233.57	0	0.5	Uranium, Total	40.5	NV	mg/kg
A5A-23	479559.97	1350370.95	0	0.5	Radium-226	0.754	NV	pCi/g
A5A-23	479559.97	1350370.95	0	0.5	Radium-228	0.685	NV	pCi/g
A5A-23	479559.97	1350370.95	0	0.5	Thorium-228	0.681	NV	pCi/g
A5A-23	479559.97	1350370.95	0	0.5	Thorium-232	0.685	NV	pCi/g
A5A-23	479559.97	1350370.95	0	0.5	Uranium, Total	4.63	NV	mg/kg
A5A-24	479460.09	1350459.77	0	0.5	Radium-226	1.08	NV	pCi/g
A5A-24	479460.09	1350459.77	0	0.5	Radium-228	0.949	NV	pCi/g
A5A-24	479460.09	1350459.77	0	0.5	Thorium-228	0.943	NV	pCi/g
A5A-24	479460.09	1350459.77	0	0.5	Thorium-232	0.949	NV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-24	479460.09	1350459.77	0	0.5	Uranium, Total	11.7	NV	mg/kg
A5A-25	479418.86	1349209.28	1.5	2	Aroclor-1254	14.6	UNV	ug/kg
A5A-25	479418.86	1349209.28	2.5	3	Aroclor-1254	16	UNV	ug/kg
A5A-25	479418.86	1349209.28	1.5	2	Aroclor-1260	14.6	UNV	ug/kg
A5A-25	479418.86	1349209.28	2.5	3	Aroclor-1260	16	UNV	ug/kg
A5A-25	479418.86	1349209.28	1.5	2	Arsenic	4.87	NV	mg/kg
A5A-25	479418.86	1349209.28	2.5	3	Arsenic	7.85	NV	mg/kg
A5A-25	479418.86	1349209.28	1.5	2	Beryllium	0.545	NV	mg/kg
A5A-25	479418.86	1349209.28	2.5	3	Beryllium	0.553	NV	mg/kg
A5A-25	479418.86	1349209.28	1.5	2	Radium-226	0.714	NV	pCi/g
A5A-25	479418.86	1349209.28	2.5	3	Radium-226	1.25	NV	pCi/g
A5A-25	479418.86	1349209.28	1.5	2	Radium-228	0.632	NV	pCi/g
A5A-25	479418.86	1349209.28	2.5	3	Radium-228	1.23	NV	pCi/g
A5A-25	479418.86	1349209.28	1.5	2	Thorium-228	0.639	NV	pCi/g
A5A-25	479418.86	1349209.28	2.5	3	Thorium-228	1.24	NV	pCi/g
A5A-25	479418.86	1349209.28	1.5	2	Thorium-232	0.632	NV	pCi/g
A5A-25	479418.86	1349209.28	2.5	3	Thorium-232	1.23	NV	pCi/g
A5A-25	479418.86	1349209.28	1.5	2	Uranium, Total	10.8	NV	mg/kg
A5A-25	479418.86	1349209.28	2.5	3	Uranium, Total	4.33	NV	mg/kg
A5A-26	479274.82	1349245.22	1.5	2	Radium-226	0.943	NV	pCi/g
A5A-26	479274.82	1349245.22	2.5	3	Radium-226	0.824	NV	pCi/g
A5A-26	479274.82	1349245.22	1.5	2	Radium-228	0.886	NV	pCi/g
A5A-26	479274.82	1349245.22	2.5	3	Radium-228	0.936	NV	pCi/g
A5A-26	479274.82	1349245.22	3.5	4	Technetium-99	1.08	UNV	pCi/g
A5A-26	479274.82	1349245.22	1.5	2	Thorium-228	0.874	NV	pCi/g
A5A-26	479274.82	1349245.22	2.5	3	Thorium-228	0.915	NV	pCi/g
A5A-26	479274.82	1349245.22	1.5	2	Thorium-232	0.886	NV	pCi/g
A5A-26	479274.82	1349245.22	2.5	3	Thorium-232	0.936	NV	pCi/g
A5A-26	479274.82	1349245.22	1.5	2	Uranium, Total	6.76	NV	mg/kg
A5A-26	479274.82	1349245.22	2.5	3	Uranium, Total	4.09	NV	mg/kg
A5A-26	479274.82	1349245.22	3.5	4	Uranium, Total	2.22	NV	mg/kg
A5A-27	479405.24	1349444.9	1.5	2	Gross Alpha	21	NV	pCi/g
A5A-27	479405.24	1349444.9	1.5	2	Gross Beta	16	UNV	pCi/g
A5A-27	479405.24	1349444.9	1.5	2	Radium-226	1.01	NV	pCi/g
A5A-27	479405.24	1349444.9	2.5	3	Radium-226	0.883	NV	pCi/g
A5A-27	479405.24	1349444.9	1.5	2	Radium-228	0.976	NV	pCi/g
A5A-27	479405.24	1349444.9	2.5	3	Radium-228	0.853	NV	pCi/g
A5A-27	479405.24	1349444.9	1.5	2	Thorium-228	0.991	NV	pCi/g
A5A-27	479405.24	1349444.9	2.5	3	Thorium-228	0.833	NV	pCi/g
A5A-27	479405.24	1349444.9	1.5	2	Thorium-232	0.976	NV	pCi/g
A5A-27	479405.24	1349444.9	2.5	3	Thorium-232	0.853	NV	pCi/g
A5A-27	479405.24	1349444.9	1.5	2	Uranium, Total	4.83	NV	mg/kg
A5A-27	479405.24	1349444.9	2.5	3	Uranium, Total	3.84	NV	mg/kg
A5A-27A	479405.24	1349444.9	1.5	2	Benzo(a)anthracene	76.3	U	ug/kg
A5A-27A	479405.24	1349444.9	2.5	3	Benzo(a)anthracene	79.3	U	ug/kg
A5A-27A	479405.24	1349444.9	1.5	2	Benzo(a)pyrene	76.3	U	ug/kg
A5A-27A	479405.24	1349444.9	2.5	3	Benzo(a)pyrene	79.3	U	ug/kg
A5A-27A	479405.24	1349444.9	1.5	2	Benzo(b)fluoranthene	76.3	U	ug/kg
A5A-27A	479405.24	1349444.9	2.5	3	Benzo(b)fluoranthene	79.3	U	ug/kg
A5A-27A	479405.24	1349444.9	1.5	2	Dibenzo(a,h)anthracene	76.3	U	ug/kg
A5A-27A	479405.24	1349444.9	2.5	3	Dibenzo(a,h)anthracene	79.3	U	ug/kg
A5A-27A	479405.24	1349444.9	1.5	2	Indeno(1,2,3-cd)pyrene	76.3	U	ug/kg
A5A-27A	479405.24	1349444.9	2.5	3	Indeno(1,2,3-cd)pyrene	79.3	U	ug/kg
A5A-28	479316.24	1349458.96	1.5	2	Radium-226	0.876	NV	pCi/g
A5A-28	479316.24	1349458.96	2.5	3	Radium-226	1	NV	pCi/g
A5A-28	479316.24	1349458.96	1.5	2	Radium-228	0.866	NV	pCi/g
A5A-28	479316.24	1349458.96	2.5	3	Radium-228	1.25	NV	pCi/g
A5A-28	479316.24	1349458.96	1.5	2	Thorium-228	0.876	NV	pCi/g
A5A-28	479316.24	1349458.96	2.5	3	Thorium-228	1.26	NV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-28	479316.24	1349458.96	1.5	2	Thorium-232	0.866	NV	pCi/g
A5A-28	479316.24	1349458.96	2.5	3	Thorium-232	1.25	NV	pCi/g
A5A-28	479316.24	1349458.96	1.5	2	Uranium, Total	9.84	NV	mg/kg
A5A-28	479316.24	1349458.96	2.5	3	Uranium, Total	8.03	NV	mg/kg
A5A-29	479351.55	1349617.42	1.5	2	Aroclor-1254	16.2	UNV	ug/kg
A5A-29	479351.55	1349617.42	2.5	3	Aroclor-1254	16.2	UNV	ug/kg
A5A-29	479351.55	1349617.42	1.5	2	Aroclor-1260	16.2	UNV	ug/kg
A5A-29	479351.55	1349617.42	2.5	3	Aroclor-1260	16.2	UNV	ug/kg
A5A-29	479351.55	1349617.42	1.5	2	Arsenic	6.53	NV	mg/kg
A5A-29	479351.55	1349617.42	2.5	3	Arsenic	10.5	NV	mg/kg
A5A-29	479351.55	1349617.42	1.5	2	Beryllium	0.928	NV	mg/kg
A5A-29	479351.55	1349617.42	2.5	3	Beryllium	1.07	NV	mg/kg
A5A-29	479351.55	1349617.42	1.5	2	Radium-226	1.15	NV	pCi/g
A5A-29	479351.55	1349617.42	2.5	3	Radium-226	1.54	NV	pCi/g
A5A-29	479351.55	1349617.42	1.5	2	Radium-228	1.26	NV	pCi/g
A5A-29	479351.55	1349617.42	2.5	3	Radium-228	1.32	NV	pCi/g
A5A-29	479351.55	1349617.42	6.5	7	Technetium-99	2.05	UNV	pCi/g
A5A-29	479351.55	1349617.42	1.5	2	Thorium-228	1.26	NV	pCi/g
A5A-29	479351.55	1349617.42	2.5	3	Thorium-228	1.32	NV	pCi/g
A5A-29	479351.55	1349617.42	1.5	2	Thorium-232	1.26	NV	pCi/g
A5A-29	479351.55	1349617.42	2.5	3	Thorium-232	1.32	NV	pCi/g
A5A-29	479351.55	1349617.42	1.5	2	Uranium, Total	5.57	NV	mg/kg
A5A-29	479351.55	1349617.42	2.5	3	Uranium, Total	5.3	NV	mg/kg
A5A-29	479351.55	1349617.42	6.5	7	Uranium, Total	2.11	NV	mg/kg
A5A-3	479710.31	1349293.84	0	0.5	Radium-226	0.992	J	pCi/g
A5A-3	479710.31	1349293.84	0	0.5	Radium-228	1.1	-	pCi/g
A5A-3	479710.31	1349293.84	0	0.5	Thorium-228	1.11	-	pCi/g
A5A-3	479710.31	1349293.84	0	0.5	Thorium-232	1.1	-	pCi/g
A5A-3	479710.31	1349293.84	0	0.5	Uranium, Total	83.7	-	mg/kg
A5A-30	479256.61	1349626.43	2.5	3	Radium-226	1.08	NV	pCi/g
A5A-30	479256.61	1349626.43	2.5	3	Radium-228	1.23	NV	pCi/g
A5A-30	479256.61	1349626.43	2.5	3	Thorium-228	1.23	NV	pCi/g
A5A-30	479256.61	1349626.43	2.5	3	Thorium-232	1.23	NV	pCi/g
A5A-30	479256.61	1349626.43	2.5	3	Uranium, Total	5.24	NV	mg/kg
A5A-30A			3.5	4	Radium-226	1.04	NV	pCi/g
A5A-30A			3.5	4	Radium-228	1.26	NV	pCi/g
A5A-30A			3.5	4	Thorium-228	1.25	NV	pCi/g
A5A-30A			3.5	4	Thorium-232	1.26	NV	pCi/g
A5A-30A			3.5	4	Uranium, Total	5.59	NV	mg/kg
A5A-31	479374.07	1349735.84	2	2.5	Radium-226	1.11	NV	pCi/g
A5A-31	479374.07	1349735.84	3	3.5	Radium-226	1.08	NV	pCi/g
A5A-31	479374.07	1349735.84	2	2.5	Radium-228	1.08	NV	pCi/g
A5A-31	479374.07	1349735.84	3	3.5	Radium-228	0.961	NV	pCi/g
A5A-31	479374.07	1349735.84	2	2.5	Thorium-228	1.06	NV	pCi/g
A5A-31	479374.07	1349735.84	3	3.5	Thorium-228	0.957	NV	pCi/g
A5A-31	479374.07	1349735.84	2	2.5	Thorium-232	1.08	NV	pCi/g
A5A-31	479374.07	1349735.84	3	3.5	Thorium-232	0.961	NV	pCi/g
A5A-31	479374.07	1349735.84	2	2.5	Uranium, Total	4.01	NV	mg/kg
A5A-31	479374.07	1349735.84	3	3.5	Uranium, Total	1.51	UNV	mg/kg
A5A-32	479266.47	1349744.62	2	2.5	Radium-226	0.997	NV	pCi/g
A5A-32	479266.47	1349744.62	3	3.5	Radium-226	1.07	NV	pCi/g
A5A-32	479266.47	1349744.62	2	2.5	Radium-228	1.22	NV	pCi/g
A5A-32	479266.47	1349744.62	3	3.5	Radium-228	1.09	NV	pCi/g
A5A-32	479266.47	1349744.62	2	2.5	Thorium-228	1.22	NV	pCi/g
A5A-32	479266.47	1349744.62	3	3.5	Thorium-228	1.39	NV	pCi/g
A5A-32	479266.47	1349744.62	2	2.5	Thorium-232	1.22	NV	pCi/g
A5A-32	479266.47	1349744.62	3	3.5	Thorium-232	1.09	NV	pCi/g
A5A-32	479266.47	1349744.62	2	2.5	Uranium, Total	4.73	NV	mg/kg
A5A-32	479266.47	1349744.62	3	3.5	Uranium, Total	4.68	NV	mg/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-32A	4792660.47	1349744.62	1.5	2	Benzo(a)anthracene	82.2	U	ug/kg
A5A-32A	4792660.47	1349744.62	2.5	3	Benzo(a)anthracene	79.5	U	ug/kg
A5A-32A	4792660.47	1349744.62	1.5	2	Benzo(a)pyrene	82.2	U	ug/kg
A5A-32A	4792660.47	1349744.62	2.5	3	Benzo(a)pyrene	79.5	U	ug/kg
A5A-32A	4792660.47	1349744.62	1.5	2	Benzo(b)fluoranthene	82.2	U	ug/kg
A5A-32A	4792660.47	1349744.62	2.5	3	Benzo(b)fluoranthene	79.5	U	ug/kg
A5A-32A	4792660.47	1349744.62	1.5	2	Dibenzo(a,h)anthracene	82.2	U	ug/kg
A5A-32A	4792660.47	1349744.62	2.5	3	Dibenzo(a,h)anthracene	79.5	U	ug/kg
A5A-32A	4792660.47	1349744.62	1.5	2	Indeno(1,2,3-cd)pyrene	82.2	U	ug/kg
A5A-32A	4792660.47	1349744.62	2.5	3	Indeno(1,2,3-cd)pyrene	79.5	U	ug/kg
A5A-33	479419.97	1349806.69	2	2.5	Aroclor-1254	14.7	UNV	ug/kg
A5A-33	479419.97	1349806.69	3	3.5	Aroclor-1254	14.7	UNV	ug/kg
A5A-33	479419.97	1349806.69	2	2.5	Aroclor-1260	14.7	UNV	ug/kg
A5A-33	479419.97	1349806.69	3	3.5	Aroclor-1260	14.7	UNV	ug/kg
A5A-33	479419.97	1349806.69	2	2.5	Arsenic	4.57	NV	mg/kg
A5A-33	479419.97	1349806.69	3	3.5	Arsenic	3.48	NV	mg/kg
A5A-33	479419.97	1349806.69	2	2.5	Beryllium	0.509	NV	mg/kg
A5A-33	479419.97	1349806.69	3	3.5	Beryllium	0.407	NV	mg/kg
A5A-33	479419.97	1349806.69	2	2.5	Radium-226	0.81	NV	pCi/g
A5A-33	479419.97	1349806.69	3	3.5	Radium-226	0.631	NV	pCi/g
A5A-33	479419.97	1349806.69	2	2.5	Radium-228	0.673	NV	pCi/g
A5A-33	479419.97	1349806.69	3	3.5	Radium-228	0.55	NV	pCi/g
A5A-33	479419.97	1349806.69	2	2.5	Thorium-228	0.676	NV	pCi/g
A5A-33	479419.97	1349806.69	3	3.5	Thorium-228	0.558	NV	pCi/g
A5A-33	479419.97	1349806.69	2	2.5	Thorium-232	0.673	NV	pCi/g
A5A-33	479419.97	1349806.69	3	3.5	Thorium-232	0.55	NV	pCi/g
A5A-33	479419.97	1349806.69	2	2.5	Uranium, Total	3.25	NV	mg/kg
A5A-33	479419.97	1349806.69	3	3.5	Uranium, Total	3.1	NV	mg/kg
A5A-34	479308.83	1349802.72	2	2.5	Radium-226	0.956	NV	pCi/g
A5A-34	479308.83	1349802.72	3	3.5	Radium-226	1.02	NV	pCi/g
A5A-34	479308.83	1349802.72	2	2.5	Radium-228	1.08	NV	pCi/g
A5A-34	479308.83	1349802.72	3	3.5	Radium-228	1.08	NV	pCi/g
A5A-34	479308.83	1349802.72	2	2.5	Thorium-228	1.32	NV	pCi/g
A5A-34	479308.83	1349802.72	3	3.5	Thorium-228	1.07	NV	pCi/g
A5A-34	479308.83	1349802.72	2	2.5	Thorium-232	1.08	NV	pCi/g
A5A-34	479308.83	1349802.72	3	3.5	Thorium-232	1.08	NV	pCi/g
A5A-34	479308.83	1349802.72	2	2.5	Uranium, Total	4.64	NV	mg/kg
A5A-34	479308.83	1349802.72	3	3.5	Uranium, Total	4.49	NV	mg/kg
A5A-35	479342.84	1349918.11	1.5	2	Radium-226	0.746	NV	pCi/g
A5A-35	479342.84	1349918.11	2.5	3	Radium-226	0.826	NV	pCi/g
A5A-35	479342.84	1349918.11	1.5	2	Radium-228	0.667	NV	pCi/g
A5A-35	479342.84	1349918.11	2.5	3	Radium-228	0.512	NV	pCi/g
A5A-35	479342.84	1349918.11	1.5	2	Thorium-228	0.655	NV	pCi/g
A5A-35	479342.84	1349918.11	2.5	3	Thorium-228	0.519	NV	pCi/g
A5A-35	479342.84	1349918.11	1.5	2	Thorium-232	0.667	NV	pCi/g
A5A-35	479342.84	1349918.11	2.5	3	Thorium-232	0.512	NV	pCi/g
A5A-35	479342.84	1349918.11	1.5	2	Uranium, Total	2.71	NV	mg/kg
A5A-35	479342.84	1349918.11	2.5	3	Uranium, Total	2.27	NV	mg/kg
A5A-35A	479342.84	1349918.11	3	3.5	Benzo(a)anthracene	177	-	ug/kg
A5A-35A	479342.84	1349918.11	3.5	4	Benzo(a)anthracene	81.8	U	ug/kg
A5A-35A	479342.84	1349918.11	3	3.5	Benzo(a)pyrene	190	-	ug/kg
A5A-35A	479342.84	1349918.11	3.5	4	Benzo(a)pyrene	81.8	U	ug/kg
A5A-35A	479342.84	1349918.11	3	3.5	Benzo(b)fluoranthene	226	-	ug/kg
A5A-35A	479342.84	1349918.11	3.5	4	Benzo(b)fluoranthene	81.8	U	ug/kg
A5A-35A	479342.84	1349918.11	3	3.5	Dibenzo(a,h)anthracene	73.6	U	ug/kg
A5A-35A	479342.84	1349918.11	3.5	4	Dibenzo(a,h)anthracene	81.8	U	ug/kg
A5A-35A	479342.84	1349918.11	3	3.5	Indeno(1,2,3-cd)pyrene	79.8	-	ug/kg
A5A-35A	479342.84	1349918.11	3.5	4	Indeno(1,2,3-cd)pyrene	81.8	U	ug/kg
A5A-36	479242.25	1349994.79	2	2.5	Radium-226	0.779	NV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-36	479242.25	1349994.79	3	3.5	Radium-226	0.759	NV	pCi/g
A5A-36	479242.25	1349994.79	2	2.5	Radium-228	0.701	NV	pCi/g
A5A-36	479242.25	1349994.79	3	3.5	Radium-228	0.689	NV	pCi/g
A5A-36	479242.25	1349994.79	2	2.5	Thorium-228	0.71	NV	pCi/g
A5A-36	479242.25	1349994.79	3	3.5	Thorium-228	0.693	NV	pCi/g
A5A-36	479242.25	1349994.79	2	2.5	Thorium-232	0.701	NV	pCi/g
A5A-36	479242.25	1349994.79	3	3.5	Thorium-232	0.689	NV	pCi/g
A5A-36	479242.25	1349994.79	2	2.5	Uranium, Total	2.75	NV	mg/kg
A5A-36	479242.25	1349994.79	3	3.5	Uranium, Total	3.02	NV	mg/kg
A5A-37	479437.84	1350023.39	2	2.5	Aroclor-1254	15.5	UNV	ug/kg
A5A-37	479437.84	1350023.39	3	3.5	Aroclor-1254	15.7	UNV	ug/kg
A5A-37	479437.84	1350023.39	2	2.5	Aroclor-1260	15.5	UNV	ug/kg
A5A-37	479437.84	1350023.39	3	3.5	Aroclor-1260	15.7	UNV	ug/kg
A5A-37	479437.84	1350023.39	2	2.5	Arsenic	5.91	NV	mg/kg
A5A-37	479437.84	1350023.39	3	3.5	Arsenic	11.9	NV	mg/kg
A5A-37	479437.84	1350023.39	2	2.5	Beryllium	0.613	NV	mg/kg
A5A-37	479437.84	1350023.39	3	3.5	Beryllium	0.801	NV	mg/kg
A5A-37	479437.84	1350023.39	2	2.5	Gross Alpha	11	UNV	pCi/g
A5A-37	479437.84	1350023.39	2	2.5	Gross Beta	19	UNV	pCi/g
A5A-37	479437.84	1350023.39	2	2.5	Radium-226	1	NV	pCi/g
A5A-37	479437.84	1350023.39	3	3.5	Radium-226	0.856	NV	pCi/g
A5A-37	479437.84	1350023.39	2	2.5	Radium-228	0.773	NV	pCi/g
A5A-37	479437.84	1350023.39	3	3.5	Radium-228	0.847	NV	pCi/g
A5A-37	479437.84	1350023.39	2	2.5	Thorium-228	0.771	NV	pCi/g
A5A-37	479437.84	1350023.39	3	3.5	Thorium-228	0.857	NV	pCi/g
A5A-37	479437.84	1350023.39	2	2.5	Thorium-232	0.773	NV	pCi/g
A5A-37	479437.84	1350023.39	3	3.5	Thorium-232	0.847	NV	pCi/g
A5A-37	479437.84	1350023.39	2	2.5	Uranium, Total	1.96	UNV	mg/kg
A5A-37	479437.84	1350023.39	3	3.5	Uranium, Total	3.07	NV	mg/kg
A5A-38	479313.95	1350023.95	2	2.5	Radium-226	0.684	NV	pCi/g
A5A-38	479313.95	1350023.95	3	3.5	Radium-226	0.696	NV	pCi/g
A5A-38	479313.95	1350023.95	2	2.5	Radium-228	0.629	NV	pCi/g
A5A-38	479313.95	1350023.95	3	3.5	Radium-228	0.506	NV	pCi/g
A5A-38	479313.95	1350023.95	2	2.5	Thorium-228	0.634	NV	pCi/g
A5A-38	479313.95	1350023.95	3	3.5	Thorium-228	0.507	NV	pCi/g
A5A-38	479313.95	1350023.95	2	2.5	Thorium-232	0.629	NV	pCi/g
A5A-38	479313.95	1350023.95	3	3.5	Thorium-232	0.506	NV	pCi/g
A5A-38	479313.95	1350023.95	2	2.5	Uranium, Total	1.25	UNV	mg/kg
A5A-38	479313.95	1350023.95	3	3.5	Uranium, Total	3.72	NV	mg/kg
A5A-39	479378.91	1350187.85	3	3.5	Radium-226	1.06	NV	pCi/g
A5A-39	479378.91	1350187.85	4	4.5	Radium-226	0.909	NV	pCi/g
A5A-39	479378.91	1350187.85	3	3.5	Radium-228	0.952	NV	pCi/g
A5A-39	479378.91	1350187.85	4	4.5	Radium-228	0.777	NV	pCi/g
A5A-39	479378.91	1350187.85	3	3.5	Thorium-228	0.946	NV	pCi/g
A5A-39	479378.91	1350187.85	4	4.5	Thorium-228	0.778	NV	pCi/g
A5A-39	479378.91	1350187.85	3	3.5	Thorium-232	0.952	NV	pCi/g
A5A-39	479378.91	1350187.85	4	4.5	Thorium-232	0.777	NV	pCi/g
A5A-39	479378.91	1350187.85	3	3.5	Uranium, Total	3.87	NV	mg/kg
A5A-39	479378.91	1350187.85	4	4.5	Uranium, Total	4.03	NV	mg/kg
A5A-39A	479378.91	1350187.85	2	2.5	Benzo(a)anthracene	74.6	U	ug/kg
A5A-39A	479378.91	1350187.85	3	3.5	Benzo(a)anthracene	83.3	U	ug/kg
A5A-39A	479378.91	1350187.85	2	2.5	Benzo(a)pyrene	74.6	U	ug/kg
A5A-39A	479378.91	1350187.85	3	3.5	Benzo(a)pyrene	83.3	U	ug/kg
A5A-39A	479378.91	1350187.85	2	2.5	Benzo(b)fluoranthene	35.1	J	ug/kg
A5A-39A	479378.91	1350187.85	3	3.5	Benzo(b)fluoranthene	83.3	U	ug/kg
A5A-39A	479378.91	1350187.85	2	2.5	Dibenzo(a,h)anthracene	74.6	U	ug/kg
A5A-39A	479378.91	1350187.85	3	3.5	Dibenzo(a,h)anthracene	83.3	U	ug/kg
A5A-39A	479378.91	1350187.85	2	2.5	Indeno(1,2,3-cd)pyrene	74.6	U	ug/kg
A5A-39A	479378.91	1350187.85	3	3.5	Indeno(1,2,3-cd)pyrene	83.3	U	ug/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-4	479681.24	1349636.56	0	0.5	Radium-226	1.13	J	pCi/g
A5A-4	479681.24	1349636.56	0	0.5	Radium-228	0.786	-	pCi/g
A5A-4	479681.24	1349636.56	0	0.5	Thorium-228	0.784	-	pCi/g
A5A-4	479681.24	1349636.56	0	0.5	Thorium-232	0.786	-	pCi/g
A5A-4	479681.24	1349636.56	0	0.5	Uranium, Total	9.47	-	mg/kg
A5A-40	479329.87	1350218.57	1.5	2	Gross Alpha	11	UNV	pCi/g
A5A-40	479329.87	1350218.57	1.5	2	Gross Beta	20	UNV	pCi/g
A5A-40	479329.87	1350218.57	1.5	2	Radium-226	0.934	NV	pCi/g
A5A-40	479329.87	1350218.57	2.5	3	Radium-226	1.01	NV	pCi/g
A5A-40	479329.87	1350218.57	1.5	2	Radium-228	0.807	NV	pCi/g
A5A-40	479329.87	1350218.57	2.5	3	Radium-228	0.912	NV	pCi/g
A5A-40	479329.87	1350218.57	1.5	2	Thorium-228	0.811	NV	pCi/g
A5A-40	479329.87	1350218.57	2.5	3	Thorium-228	0.91	NV	pCi/g
A5A-40	479329.87	1350218.57	1.5	2	Thorium-232	0.807	NV	pCi/g
A5A-40	479329.87	1350218.57	2.5	3	Thorium-232	0.912	NV	pCi/g
A5A-40	479329.87	1350218.57	1.5	2	Uranium, Total	2.61	NV	mg/kg
A5A-40	479329.87	1350218.57	2.5	3	Uranium, Total	4.22	NV	mg/kg
A5A-41	479194.49	1349330.39	0	0.5	Aroclor-1254	7.3	UNV	ug/kg
A5A-41	479194.49	1349330.39	0	0.5	Aroclor-1260	7.3	UNV	ug/kg
A5A-41	479194.49	1349330.39	0	0.5	Arsenic	5.26	NV	mg/kg
A5A-41	479194.49	1349330.39	0	0.5	Beryllium	0.491	NV	mg/kg
A5A-41	479194.49	1349330.39	0	0.5	Radium-226	0.998	NV	pCi/g
A5A-41	479194.49	1349330.39	0	0.5	Radium-228	0.782	NV	pCi/g
A5A-41	479194.49	1349330.39	0	0.5	Thorium-228	0.783	NV	pCi/g
A5A-41	479194.49	1349330.39	0	0.5	Thorium-232	0.782	NV	pCi/g
A5A-41	479194.49	1349330.39	0	0.5	Uranium, Total	13.8	NV	mg/kg
A5A-42	479151.12	1349201.02	1.5	2	Radium-226	0.91	NV	pCi/g
A5A-42	479151.12	1349201.02	2.5	3	Radium-226	0.977	NV	pCi/g
A5A-42	479151.12	1349201.02	1.5	2	Radium-228	0.99	NV	pCi/g
A5A-42	479151.12	1349201.02	2.5	3	Radium-228	0.905	NV	pCi/g
A5A-42	479151.12	1349201.02	1.5	2	Thorium-228	0.989	NV	pCi/g
A5A-42	479151.12	1349201.02	2.5	3	Thorium-228	0.906	NV	pCi/g
A5A-42	479151.12	1349201.02	1.5	2	Thorium-232	0.99	NV	pCi/g
A5A-42	479151.12	1349201.02	2.5	3	Thorium-232	0.905	NV	pCi/g
A5A-42	479151.12	1349201.02	1.5	2	Uranium, Total	4.89	NV	mg/kg
A5A-42	479151.12	1349201.02	2.5	3	Uranium, Total	4.33	NV	mg/kg
A5A-42A	479151.12	1349201.02	1.5	2	Benzo(a)anthracene	80.2	U	ug/kg
A5A-42A	479151.12	1349201.02	2.5	3	Benzo(a)anthracene	79.5	U	ug/kg
A5A-42A	479151.12	1349201.02	1.5	2	Benzo(a)pyrene	80.2	U	ug/kg
A5A-42A	479151.12	1349201.02	2.5	3	Benzo(a)pyrene	79.5	U	ug/kg
A5A-42A	479151.12	1349201.02	1.5	2	Benzo(b)fluoranthene	80.2	U	ug/kg
A5A-42A	479151.12	1349201.02	2.5	3	Benzo(b)fluoranthene	79.5	U	ug/kg
A5A-42A	479151.12	1349201.02	1.5	2	Dibenzo(a,h)anthracene	80.2	U	ug/kg
A5A-42A	479151.12	1349201.02	2.5	3	Dibenzo(a,h)anthracene	79.5	U	ug/kg
A5A-42A	479151.12	1349201.02	1.5	2	Indeno(1,2,3-cd)pyrene	80.2	U	ug/kg
A5A-42A	479151.12	1349201.02	2.5	3	Indeno(1,2,3-cd)pyrene	79.5	U	ug/kg
A5A-43	479185.35	1349492.82	0	0.5	Radium-226	0.731	J	pCi/g
A5A-43	479185.35	1349492.82	0	0.5	Radium-228	0.576	-	pCi/g
A5A-43	479185.35	1349492.82	0	0.5	Thorium-228	0.577	-	pCi/g
A5A-43	479185.35	1349492.82	0	0.5	Thorium-232	0.576	-	pCi/g
A5A-43	479185.35	1349492.82	0	0.5	Uranium, Total	6.96	-	mg/kg
A5A-44	479090.8	1349453.73	1.5	2	Radium-226	0.935	NV	pCi/g
A5A-44	479090.8	1349453.73	2.5	3	Radium-226	1.01	NV	pCi/g
A5A-44	479090.8	1349453.73	1.5	2	Radium-228	0.963	NV	pCi/g
A5A-44	479090.8	1349453.73	2.5	3	Radium-228	0.989	NV	pCi/g
A5A-44	479090.8	1349453.73	1.5	2	Thorium-228	0.959	NV	pCi/g
A5A-44	479090.8	1349453.73	2.5	3	Thorium-228	1.01	NV	pCi/g
A5A-44	479090.8	1349453.73	1.5	2	Thorium-232	0.963	NV	pCi/g
A5A-44	479090.8	1349453.73	2.5	3	Thorium-232	0.989	NV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-44	479090.8	1349453.73	1.5	2	Uranium, Total	3.69	NV	mg/kg
A5A-44	479090.8	1349453.73	2.5	3	Uranium, Total	4.69	NV	mg/kg
A5A-45	479189.86	1349595.26	0	0.5	Aroclor-1254	7.5	UNV	ug/kg
A5A-45	479189.86	1349595.26	0	0.5	Aroclor-1260	7.5	UNV	ug/kg
A5A-45	479189.86	1349595.26	0	0.5	Arsenic	7.94	NV	mg/kg
A5A-45	479189.86	1349595.26	0	0.5	Beryllium	0.708	NV	mg/kg
A5A-45	479189.86	1349595.26	0	0.5	Gross Alpha	29	NV	pCi/g
A5A-45	479189.86	1349595.26	0	0.5	Gross Beta	27	NV	pCi/g
A5A-45	479189.86	1349595.26	0	0.5	Radium-226	1.35	NV	pCi/g
A5A-45	479189.86	1349595.26	0	0.5	Radium-228	1.05	NV	pCi/g
A5A-45	479189.86	1349595.26	0	0.5	Thorium-228	1.04	NV	pCi/g
A5A-45	479189.86	1349595.26	0	0.5	Thorium-232	1.05	NV	pCi/g
A5A-45	479189.86	1349595.26	0	0.5	Uranium, Total	35.4	NV	mg/kg
A5A-47	479089.38	1349706.59	1	1.5	Radium-226	0.975	NV	pCi/g
A5A-47	479089.38	1349706.59	2	2.5	Radium-226	1.45	NV	pCi/g
A5A-47	479089.38	1349706.59	1	1.5	Radium-228	1.12	NV	pCi/g
A5A-47	479089.38	1349706.59	2	2.5	Radium-228	1.22	NV	pCi/g
A5A-47	479089.38	1349706.59	1	1.5	Thorium-228	1.12	NV	pCi/g
A5A-47	479089.38	1349706.59	2	2.5	Thorium-228	1.21	NV	pCi/g
A5A-47	479089.38	1349706.59	1	1.5	Thorium-232	1.12	NV	pCi/g
A5A-47	479089.38	1349706.59	2	2.5	Thorium-232	1.22	NV	pCi/g
A5A-47	479089.38	1349706.59	1	1.5	Uranium, Total	4.74	NV	mg/kg
A5A-47	479089.38	1349706.59	2	2.5	Uranium, Total	3.62	NV	mg/kg
A5A-47A	479089.38	1349706.59	1.5	2	Benzo(a)anthracene	247	-	ug/kg
A5A-47A	479089.38	1349706.59	2.5	3	Benzo(a)anthracene	81	U	ug/kg
A5A-47A	479089.38	1349706.59	1.5	2	Benzo(a)pyrene	198	-	ug/kg
A5A-47A	479089.38	1349706.59	2.5	3	Benzo(a)pyrene	81	U	ug/kg
A5A-47A	479089.38	1349706.59	1.5	2	Benzo(b)fluoranthene	290	-	ug/kg
A5A-47A	479089.38	1349706.59	2.5	3	Benzo(b)fluoranthene	81	U	ug/kg
A5A-47A	479089.38	1349706.59	1.5	2	Dibenzo(a,h)anthracene	25.6	J	ug/kg
A5A-47A	479089.38	1349706.59	2.5	3	Dibenzo(a,h)anthracene	81	U	ug/kg
A5A-47A	479089.38	1349706.59	1.5	2	Indeno(1,2,3-cd)pyrene	99.8	-	ug/kg
A5A-47A	479089.38	1349706.59	2.5	3	Indeno(1,2,3-cd)pyrene	81	U	ug/kg
A5A-49	479167.08	1349808.81	2	2.5	Aroclor-1254	16.5	UNV	ug/kg
A5A-49	479167.08	1349808.81	3	3.5	Aroclor-1254	16.1	UNV	ug/kg
A5A-49	479167.08	1349808.81	2	2.5	Aroclor-1260	16.5	UNV	ug/kg
A5A-49	479167.08	1349808.81	3	3.5	Aroclor-1260	16.1	UNV	ug/kg
A5A-49	479167.08	1349808.81	2	2.5	Arsenic	10.8	NV	mg/kg
A5A-49	479167.08	1349808.81	3	3.5	Arsenic	17.7	NV	mg/kg
A5A-49	479167.08	1349808.81	2	2.5	Beryllium	0.978	NV	mg/kg
A5A-49	479167.08	1349808.81	3	3.5	Beryllium	0.876	NV	mg/kg
A5A-49	479167.08	1349808.81	2	2.5	Radium-226	1.49	NV	pCi/g
A5A-49	479167.08	1349808.81	3	3.5	Radium-226	0.904	NV	pCi/g
A5A-49	479167.08	1349808.81	2	2.5	Radium-228	1.24	NV	pCi/g
A5A-49	479167.08	1349808.81	3	3.5	Radium-228	1	NV	pCi/g
A5A-49	479167.08	1349808.81	2	2.5	Thorium-228	1.24	NV	pCi/g
A5A-49	479167.08	1349808.81	3	3.5	Thorium-228	1.14	NV	pCi/g
A5A-49	479167.08	1349808.81	2	2.5	Thorium-232	1.24	NV	pCi/g
A5A-49	479167.08	1349808.81	3	3.5	Thorium-232	1	NV	pCi/g
A5A-49	479167.08	1349808.81	2	2.5	Uranium, Total	5.26	NV	mg/kg
A5A-49	479167.08	1349808.81	3	3.5	Uranium, Total	3.77	NV	mg/kg
A5A-5	479663.85	1349744.64	1.5	2	Aroclor-1254	16.2	UNV	ug/kg
A5A-5	479663.85	1349744.64	2.5	3	Aroclor-1254	15.9	UNV	ug/kg
A5A-5	479663.85	1349744.64	1.5	2	Aroclor-1260	16.2	UNV	ug/kg
A5A-5	479663.85	1349744.64	2.5	3	Aroclor-1260	15.9	UNV	ug/kg
A5A-5	479663.85	1349744.64	1.5	2	Arsenic	11.8	NV	mg/kg
A5A-5	479663.85	1349744.64	2.5	3	Arsenic	9.75	NV	mg/kg
A5A-5	479663.85	1349744.64	1.5	2	Beryllium	1.16	NV	mg/kg
A5A-5	479663.85	1349744.64	2.5	3	Beryllium	0.67	NV	mg/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-5	479663.85	1349744.64	1.5	2	Radium-226	1.44	NV	pCi/g
A5A-5	479663.85	1349744.64	2.5	3	Radium-226	1.13	NV	pCi/g
A5A-5	479663.85	1349744.64	1.5	2	Radium-228	1.19	NV	pCi/g
A5A-5	479663.85	1349744.64	2.5	3	Radium-228	0.942	NV	pCi/g
A5A-5	479663.85	1349744.64	1.5	2	Thorium-228	1.19	NV	pCi/g
A5A-5	479663.85	1349744.64	2.5	3	Thorium-228	0.937	NV	pCi/g
A5A-5	479663.85	1349744.64	1.5	2	Thorium-232	1.19	NV	pCi/g
A5A-5	479663.85	1349744.64	2.5	3	Thorium-232	0.942	NV	pCi/g
A5A-5	479663.85	1349744.64	1.5	2	Uranium, Total	4.9	NV	mg/kg
A5A-5	479663.85	1349744.64	2.5	3	Uranium, Total	4.14	NV	mg/kg
A5A-51	479196.04	1349914.01	2	2.5	Radium-226	0.961	NV	pCi/g
A5A-51	479196.04	1349914.01	3	3.5	Radium-226	0.71	NV	pCi/g
A5A-51	479196.04	1349914.01	2	2.5	Radium-228	1.09	NV	pCi/g
A5A-51	479196.04	1349914.01	3	3.5	Radium-228	0.714	NV	pCi/g
A5A-51	479196.04	1349914.01	2	2.5	Thorium-228	1.1	NV	pCi/g
A5A-51	479196.04	1349914.01	3	3.5	Thorium-228	0.727	NV	pCi/g
A5A-51	479196.04	1349914.01	2	2.5	Thorium-232	1.09	NV	pCi/g
A5A-51	479196.04	1349914.01	3	3.5	Thorium-232	0.714	NV	pCi/g
A5A-51	479196.04	1349914.01	2	2.5	Uranium, Total	5.79	NV	mg/kg
A5A-51	479196.04	1349914.01	3	3.5	Uranium, Total	3.42	NV	mg/kg
A5A-52	479019.8	1349939.61	1.5	2	Radium-226	0.622	NV	pCi/g
A5A-52	479019.8	1349939.61	2.5	3	Radium-226	0.555	NV	pCi/g
A5A-52	479019.8	1349939.61	1.5	2	Radium-228	0.611	NV	pCi/g
A5A-52	479019.8	1349939.61	2.5	3	Radium-228	0.449	NV	pCi/g
A5A-52	479019.8	1349939.61	1.5	2	Thorium-228	0.609	NV	pCi/g
A5A-52	479019.8	1349939.61	2.5	3	Thorium-228	0.465	NV	pCi/g
A5A-52	479019.8	1349939.61	1.5	2	Thorium-232	0.611	NV	pCi/g
A5A-52	479019.8	1349939.61	2.5	3	Thorium-232	0.449	NV	pCi/g
A5A-52	479019.8	1349939.61	1.5	2	Uranium, Total	2.97	NV	mg/kg
A5A-52	479019.8	1349939.61	2.5	3	Uranium, Total	3.37	NV	mg/kg
A5A-53	479149.41	1350027.68	1.5	2	Aroclor-1254	14.7	UNV	ug/kg
A5A-53	479149.41	1350027.68	2.5	3	Aroclor-1254	14.4	UNV	ug/kg
A5A-53	479149.41	1350027.68	1.5	2	Aroclor-1260	14.7	UNV	ug/kg
A5A-53	479149.41	1350027.68	2.5	3	Aroclor-1260	14.4	UNV	ug/kg
A5A-53	479149.41	1350027.68	1.5	2	Arsenic	6	NV	mg/kg
A5A-53	479149.41	1350027.68	2.5	3	Arsenic	5.38	NV	mg/kg
A5A-53	479149.41	1350027.68	1.5	2	Beryllium	0.721	NV	mg/kg
A5A-53	479149.41	1350027.68	2.5	3	Beryllium	0.38	NV	mg/kg
A5A-53	479149.41	1350027.68	1.5	2	Radium-226	0.791	NV	pCi/g
A5A-53	479149.41	1350027.68	2.5	3	Radium-226	0.958	NV	pCi/g
A5A-53	479149.41	1350027.68	1.5	2	Radium-228	0.776	NV	pCi/g
A5A-53	479149.41	1350027.68	2.5	3	Radium-228	0.687	NV	pCi/g
A5A-53	479149.41	1350027.68	1.5	2	Thorium-228	0.784	NV	pCi/g
A5A-53	479149.41	1350027.68	2.5	3	Thorium-228	0.683	NV	pCi/g
A5A-53	479149.41	1350027.68	1.5	2	Thorium-232	0.776	NV	pCi/g
A5A-53	479149.41	1350027.68	2.5	3	Thorium-232	0.687	NV	pCi/g
A5A-53	479149.41	1350027.68	1.5	2	Uranium, Total	3.19	NV	mg/kg
A5A-53	479149.41	1350027.68	2.5	3	Uranium, Total	3.27	NV	mg/kg
A5A-54	479204.07	1350145.44	1.5	2	Radium-226	0.532	NV	pCi/g
A5A-54	479204.07	1350145.44	2.5	3	Radium-226	0.73	NV	pCi/g
A5A-54	479204.07	1350145.44	1.5	2	Radium-228	0.435	NV	pCi/g
A5A-54	479204.07	1350145.44	2.5	3	Radium-228	0.767	NV	pCi/g
A5A-54	479204.07	1350145.44	1.5	2	Thorium-228	0.427	NV	pCi/g
A5A-54	479204.07	1350145.44	2.5	3	Thorium-228	0.87	NV	pCi/g
A5A-54	479204.07	1350145.44	1.5	2	Thorium-232	0.435	NV	pCi/g
A5A-54	479204.07	1350145.44	2.5	3	Thorium-232	0.767	NV	pCi/g
A5A-54	479204.07	1350145.44	1.5	2	Uranium, Total	2.65	NV	mg/kg
A5A-54	479204.07	1350145.44	2.5	3	Uranium, Total	4.45	NV	mg/kg
A5A-55	479145.23	1350202.58	1.5	2	Radium-226	0.829	NV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-55	479145.23	1350202.58	2.5	3	Radium-226	0.9	NV	pCi/g
A5A-55	479145.23	1350202.58	1.5	2	Radium-228	0.784	NV	pCi/g
A5A-55	479145.23	1350202.58	2.5	3	Radium-228	0.763	NV	pCi/g
A5A-55	479145.23	1350202.58	1.5	2	Thorium-228	0.79	NV	pCi/g
A5A-55	479145.23	1350202.58	2.5	3	Thorium-228	0.77	NV	pCi/g
A5A-55	479145.23	1350202.58	1.5	2	Thorium-232	0.784	NV	pCi/g
A5A-55	479145.23	1350202.58	2.5	3	Thorium-232	0.763	NV	pCi/g
A5A-55	479145.23	1350202.58	1.5	2	Uranium, Total	3.45	NV	mg/kg
A5A-55	479145.23	1350202.58	2.5	3	Uranium, Total	3.99	NV	mg/kg
A5A-55A	479145.23	1350202.58	1	1.5	Benzo(a)anthracene	76.3	U	ug/kg
A5A-55A	479145.23	1350202.58	2	2.5	Benzo(a)anthracene	74.8	U	ug/kg
A5A-55A	479145.23	1350202.58	1	1.5	Benzo(a)pyrene	76.3	U	ug/kg
A5A-55A	479145.23	1350202.58	2	2.5	Benzo(a)pyrene	74.8	U	ug/kg
A5A-55A	479145.23	1350202.58	1	1.5	Benzo(b)fluoranthene	76.3	U	ug/kg
A5A-55A	479145.23	1350202.58	2	2.5	Benzo(b)fluoranthene	74.8	U	ug/kg
A5A-55A	479145.23	1350202.58	1	1.5	Dibenzo(a,h)anthracene	76.3	U	ug/kg
A5A-55A	479145.23	1350202.58	2	2.5	Dibenzo(a,h)anthracene	74.8	U	ug/kg
A5A-55A	479145.23	1350202.58	1	1.5	Indeno(1,2,3-cd)pyrene	76.3	U	ug/kg
A5A-55A	479145.23	1350202.58	2	2.5	Indeno(1,2,3-cd)pyrene	74.8	U	ug/kg
A5A-56A	479250.23	1350287.6	1.5	2	Radium-226	1.16	NV	pCi/g
A5A-56A	479250.23	1350287.6	2.5	3	Radium-226	1.08	NV	pCi/g
A5A-56A	479250.23	1350287.6	1.5	2	Radium-228	1.23	NV	pCi/g
A5A-56A	479250.23	1350287.6	2.5	3	Radium-228	1.01	NV	pCi/g
A5A-56A	479250.23	1350287.6	1.5	2	Thorium-228	1.25	NV	pCi/g
A5A-56A	479250.23	1350287.6	2.5	3	Thorium-228	0.998	NV	pCi/g
A5A-56A	479250.23	1350287.6	1.5	2	Thorium-232	1.23	NV	pCi/g
A5A-56A	479250.23	1350287.6	2.5	3	Thorium-232	1.01	NV	pCi/g
A5A-56A	479250.23	1350287.6	1.5	2	Uranium, Total	6.25	NV	mg/kg
A5A-56A	479250.23	1350287.6	2.5	3	Uranium, Total	4.19	NV	mg/kg
A5A-57	479058.69	1349264.97	1.5	2	Aroclor-1254	15.4	UNV	ug/kg
A5A-57	479058.69	1349264.97	2.5	3	Aroclor-1254	15.5	UNV	ug/kg
A5A-57	479058.69	1349264.97	1.5	2	Aroclor-1260	15.4	UNV	ug/kg
A5A-57	479058.69	1349264.97	2.5	3	Aroclor-1260	15.5	UNV	ug/kg
A5A-57	479058.69	1349264.97	1.5	2	Arsenic	10.2	NV	mg/kg
A5A-57	479058.69	1349264.97	2.5	3	Arsenic	10	NV	mg/kg
A5A-57	479058.69	1349264.97	1.5	2	Beryllium	0.832	NV	mg/kg
A5A-57	479058.69	1349264.97	2.5	3	Beryllium	0.96	NV	mg/kg
A5A-57	479058.69	1349264.97	1.5	2	Radium-226	1.14	NV	pCi/g
A5A-57	479058.69	1349264.97	2.5	3	Radium-226	1.18	NV	pCi/g
A5A-57	479058.69	1349264.97	1.5	2	Radium-228	0.9	NV	pCi/g
A5A-57	479058.69	1349264.97	2.5	3	Radium-228	0.922	NV	pCi/g
A5A-57	479058.69	1349264.97	4	4.5	Technetium-99	1.04	UNV	pCi/g
A5A-57	479058.69	1349264.97	1.5	2	Thorium-228	0.89	NV	pCi/g
A5A-57	479058.69	1349264.97	2.5	3	Thorium-228	0.919	NV	pCi/g
A5A-57	479058.69	1349264.97	1.5	2	Thorium-232	0.9	NV	pCi/g
A5A-57	479058.69	1349264.97	2.5	3	Thorium-232	0.922	NV	pCi/g
A5A-57	479058.69	1349264.97	1.5	2	Uranium, Total	3.77	NV	mg/kg
A5A-57	479058.69	1349264.97	2.5	3	Uranium, Total	4.13	NV	mg/kg
A5A-57	479058.69	1349264.97	4	4.5	Uranium, Total	2.6	NV	mg/kg
A5A-6	479718.02	1349870.87	3	3.5	Gross Alpha	11	UNV	pCi/g
A5A-6	479718.02	1349870.87	3	3.5	Gross Beta	20	UNV	pCi/g
A5A-6	479718.02	1349870.87	3	3.5	Radium-226	1.4	NV	pCi/g
A5A-6	479718.02	1349870.87	4	4.5	Radium-226	0.894	NV	pCi/g
A5A-6	479718.02	1349870.87	3	3.5	Radium-228	1.1	NV	pCi/g
A5A-6	479718.02	1349870.87	4	4.5	Radium-228	0.686	NV	pCi/g
A5A-6	479718.02	1349870.87	3	3.5	Thorium-228	1.1	NV	pCi/g
A5A-6	479718.02	1349870.87	4	4.5	Thorium-228	0.672	NV	pCi/g
A5A-6	479718.02	1349870.87	3	3.5	Thorium-232	1.1	NV	pCi/g
A5A-6	479718.02	1349870.87	4	4.5	Thorium-232	0.686	NV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-6	479718.02	1349870.87	3	3.5	Uranium, Total	1.76	UNV	mg/kg
A5A-6	479718.02	1349870.87	4	4.5	Uranium, Total	1.88	NV	mg/kg
A5A-65	479011.26	1350007.39	1.5	2	Aroclor-1254	14.8	UNV	ug/kg
A5A-65	479011.26	1350007.39	2.5	3	Aroclor-1254	14.7	UNV	ug/kg
A5A-65	479011.26	1350007.39	1.5	2	Aroclor-1260	14.8	UNV	ug/kg
A5A-65	479011.26	1350007.39	2.5	3	Aroclor-1260	14.7	UNV	ug/kg
A5A-65	479011.26	1350007.39	1.5	2	Arsenic	4.59	NV	mg/kg
A5A-65	479011.26	1350007.39	2.5	3	Arsenic	4.45	NV	mg/kg
A5A-65	479011.26	1350007.39	1.5	2	Beryllium	0.578	NV	mg/kg
A5A-65	479011.26	1350007.39	2.5	3	Beryllium	0.689	NV	mg/kg
A5A-65	479011.26	1350007.39	1.5	2	Radium-226	0.861	NV	pCi/g
A5A-65	479011.26	1350007.39	2.5	3	Radium-226	0.898	NV	pCi/g
A5A-65	479011.26	1350007.39	1.5	2	Radium-228	0.714	NV	pCi/g
A5A-65	479011.26	1350007.39	2.5	3	Radium-228	0.803	NV	pCi/g
A5A-65	479011.26	1350007.39	1.5	2	Thorium-228	0.735	NV	pCi/g
A5A-65	479011.26	1350007.39	2.5	3	Thorium-228	0.808	NV	pCi/g
A5A-65	479011.26	1350007.39	1.5	2	Thorium-232	0.714	NV	pCi/g
A5A-65	479011.26	1350007.39	2.5	3	Thorium-232	0.803	NV	pCi/g
A5A-65	479011.26	1350007.39	1.5	2	Uranium, Total	3.7	NV	mg/kg
A5A-65	479011.26	1350007.39	2.5	3	Uranium, Total	5.17	NV	mg/kg
A5A-66	479073.72	1350136.46	1.5	2	Radium-226	0.844	NV	pCi/g
A5A-66	479073.72	1350136.46	2.5	3	Radium-226	0.812	NV	pCi/g
A5A-66	479073.72	1350136.46	1.5	2	Radium-228	0.898	NV	pCi/g
A5A-66	479073.72	1350136.46	2.5	3	Radium-228	0.665	NV	pCi/g
A5A-66	479073.72	1350136.46	1.5	2	Thorium-228	0.915	NV	pCi/g
A5A-66	479073.72	1350136.46	2.5	3	Thorium-228	0.682	NV	pCi/g
A5A-66	479073.72	1350136.46	1.5	2	Thorium-232	0.898	NV	pCi/g
A5A-66	479073.72	1350136.46	2.5	3	Thorium-232	0.665	NV	pCi/g
A5A-66	479073.72	1350136.46	1.5	2	Uranium, Total	3.31	NV	mg/kg
A5A-66	479073.72	1350136.46	2.5	3	Uranium, Total	4.24	NV	mg/kg
A5A-68	478994.44	1350273.59	1.5	2	Radium-226	0.698	NV	pCi/g
A5A-68	478994.44	1350273.59	2.5	3	Radium-226	0.877	NV	pCi/g
A5A-68	478994.44	1350273.59	1.5	2	Radium-228	0.578	NV	pCi/g
A5A-68	478994.44	1350273.59	2.5	3	Radium-228	0.693	NV	pCi/g
A5A-68	478994.44	1350273.59	1.5	2	Thorium-228	0.582	NV	pCi/g
A5A-68	478994.44	1350273.59	2.5	3	Thorium-228	0.695	NV	pCi/g
A5A-68	478994.44	1350273.59	1.5	2	Thorium-232	0.578	NV	pCi/g
A5A-68	478994.44	1350273.59	2.5	3	Thorium-232	0.693	NV	pCi/g
A5A-68	478994.44	1350273.59	1.5	2	Uranium, Total	4.63	NV	mg/kg
A5A-68	478994.44	1350273.59	2.5	3	Uranium, Total	2.67	NV	mg/kg
A5A-68A	478994.44	1350273.59	1.5	2	Benzo(a)anthracene	73.1	U	ug/kg
A5A-68A	478994.44	1350273.59	2.5	3	Benzo(a)anthracene	79.3	U	ug/kg
A5A-68A	478994.44	1350273.59	1.5	2	Benzo(a)pyrene	73.1	U	ug/kg
A5A-68A	478994.44	1350273.59	2.5	3	Benzo(a)pyrene	79.3	U	ug/kg
A5A-68A	478994.44	1350273.59	1.5	2	Benzo(b)fluoranthene	73.1	U	ug/kg
A5A-68A	478994.44	1350273.59	2.5	3	Benzo(b)fluoranthene	79.3	U	ug/kg
A5A-68A	478994.44	1350273.59	1.5	2	Dibenzo(a,h)anthracene	73.1	U	ug/kg
A5A-68A	478994.44	1350273.59	2.5	3	Dibenzo(a,h)anthracene	79.3	U	ug/kg
A5A-68A	478994.44	1350273.59	1.5	2	Indeno(1,2,3-cd)pyrene	73.1	U	ug/kg
A5A-68A	478994.44	1350273.59	2.5	3	Indeno(1,2,3-cd)pyrene	79.3	U	ug/kg
A5A-7	479642.27	1349910.67	0	0.5	Radium-226	0.675	J	pCi/g
A5A-7	479642.27	1349910.67	0	0.5	Radium-228	0.651	-	pCi/g
A5A-7	479642.27	1349910.67	0	0.5	Thorium-228	0.655	-	pCi/g
A5A-7	479642.27	1349910.67	0	0.5	Thorium-232	0.651	-	pCi/g
A5A-7	479642.27	1349910.67	0	0.5	Uranium, Total	19.1	-	mg/kg
A5A-8	479686.98	1350020.79	0	0.5	Radium-226	0.828	J	pCi/g
A5A-8	479686.98	1350020.79	0	0.5	Radium-228	0.731	-	pCi/g
A5A-8	479686.98	1350020.79	0	0.5	Thorium-228	0.725	-	pCi/g
A5A-8	479686.98	1350020.79	0	0.5	Thorium-232	0.731	-	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-8	479686.98	1350020.79	0	0.5	Uranium, Total	21.8	-	mg/kg
A5A-9	479614.46	1349259.12	0	0.5	Aroclor-1254	14.5	UNV	ug/kg
A5A-9	479614.46	1349259.12	0	0.5	Aroclor-1260	14.5	UNV	ug/kg
A5A-9	479614.46	1349259.12	0	0.5	Arsenic	5.47	NV	mg/kg
A5A-9	479614.46	1349259.12	0	0.5	Beryllium	0.611	NV	mg/kg
A5A-9	479614.46	1349259.12	0	0.5	Gross Alpha	23	NV	pCi/g
A5A-9	479614.46	1349259.12	0	0.5	Gross Beta	31	NV	pCi/g
A5A-9	479614.46	1349259.12	0	0.5	Radium-226	1.29	NV	pCi/g
A5A-9	479614.46	1349259.12	0	0.5	Radium-228	0.939	NV	pCi/g
A5A-9	479614.46	1349259.12	0	0.5	Thorium-228	0.919	NV	pCi/g
A5A-9	479614.46	1349259.12	0	0.5	Thorium-232	0.939	NV	pCi/g
A5A-9	479614.46	1349259.12	0	0.5	Uranium, Total	30.5	NV	mg/kg
A5A-EF1	479431.26	1350328.85	0	0.5	Aroclor-1254	14.3	UNV	ug/kg
A5A-EF1	479431.26	1350328.85	0	0.5	Aroclor-1260	14.3	UNV	ug/kg
A5A-EF1	479431.26	1350328.85	0	0.5	Arsenic	7.42	NV	mg/kg
A5A-EF1	479431.26	1350328.85	0	0.5	Beryllium	0.792	NV	mg/kg
A5A-EF1	479431.26	1350328.85	0	0.5	Radium-226	1.15	NV	pCi/g
A5A-EF1	479431.26	1350328.85	0	0.5	Radium-228	0.942	NV	pCi/g
A5A-EF1	479431.26	1350328.85	0	0.5	Thorium-228	0.95	NV	pCi/g
A5A-EF1	479431.26	1350328.85	0	0.5	Thorium-232	0.942	NV	pCi/g
A5A-EF1	479431.26	1350328.85	0	0.5	Uranium, Total	17.8	NV	mg/kg
A5A-EF10	479343.68	1350382.7	0	0.5	Aroclor-1254	11.3	NV	ug/kg
A5A-EF10	479343.68	1350382.7	0	0.5	Aroclor-1260	14.5	UNV	ug/kg
A5A-EF10	479343.68	1350382.7	0	0.5	Arsenic	7.1	NV	mg/kg
A5A-EF10	479343.68	1350382.7	0	0.5	Beryllium	0.818	NV	mg/kg
A5A-EF10	479343.68	1350382.7	0	0.5	Radium-226	1.33	NV	pCi/g
A5A-EF10	479343.68	1350382.7	0	0.5	Radium-228	1.1	NV	pCi/g
A5A-EF10	479343.68	1350382.7	0	0.5	Thorium-228	1.1	NV	pCi/g
A5A-EF10	479343.68	1350382.7	0	0.5	Thorium-232	1.1	NV	pCi/g
A5A-EF10	479343.68	1350382.7	0	0.5	Uranium, Total	42	NV	mg/kg
A5A-EF101	479170.2	1350331	2.5	3	Uranium, Total	0.935	NV	mg/kg dry
A5A-EF101	479170.2	1350331	5	5.5	Uranium, Total	1.15	NV	mg/kg dry
A5A-EF102	479172.9	1350371	2.5	3	Uranium, Total	1.31	NV	mg/kg dry
A5A-EF102	479172.9	1350371	5.5	6	Uranium, Total	0.757	NV	mg/kg dry
A5A-EF102	479172.9	1350371	8	8.5	Uranium, Total	0.792	NV	mg/kg dry
A5A-EF103	479170.4	1350387.1	2.5	3	Uranium, Total	12.2	NV	mg/kg dry
A5A-EF103	479170.4	1350387.1	5.5	6	Uranium, Total	1.45	NV	mg/kg dry
A5A-EF103	479170.4	1350387.1	8.5	9	Uranium, Total	1.12	NV	mg/kg dry
A5A-EF11	479313.02	1350503.63	0	0.5	Aroclor-1254	6.5	NV	ug/kg
A5A-EF11	479313.02	1350503.63	0	0.5	Aroclor-1254	6.1	NV	ug/kg
A5A-EF11	479313.02	1350503.63	0	0.5	Aroclor-1260	14.9	UNV	ug/kg
A5A-EF11	479313.02	1350503.63	0	0.5	Aroclor-1260	14.9	UNV	ug/kg
A5A-EF11	479313.02	1350503.63	0	0.5	Arsenic	7.13	NV	mg/kg
A5A-EF11	479313.02	1350503.63	0	0.5	Arsenic	5.88	NV	mg/kg
A5A-EF11	479313.02	1350503.63	0	0.5	Beryllium	0.703	NV	mg/kg
A5A-EF11	479313.02	1350503.63	0	0.5	Beryllium	0.597	NV	mg/kg
A5A-EF11	479313.02	1350503.63	0	0.5	Radium-226	1.2	NV	pCi/g
A5A-EF11	479313.02	1350503.63	0	0.5	Radium-226	1.17	NV	pCi/g
A5A-EF11	479313.02	1350503.63	0	0.5	Radium-228	1.07	NV	pCi/g
A5A-EF11	479313.02	1350503.63	0	0.5	Radium-228	1.01	NV	pCi/g
A5A-EF11	479313.02	1350503.63	0	0.5	Thorium-228	1.06	NV	pCi/g
A5A-EF11	479313.02	1350503.63	0	0.5	Thorium-228	0.99	NV	pCi/g
A5A-EF11	479313.02	1350503.63	0	0.5	Thorium-232	1.07	NV	pCi/g
A5A-EF11	479313.02	1350503.63	0	0.5	Thorium-232	1.01	NV	pCi/g
A5A-EF11	479313.02	1350503.63	0	0.5	Uranium, Total	24.7	NV	mg/kg
A5A-EF11	479313.02	1350503.63	0	0.5	Uranium, Total	28.1	NV	mg/kg
A5A-EF12	479341.06	1350621.12	0	0.5	Aroclor-1254	14.1	U	ug/kg
A5A-EF12	479341.06	1350621.12	0	0.5	Aroclor-1260	14.1	U	ug/kg
A5A-EF12	479341.06	1350621.12	0	0.5	Arsenic	8.33	J	mg/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-EF12	479341.06	1350621.12	0	0.5	Beryllium	0.691	J	mg/kg
A5A-EF12	479341.06	1350621.12	0	0.5	Radium-226	1.16	-	pCi/g
A5A-EF12	479341.06	1350621.12	0	0.5	Radium-228	0.941	-	pCi/g
A5A-EF12	479341.06	1350621.12	0	0.5	Thorium-228	0.925	-	pCi/g
A5A-EF12	479341.06	1350621.12	0	0.5	Thorium-232	0.941	-	pCi/g
A5A-EF12	479341.06	1350621.12	0	0.5	Uranium, Total	7.31	-	mg/kg
A5A-EF13	479273.52	1350363.29	0	0.5	Aroclor-1254	14.5	UNV	ug/kg
A5A-EF13	479273.52	1350363.29	0	0.5	Aroclor-1260	14.5	UNV	ug/kg
A5A-EF13	479273.52	1350363.29	0	0.5	Arsenic	6.89	NV	mg/kg
A5A-EF13	479273.52	1350363.29	0	0.5	Beryllium	0.725	NV	mg/kg
A5A-EF13	479273.52	1350363.29	0	0.5	Radium-226	0.975	NV	pCi/g
A5A-EF13	479273.52	1350363.29	0	0.5	Radium-228	0.968	NV	pCi/g
A5A-EF13	479273.52	1350363.29	0	0.5	Thorium-228	0.965	NV	pCi/g
A5A-EF13	479273.52	1350363.29	0	0.5	Thorium-232	0.968	NV	pCi/g
A5A-EF13	479273.52	1350363.29	0	0.5	Uranium, Total	11.2	NV	mg/kg
A5A-EF14	479274.57	1350431.5	0	0.5	Aroclor-1254	5.2	NV	ug/kg
A5A-EF14	479274.57	1350431.5	0	0.5	Aroclor-1260	14.3	UNV	ug/kg
A5A-EF14	479274.57	1350431.5	0	0.5	Arsenic	6.77	NV	mg/kg
A5A-EF14	479274.57	1350431.5	0	0.5	Beryllium	0.689	NV	mg/kg
A5A-EF14	479274.57	1350431.5	0	0.5	Radium-226	1.16	NV	pCi/g
A5A-EF14	479274.57	1350431.5	0	0.5	Radium-228	1.12	NV	pCi/g
A5A-EF14	479274.57	1350431.5	0	0.5	Thorium-228	1.11	NV	pCi/g
A5A-EF14	479274.57	1350431.5	0	0.5	Thorium-232	1.12	NV	pCi/g
A5A-EF14	479274.57	1350431.5	0	0.5	Uranium, Total	32.4	NV	mg/kg
A5A-EF15	479280.69	1350467.85	0	0.5	Aroclor-1254	10.5	NV	ug/kg
A5A-EF15	479280.69	1350467.85	0	0.5	Aroclor-1254	7.3	NV	ug/kg
A5A-EF15	479280.69	1350467.85	0	0.5	Aroclor-1260	14.2	UNV	ug/kg
A5A-EF15	479280.69	1350467.85	0	0.5	Aroclor-1260	14.3	UNV	ug/kg
A5A-EF15	479280.69	1350467.85	0	0.5	Arsenic	6.6	NV	mg/kg
A5A-EF15	479280.69	1350467.85	0	0.5	Arsenic	7.7	NV	mg/kg
A5A-EF15	479280.69	1350467.85	0	0.5	Beryllium	0.567	NV	mg/kg
A5A-EF15	479280.69	1350467.85	0	0.5	Beryllium	0.615	NV	mg/kg
A5A-EF15	479280.69	1350467.85	0	0.5	Radium-226	1.12	NV	pCi/g
A5A-EF15	479280.69	1350467.85	0	0.5	Radium-226	1.15	NV	pCi/g
A5A-EF15	479280.69	1350467.85	0	0.5	Radium-228	1	NV	pCi/g
A5A-EF15	479280.69	1350467.85	0	0.5	Radium-228	1.1	NV	pCi/g
A5A-EF15	479280.69	1350467.85	0	0.5	Thorium-228	1.01	NV	pCi/g
A5A-EF15	479280.69	1350467.85	0	0.5	Thorium-228	1.11	NV	pCi/g
A5A-EF15	479280.69	1350467.85	0	0.5	Thorium-232	1	NV	pCi/g
A5A-EF15	479280.69	1350467.85	0	0.5	Thorium-232	1.1	NV	pCi/g
A5A-EF15	479280.69	1350467.85	0	0.5	Uranium, Total	19.5	NV	mg/kg
A5A-EF15	479280.69	1350467.85	0	0.5	Uranium, Total	18.2	NV	mg/kg
A5A-EF16	479274.43	1350522.49	0	0.5	Aroclor-1254	15.2	UNV	ug/kg
A5A-EF16	479274.43	1350522.49	0	0.5	Aroclor-1260	15.2	UNV	ug/kg
A5A-EF16	479274.43	1350522.49	0	0.5	Arsenic	9.2	NV	mg/kg
A5A-EF16	479274.43	1350522.49	0	0.5	Beryllium	0.917	NV	mg/kg
A5A-EF16	479274.43	1350522.49	0	0.5	Radium-226	1.11	NV	pCi/g
A5A-EF16	479274.43	1350522.49	0	0.5	Radium-228	1.06	NV	pCi/g
A5A-EF16	479274.43	1350522.49	0	0.5	Thorium-228	1.07	NV	pCi/g
A5A-EF16	479274.43	1350522.49	0	0.5	Thorium-232	1.06	NV	pCi/g
A5A-EF16	479274.43	1350522.49	0	0.5	Uranium, Total	7.78	NV	mg/kg
A5A-EF17	479278.9	1350605.9	0	0.5	Aroclor-1254	4.4	NV	ug/kg
A5A-EF17	479278.9	1350605.9	0	0.5	Aroclor-1260	14.4	UNV	ug/kg
A5A-EF17	479278.9	1350605.9	0	0.5	Arsenic	12.5	NV	mg/kg
A5A-EF17	479278.9	1350605.9	1	1.5	Arsenic	7.1	NV	mg/kg
A5A-EF17	479278.9	1350605.9	2	2.5	Arsenic	9.1	NV	mg/kg
A5A-EF17	479278.9	1350605.9	3	3.5	Arsenic	9	NV	mg/kg
A5A-EF17	479278.9	1350605.9	4	4.5	Arsenic	6.1	NV	mg/kg
A5A-EF17	479278.9	1350605.9	0	0.5	Beryllium	0.844	NV	mg/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-EF17	479278.9	1350605.9	0	0.5	Radium-226	1.2	NV	pCi/g
A5A-EF17	479278.9	1350605.9	0	0.5	Radium-228	1.04	NV	pCi/g
A5A-EF17	479278.9	1350605.9	0	0.5	Thorium-228	1.03	NV	pCi/g
A5A-EF17	479278.9	1350605.9	0	0.5	Thorium-232	1.04	NV	pCi/g
A5A-EF17	479278.9	1350605.9	0	0.5	Uranium, Total	8.65	NV	mg/kg
A5A-EF18	479228.75	1350325.79	0	0.5	Aroclor-1254	14.2	UNV	ug/kg
A5A-EF18	479228.75	1350325.79	0	0.5	Aroclor-1260	14.2	UNV	ug/kg
A5A-EF18	479228.75	1350325.79	0	0.5	Arsenic	9.59	NV	mg/kg
A5A-EF18	479228.75	1350325.79	0	0.5	Beryllium	0.819	NV	mg/kg
A5A-EF18	479228.75	1350325.79	0	0.5	Radium-226	1.13	NV	pCi/g
A5A-EF18	479228.75	1350325.79	0	0.5	Radium-228	0.897	NV	pCi/g
A5A-EF18	479228.75	1350325.79	0	0.5	Thorium-228	0.888	NV	pCi/g
A5A-EF18	479228.75	1350325.79	0	0.5	Thorium-232	0.897	NV	pCi/g
A5A-EF18	479228.75	1350325.79	0	0.5	Uranium, Total	7.82	NV	mg/kg
A5A-EF19	479250.29	1350482.23	0	0.5	Aroclor-1254	5.4	J	ug/kg
A5A-EF19	479250.29	1350482.23	0	0.5	Aroclor-1260	13.9	U	ug/kg
A5A-EF19	479250.29	1350482.23	0	0.5	Arsenic	5.95	J	mg/kg
A5A-EF19	479250.29	1350482.23	0	0.5	Beryllium	0.466	J	mg/kg
A5A-EF19	479250.29	1350482.23	0	0.5	Gross Alpha	22	UNV	pCi/g
A5A-EF19	479250.29	1350482.23	0	0.5	Gross Beta	35	UNV	pCi/g
A5A-EF19	479250.29	1350482.23	0	0.5	Radium-226	0.7	-	pCi/g
A5A-EF19	479250.29	1350482.23	0	0.5	Radium-228	0.578	-	pCi/g
A5A-EF19	479250.29	1350482.23	0	0.5	Thorium-228	0.572	-	pCi/g
A5A-EF19	479250.29	1350482.23	0	0.5	Thorium-232	0.578	-	pCi/g
A5A-EF19	479250.29	1350482.23	0	0.5	Uranium, Total	6.65	-	mg/kg
A5A-EF2	479424.28	1350389.6	0	0.5	Aroclor-1254	10.8	NV	ug/kg
A5A-EF2	479424.28	1350389.6	0	0.5	Aroclor-1260	14.3	UNV	ug/kg
A5A-EF2	479424.28	1350389.6	0	0.5	Arsenic	7.79	NV	mg/kg
A5A-EF2	479424.28	1350389.6	0	0.5	Beryllium	0.762	NV	mg/kg
A5A-EF2	479424.28	1350389.6	0	0.5	Radium-226	1.26	NV	pCi/g
A5A-EF2	479424.28	1350389.6	0	0.5	Radium-228	1.27	NV	pCi/g
A5A-EF2	479424.28	1350389.6	0	0.5	Thorium-228	1.44	NV	pCi/g
A5A-EF2	479424.28	1350389.6	0	0.5	Thorium-232	1.27	NV	pCi/g
A5A-EF2	479424.28	1350389.6	0	0.5	Uranium, Total	26.6	NV	mg/kg
A5A-EF20	479254.21	1350619.22	0	0.5	Aroclor-1254	14.6	U	ug/kg
A5A-EF20	479254.21	1350619.22	0	0.5	Aroclor-1260	14.6	U	ug/kg
A5A-EF20	479254.21	1350619.22	0	0.5	Arsenic	7.57	J	mg/kg
A5A-EF20	479254.21	1350619.22	0	0.5	Beryllium	0.734	J	mg/kg
A5A-EF20	479254.21	1350619.22	0	0.5	Radium-226	1.16	-	pCi/g
A5A-EF20	479254.21	1350619.22	0	0.5	Radium-228	0.957	-	pCi/g
A5A-EF20	479254.21	1350619.22	0	0.5	Thorium-228	0.96	-	pCi/g
A5A-EF20	479254.21	1350619.22	0	0.5	Thorium-232	0.957	-	pCi/g
A5A-EF20	479254.21	1350619.22	0	0.5	Uranium, Total	13.7	-	mg/kg
A5A-EF21	479191.01	1350330.61	0	0.5	Aroclor-1254	14.6	UNV	ug/kg
A5A-EF21	479191.01	1350330.61	0	0.5	Aroclor-1260	14.6	UNV	ug/kg
A5A-EF21	479191.01	1350330.61	0	0.5	Arsenic	11.2	NV	mg/kg
A5A-EF21	479191.01	1350330.61	0	0.5	Beryllium	0.831	NV	mg/kg
A5A-EF21	479191.01	1350330.61	0	0.5	Radium-226	1.13	NV	pCi/g
A5A-EF21	479191.01	1350330.61	0	0.5	Radium-228	0.984	NV	pCi/g
A5A-EF21	479191.01	1350330.61	0	0.5	Thorium-228	0.978	NV	pCi/g
A5A-EF21	479191.01	1350330.61	0	0.5	Thorium-232	0.984	NV	pCi/g
A5A-EF21	479191.01	1350330.61	0	0.5	Uranium, Total	8.15	NV	mg/kg
A5A-EF22	479198.4	1350457.57	0	0.5	Aroclor-1254	9.6	J	ug/kg
A5A-EF22	479198.4	1350457.57	0	0.5	Aroclor-1260	14.6	U	ug/kg
A5A-EF22	479198.4	1350457.57	0	0.5	Arsenic	5.57	J	mg/kg
A5A-EF22	479198.4	1350457.57	0	0.5	Beryllium	0.453	J	mg/kg
A5A-EF22	479198.4	1350457.57	0	0.5	Radium-226	0.731	-	pCi/g
A5A-EF22	479198.4	1350457.57	0	0.5	Radium-228	0.689	-	pCi/g
A5A-EF22	479198.4	1350457.57	0	0.5	Thorium-228	0.693	-	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-EF22	479198.4	1350457.57	0	0.5	Thorium-232	0.689	-	pCi/g
A5A-EF22	479198.4	1350457.57	0	0.5	Uranium, Total	12.6	-	mg/kg
A5A-EF23	479213.09	1350529.06	0	0.5	Aroclor-1254	4.7	J	ug/kg
A5A-EF23	479213.09	1350529.06	0	0.5	Aroclor-1260	14.6	U	ug/kg
A5A-EF23	479213.09	1350529.06	0	0.5	Arsenic	7.15	J	mg/kg
A5A-EF23	479213.09	1350529.06	0	0.5	Beryllium	0.654	J	mg/kg
A5A-EF23	479213.09	1350529.06	0	0.5	Radium-226	1.12	-	pCi/g
A5A-EF23	479213.09	1350529.06	0	0.5	Radium-228	1.04	-	pCi/g
A5A-EF23	479213.09	1350529.06	0	0.5	Thorium-228	1.04	-	pCi/g
A5A-EF23	479213.09	1350529.06	0	0.5	Thorium-232	1.04	-	pCi/g
A5A-EF23	479213.09	1350529.06	0	0.5	Uranium, Total	22.8	-	mg/kg
A5A-EF24	479187.28	1350577.98	0	0.5	Aroclor-1254	14.6	U	ug/kg
A5A-EF24	479187.28	1350577.98	0	0.5	Aroclor-1260	14.6	U	ug/kg
A5A-EF24	479187.28	1350577.98	0	0.5	Arsenic	6.82	J	mg/kg
A5A-EF24	479187.28	1350577.98	0	0.5	Beryllium	0.595	J	mg/kg
A5A-EF24	479187.28	1350577.98	0	0.5	Radium-226	1.03	-	pCi/g
A5A-EF24	479187.28	1350577.98	0	0.5	Radium-228	0.855	-	pCi/g
A5A-EF24	479187.28	1350577.98	0	0.5	Thorium-228	0.844	-	pCi/g
A5A-EF24	479187.28	1350577.98	0	0.5	Thorium-232	0.855	-	pCi/g
A5A-EF24	479187.28	1350577.98	0	0.5	Uranium, Total	11.9	-	mg/kg
A5A-EF25	479137.53	1350396.47	0	0.5	Aroclor-1254	9.2	J	ug/kg
A5A-EF25	479137.53	1350396.47	0	0.5	Aroclor-1260	14.7	U	ug/kg
A5A-EF25	479137.53	1350396.47	0	0.5	Arsenic	6.97	J	mg/kg
A5A-EF25	479137.53	1350396.47	0	0.5	Beryllium	0.835	J	mg/kg
A5A-EF25	479137.53	1350396.47	0	0.5	Radium-226	1.24	-	pCi/g
A5A-EF25	479137.53	1350396.47	0	0.5	Radium-228	1.07	-	pCi/g
A5A-EF25	479137.53	1350396.47	0	0.5	Thorium-228	1.05	-	pCi/g
A5A-EF25	479137.53	1350396.47	0	0.5	Thorium-232	1.07	-	pCi/g
A5A-EF25	479137.53	1350396.47	0	0.5	Uranium, Total	20.8	-	mg/kg
A5A-EF26	479145.41	1350453.83	0	0.5	Aroclor-1254	10.4	J	ug/kg
A5A-EF26	479145.41	1350453.83	0	0.5	Aroclor-1260	14.6	U	ug/kg
A5A-EF26	479145.41	1350453.83	0	0.5	Arsenic	7.47	J	mg/kg
A5A-EF26	479145.41	1350453.83	0	0.5	Beryllium	0.759	J	mg/kg
A5A-EF26	479145.41	1350453.83	0	0.5	Radium-226	1.15	-	pCi/g
A5A-EF26	479145.41	1350453.83	0	0.5	Radium-228	1.01	-	pCi/g
A5A-EF26	479145.41	1350453.83	0	0.5	Thorium-228	0.992	-	pCi/g
A5A-EF26	479145.41	1350453.83	0	0.5	Thorium-232	1.01	-	pCi/g
A5A-EF26	479145.41	1350453.83	0	0.5	Uranium, Total	18.5	-	mg/kg
A5A-EF27	479170.58	1350501.66	0	0.5	Aroclor-1254	11	J	ug/kg
A5A-EF27	479170.58	1350501.66	0	0.5	Aroclor-1260	14.5	U	ug/kg
A5A-EF27	479170.58	1350501.66	0	0.5	Arsenic	8.06	J	mg/kg
A5A-EF27	479170.58	1350501.66	0	0.5	Beryllium	0.632	J	mg/kg
A5A-EF27	479170.58	1350501.66	0	0.5	Radium-226	1.03	-	pCi/g
A5A-EF27	479170.58	1350501.66	0	0.5	Radium-228	0.891	-	pCi/g
A5A-EF27	479170.58	1350501.66	0	0.5	Thorium-228	0.893	-	pCi/g
A5A-EF27	479170.58	1350501.66	0	0.5	Thorium-232	0.891	-	pCi/g
A5A-EF27	479170.58	1350501.66	0	0.5	Uranium, Total	8.1	-	mg/kg
A5A-EF28	479151.44	1350573.44	0	0.5	Aroclor-1254	13.8	U	ug/kg
A5A-EF28	479151.44	1350573.44	0	0.5	Aroclor-1260	13.8	U	ug/kg
A5A-EF28	479151.44	1350573.44	0	0.5	Arsenic	5.27	J	mg/kg
A5A-EF28	479151.44	1350573.44	0	0.5	Beryllium	0.644	J	mg/kg
A5A-EF28	479151.44	1350573.44	0	0.5	Radium-226	0.871	-	pCi/g
A5A-EF28	479151.44	1350573.44	0	0.5	Radium-228	0.656	-	pCi/g
A5A-EF28	479151.44	1350573.44	0	0.5	Thorium-228	0.665	-	pCi/g
A5A-EF28	479151.44	1350573.44	0	0.5	Thorium-232	0.656	-	pCi/g
A5A-EF28	479151.44	1350573.44	0	0.5	Uranium, Total	3.57	-	mg/kg
A5A-EF29	479081.12	1350321.7	0	0.5	Aroclor-1254	14	U	ug/kg
A5A-EF29	479081.12	1350321.7	0	0.5	Aroclor-1260	14	U	ug/kg
A5A-EF29	479081.12	1350321.7	0	0.5	Arsenic	5.63	J	mg/kg

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PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-EF29	479081.12	1350321.7	0	0.5	Beryllium	0.669	J	mg/kg
A5A-EF29	479081.12	1350321.7	0	0.5	Radium-226	0.811	-	pCi/g
A5A-EF29	479081.12	1350321.7	0	0.5	Radium-228	0.836	-	pCi/g
A5A-EF29	479081.12	1350321.7	0	0.5	Thorium-228	0.821	-	pCi/g
A5A-EF29	479081.12	1350321.7	0	0.5	Thorium-232	0.836	-	pCi/g
A5A-EF29	479081.12	1350321.7	0	0.5	Uranium, Total	13	-	mg/kg
A5A-EF3	479445.23	1350475.91	0	0.5	Aroclor-1254	4.5	NV	ug/kg
A5A-EF3	479445.23	1350475.91	0	0.5	Aroclor-1260	14.2	UNV	ug/kg
A5A-EF3	479445.23	1350475.91	0	0.5	Arsenic	8.75	NV	mg/kg
A5A-EF3	479445.23	1350475.91	0	0.5	Beryllium	0.754	NV	mg/kg
A5A-EF3	479445.23	1350475.91	0	0.5	Radium-226	1.32	NV	pCi/g
A5A-EF3	479445.23	1350475.91	0	0.5	Radium-228	1.1	NV	pCi/g
A5A-EF3	479445.23	1350475.91	0	0.5	Thorium-228	1.14	NV	pCi/g
A5A-EF3	479445.23	1350475.91	0	0.5	Thorium-232	1.1	NV	pCi/g
A5A-EF3	479445.23	1350475.91	0	0.5	Uranium, Total	14.6	NV	mg/kg
A5A-EF30	479099.52	1350376.25	0	0.5	Aroclor-1254	15	U	ug/kg
A5A-EF30	479099.52	1350376.25	0	0.5	Aroclor-1254	15.1	U	ug/kg
A5A-EF30	479099.52	1350376.25	0	0.5	Aroclor-1260	15	U	ug/kg
A5A-EF30	479099.52	1350376.25	0	0.5	Aroclor-1260	15.1	U	ug/kg
A5A-EF30	479099.52	1350376.25	0	0.5	Arsenic	8.75	J	mg/kg
A5A-EF30	479099.52	1350376.25	0	0.5	Arsenic	7.42	J	mg/kg
A5A-EF30	479099.52	1350376.25	0	0.5	Beryllium	1.17	J	mg/kg
A5A-EF30	479099.52	1350376.25	0	0.5	Beryllium	1.03	J	mg/kg
A5A-EF30	479099.52	1350376.25	0	0.5	Radium-226	1.4	-	pCi/g
A5A-EF30	479099.52	1350376.25	0	0.5	Radium-226	1.33	-	pCi/g
A5A-EF30	479099.52	1350376.25	0	0.5	Radium-228	1.19	-	pCi/g
A5A-EF30	479099.52	1350376.25	0	0.5	Radium-228	1.11	-	pCi/g
A5A-EF30	479099.52	1350376.25	0	0.5	Thorium-228	1.18	-	pCi/g
A5A-EF30	479099.52	1350376.25	0	0.5	Thorium-228	1.17	-	pCi/g
A5A-EF30	479099.52	1350376.25	0	0.5	Thorium-232	1.19	-	pCi/g
A5A-EF30	479099.52	1350376.25	0	0.5	Thorium-232	1.11	-	pCi/g
A5A-EF30	479099.52	1350376.25	0	0.5	Uranium, Total	9.05	-	mg/kg
A5A-EF30	479099.52	1350376.25	0	0.5	Uranium, Total	10.8	-	mg/kg
A5A-EF31	479081.56	1350434.07	0	0.5	Aroclor-1254	13.8	U	ug/kg
A5A-EF31	479081.56	1350434.07	0	0.5	Aroclor-1260	13.8	U	ug/kg
A5A-EF31	479081.56	1350434.07	0	0.5	Arsenic	6.13	J	mg/kg
A5A-EF31	479081.56	1350434.07	0	0.5	Beryllium	0.642	J	mg/kg
A5A-EF31	479081.56	1350434.07	0	0.5	Radium-226	0.919	-	pCi/g
A5A-EF31	479081.56	1350434.07	0	0.5	Radium-228	0.687	-	pCi/g
A5A-EF31	479081.56	1350434.07	0	0.5	Thorium-228	0.662	-	pCi/g
A5A-EF31	479081.56	1350434.07	0	0.5	Thorium-232	0.687	-	pCi/g
A5A-EF31	479081.56	1350434.07	0	0.5	Uranium, Total	3.62	-	mg/kg
A5A-EF32	479085.23	1350488.85	0	0.5	Aroclor-1254	14.8	U	ug/kg
A5A-EF32	479085.23	1350488.85	0	0.5	Aroclor-1260	14.8	U	ug/kg
A5A-EF32	479085.23	1350488.85	0	0.5	Arsenic	5.15	J	mg/kg
A5A-EF32	479085.23	1350488.85	0	0.5	Beryllium	0.582	J	mg/kg
A5A-EF32	479085.23	1350488.85	0	0.5	Radium-226	1.22	-	pCi/g
A5A-EF32	479085.23	1350488.85	0	0.5	Radium-228	1.13	-	pCi/g
A5A-EF32	479085.23	1350488.85	0	0.5	Thorium-228	1.13	-	pCi/g
A5A-EF32	479085.23	1350488.85	0	0.5	Thorium-232	1.13	-	pCi/g
A5A-EF32	479085.23	1350488.85	0	0.5	Uranium, Total	11.1	-	mg/kg
A5A-EF33	479034.83	1350346.96	0	0.5	Aroclor-1254	13.8	U	ug/kg
A5A-EF33	479034.83	1350346.96	0	0.5	Aroclor-1260	13.8	U	ug/kg
A5A-EF33	479034.83	1350346.96	0	0.5	Arsenic	6.37	J	mg/kg
A5A-EF33	479034.83	1350346.96	0	0.5	Beryllium	0.703	J	mg/kg
A5A-EF33	479034.83	1350346.96	0	0.5	Radium-226	0.814	-	pCi/g
A5A-EF33	479034.83	1350346.96	0	0.5	Radium-228	0.713	-	pCi/g
A5A-EF33	479034.83	1350346.96	0	0.5	Thorium-228	0.731	-	pCi/g
A5A-EF33	479034.83	1350346.96	0	0.5	Thorium-232	0.713	-	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-EF33	479034.83	1350346.96	0	0.5	Uranium, Total	6.71	-	mg/kg
A5A-EF34	479036.18	1350385.55	0	0.5	Aroclor-1254	7.2	J	ug/kg
A5A-EF34	479036.18	1350385.55	0	0.5	Aroclor-1260	13.9	U	ug/kg
A5A-EF34	479036.18	1350385.55	0	0.5	Arsenic	8.39	J	mg/kg
A5A-EF34	479036.18	1350385.55	0	0.5	Beryllium	0.713	J	mg/kg
A5A-EF34	479036.18	1350385.55	0	0.5	Radium-226	1.1	-	pCi/g
A5A-EF34	479036.18	1350385.55	0	0.5	Radium-228	0.827	-	pCi/g
A5A-EF34	479036.18	1350385.55	0	0.5	Thorium-228	0.847	-	pCi/g
A5A-EF34	479036.18	1350385.55	0	0.5	Thorium-232	0.827	-	pCi/g
A5A-EF34	479036.18	1350385.55	0	0.5	Uranium, Total	5.13	-	mg/kg
A5A-EF35	478963.85	1350356.66	0	0.5	Aroclor-1254	14.2	UNV	ug/kg
A5A-EF35	478963.85	1350356.66	0	0.5	Aroclor-1260	14.2	UNV	ug/kg
A5A-EF35	478963.85	1350356.66	0	0.5	Arsenic	5.36	NV	mg/kg
A5A-EF35	478963.85	1350356.66	0	0.5	Beryllium	0.729	NV	mg/kg
A5A-EF35	478963.85	1350356.66	0	0.5	Radium-226	0.897	NV	pCi/g
A5A-EF35	478963.85	1350356.66	0	0.5	Radium-228	0.697	NV	pCi/g
A5A-EF35	478963.85	1350356.66	0	0.5	Thorium-228	0.69	NV	pCi/g
A5A-EF35	478963.85	1350356.66	0	0.5	Thorium-232	0.697	NV	pCi/g
A5A-EF35	478963.85	1350356.66	0	0.5	Uranium, Total	4.87	NV	mg/kg
A5A-EF36	478976.35	1350415.92	0	0.5	Aroclor-1254	14.3	U	ug/kg
A5A-EF36	478976.35	1350415.92	0	0.5	Aroclor-1260	14.3	U	ug/kg
A5A-EF36	478976.35	1350415.92	0	0.5	Arsenic	5.35	J	mg/kg
A5A-EF36	478976.35	1350415.92	0	0.5	Beryllium	0.646	J	mg/kg
A5A-EF36	478976.35	1350415.92	0	0.5	Gross Alpha	14	NV	pCi/g
A5A-EF36	478976.35	1350415.92	0	0.5	Gross Beta	17	UNV	pCi/g
A5A-EF36	478976.35	1350415.92	0	0.5	Radium-226	0.866	-	pCi/g
A5A-EF36	478976.35	1350415.92	0	0.5	Radium-228	0.739	-	pCi/g
A5A-EF36	478976.35	1350415.92	0	0.5	Thorium-228	0.747	-	pCi/g
A5A-EF36	478976.35	1350415.92	0	0.5	Thorium-232	0.739	-	pCi/g
A5A-EF36	478976.35	1350415.92	0	0.5	Uranium, Total	6.09	-	mg/kg
A5A-EF4	479423.53	1350614.29	0	0.5	Aroclor-1254	13.9	U	ug/kg
A5A-EF4	479423.53	1350614.29	0	0.5	Aroclor-1260	13.9	U	ug/kg
A5A-EF4	479423.53	1350614.29	0	0.5	Arsenic	7.83	J	mg/kg
A5A-EF4	479423.53	1350614.29	0	0.5	Beryllium	0.688	J	mg/kg
A5A-EF4	479423.53	1350614.29	0	0.5	Radium-226	1.13	-	pCi/g
A5A-EF4	479423.53	1350614.29	0	0.5	Radium-228	0.963	-	pCi/g
A5A-EF4	479423.53	1350614.29	0	0.5	Thorium-228	0.956	-	pCi/g
A5A-EF4	479423.53	1350614.29	0	0.5	Thorium-232	0.963	-	pCi/g
A5A-EF4	479423.53	1350614.29	0	0.5	Uranium, Total	6.74	-	mg/kg
A5A-EF5	479401.47	1350332.06	0	0.5	Aroclor-1254	14.9	UNV	ug/kg
A5A-EF5	479401.47	1350332.06	0	0.5	Aroclor-1260	14.9	UNV	ug/kg
A5A-EF5	479401.47	1350332.06	0	0.5	Arsenic	7.63	NV	mg/kg
A5A-EF5	479401.47	1350332.06	0	0.5	Beryllium	0.898	NV	mg/kg
A5A-EF5	479401.47	1350332.06	0	0.5	Radium-226	1.19	NV	pCi/g
A5A-EF5	479401.47	1350332.06	0	0.5	Radium-228	1.07	NV	pCi/g
A5A-EF5	479401.47	1350332.06	0	0.5	Thorium-228	1.1	NV	pCi/g
A5A-EF5	479401.47	1350332.06	0	0.5	Thorium-232	1.07	NV	pCi/g
A5A-EF5	479401.47	1350332.06	0	0.5	Uranium, Total	10.2	NV	mg/kg
A5A-EF6	479369.27	1350450.58	0	0.5	Aroclor-1254	7.3	NV	ug/kg
A5A-EF6	479369.27	1350450.58	0	0.5	Aroclor-1260	14.8	UNV	ug/kg
A5A-EF6	479369.27	1350450.58	0	0.5	Arsenic	6.56	NV	mg/kg
A5A-EF6	479369.27	1350450.58	0	0.5	Beryllium	0.692	NV	mg/kg
A5A-EF6	479369.27	1350450.58	0	0.5	Radium-226	1.18	NV	pCi/g
A5A-EF6	479369.27	1350450.58	0	0.5	Radium-228	1.09	NV	pCi/g
A5A-EF6	479369.27	1350450.58	0	0.5	Thorium-228	1.09	NV	pCi/g
A5A-EF6	479369.27	1350450.58	0	0.5	Thorium-232	1.09	NV	pCi/g
A5A-EF6	479369.27	1350450.58	0	0.5	Uranium, Total	28.6	NV	mg/kg
A5A-EF7	479364.8	1350511.67	0	0.5	Aroclor-1254	7.3	NV	ug/kg
A5A-EF7	479364.8	1350511.67	0	0.5	Aroclor-1260	15.3	UNV	ug/kg

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Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5A-EF7	479364.8	1350511.67	0	0.5	Arsenic	5.54	NV	mg/kg
A5A-EF7	479364.8	1350511.67	0	0.5	Beryllium	0.657	NV	mg/kg
A5A-EF7	479364.8	1350511.67	0	0.5	Radium-226	1.24	NV	pCi/g
A5A-EF7	479364.8	1350511.67	0	0.5	Radium-228	1.06	NV	pCi/g
A5A-EF7	479364.8	1350511.67	0	0.5	Thorium-228	1.06	NV	pCi/g
A5A-EF7	479364.8	1350511.67	0	0.5	Thorium-232	1.06	NV	pCi/g
A5A-EF7	479364.8	1350511.67	0	0.5	Uranium, Total	33.3	NV	mg/kg
A5A-EF8	479389.11	1350558.42	0	0.5	Aroclor-1254	5.6	J	ug/kg
A5A-EF8	479389.11	1350558.42	0	0.5	Aroclor-1260	15.5	U	ug/kg
A5A-EF8	479389.11	1350558.42	0	0.5	Arsenic	8.39	J	mg/kg
A5A-EF8	479389.11	1350558.42	0	0.5	Beryllium	1.07	J	mg/kg
A5A-EF8	479389.11	1350558.42	0	0.5	Radium-226	1.15	-	pCi/g
A5A-EF8	479389.11	1350558.42	0	0.5	Radium-228	1.01	-	pCi/g
A5A-EF8	479389.11	1350558.42	0	0.5	Thorium-228	1.03	-	pCi/g
A5A-EF8	479389.11	1350558.42	0	0.5	Thorium-232	1.01	-	pCi/g
A5A-EF8	479389.11	1350558.42	0	0.5	Uranium, Total	9.18	-	mg/kg
A5A-EF9	479340.45	1350343.66	0	0.5	Aroclor-1254	15.2	UNV	ug/kg
A5A-EF9	479340.45	1350343.66	0	0.5	Aroclor-1260	15.2	UNV	ug/kg
A5A-EF9	479340.45	1350343.66	0	0.5	Arsenic	5.54	NV	mg/kg
A5A-EF9	479340.45	1350343.66	0	0.5	Beryllium	0.892	NV	mg/kg
A5A-EF9	479340.45	1350343.66	0	0.5	Radium-226	1.37	NV	pCi/g
A5A-EF9	479340.45	1350343.66	0	0.5	Radium-228	1.13	NV	pCi/g
A5A-EF9	479340.45	1350343.66	0	0.5	Thorium-228	1.13	NV	pCi/g
A5A-EF9	479340.45	1350343.66	0	0.5	Thorium-232	1.13	NV	pCi/g
A5A-EF9	479340.45	1350343.66	0	0.5	Uranium, Total	12.5	NV	mg/kg
A5-AT-10	479957	1350520.5	0	0.5	Technetium-99	-1.44	U	pCi/g
A5-AT-10	479957	1350520.5	6.5	7	Technetium-99	-0.976	U	pCi/g
A5-AT-8	480025.4	1349188	0	0.5	Gross Alpha	4.8	NV	pCi/g
A5-AT-8	480025.4	1349188	0	0.5	Gross Beta	2.3	UNV	pCi/g
A5-AT-8	480025.4	1349188	0	0.5	Technetium-99	0.854	UNV	pCi/g
A5-AT-8	480025.4	1349188	6.5	7	Technetium-99	1.24	NV	pCi/g
A5EF-TC1			0	0.5	Technetium-99	0.23	UNV	pCi/g
A5EF-TC2			0	0.5	Technetium-99	-1.06	UNV	pCi/g
A5EF-TC3			0	0.5	Technetium-99	0.669	UNV	pCi/g
A5EF-TC4			0	0.5	Technetium-99	-0.174	UNV	pCi/g
A5-HSB-01	479941.21	1349610.06	4	4.5	Technetium-99	4.86	NV	pCi/g
A5-HSB-01	479941.21	1349610.06	7	7.5	Technetium-99	2.39	UNV	pCi/g
A5-HSB-01	479941.21	1349610.06	10	10.5	Technetium-99	2.15	NV	pCi/g
A5-HSB-01	479941.21	1349610.06	4	4.5	Uranium, Total	121	NV	mg/kg dry
A5-HSB-01	479941.21	1349610.06	7	7.5	Uranium, Total	1.69	NV	mg/kg dry
A5-HSB-01	479941.21	1349610.06	10	10.5	Uranium, Total	2.28	NV	mg/kg dry
A5P-15	479700.644	1350520.612	0	0.5	Aroclor-1254	101	-	ug/kg
A5P-15	479700.644	1350520.612	0	0.5	Aroclor-1260	43	-	ug/kg
A5P-15	479700.644	1350520.612	0	0.5	Benzo(a)anthracene	61.9	J	ug/kg
A5P-15	479700.644	1350520.612	0	0.5	Benzo(a)pyrene	73.2	J	ug/kg
A5P-15	479700.644	1350520.612	0	0.5	Benzo(b)fluoranthene	112	J	ug/kg
A5P-15	479700.644	1350520.612	0	0.5	Dibenzo(a,h)anthracene	77.4	U	ug/kg
A5P-15	479700.644	1350520.612	0	0.5	Indeno(1,2,3-cd)pyrene	35.6	J	ug/kg
A5P-15	479700.644	1350520.612	0	0.5	Uranium, Total	15.3	NV	mg/kg
A5P-9	479714.48	1350272.21	1	1.5	Aroclor-1254	6.2	UNV	ug/kg
A5P-9	479714.48	1350272.21	3.5	4	Aroclor-1254	6.2	UNV	ug/kg
A5P-9	479714.48	1350272.21	1	1.5	Aroclor-1260	6.2	UNV	ug/kg
A5P-9	479714.48	1350272.21	3.5	4	Aroclor-1260	6.2	UNV	ug/kg
A5P-9	479714.48	1350272.21	1	1.5	Benzo(a)anthracene	84.4	UNV	ug/kg
A5P-9	479714.48	1350272.21	3.5	4	Benzo(a)anthracene	82.3	UNV	ug/kg
A5P-9	479714.48	1350272.21	1	1.5	Benzo(a)pyrene	84.4	UNV	ug/kg
A5P-9	479714.48	1350272.21	3.5	4	Benzo(a)pyrene	82.3	UNV	ug/kg
A5P-9	479714.48	1350272.21	1	1.5	Benzo(b)fluoranthene	84.4	UNV	ug/kg
A5P-9	479714.48	1350272.21	3.5	4	Benzo(b)fluoranthene	82.3	UNV	ug/kg

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Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A5P-9	479714.48	1350272.21	1	1.5	Dibenzo(a,h)anthracene	84.4	UNV	ug/kg
A5P-9	479714.48	1350272.21	3.5	4	Dibenzo(a,h)anthracene	82.3	UNV	ug/kg
A5P-9	479714.48	1350272.21	1	1.5	Indeno(1,2,3-cd)pyrene	84.4	UNV	ug/kg
A5P-9	479714.48	1350272.21	3.5	4	Indeno(1,2,3-cd)pyrene	82.3	UNV	ug/kg
A6-18	481670.4	1348718	0	0.5	Technetium-99	1	NV	pCi/g
A6-18	481670.4	1348718	1	1.5	Technetium-99	1.4	UNV	pCi/g
A6-18	481670.4	1348718	2.5	3	Technetium-99	1.6	UNV	pCi/g
A6-18	481670.4	1348718	4.5	5	Technetium-99	1.5	UNV	pCi/g
A6-18	481670.4	1348718	0	0.5	Uranium, Total	3820	NV	mg/kg
A6-18	481670.4	1348718	0.5	1	Uranium, Total	1160	NV	mg/kg
A6-18	481670.4	1348718	1	1.5	Uranium, Total	56.9	NV	mg/kg
A6-18	481670.4	1348718	2.5	3	Uranium, Total	159	NV	mg/kg
A6-18	481670.4	1348718	4.5	5	Uranium, Total	11.1	NV	mg/kg
A6-19	481673.87	1348714.62	0	0.5	Technetium-99	1.6	UNV	pCi/g
A6-19	481673.87	1348714.62	1	1.5	Technetium-99	1.7	UNV	pCi/g
A6-19	481673.87	1348714.62	2.5	3	Technetium-99	1.5	UNV	pCi/g
A6-19	481673.87	1348714.62	4.5	5	Technetium-99	1.7	UNV	pCi/g
A6-19	481673.87	1348714.62	0	0.5	Uranium, Total	456	NV	mg/kg
A6-19	481673.87	1348714.62	1	1.5	Uranium, Total	4.53	NV	mg/kg
A6-19	481673.87	1348714.62	2.5	3	Uranium, Total	12.6	NV	mg/kg
A6-19	481673.87	1348714.62	4.5	5	Uranium, Total	5.75	NV	mg/kg
A6-21	481666.66	1348714.46	0	0.5	Technetium-99	1.6	UNV	pCi/g
A6-21	481666.66	1348714.46	1	1.5	Technetium-99	1.4	UNV	pCi/g
A6-21	481666.66	1348714.46	2.5	3	Technetium-99	1.4	UNV	pCi/g
A6-21	481666.66	1348714.46	4.5	5	Technetium-99	1.6	UNV	pCi/g
A6-21	481666.66	1348714.46	0	0.5	Uranium, Total	132	NV	mg/kg
A6-21	481666.66	1348714.46	1	1.5	Uranium, Total	62.8	NV	mg/kg
A6-21	481666.66	1348714.46	2.5	3	Uranium, Total	39	NV	mg/kg
A6-21	481666.66	1348714.46	4.5	5	Uranium, Total	27.8	NV	mg/kg
A6-22	481666.88	1348721.7	0	0.5	Technetium-99	1.5	UNV	pCi/g
A6-22	481666.88	1348721.7	1	1.5	Technetium-99	1.5	UNV	pCi/g
A6-22	481666.88	1348721.7	2.5	3	Technetium-99	1.5	UNV	pCi/g
A6-22	481666.88	1348721.7	4.5	5	Technetium-99	1.5	UNV	pCi/g
A6-22	481666.88	1348721.7	0	0.5	Uranium, Total	118	NV	mg/kg
A6-22	481666.88	1348721.7	1	1.5	Uranium, Total	12.6	NV	mg/kg
A6-22	481666.88	1348721.7	2.5	3	Uranium, Total	12.9	NV	mg/kg
A6-22	481666.88	1348721.7	4.5	5	Uranium, Total	41	NV	mg/kg
A6-23	481656.35	1348868.16	0	0.5	Technetium-99	17	NV	pCi/g
A6-23	481656.35	1348868.16	1	1.5	Technetium-99	3.1	NV	pCi/g
A6-23	481656.35	1348868.16	2.5	3	Technetium-99	1.7	UNV	pCi/g
A6-23	481656.35	1348868.16	4.5	5	Technetium-99	1.5	UNV	pCi/g
A6-23	481656.35	1348868.16	0	0.5	Uranium, Total	56700	NV	mg/kg
A6-23	481656.35	1348868.16	0.5	1	Uranium, Total	1820	NV	mg/kg
A6-23	481656.35	1348868.16	1	1.5	Uranium, Total	2480	NV	mg/kg
A6-23	481656.35	1348868.16	1.5	2	Uranium, Total	2880	NV	mg/kg
A6-23	481656.35	1348868.16	2	2.5	Uranium, Total	2980	NV	mg/kg
A6-23	481656.35	1348868.16	2.5	3	Uranium, Total	3290	NV	mg/kg
A6-23	481656.35	1348868.16	3	3.5	Uranium, Total	1630	NV	mg/kg
A6-23	481656.35	1348868.16	3.5	4	Uranium, Total	2000	NV	mg/kg
A6-23	481656.35	1348868.16	4	4.5	Uranium, Total	435	NV	mg/kg
A6-23	481656.35	1348868.16	4.5	5	Uranium, Total	156	NV	mg/kg
A6-23	481656.35	1348868.16	5	5.5	Uranium, Total	52.8	NV	mg/kg
A6-23	481656.35	1348868.16	6.5	7	Uranium, Total	14.8	NV	mg/kg
A6-23	481656.35	1348868.16	8.5	9	Uranium, Total	13.4	NV	mg/kg
A6-23	481656.35	1348868.16	10.5	11	Uranium, Total	6.47	NV	mg/kg
A6-24	481656.39	1348873.06	0	0.5	Technetium-99	3	NV	pCi/g
A6-24	481656.39	1348873.06	1	1.5	Technetium-99	2	NV	pCi/g
A6-24	481656.39	1348873.06	2.5	3	Technetium-99	1.6	UNV	pCi/g
A6-24	481656.39	1348873.06	4.5	5	Technetium-99	1.5	UNV	pCi/g

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A6-24	481656.39	1348873.06	0	0.5	Uranium, Total	1140	NV	mg/kg
A6-24	481656.39	1348873.06	0.5	1	Uranium, Total	1400	NV	mg/kg
A6-24	481656.39	1348873.06	1	1.5	Uranium, Total	974	NV	mg/kg
A6-24	481656.39	1348873.06	1.5	2	Uranium, Total	634	NV	mg/kg
A6-24	481656.39	1348873.06	2.5	3	Uranium, Total	2560	NV	mg/kg
A6-24	481656.39	1348873.06	4.5	5	Uranium, Total	485	NV	mg/kg
A6-24	481656.39	1348873.06	5	5.5	Uranium, Total	229	NV	mg/kg
A6-24	481656.39	1348873.06	6.5	7	Uranium, Total	54.7	NV	mg/kg
A6-24	481656.39	1348873.06	8.5	9	Uranium, Total	7.27	NV	mg/kg
A6-24	481656.39	1348873.06	10.5	11	Uranium, Total	1.32	NV	mg/kg
A6-25	481656.67	1348862.84	0	0.5	Technetium-99	5.2	NV	pCi/g
A6-25	481656.67	1348862.84	1	1.5	Technetium-99	1.6	UNV	pCi/g
A6-25	481656.67	1348862.84	2.5	3	Technetium-99	1.5	UNV	pCi/g
A6-25	481656.67	1348862.84	4.5	5	Technetium-99	1.4	UNV	pCi/g
A6-25	481656.67	1348862.84	0	0.5	Uranium, Total	14900	NV	mg/kg
A6-25	481656.67	1348862.84	0.5	1	Uranium, Total	832	NV	mg/kg
A6-25	481656.67	1348862.84	1	1.5	Uranium, Total	1530	NV	mg/kg
A6-25	481656.67	1348862.84	2.5	3	Uranium, Total	49.4	NV	mg/kg
A6-25	481656.67	1348862.84	3.5	4	Uranium, Total	350	NV	mg/kg
A6-25	481656.67	1348862.84	4	4.5	Uranium, Total	2720	NV	mg/kg
A6-25	481656.67	1348862.84	4.5	5	Uranium, Total	1330	NV	mg/kg
A6-25	481656.67	1348862.84	5	5.5	Uranium, Total	97.7	NV	mg/kg
A6-25	481656.67	1348862.84	6.5	7	Uranium, Total	42.3	NV	mg/kg
A6-25	481656.67	1348862.84	8.5	9	Uranium, Total	3.04	NV	mg/kg
A6-25	481656.67	1348862.84	10.5	11	Uranium, Total	1.69	NV	mg/kg
A6-26	481661.24	1348873.01	0	0.5	Technetium-99	2.5	NV	pCi/g
A6-26	481661.24	1348873.01	1	1.5	Technetium-99	1.5	UNV	pCi/g
A6-26	481661.24	1348873.01	2.5	3	Technetium-99	1.5	UNV	pCi/g
A6-26	481661.24	1348873.01	4.5	5	Technetium-99	1.6	UNV	pCi/g
A6-26	481661.24	1348873.01	0	0.5	Uranium, Total	3490	NV	mg/kg
A6-26	481661.24	1348873.01	1	1.5	Uranium, Total	442	NV	mg/kg
A6-26	481661.24	1348873.01	2	2.5	Uranium, Total	1580	NV	mg/kg
A6-26	481661.24	1348873.01	2.5	3	Uranium, Total	2630	NV	mg/kg
A6-26	481661.24	1348873.01	4	4.5	Uranium, Total	2500	NV	mg/kg
A6-26	481661.24	1348873.01	4.5	5	Uranium, Total	282	NV	mg/kg
A6-26	481661.24	1348873.01	5	5.5	Uranium, Total	46.4	NV	mg/kg
A6-26	481661.24	1348873.01	6.5	7	Uranium, Total	35.5	NV	mg/kg
A6-26	481661.24	1348873.01	8.5	9	Uranium, Total	11.2	NV	mg/kg
A6-26	481661.24	1348873.01	10.5	11	Uranium, Total	10.2	NV	mg/kg
A6-28	481656	1348883	0	0.5	Uranium, Total	1.56	NV	mg/kg
A6-28	481656	1348883	1	1.5	Uranium, Total	680	NV	mg/kg
A6-28	481656	1348883	1.5	2	Uranium, Total	2240	NV	mg/kg
A6-28	481656	1348883	2.5	3	Uranium, Total	99.4	NV	mg/kg
A6-28	481656	1348883	4.5	5	Uranium, Total	3.36	NV	mg/kg
A6-28	481656	1348883	6.5	7	Uranium, Total	98.8	NV	mg/kg
A6-28	481656	1348883	8.5	9	Uranium, Total	14	NV	mg/kg
A6-28	481656	1348883	10.5	11	Uranium, Total	7.94	NV	mg/kg
A6-29	481656.39	1348852.84	0	0.5	Uranium, Total	2970	NV	mg/kg
A6-29	481656.39	1348852.84	0.5	1	Uranium, Total	937	NV	mg/kg
A6-29	481656.39	1348852.84	2.5	3	Uranium, Total	2.41	NV	mg/kg
A6-29	481656.39	1348852.84	4.5	5	Uranium, Total	38	NV	mg/kg
A6-29	481656.39	1348852.84	6.5	7	Uranium, Total	24.4	NV	mg/kg
A6-29	481656.39	1348852.84	8.5	9	Uranium, Total	2.14	NV	mg/kg
A6-29	481656.39	1348852.84	10.5	11	Uranium, Total	1.11	NV	mg/kg
A6-30	481671	1348868	0	0.5	Uranium, Total	558	NV	mg/kg
A6-30	481671	1348868	2.5	3	Uranium, Total	189	NV	mg/kg
A6-30	481671	1348868	4.5	5	Uranium, Total	22.3	NV	mg/kg
A6-30	481671	1348868	6.5	7	Uranium, Total	14.6	NV	mg/kg
A6-30	481671	1348868	8.5	9	Uranium, Total	5.7	NV	mg/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

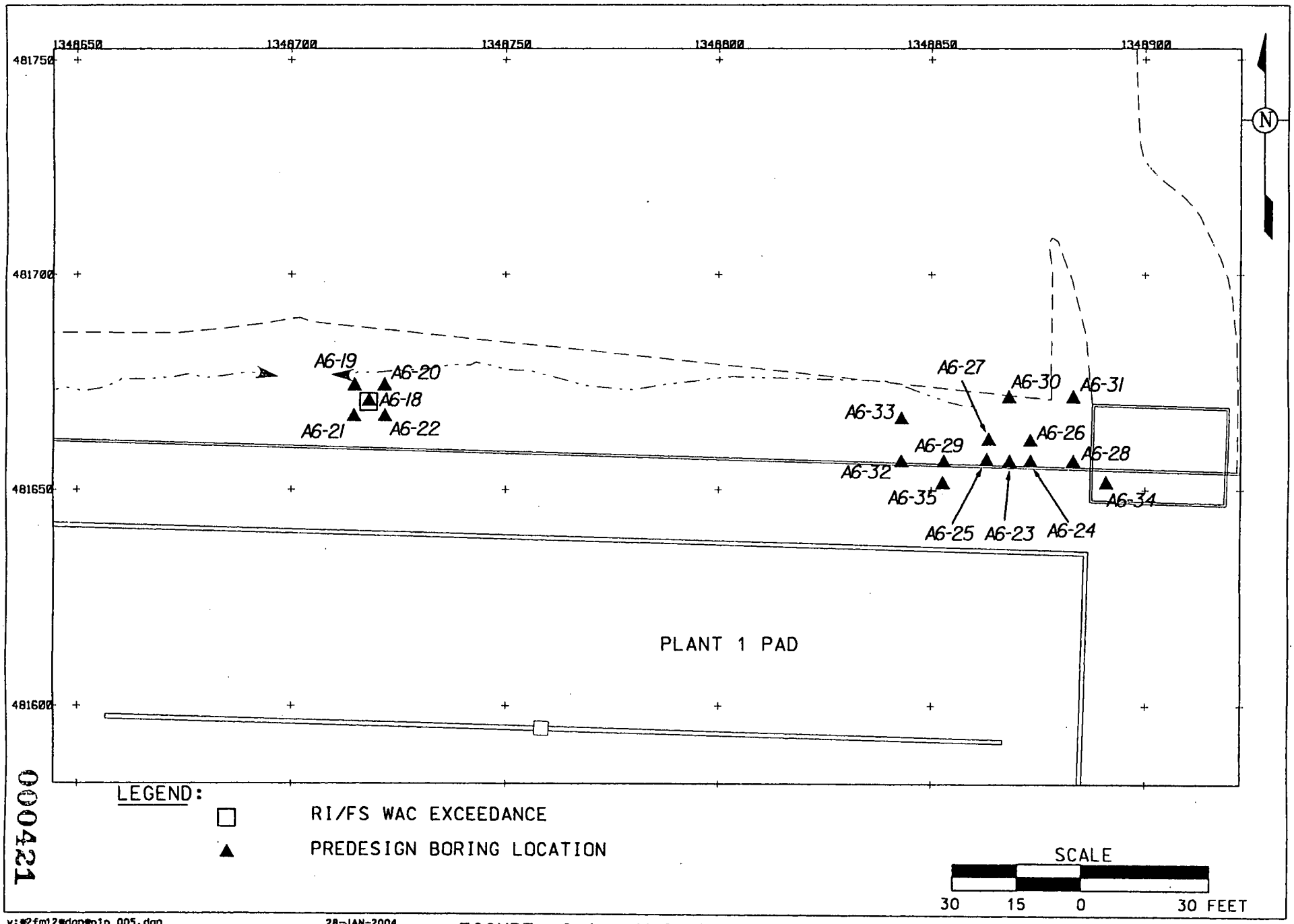
Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A6-30	481671	1348868	10.5	11	Uranium, Total	1.55	NV	mg/kg
A6-31	481671.24	1348883.06	0	0.5	Uranium, Total	1.48	NV	mg/kg
A6-31	481671.24	1348883.06	2.5	3	Uranium, Total	79.8	NV	mg/kg
A6-31	481671.24	1348883.06	4.5	5	Uranium, Total	2.34	NV	mg/kg
A6-31	481671.24	1348883.06	6.5	7	Uranium, Total	15.4	NV	mg/kg
A6-31	481671.24	1348883.06	8.5	9	Uranium, Total	1.46	NV	mg/kg
A6-31	481671.24	1348883.06	10.5	11	Uranium, Total	3.43	NV	mg/kg
A6-32	481656.39	1348842.83	0	0.5	Uranium, Total	307	NV	mg/kg
A6-32	481656.39	1348842.83	2.5	3	Uranium, Total	105	NV	mg/kg
A6-32	481656.39	1348842.83	4.5	5	Uranium, Total	37.4	NV	mg/kg
A6-32	481656.39	1348842.83	6.5	7	Uranium, Total	19.4	NV	mg/kg
A6-32	481656.39	1348842.83	8.5	9	Uranium, Total	3.62	NV	mg/kg
A6-32	481656.39	1348842.83	10.5	11	Uranium, Total	4.46	NV	mg/kg
A6-33	481666.39	1348842.83	0	0.5	Uranium, Total	379	NV	mg/kg
A6-33	481666.39	1348842.83	2.5	3	Uranium, Total	122	NV	mg/kg
A6-33	481666.39	1348842.83	4.5	5	Uranium, Total	66.9	NV	mg/kg
A6-33	481666.39	1348842.83	6.5	7	Uranium, Total	15.9	NV	mg/kg
A6-33	481666.39	1348842.83	8.5	9	Uranium, Total	2.51	NV	mg/kg
A6-33	481666.39	1348842.83	10.5	11	Uranium, Total	1.35	NV	mg/kg
A6-34A	481651.37	1348890.78	0	0.5	Technetium-99	1.55	UNV	pCi/g
A6-34A	481651.37	1348890.78	4.5	5	Technetium-99	1.49	UNV	pCi/g
A6-34A	481651.37	1348890.78	0	0.5	Uranium, Total	8.15	NV	mg/kg dry
A6-34A	481651.37	1348890.78	4.5	5	Uranium, Total	8.07	NV	mg/kg dry
A6-35	481651.29	1348852.57	0	0.5	Technetium-99	0.941	UNV	pCi/g
A6-35	481651.29	1348852.57	4.5	5	Technetium-99	1.39	UNV	pCi/g
A6-35	481651.29	1348852.57	0	0.5	Uranium, Total	141	NV	mg/kg dry
A6-35	481651.29	1348852.57	4.5	5	Uranium, Total	11.2	NV	mg/kg dry
A4B-LAB-21	479672.796	1348781.296	0	0.5	Technetium-99	1.47	UNV	pCi/g dry
A4B-LAB-21	479672.796	1348781.296	0	0.5	Uranium, Total	30.2	NV	mg/kg dry
A4B-LAB-21	479672.796	1348781.296	2.5	3	Technetium-99	0.542	UNV	pCi/g dry
A4B-LAB-21	479672.796	1348781.296	2.5	3	Uranium, Total	4.86	UNV	mg/kg dry
A4B-P2-27	480642.99	1348700	1	1.5	Technetium-99	0.414	UNV	pCi/g
A4B-P2-27	480642.99	1348700	2	2.5	Technetium-99	0.312	UNV	pCi/g
A4B-P2-27	480642.99	1348700	4	4.5	Technetium-99	0.252	UNV	pCi/g
A4B-P2-28	480679	1348744.07	1	1.5	Technetium-99	0.869	UNV	pCi/g
A4B-P2-28	480679	1348744.07	2	2.5	Technetium-99	0.403	UNV	pCi/g
A4B-P2-28	480679	1348744.07	4	4.5	Technetium-99	-0.0754	UNV	pCi/g
A4B-P2-29	480670	1348839	1	1.5	Technetium-99	66.5	NV	pCi/g
A4B-P2-29	480670	1348839	2	2.5	Technetium-99	57.9	NV	pCi/g
A4B-P2-29	480670	1348839	4	4.5	Technetium-99	6.35	NV	pCi/g
A4B-P2-30	480696.5	1348840.5	0	0.5	Technetium-99	14	NV	pCi/g
A4B-P2-30	480696.5	1348840.5	1	1.5	Technetium-99	3.64	NV	pCi/g
A4B-P2-31	480676.5	1348850.81	1	1.5	Technetium-99	-0.157	UNV	pCi/g dry
A4B-P2-31	480676.5	1348850.81	0	0.5	Technetium-99	1.45	UNV	pCi/g dry
A4B-P2-31	480676.5	1348850.81	3	3.5	Technetium-99	1.58	UNV	pCi/g dry
A4B-P2-32	480654.12	1348848.81	3	3.5	Technetium-99	-0.205	UNV	pCi/g dry
A4B-P2-32	480654.12	1348848.81	1	1.5	Technetium-99	0.464	UNV	pCi/g dry
A4B-P2-32	480654.12	1348848.81	0	0.5	Technetium-99	0.791	UNV	pCi/g dry
A4B-P2-34	480737.51	1348886.391	1	1.5	Uranium, Total	11.5	NV	mg/kg dry
A4B-P2-34	480737.51	1348886.391	0	0.5	Uranium, Total	59.1	NV	mg/kg dry
A4B-P2-34	480737.51	1348886.391	3	3.5	Uranium, Total	201	NV	mg/kg dry
A4B-P2-35	480729.174	1348886.119	1	1.5	Uranium, Total	64.8	NV	mg/kg dry
A4B-P2-35	480729.174	1348886.119	0	0.5	Uranium, Total	548	NV	mg/kg dry
A4B-P2-35	480729.174	1348886.119	3	3.5	Uranium, Total	37.1	NV	mg/kg dry
A4B-P2-36	480733.54	1348882.434	1	1.5	Uranium, Total	14.4	NV	mg/kg dry
A4B-P2-36	480733.54	1348882.434	0	0.5	Uranium, Total	97	NV	mg/kg dry
A4B-P2-36	480733.54	1348882.434	3	3.5	Uranium, Total	9.57	NV	mg/kg dry
A4B-P2-37	480733.435	1348890.561	1	1.5	Uranium, Total	10.9	NV	mg/kg dry
A4B-P2-37	480733.435	1348890.561	3	3.5	Uranium, Total	26.5	NV	mg/kg dry

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A4B-P2-37	480733.435	1348890.561	0	0.5	Uranium, Total	138	NV	mg/kg dry
A4B-P8-10	480232.1	1348989.87	0.5	1	Technetium-99	31.3	NV	pCi/g
A4B-P8-10	480232.1	1348989.87	0.5	1	Uranium, Total	162	NV	mg/kg
A4B-P8-10	480232.1	1348989.87	3.5	4	Technetium-99	36.8	NV	pCi/g
A4B-P8-10	480232.1	1348989.87	3.5	4	Uranium, Total	3.2	NV	mg/kg
A4B-P8-10	480232.1	1348989.87	6.5	7	Technetium-99	98.9	NV	pCi/g
A4B-P8-10	480232.1	1348989.87	6.5	7	Uranium, Total	0.0546	UNV	mg/kg
A4B-P8-11	480237.1	1348989.87	0.5	1	Technetium-99	38.4	NV	pCi/g
A4B-P8-11	480237.1	1348989.87	0.5	1	Uranium, Total	45	NV	mg/kg
A4B-P8-11	480237.1	1348989.87	3.5	4	Technetium-99	52.6	NV	pCi/g
A4B-P8-11	480237.1	1348989.87	3.5	4	Uranium, Total	6	NV	mg/kg
A4B-P8-11	480237.1	1348989.87	6.5	7	Technetium-99	8.98	NV	pCi/g
A4B-P8-11	480237.1	1348989.87	6.5	7	Uranium, Total	5.22	NV	mg/kg
A4B-P8-13	480227.1	1348989.87	0.5	1	Technetium-99	13.6	NV	pCi/g
A4B-P8-13	480227.1	1348989.87	0.5	1	Uranium, Total	221	NV	mg/kg
A4B-P8-13	480227.1	1348989.87	3.5	4	Technetium-99	9.3	NV	pCi/g
A4B-P8-13	480227.1	1348989.87	3.5	4	Uranium, Total	2.69	NV	mg/kg
A4B-P8-13	480227.1	1348989.87	6.5	7	Technetium-99	26.2	NV	pCi/g
A4B-P8-13	480227.1	1348989.87	6.5	7	Uranium, Total	22.1	NV	mg/kg
A4B-P8-14	480232.1	1348984.87	0.5	1	Technetium-99	12.1	NV	pCi/g
A4B-P8-14	480232.1	1348984.87	0.5	1	Uranium, Total	18.6	NV	mg/kg
A4B-P8-14	480232.1	1348984.87	3.5	4	Technetium-99	4.33	NV	pCi/g
A4B-P8-14	480232.1	1348984.87	3.5	4	Uranium, Total	3.79	NV	mg/kg
A4B-P8-14	480232.1	1348984.87	6.5	7	Technetium-99	1.37	NV	pCi/g
A4B-P8-14	480232.1	1348984.87	6.5	7	Uranium, Total	0	UNV	mg/kg
A4B-PP-01	479925.29	1348459.35	1	2	Technetium-99	0.991	U	pCi/g
A4B-PP-01	479925.29	1348459.35	1	2	Uranium, Total	528	-	mg/kg
A4B-PP-01	479925.29	1348459.35	2	3	Technetium-99	0.227	U	pCi/g
A4B-PP-01	479925.29	1348459.35	2	3	Uranium, Total	463	-	mg/kg
A4B-PP-01	479925.29	1348459.35	3	4	Technetium-99	0.58	U	pCi/g
A4B-PP-01	479925.29	1348459.35	3	4	Uranium, Total	701	-	mg/kg
A4B-PP-01	479925.29	1348459.35	5	6	Technetium-99	1.27	-	pCi/g
A4B-PP-01	479925.29	1348459.35	5	6	Uranium, Total	931	-	mg/kg
A4B-PP-01	479925.29	1348459.35	8	9	Technetium-99	-0.309	U	pCi/g
A4B-PP-01	479925.29	1348459.35	8	9	Uranium, Total	108	-	mg/kg
A4B-PP-02	479930.29	1348459.35	1.5	2.5	Technetium-99	8.97	-	pCi/g
A4B-PP-02	479930.29	1348459.35	1.5	2.5	Uranium, Total	54100	-	mg/kg
A4B-PP-02	479930.29	1348459.35	2.5	3.5	Technetium-99	16.7	-	pCi/g
A4B-PP-02	479930.29	1348459.35	2.5	3.5	Uranium, Total	27900	-	mg/kg
A4B-PP-02	479930.29	1348459.35	3.5	4.5	Technetium-99	7.22	-	pCi/g
A4B-PP-02	479930.29	1348459.35	3.5	4.5	Uranium, Total	11400	-	mg/kg
A4B-PP-02	479930.29	1348459.35	5.5	6.5	Technetium-99	0.367	U	pCi/g
A4B-PP-02	479930.29	1348459.35	5.5	6.5	Uranium, Total	305	-	mg/kg
A4B-PP-02	479930.29	1348459.35	8.5	9.5	Technetium-99	-0.25	U	pCi/g
A4B-PP-02	479930.29	1348459.35	8.5	9.5	Uranium, Total	358	-	mg/kg
A4B-PP-03	479925.29	1348464.35	1.5	2.5	Technetium-99	7.36	-	pCi/g
A4B-PP-03	479925.29	1348464.35	1.5	2.5	Uranium, Total	1680	-	mg/kg
A4B-PP-03	479925.29	1348464.35	2.5	3.5	Technetium-99	2.11	-	pCi/g
A4B-PP-03	479925.29	1348464.35	2.5	3.5	Uranium, Total	905	-	mg/kg
A4B-PP-03	479925.29	1348464.35	3.5	4.5	Technetium-99	0.56	U	pCi/g
A4B-PP-03	479925.29	1348464.35	3.5	4.5	Uranium, Total	669	-	mg/kg
A4B-PP-03	479925.29	1348464.35	5.5	6.5	Technetium-99	-0.476	U	pCi/g
A4B-PP-03	479925.29	1348464.35	5.5	6.5	Uranium, Total	451	-	mg/kg
A4B-PP-03	479925.29	1348464.35	8.5	9.5	Technetium-99	2.71	-	pCi/g
A4B-PP-03	479925.29	1348464.35	8.5	9.5	Uranium, Total	46.2	-	mg/kg
A4B-PP-04	479920.29	1348459.35	1	2	Technetium-99	0.566	U	pCi/g
A4B-PP-04	479920.29	1348459.35	1	2	Uranium, Total	442	-	mg/kg
A4B-PP-04	479920.29	1348459.35	2	3	Technetium-99	2.38	-	pCi/g
A4B-PP-04	479920.29	1348459.35	2	3	Uranium, Total	314	-	mg/kg

TABLE C-1
PREDESIGN INVESTIGATION DATA COLLECTED IN AREAS 3B/4B/5

Boring ID	Northing '83	Easting '83	Top	Bottom	Parameter	Result	Qual	Units
A4B-PP-04	479920.29	1348459.35	3	4	Technetium-99	5.19	-	pCi/g
A4B-PP-04	479920.29	1348459.35	3	4	Uranium, Total	348	-	mg/kg
A4B-PP-04	479920.29	1348459.35	5	6	Technetium-99	0.539	U	pCi/g
A4B-PP-04	479920.29	1348459.35	5	6	Uranium, Total	856	-	mg/kg
A4B-PP-04	479920.29	1348459.35	8	9	Technetium-99	1.5	U	pCi/g
A4B-PP-04	479920.29	1348459.35	8	9	Uranium, Total	263	-	mg/kg
A4B-PP-05	479925.66	1348455.2	1.5	2.5	Technetium-99	1.42	U	pCi/g
A4B-PP-05	479925.66	1348455.2	1.5	2.5	Uranium, Total	523	-	mg/kg
A4B-PP-05	479925.66	1348455.2	2.5	3.5	Technetium-99	0.328	U	pCi/g
A4B-PP-05	479925.66	1348455.2	2.5	3.5	Uranium, Total	481	-	mg/kg
A4B-PP-05	479925.66	1348455.2	3.5	4.5	Technetium-99	2.88	-	pCi/g
A4B-PP-05	479925.66	1348455.2	3.5	4.5	Uranium, Total	509	-	mg/kg
A4B-PP-05	479925.66	1348455.2	5.5	6.5	Technetium-99	0.885	U	pCi/g
A4B-PP-05	479925.66	1348455.2	5.5	6.5	Uranium, Total	691	-	mg/kg
A4B-PP-05	479925.66	1348455.2	8.5	9.5	Technetium-99	9.19	-	pCi/g
A4B-PP-05	479925.66	1348455.2	8.5	9.5	Uranium, Total	299	-	mg/kg
HWMU-22-1	479831.87	1348442.19	2.5	3	Mercury	0.00728	UNV	mg/kg
HWMU-22-1	479831.87	1348442.19	5	5.5	Mercury	0.00829	NV	mg/kg
HWMU-22-2	479818	1348431.5	2.5	3	Mercury	0.00747	UNV	mg/kg
HWMU-22-2	479818	1348431.5	5	5.5	Mercury	0.0149	NV	mg/kg



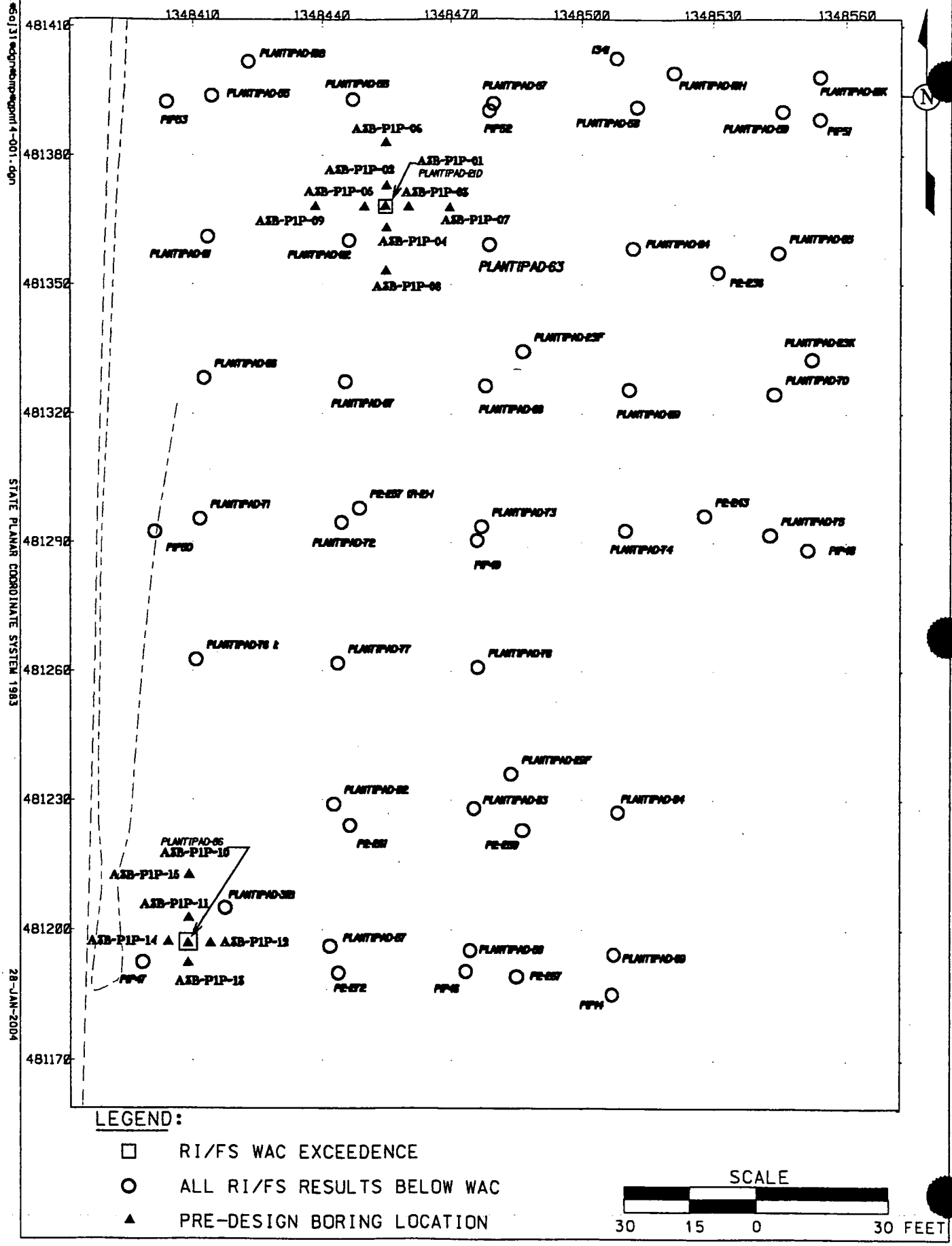
v:\2fm12\dgn\p1p_005.dgn
STATE PLANAR COORDINATE SYSTEM 1983

28-JAN-2004

FIGURE C-1. WAC INVESTIGATION BORINGS NORTH OF THE PLANT 1 PAD

000421

5330



LEGEND:

- □ RI/FS WAC EXCEEDENCE
- ○ ALL RI/FS RESULTS BELOW WAC
- ▲ PRE-DESIGN BORING LOCATION

SCALE

30 15 0 30 FEET

STATE PLANAR COORDINATE SYSTEM 1983

28-JAN-2004

FIGURE C-2. WAC INVESTIGATION BORINGS ON THE PLANT 1 PAD

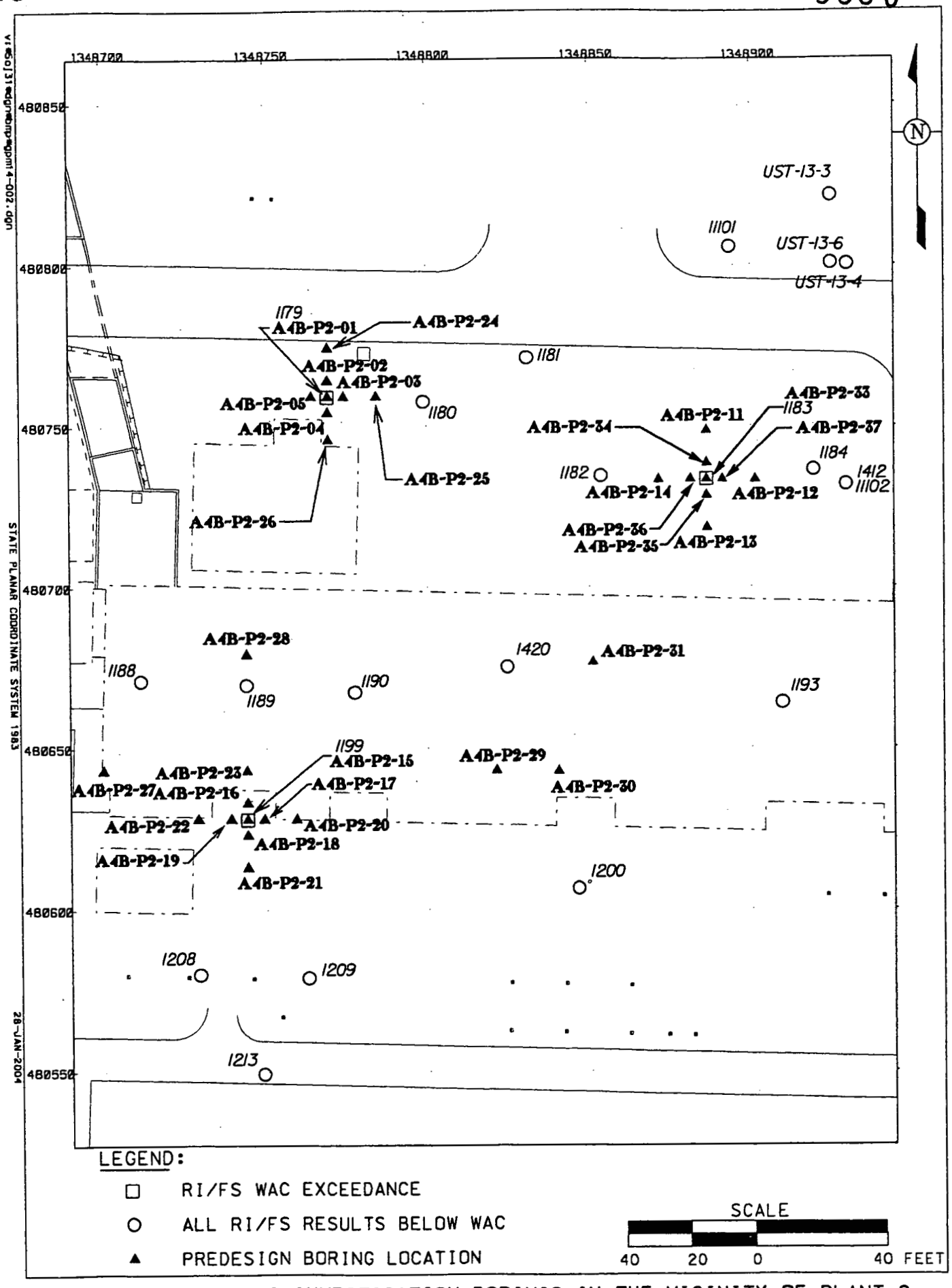


FIGURE C-3. WAC INVESTIGATION BORINGS IN THE VICINITY OF PLANT 2

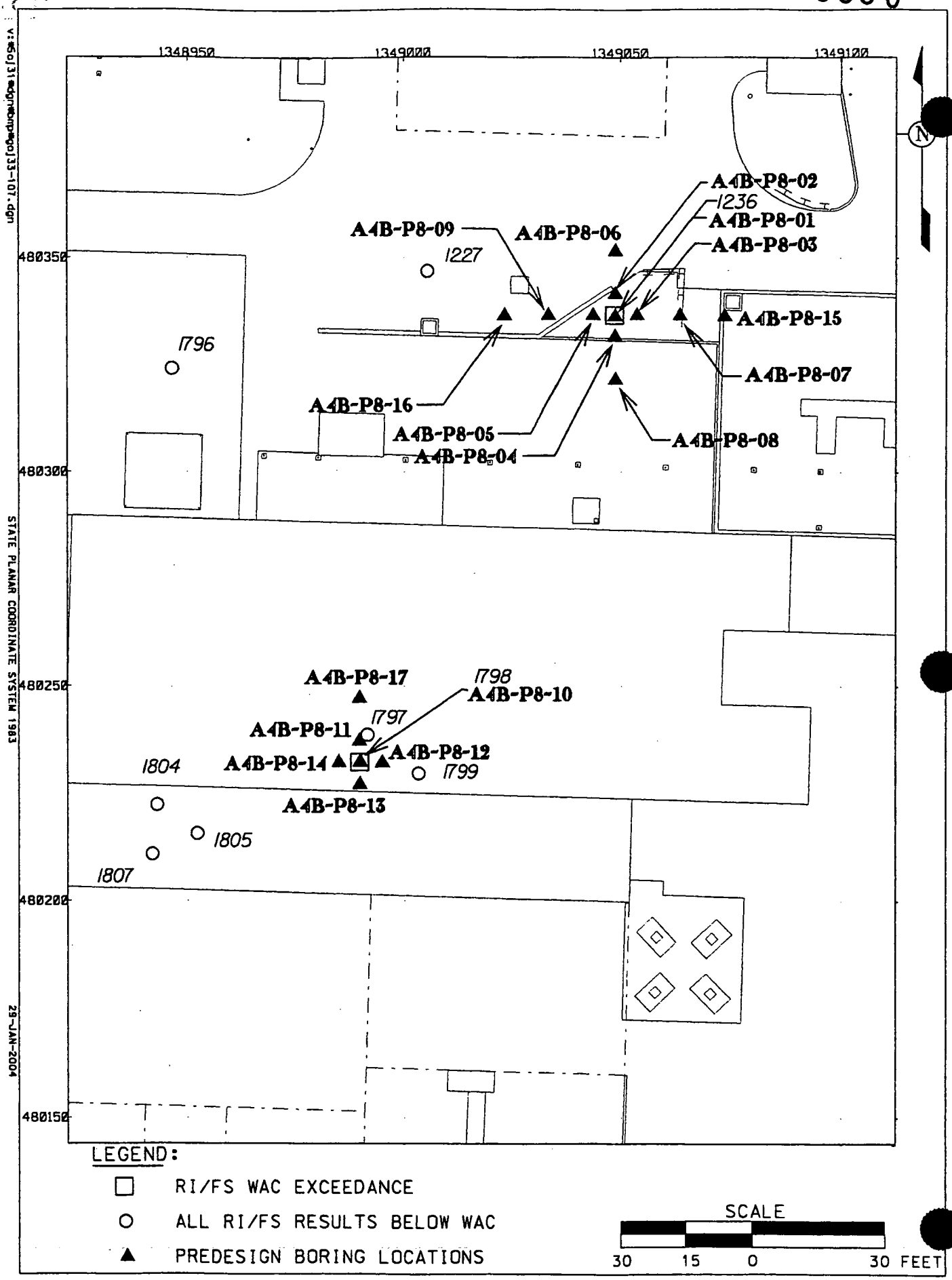


FIGURE C-4. WAC INVESTIGATION BORINGS IN THE VICINITY OF PLANT 8

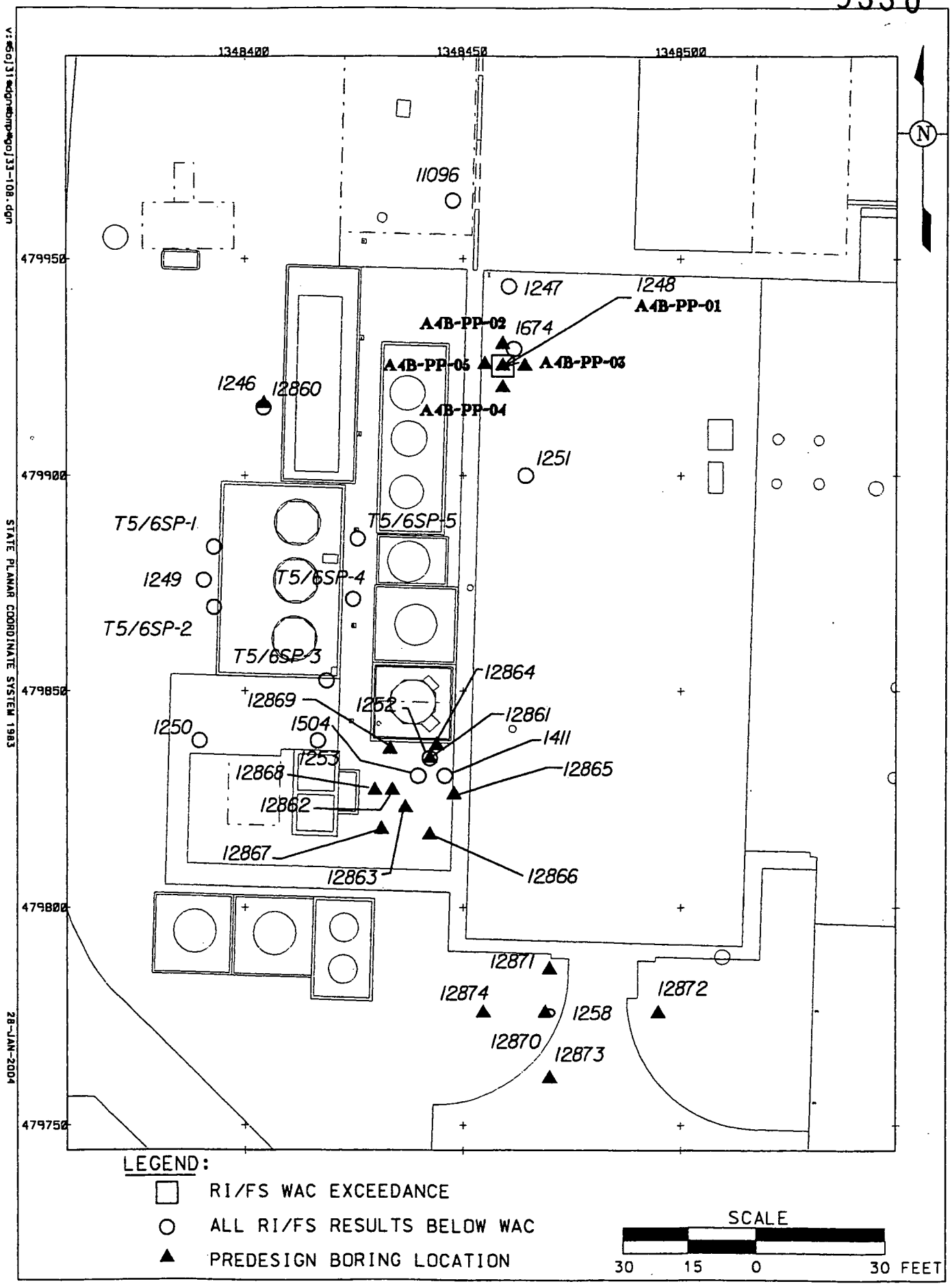
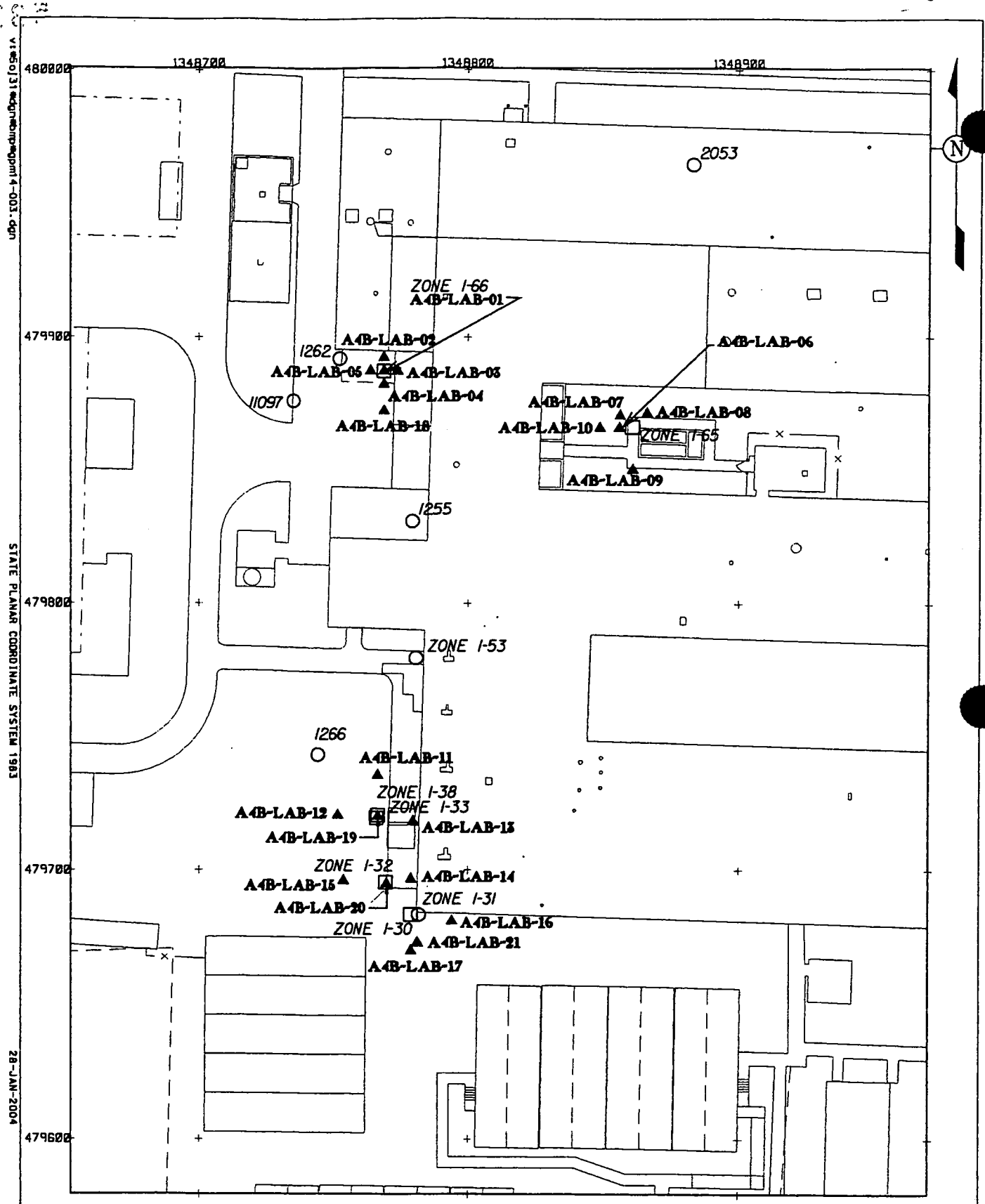


FIGURE C-5. WAC AND RCRA SOIL INVESTIGATION BORINGS IN THE VICINITY OF THE PILOT PLANT



LEGEND:

- □ RI/FS WAC EXCEEDANCE
- ○ ALL RI/FS RESULTS BELOW WAC
- ▲ PREDESIGN BORING LOCATION

SCALE

50 25 0 50 FEET

FIGURE C-6. WAC INVESTIGATION BORINGS IN THE VICINITY OF THE LAB BUILDING

Appendix D

APPENDIX D

EXCAVATION VOLUMES

APPENDIX D
DETERMINATION OF EXCAVATION VOLUMES

D.1 INTRODUCTION

Table D-1 summarizes excavation volume estimates for Area 3B/4B/5 and the Main Drainage Corridors (MDC). As noted on the table, all quantities are reported in bank cubic yards. Where applicable, Area 3B/4B/5 estimates are subdivided into quantities per underground utility grid, which relate closely to Plant/Building complexes. Because the MDC does not correspond well to underground utility grid match lines, MDC estimates are subdivided into three areas that relate to 3B/4B/5 remediation areas. This method of subdividing MDC conforms to historical site planning, which does not recognize MDC as an independent remediation area, but a component of Area 3B/4B/5. MDC (3B) represents the "B" Street corridor between Area 3B and 3A, including the remaining Tank Farm (19A) and Pump Station and Power Center (20A). MDC (4B) represents the "B" Street corridor south of 2nd Street, between Area 4B and 4A. MDC (5) represents the 1st Street corridor between Area 5 and 4A, as well as the main storm sewer trunk corridor south of 1st Street.

Gross excavation volume estimates (consisting of above-FRL and below-FRL soil, voids and debris) were calculated electronically through triangulation, comparing existing grade versus final design grade. Triangulation was then performed comparing existing grade versus contamination grade in order to estimate above-FRL and below-FRL soil volumes. Based on foundation drawings, a percentage of the debris and void volume estimates for each area was deducted from the calculated above-FRL and below-FRL excavation quantities derived from triangulation to arrive at soil estimates.

Void volumes for each area were estimated based on foundation drawings. Estimates for debris (concrete, asphalt, metal, wood, etc.) in the various areas presented the biggest challenge. These estimates were prepared based on information gathered from the following sources:

- Parsons Grid Volume Reports of At- and Below Grade Structures
- Lockwood-Greene Technologies Volume Reports of At- and Below-Grade Structures
- OU3 Estimated Material Quantities (FEMP-OU3-EMQ-FINAL) (1995)
- Fernald Site Soil Remediation Plan (1998)

Each of these sources researched foundation drawings to estimate debris volumes associated with individual plants, buildings, pads, utilities, etc. and organized them by underground utility grid. In most cases, grid match lines correspond well with remediation area excavation limits. The primary exception is

the MDC. The MDC relates to the utility grids much as it does the remediation areas, as a perimeter component of a larger area. For this reason, and for consistency with historical site planning, MDC has been subdivided into components of the larger remediation areas (3B/4B/5) as previously detailed.

With regard to at- and below-grade debris estimates for specific structures, all of the above listed volume estimate references were considered. Based on experience from previous remediation projects, unless one source was considered more reliable than another for a given structure, the largest estimate was used. In some cases where an estimate of bank cubic yards of concrete for a given structure was questionably low the estimate was bulked by 30 percent based on lessons learned from previous remediation projects. A detailed summary of debris estimates by area, grid, and structure is presented in Table D-4.

Above-WAC soil volumes are based on characterization data for known above-WAC areas. Known above-WAC areas are confined to Areas 3B and 4B, as summarized in Tables D-2 and D-3. The tables identify each above-WAC area by the identifier used on construction drawings. Tables D-2 and D-3 also summarize information on COC, bounding coordinates, depth, and soil estimates associated with each above-WAC area. Based on experience with previous remediation projects, the actual quantity of above-WAC material from remediation Areas 3B and 4B may increase as additional quantities are encountered in the field. The excavation volume summary presented in Table D-1 is based on characterization and research of quantity estimate sources listed above. Excavation volumes do not attempt to forecast unknown above-WAC soil, foundations or prohibited items. Supplemental excavation of unknown quantities will change the estimated excavation volumes presented in Table D-1.

Note that soil to be generated from the excavation of former UST footprints and HWMUs discussed in Section 3 are accounted for in the above-FRL soil volume estimates in Table D-1.

TABLE D-1
AREA 3B/4B/5/MDC EXCAVATION VOLUME SUMMARY

Remediation Area	Gross Excavation[1]	Above-FRL Soil[2]	Above-WAC Soil	Above-FRL Below-WAC Soil	Below-FRL Soil	Voids	Debris
3B Totals	**223,598**	**127,283**	**251**	**127,032**	**70,846**	**500**	**24,969**
Grid 17 (Bldg 56A & TS6)	-	-	222	-	-	-	556
Grid 18 (Bldg 30A)	-	-	0	-	-	-	3,146
Grid 24 (TS4 & 5)	-	-	29	-	-	-	187
Grid 27 (Plant 1 Complex)	-	-	0	-	-	-	21,080
4B Totals	**546,340**	**512,891**	**8,437**	**504,454**	**0**	**5,925**	**27,524**
Grid 19 (Plant 2/3 Complex)	-	-	1,004	-	-	-	11,716
Grid 20 (Plant 8 Complex)	-	-	6,565	-	-	-	5,993
Grid 21 (Laboratory)	-	-	207	-	-	-	4,022
Grid 25 (Bldg 45A & Water Tower)	-	-	150	-	-	-	2,270
Grid 26 (Pilot Plant Complex)	-	-	511	-	-	-	3,523
Area 7 Excavation in 4B scope[3]	15,117	15,117	0	-	-	-	-
5 Totals	**72,465**	**39,343**	**0**	**39,343**	**0**	**4,610**	**28,512**
Grid 7 (Garage Complex)	-	-	0	-	-	-	2,444
Grid 14 (Admin Complex)	-	-	0	-	-	-	7,110
Grid 8 & 15 (Parking Lots)	-	-	0	-	-	-	18,958
MDC Totals	**207,281**	**47,793**	**0**	**47,793**	**150,250**	**720**	**8,518**
MDC (3B)	66,135	14,665	0	14,665	47,431	120	3,919
MDC (4B)	78,334	20,939	0	20,939	54,031	400	2,964
MDC (5)	62,812	12,189	0	12,189	48,788	200	1,635
Totals	**1,049,684**	**727,310**	**8,688**	**718,622**	**221,096**	**11,755**	**89,523**

General Notes:
A- All quantities are reported in bank cubic yards.
B- Estimates are based on known quantities. No attempt has been made to forecast unknown quantities.

Keyed Notes:
[1]- Gross Excavation = Above-FRL Soil + Below-FRL Soil + Voids + Debris
[2]- Above-FRL Soil = Above-WAC Soil + Above-FRL Below-WAC Soil
[3]- For purposes of tracking, Area 7 above-FRL soil included in 4B excavation should be subtracted from 4B quantities and tracked separately.

TABLE D-2
AREA 3B ABOVE-WAC VOLUMES

#	Identifier	COC(S)	Northing	Easting	Appx. Elev.	Length (ft)	Width (ft)	Area (sq.ft.)	Soil Depth (ft)	Soil Volume (bcy)
1	PLANT 1 PAD NORTHWEST	U	481674	1348714	582	8	8	64	4	9
			481674	1348722						
			481666	1348722						
			481666	1348714						
2	PLANT 1 PAD NORTH CENTRAL	U	481671	1348843	579.5	48	20	960	6	213
			481671	1348883						
			481651	1348883						
			481651	1348843						
3	PLANT 1 PAD TS-4	TC-99	481373	1348450	582	10	10	100	2	7
			481373	1348460						
			481363	1348460						
			481363	1348450						
4	PLANT 1 PAD SOUTHWEST	TC-99	481213	1348404	581.5	10	20	200	3	22
			481213	1348414						
			481192	1348414						
			481192	1348404						
TOTAL										251

TABLE D-3
AREA 4B ABOVE-WAC VOLUMES

#	Identifier	COC(S)	Northing	Easting	Appx. Elev.	Length (ft)	Width (ft)	Area (sq.ft.)	Soil Depth (ft)	Soil Volume (bcy)
1	PLANT 8 NORTH	U & TC-99	480341	1349024	570	50	20	1000	10	370
			480341	1349074						
			480321	1349074						
			480321	1349024						
2	PLANT 8 CENTRAL	TC-99	480299	1348942	570	179	89	15931	10.5	6195
			480299	1349121						
			480210	1349121						
			480210	1348942						
3	PLANT 2 NORTHWEST	U & TC-99	480774	1348764	576	20	28	560	3.5	69
			480774	1348784						
			480746	1348784						
			480746	1348764						
4	PLANT 2 NORTHEAST	U	480737	1348882	578.5	8	8	64	1	2
			480737	1348890						
			480729	1348890						
			480729	1348882						
5	PLANT 2 SOUTHWEST	U & TC-99	480679	1348700	575	150	56	8400	3	933
			480679	1348850						
			480623	1348850						
			480623	1348700						
6	PILOT PLANT SOUTH	U & TC-99	479786	1348454	576	41	26	1066	3	118
			479786	1348495						
			479760	1348495						
			479760	1348454						
7	PILOT PLANT NORTHWEST	U & TC-99	479944	1348455	572.5	62	24	1488	6.5	358
			479944	1348517						
			479920	1348517						
			479920	1348455						
8	PILOT PLANT SOUTHWEST	U	479827	1348431	572	17	11	187	5	35
			479827	1348448						
			479816	1348448						
			479816	1348431						
9	LAB DOCK	U & TC-99	479892	1348764	577	10	10	100	1.5	6
			479892	1348774						
			479882	1348774						
			479882	1348764						
10	LAB NORTH COURTYARD	U	479871	1348856	577	10	21	210	1	8
			479871	1348866						
			479850	1348866						
			479850	1348856						
11	LAB SOUTHWEST	U & TC-99	479735	1348754	575	28	62	1736	3	193
			479735	1348782						
			479673	1348782						
			479673	1348754						
12	K65 TRENCH	U & TC-99	NA	NA	NA	NA	NA	NA	NA	150
TOTAL										8437

TABLE D-4
AREA 3B/4B/5/MDC DEBRIS QUANTITIES

AREA 3B

GRID	BLDG	SOURCE DESCRIPTION	GRADE LEVEL	MATERIAL	BANK CY
17	56A	CP Storage Warehouse (Butler Building)	AT GRADE	CONCRETE	161
			BELOW GRADE	CONCRETE	124
			BELOW GRADE	MISC	1
17	-	General	AT GRADE	CONC/ASPH	0
			BELOW GRADE	CONCRETE	69
			BELOW GRADE	MISC	200
GRID 17 SUBTOTALS			AT GRADE	CONC/ASPH	161
			BELOW GRADE	CONCRETE	193
			BELOW GRADE	MISC	201
GRID 17 TOTALS					556
18	30A	Chemical Warehouse	AT GRADE	CONCRETE	510
			BELOW GRADE	CONCRETE	160
			BELOW GRADE	MISC	1
18	-	General	AT GRADE	CONC/ASPH	0
			BELOW GRADE	CONCRETE	2302
			BELOW GRADE	MISC	172
GRID 18 SUBTOTALS			AT GRADE	CONC/ASPH	510
			BELOW GRADE	CONCRETE	2462
			BELOW GRADE	MISC	173
GRID 18 TOTALS					3146
24	28D	Guard Post on West End of 2nd Street	AT GRADE	CONCRETE	1
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
24	67	Plant 1 Thorium Warehouse	AT GRADE	CONCRETE	94
			BELOW GRADE	CONCRETE	31
			BELOW GRADE	MISC	0
24	-	General	AT GRADE	CONCRETE	0
			AT GRADE	ASPHALT	0
			BELOW GRADE	CONCRETE	4
			BELOW GRADE	MISC	57
GRID 24 SUBTOTALS			AT GRADE	CONC/ASPH	95
			BELOW GRADE	CONCRETE	35
			BELOW GRADE	MISC	57
GRID 24 TOTALS					187

27	1A	Preparation Plant	AT GRADE	CONCRETE	317
			BELOW GRADE	CONCRETE	505
			BELOW GRADE	MISC	6
27	1B	Plant 1 Storage Building	AT GRADE	CONCRETE	238
			BELOW GRADE	CONCRETE	247
			BELOW GRADE	MISC	0
27	1C	Ore Silos	AT GRADE	CONCRETE	0
			BELOW GRADE	CONCRETE	287
			BELOW GRADE	MISC	0
27	-	Ore Silos Trench	AT GRADE	CONCRETE	0
			BELOW GRADE	CONCRETE	74
			BELOW GRADE	MISC	0
27	2E	NFS Storage Tank and Pump House	AT GRADE	CONCRETE	75
			BELOW GRADE	CONCRETE	117
			BELOW GRADE	MISC	0
27	2H	Conveyor Tunnel (3B portion)	AT GRADE	CONCRETE	3
			BELOW GRADE	CONCRETE	58
			BELOW GRADE	MISC	1
27	30B	Drum Storage Warehouse	AT GRADE	CONCRETE	12
			BELOW GRADE	CONCRETE	1
			BELOW GRADE	MISC	0
27	66	Drum Reconditioning Building	AT GRADE	CONCRETE	106
			BELOW GRADE	CONCRETE	31
			BELOW GRADE	MISC	0
27	71	General In-Process Warehouse	AT GRADE	CONCRETE	600
			BELOW GRADE	CONCRETE	130
			BELOW GRADE	MISC	0
27	72	Drum Storage Building	AT GRADE	CONCRETE	32
			BELOW GRADE	CONCRETE	18
			BELOW GRADE	MISC	0
27	74T	Plant 1 Pad	AT GRADE	CONCRETE	18070
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
27	-	General	AT GRADE	CONCRETE	0
			AT GRADE	ASPHALT	0
			BELOW GRADE	CONCRETE	92
			BELOW GRADE	MISC	60
		GRID 27 SUBTOTALS	AT GRADE	CONC/ASPH	19453
			BELOW GRADE	CONCRETE	1561
			BELOW GRADE	MISC	67
		GRID 27 TOTALS			21081

AREA 3B TOTALS	**AT GRADE**	**CONC/ASPH**	**20220**
	BELOW GRADE	**CONCRETE**	**4251**
	BELOW GRADE	**MISC**	**498**
TOTAL			**24969**

AREA 4B

GRID	BLDG	SOURCE DESCRIPTION	GRADE LEVEL	MATERIAL	BANK CY.
19	2A	Ore Refinery Plant	AT GRADE	CONCRETE	822
			BELOW GRADE	CONCRETE	1301
			BELOW GRADE	MISC	10
19	2B	General/Refinery Sump Control Building	AT GRADE	CONCRETE	30
			BELOW GRADE	CONCRETE	60
			BELOW GRADE	MISC	0
19	2C	Bulk Lime Handling Building	AT GRADE	CONCRETE	12
			BELOW GRADE	CONCRETE	71
			BELOW GRADE	MISC	0
19	2D	Metal Dissolve Building	AT GRADE	CONCRETE	33
			BELOW GRADE	CONCRETE	93
			BELOW GRADE	MISC	0
19	2F	Cold Side Ore Conveyor	AT GRADE	CONCRETE	26
			BELOW GRADE	CONCRETE	102
			BELOW GRADE	MISC	1
19	2G	Hot Side Ore Conveyor	AT GRADE	CONCRETE	27
			BELOW GRADE	CONCRETE	11
			BELOW GRADE	MISC	0
19	2H	Conveyor Tunnel (4B portion)	AT GRADE	CONCRETE	1
			BELOW GRADE	CONCRETE	20
			BELOW GRADE	MISC	1
19	3A	Maintenance Building	AT GRADE	CONCRETE	68
			BELOW GRADE	CONCRETE	716
			BELOW GRADE	MISC	0
19	3B	Ozone Building	AT GRADE	CONCRETE	17
			BELOW GRADE	CONCRETE	36
			BELOW GRADE	MISC	0
19	3C	NAR Control House	AT GRADE	CONCRETE	50
			BELOW GRADE	CONCRETE	36
			BELOW GRADE	MISC	1
19	3D	NAR Towers	AT GRADE	CONCRETE	319
			BELOW GRADE	CONCRETE	30
			BELOW GRADE	MISC	0
19	3E	Hot Raffinate Building	AT GRADE	CONCRETE	109
			BELOW GRADE	CONCRETE	418
			BELOW GRADE	MISC	0
19	3F	Harshaw Digestion Fume Recovery	AT GRADE	CONCRETE	25
			BELOW GRADE	CONCRETE	13
			BELOW GRADE	MISC	0
19	3G	Refrigeration Building	AT GRADE	CONCRETE	13
			BELOW GRADE	CONCRETE	18
			BELOW GRADE	MISC	1

19	3H	Refinery Sump	AT GRADE	CONCRETE	150
			BELOW GRADE	CONCRETE	28
			BELOW GRADE	MISC	0
19	3J	Combined Raffinate Tanks	AT GRADE	CONCRETE	274
			BELOW GRADE	CONCRETE	75
			BELOW GRADE	MISC	0
19	3K	Old Cooling Water Tower	AT GRADE	CONCRETE	45
			BELOW GRADE	CONCRETE	67
			BELOW GRADE	MISC	0
19	3L	Electrical Power Center Building	AT GRADE	CONCRETE	49
			BELOW GRADE	CONCRETE	31
			BELOW GRADE	MISC	1
19	18B	General Sump	AT GRADE	CONCRETE	172
			BELOW GRADE	CONCRETE	91
			BELOW GRADE	MISC	1
19	18D	Biodenitrification Towers	AT GRADE	CONCRETE	418
			BELOW GRADE	CONCRETE	122
			BELOW GRADE	MISC	0
19	39A	Incinerator Building	AT GRADE	CONCRETE	84
			BELOW GRADE	CONCRETE	74
			BELOW GRADE	MISC	0
19	39B	Cyliner Filling Station	AT GRADE	CONCRETE	10
			BELOW GRADE	CONCRETE	240
			BELOW GRADE	MISC	0
19	39C	Incinerator Sprinkler Riser House	AT GRADE	CONCRETE	1
			BELOW GRADE	CONCRETE	1
			BELOW GRADE	MISC	0
19	74A	Plant 2 East Pad	AT GRADE	CONCRETE	143
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	74B	Plant 2 West Pad	AT GRADE	CONCRETE	400
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	74W	Building 39A Pad	AT GRADE	CONCRETE	102
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	Elevator Pit	AT GRADE	CONCRETE	0
			BELOW GRADE	CONCRETE	75
			BELOW GRADE	MISC	0
19	-	Nitric Acid Storage Area	AT GRADE	CONCRETE	139
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	OK Liquor Storage Area	AT GRADE	CONCRETE	169
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0

19	-	Slop Liquor and Concentration Area	AT GRADE	CONCRETE	65
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	Slop Liquor/AF Feed Storage Area	AT GRADE	CONCRETE	159
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	Solvent Storage Area	AT GRADE	CONCRETE	41
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	Solvent Treatment Area	AT GRADE	CONCRETE	43
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	Tank 9	AT GRADE	CONCRETE	73
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	Tanks 8 & 14	AT GRADE	CONCRETE	47
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	Tanks 10, 11 & 13	AT GRADE	CONCRETE	120
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	2nd Street (870' x 22' x 1')	AT GRADE	CONCRETE	710
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	102 Street (700' x 15' x 1')	AT GRADE	CONC/ASPH	390
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	101 Street (700' x 22' x 1')	AT GRADE	CONC/ASPH	570
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	General	AT GRADE	CONCRETE	687
			AT GRADE	ASPHALT	488
			BELOW GRADE	CONCRETE	606
			BELOW GRADE	MISC	265
		GRID 19 SUBTOTALS	AT GRADE	CONC/ASPH	7101
			BELOW GRADE	CONCRETE	4335
			BELOW GRADE	MISC	280
		GRID 19 TOTALS			11716

20	8A	Recovery Plant	AT GRADE	CONCRETE	482
			BELOW GRADE	CONCRETE	1014
			BELOW GRADE	MISC	5
20	8B	Plant 8 Maintenance Building	AT GRADE	CONCRETE	26
			BELOW GRADE	CONCRETE	27
			BELOW GRADE	MISC	0
20	8C	Rotary Kiln/Drum Reconditioning	AT GRADE	CONCRETE	378
			BELOW GRADE	CONCRETE	564
			BELOW GRADE	MISC	0
20	8D	Plant 8 Railroad Filter Building	AT GRADE	CONCRETE	205
			BELOW GRADE	CONCRETE	76
			BELOW GRADE	MISC	12
20	8E	Drum Conveyor Shelter	AT GRADE	CONCRETE	7
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
20	8G	Former Trash Compactor Area	AT GRADE	CONCRETE	146
			BELOW GRADE	CONCRETE	268
			BELOW GRADE	MISC	0
20	8H	Soil Washing Area	AT GRADE	CONCRETE	115
			BELOW GRADE	CONCRETE	133
			BELOW GRADE	MISC	0
20	18H	BDN Effluent Treatment Facility	AT GRADE	CONCRETE	40
			BELOW GRADE	CONCRETE	10
			BELOW GRADE	MISC	0
20	74C	Plant 8 East Pad	AT GRADE	CONCRETE	268
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
20	74D	Plant 8 West Pad	AT GRADE	CONCRETE	182
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
20	74Q	Plant 8 Old Metal Dissolver Pad	AT GRADE	CONCRETE	99
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	CONCRETE	0
20	74R	Plant 8 North Pad	AT GRADE	CONCRETE	76
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
20	80	Plant 8 Warehouse	AT GRADE	CONCRETE	378
			BELOW GRADE	CONCRETE	43
			BELOW GRADE	MISC	0
20	-	1st Street (870' x 22' x 1')	AT GRADE	CONC/ASPH	710
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
20	-	General	AT GRADE	CONCRETE	137
			AT GRADE	ASPHALT	62
			BELOW GRADE	CONCRETE	396
			BELOW GRADE	MISC	133
		GRID 20 SUBTOTALS	AT GRADE	CONC/ASPH	3312
			BELOW GRADE	CONCRETE	2531
			BELOW GRADE	MISC	150
		GRID 20 TOTALS			5993

21	15A	Laboratory[1]	AT GRADE	CONCRETE	1616
			BELOW GRADE	CONCRETE	1997
			BELOW GRADE	MISC	27
21	15B	Laboratory Chemical Storage Building	AT GRADE	CONCRETE	27
			BELOW GRADE	CONCRETE	26
			BELOW GRADE	MISC	0
21	74V	Laboratory Pad	AT GRADE	CONCRETE	50
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
21	-	General	AT GRADE	CONCRETE	115
			AT GRADE	ASPHALT	76
			BELOW GRADE	CONCRETE	13
			BELOW GRADE	MISC	75
GRID 21 SUBTOTALS			AT GRADE	CONC/ASPH	1884
			BELOW GRADE	CONCRETE	2036
			BELOW GRADE	MISC	102
GRID 21 TOTALS					4022

25	20E	Well House #1	AT GRADE	CONCRETE	3
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
25	20F	Well House #2[2]	AT GRADE	CONCRETE	3
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
25	22D	Scale House & Weight Scale	AT GRADE	CONCRETE	0
			BELOW GRADE	CONCRETE	71
			BELOW GRADE	MISC	0
25	26A	Pump House - HP Fire Protection	AT GRADE	CONCRETE	38
			BELOW GRADE	CONCRETE	16
			BELOW GRADE	MISC	0
25	26B	Elevated Water Storage Tank[3]	AT GRADE	CONCRETE	7
			BELOW GRADE	CONCRETE	319
			BELOW GRADE	MISC	0
25	45A	Rust Engineering Building	AT GRADE	CONCRETE	602
			BELOW GRADE	CONCRETE	13
			BELOW GRADE	MISC	1
25	-	"A" Street (700' x 22' x 1')	AT GRADE	CONC/ASPH	570
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
25	-	General	AT GRADE	CONCRETE	0
			AT GRADE	ASPHALT	76
			BELOW GRADE	CONCRETE	420
			BELOW GRADE	MISC	131
GRID 25 SUBTOTALS			AT GRADE	CONC/ASPH	1299
			BELOW GRADE	CONCRETE	838
			BELOW GRADE	MISC	132
GRID 25 TOTALS					2270

26	13A	Pilot Plant Wet Side	AT GRADE	CONCRETE	445
			BELOW GRADE	CONCRETE	401
			BELOW GRADE	MISC	3
26	13B	Pilot Plant Maintenance Building	AT GRADE	CONCRETE	35
			BELOW GRADE	CONCRETE	58
			BELOW GRADE	MISC	0
26	13C	Sump Pump House	AT GRADE	CONCRETE	4
			BELOW GRADE	CONCRETE	59
			BELOW GRADE	MISC	0
26	13D	Pilot Plant Thorium Tank Farm	AT GRADE	CONCRETE	34
			BELOW GRADE	CONCRETE	89
			BELOW GRADE	MISC	0
26	19B	Pilot Plant Ammonia Tank Farm	AT GRADE	CONCRETE	64
			BELOW GRADE	CONCRETE	169
			BELOW GRADE	MISC	0
26	20G	Well House #3	AT GRADE	CONCRETE	3
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
26	37	Pilot Plant Annex	AT GRADE	CONCRETE	222
			BELOW GRADE	CONCRETE	159
			BELOW GRADE	MISC	1
26	54A	Six to Four Reduction Facility #1	AT GRADE	CONCRETE	242
			BELOW GRADE	CONCRETE	83
			BELOW GRADE	MISC	0
26	54B	Pilot Plant Shelter	AT GRADE	CONCRETE	105
			BELOW GRADE	CONCRETE	5
			BELOW GRADE	MISC	0
26	54C	Pilot Plant Dissociator Shelter	AT GRADE	CONCRETE	29
			BELOW GRADE	CONCRETE	14
			BELOW GRADE	MISC	0
26	68	Decontamination Building	AT GRADE	CONCRETE	137
			BELOW GRADE	CONCRETE	7
			BELOW GRADE	MISC	2
26	74U	Pilot Plant Pad	AT GRADE	CONCRETE	116
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
26	-	General	AT GRADE	CONCRETE	493
			AT GRADE	ASPHALT	324
			BELOW GRADE	CONCRETE	104
			BELOW GRADE	MISC	115
		GRID 25 SUBTOTALS	AT GRADE	CONC/ASPH	2253
			BELOW GRADE	CONCRETE	1149
			BELOW GRADE	MISC	121
		GRID 25 TOTALS			3523

AREA 4B SUBTOTALS	**AT GRADE**	**CONC/ASPH**	**15849**
	BELOW GRADE	**CONCRETE**	**10889**
	BELOW GRADE	**MISC**	**785**
AREA 4B TOTALS			**27524**

AREA 5

GRID	BLDG	SOURCE DESCRIPTION	GRADE LEVEL	MATERIAL	BANK CY
7	16A	Main Electrical Substation[4]	AT GRADE	CONCRETE	0
			BELOW GRADE	CONCRETE	520
			BELOW GRADE	MISC	3
7	16C	Electrical Panels and Transformers	AT GRADE	CONCRETE	1
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
7	16D	Main Electrical Switch House[4]	AT GRADE	CONCRETE	17
			BELOW GRADE	CONCRETE	11
			BELOW GRADE	MISC	0
7	16E	Main Electrical Transformers[4]	AT GRADE	CONCRETE	12
			BELOW GRADE	CONCRETE	9
			BELOW GRADE	MISC	0
7	16F	Trailer Substation #1	AT GRADE	CONCRETE	3
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
7	16G	Trailer Substation #2	AT GRADE	CONCRETE	3
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
7	25C	Sewage Lift Station Building[4]	AT GRADE	CONCRETE	26
			BELOW GRADE	CONCRETE	87
			BELOW GRADE	MISC	0
7	26C	Main Electrical Strainer House[4]	AT GRADE	CONCRETE	3
			BELOW GRADE	CONCRETE	6
			BELOW GRADE	MISC	0
7	28C	Guard Post East of T82	AT GRADE	CONCRETE	1
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
7	31A	Engine House/Garage	AT GRADE	CONCRETE	158
			BELOW GRADE	CONCRETE	61
			BELOW GRADE	MISC	1
7	31B	Old Truck Scale	AT GRADE	CONCRETE	145
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
7	46	Heavy Equipment Building	AT GRADE	CONCRETE	492
			BELOW GRADE	CONCRETE	106
			BELOW GRADE	MISC	2
7	-	General	AT GRADE	CONCRETE	551
			AT GRADE	ASPHALT	0
			BELOW GRADE	CONCRETE	158
			BELOW GRADE	MISC	68
		GRID 7 SUBTOTALS	AT GRADE	CONC/ASPH	1412
			BELOW GRADE	CONCRETE	958
			BELOW GRADE	MISC	74
		GRID 7 TOTALS			2444

14	11	Service Building	AT GRADE	CONCRETE	2307
			BELOW GRADE	CONCRETE	316
			BELOW GRADE	MISC	16
14	14A	Administrative Building	AT GRADE	CONCRETE	470
			BELOW GRADE	CONCRETE	470
			BELOW GRADE	MISC	3
14	14B	Building 14 EOC Generator Set	AT GRADE	CONCRETE	2
			BELOW GRADE	CONCRETE	1
			BELOW GRADE	MISC	0
14	16B	Electrical Substation	AT GRADE	CONCRETE	21
			BELOW GRADE	CONCRETE	11
			BELOW GRADE	MISC	0
14	22B	Storm Sewer Lift Station	AT GRADE	CONCRETE	10
			BELOW GRADE	CONCRETE	71
			BELOW GRADE	MISC	0
14	28A	Security Building	AT GRADE	CONCRETE	240
			BELOW GRADE	CONCRETE	100
			BELOW GRADE	MISC	0
14	28B	Human Resources Building	AT GRADE	CONCRETE	290
			BELOW GRADE	CONCRETE	67
			BELOW GRADE	MISC	0
14	53A	Health and Safety Building	AT GRADE	CONCRETE	558
			BELOW GRADE	CONCRETE	1243
			BELOW GRADE	MISC	4
14	53B	In Vivo Building	AT GRADE	CONCRETE	52
			BELOW GRADE	CONCRETE	400
			BELOW GRADE	MISC	0
14	-	General	AT GRADE	CONCRETE	87
			AT GRADE	ASPHALT	0
			BELOW GRADE	CONCRETE	174
			BELOW GRADE	MISC	198
GRID 14 SUBTOTALS			AT GRADE	CONC/ASPH	4037
			BELOW GRADE	CONCRETE	2852
			BELOW GRADE	MISC	221
GRID 14 TOTALS					7110

8 & 15	89A/B	Parking Lots	AT GRADE	CON/ASPH	18449
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
8	-	General	AT GRADE	CONCRETE	0
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	26
15	-	General	AT GRADE	CONCRETE	458
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	25
GRIDS 8 & 15 SUBTOTALS			AT GRADE	CONC/ASPH	18907
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	51
GRIDS 8 & 15 TOTALS					18958

AREA 5 SUBTOTALS	**AT GRADE**	**CONCRETE**	**24357**
	BELOW GRADE	**CONCRETE**	**3810**
	BELOW GRADE	**MISC**	**346**
AREA 5 TOTALS			**28512**

MDC

MDC(3B)

GRID	BLDG	SOURCE DESCRIPTION	GRADE LEVEL	MATERIAL	BANK CY
11	19A	Tank Farm	AT GRADE	CONCRETE	156
			BELOW GRADE	CONCRETE	1405
			BELOW GRADE	MISC	0
11	19C	Tank Farm Control House	AT GRADE	CONCRETE	23
			BELOW GRADE	CONCRETE	133
			BELOW GRADE	MISC	0
11	19D	Old North Tank Farm	AT GRADE	CONCRETE	0
			BELOW GRADE	CONCRETE	57
			BELOW GRADE	MISC	0
11	19E	Tank Farm Lime Slitter Building	AT GRADE	CONCRETE	4
			BELOW GRADE	CONCRETE	5
			BELOW GRADE	MISC	0
11	20A	Pump Station and Power Center	AT GRADE	CONCRETE	16
			BELOW GRADE	CONCRETE	41
			BELOW GRADE	MISC	0
11	-	General	AT GRADE	CONCRETE	0
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	200
18	-	General	AT GRADE	CONCRETE	5
			BELOW GRADE	CONCRETE	5
			BELOW GRADE	MISC	1000
-	-	"B" (1065' x 22' x 1')	AT GRADE	CON/ASPH	868
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
		MDC(3B) SUBTOTALS	AT GRADE	CONC/ASPH	1072
			BELOW GRADE	CONCRETE	1646
			BELOW GRADE	MISC	1200
		MDC(3B) TOTALS			3919

MDC(4B)

GRID	BLDG	SOURCE DESCRIPTION	GRADE LEVEL	MATERIAL	BANK CY
19	-	"B" Street (415' x 22' x 1')	AT GRADE	CON/ASPH	338
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
19	-	General	AT GRADE	CONC/ASPH	5
			BELOW GRADE	CONCRETE	5
			BELOW GRADE	MISC	1100
20	-	"B" Street (320' x 22' x 1')	AT GRADE	CON/ASPH	261
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
20	-	General	AT GRADE	CONC/ASPH	5
			BELOW GRADE	CONCRETE	5
			BELOW GRADE	MISC	1000
-	-	2nd Street (300' x 22' x 1)	AT GRADE	CONC/ASPH	245
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
		MDC(4B) SUBTOTALS	AT GRADE	CONC/ASPH	854
			BELOW GRADE	CONCRETE	10
			BELOW GRADE	MISC	2100
		MDC(4B) TOTALS			2964

MDC(5B)

GRID	BLDG.	SOURCE DESCRIPTION	GRADE LEVEL	MATERIAL	BANK CY
7	-	1st Street (470' x 22' x 1')	AT GRADE	CONC/ASPH	383
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
7	-	General	AT GRADE	CONC/ASPH	0
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	300
14	-	1st Street (665' x 22' x 1')	AT GRADE	CONC/ASPH	542
			BELOW GRADE	CONCRETE	0
			BELOW GRADE	MISC	0
14	-	General	AT GRADE	CONC/ASPH	5
			BELOW GRADE	CONCRETE	5
			BELOW GRADE	MISC	400
		MDC(5B) SUBTOTALS	AT GRADE	CONC/ASPH	930
			BELOW GRADE	CONCRETE	5
			BELOW GRADE	MISC	700
		MDC(4B) TOTALS			1635

MDC SUBTOTALS	**AT GRADE**	**CONCRETE**	**2856**
	BELOW GRADE	**CONCRETE**	**1661**
	BELOW GRADE	**MISC**	**4000**
AREA 5 TOTALS			**8518**

General Notes:
A- All quantities are reported in bank cubic yards.
B- At-grade concrete estimates include small quantities of tile flooring.
C- At-grade concrete estimates for main parking lots (89) include approximately 50% asphalt.
D-Below grade misc. quantities include underground utilities, steel, piping, wood, etc.

Specific Notes:
[1]-Area 4B excavation will not remove all below grade concrete from the Lab (Bldg 15)
[2]-Well House #2 (20F) will not be removed unit after Area 4B excavation is completed
[3]-Portions of the Elevated Water Storage Tank (20F) will be truncated to remain after excavation.
[4]-Excavation of these components is post OSDF closure.

Appendix E

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 Areas 3B and 4B. There were not sufficient total uranium soil sample data in Area 5 for geostatistical modeling. Model results depict an estimation of the subsurface contamination levels at excavation depths and horizontal extents beyond those 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 geostatistical model provides input data on the estimated extent of contamination to the civil engineering team, which uses the model results and drawings on the subsurface structures to create the excavation design surface. The excavation design surface is the best estimate of the volume of debris and soil that must be removed to meet FRLs. Minor changes to the excavation design surface will occur when the construction activities are implemented; 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.

E.2 PRELIMINARY DATA ANALYSIS

Total uranium soil concentration data were pulled from the SED and combined with sample data collected during the remedial investigation. Preliminary analysis of the SED data revealed a sample population with a significant portion of the samples having a mid-point depth of less than or equal to 0.5 feet (Figure E-1). Approximately 320 samples, or 30 percent of the SED data population, were in this category. This category corresponds to the bias placed on surface sampling activities at the Fernald site. Since the top 2 feet of soil will be removed from the FPA, most of these surface samples were eliminated from the modeling data to eliminate bias in the subsurface kriging results. Sixteen surface samples with results above the WAC for total uranium were retained in the model input data file.

E.3 SUBSURFACE DATA STATISTICS

The final subsurface total uranium concentration data set for Areas 3B and 4B consisted of 1044 soil samples from depths of 0.75 feet to 22 feet below the surface. Four soil samples were included with sample depths from 46.5 to 66.5 feet below the surface. Total uranium concentrations ranged from 0.9 to

125,000 mg/kg with median and average concentrations of 14 and 849 mg/kg respectively. A frequency plot of the sample population by action levels is shown on Figure E-2. The horizontal and vertical sample distributions are shown on Figures E-3, E-4, and E-5.

E.4 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 and Company.

Horizontal variograms were calculated using a 22-foot lag spacing with a 50 percent tolerance. Azimuth and dip increments were 45-degrees with a 22.5-degree angular tolerance (i.e., a three-dimensional cone spanning a 45 degree angle directed at 0, 45, and 90 degrees in dip and at 0, 45, 90, 180, etc. in azimuth). The resulting variograms and program output are included in Attachment E-I. As shown on the first two pages of Attachment E-I, the horizontal variogram range appears to be approximately 90 feet.

A vertical variogram analysis was performed using a 1.5-foot lag spacing with a 50 percent tolerance. The resulting variogram and program output are included in Attachment E-II. As shown on the first page of Attachment E-II, the vertical variogram range appears to be approximately 6 feet.

These values are consistent with previous geostatistical modeling at the Fernald site.

E.5 KRIGING AND MODEL RESULTS

The rectangular model grid used for kriging the total uranium soil contamination in Areas 3B and 4B extends from an Easting and Northing of 1348025.75 feet and 479402.3 feet at the southwest corner to 134935.75 feet and 482193.5 feet at the northeast corner (1983 State Planer coordinates) (Figure E-6). The model extent was 2791 feet north-south and 1370 feet east-west. A grid cell size of approximately 28 feet by 27 feet (illustrated in the upper right hand corner of Figure E-6) was chosen because it provided sufficient horizontal resolution with a model size of 100 cells by 50 cells and allows for convenient kriging run times.

Vertically, the model consisted of 50 horizontal layers each 1 foot in thickness extending from a top elevation of 602 feet amsl to a bottom elevation of 552 feet amsl. These elevations are bounded by the topographic surface and the top of the GMA (Figure E-7).

The Mining Visualization System (MVS) by C Tech Development Corporation was used to do ordinary kriging and visualization of the contaminated soil volumes. Consistent with the variogram analysis, a horizontal Kriging search radius of 90 feet was used with *t* vertical to horizontal anisotropic ratio of 15, which corresponds to a vertical search depth of 6 feet.

After kriged estimates were made for each grid cell, the model top was cut by the site topographic surface (soil piles removed), and the model bottom was cut by the top of the GMA. The final excavation surface for Areas 3B and 4B was placed in the model as an intermediate surface between the model top and bottom. The MVS Explode and Scale module was used to visually separate and display contaminated soil volumes above the excavation surface from soil volumes below the excavation surface. An isometric view of the model surfaces is shown on Figure E-7 with the highest and lowest relative elevations for each layer shown in red and blue respectively. An isometric view of the contaminated soil volume above the excavation surface is shown on Figure E-8.

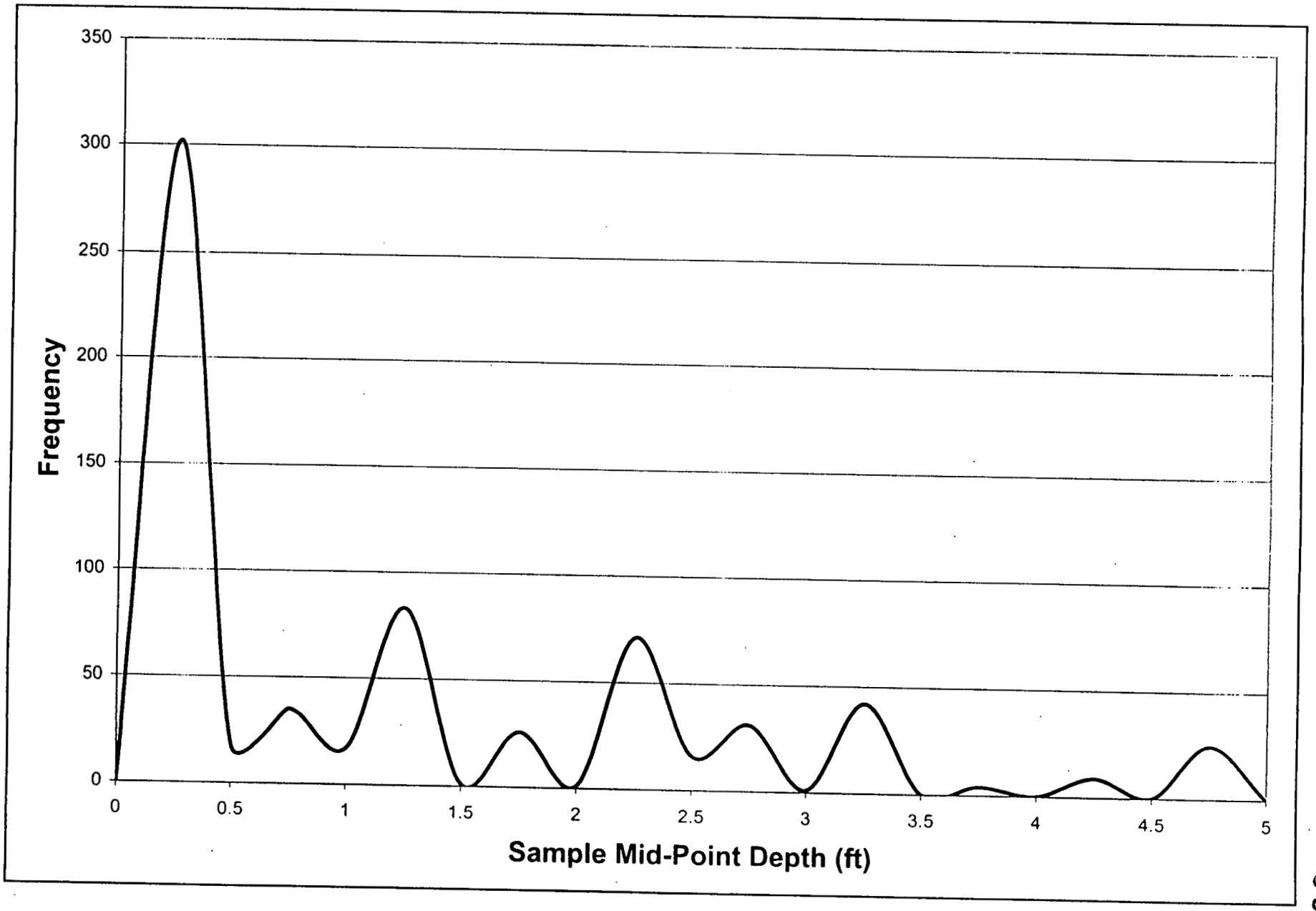

Frequency
350
300
250
200
150
100
50
0
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Sample Mid-Point Depth (ft)

FIGURE E-1

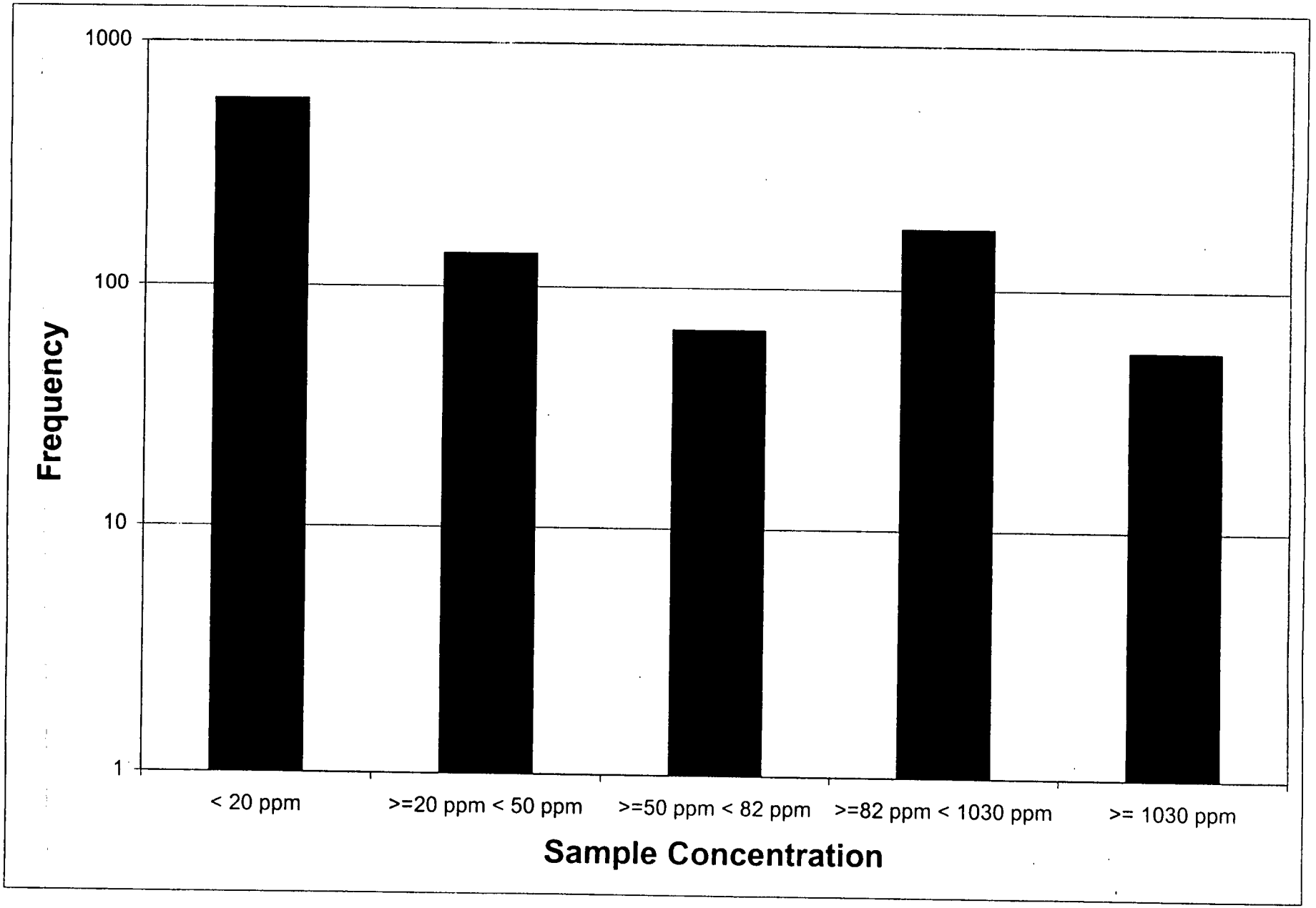

1000
100
10
1
Frequency
< 20 ppm
>=20 ppm < 50 ppm
>=50 ppm < 82 ppm
>=82 ppm < 1030 ppm
>= 1030 ppm
Sample Concentration

FIGURE E-2

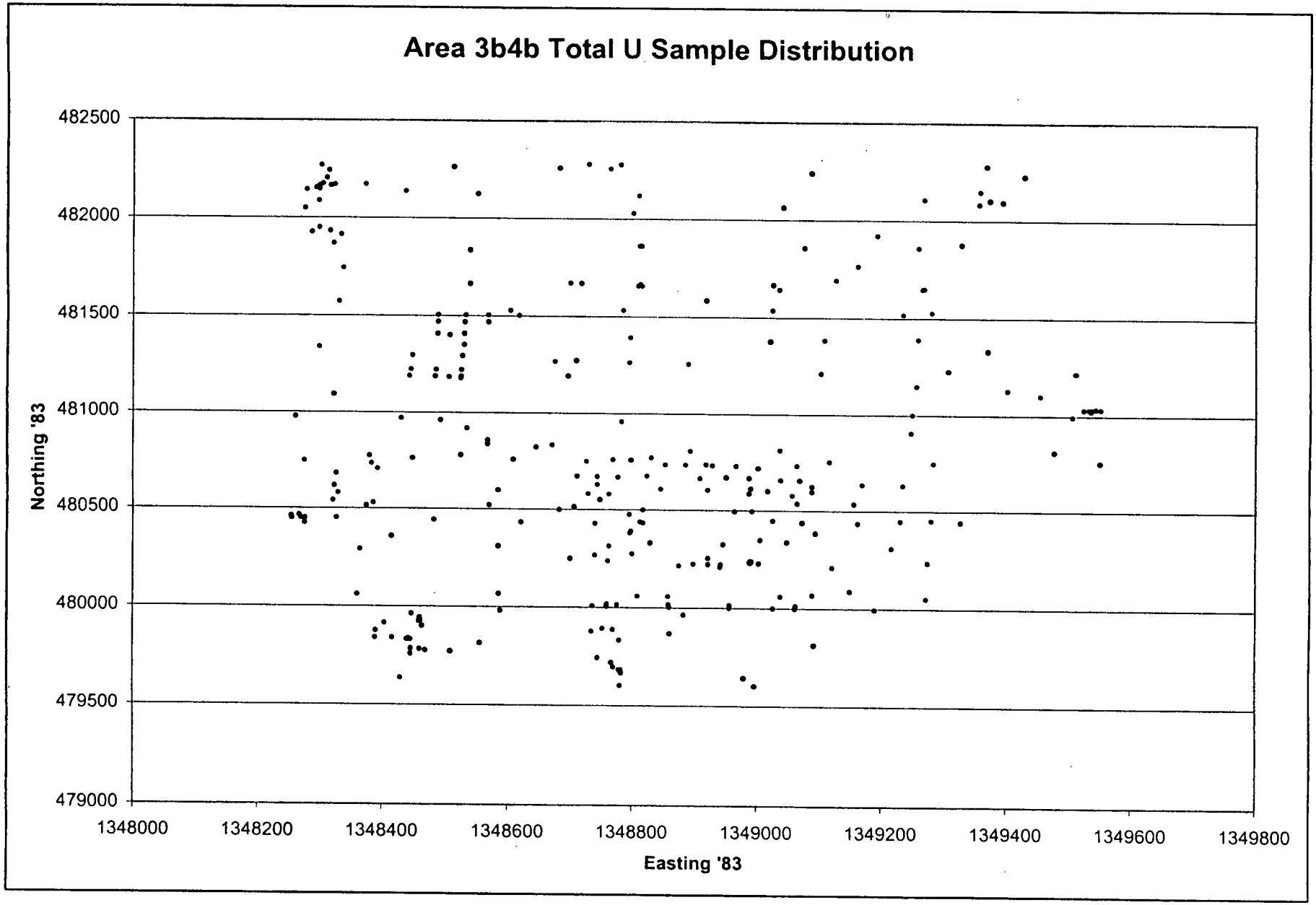

Area 3b4b Total U Sample Distribution
482500
482000
481500
481000
480500
480000
479500
479000
Northing '83
1348000
1348200
1348400
1348600
1348800
1349000
1349200
1349400
1349600
1349800
Easting '83

FIGURE E-3

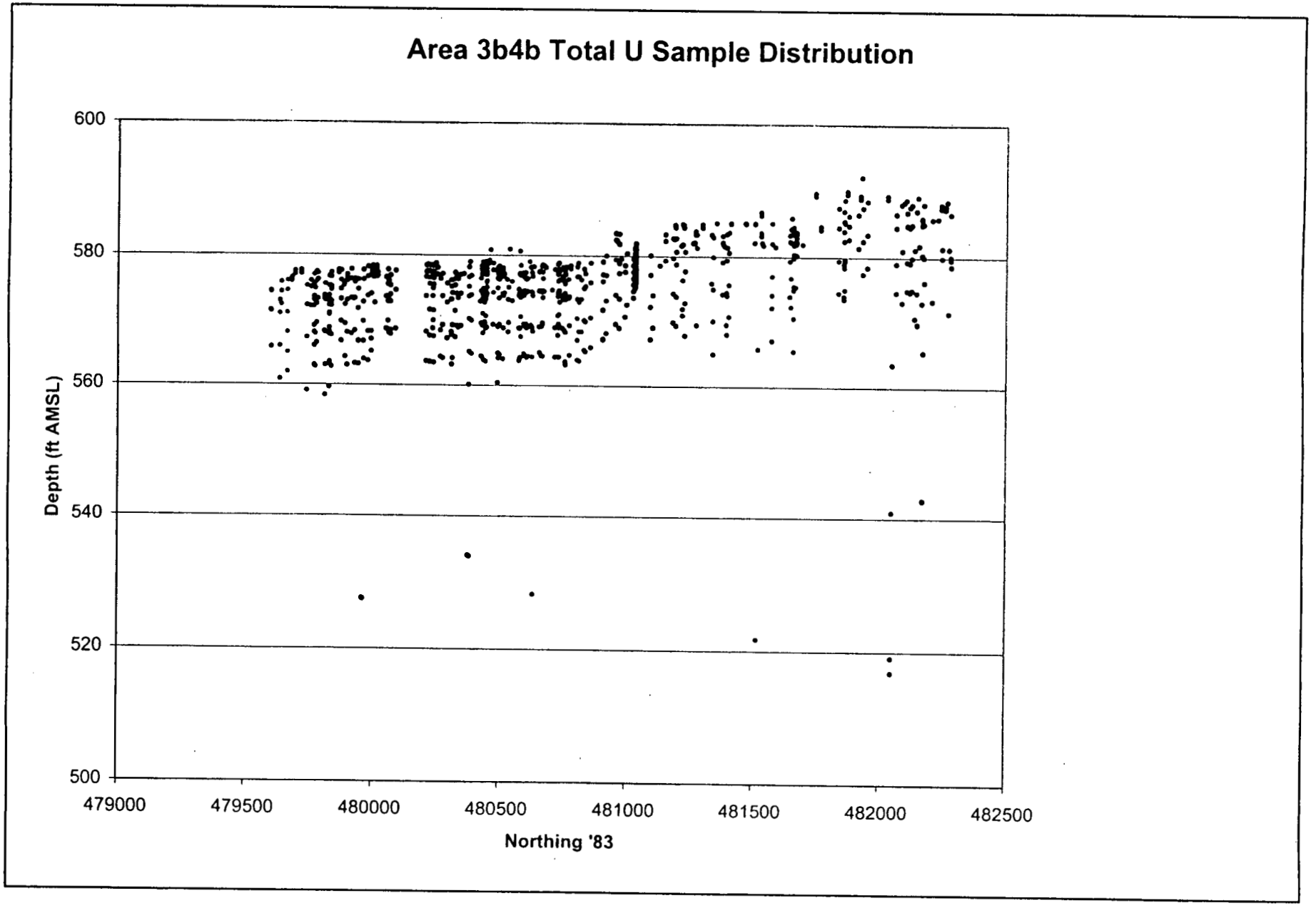

Area 3b4b Total U Sample Distribution
Depth (ft AMSL)
600
580
560
540
520
500
479000
479500
480000
480500
481000
481500
482000
482500
Northing '83

FIGURE E-4

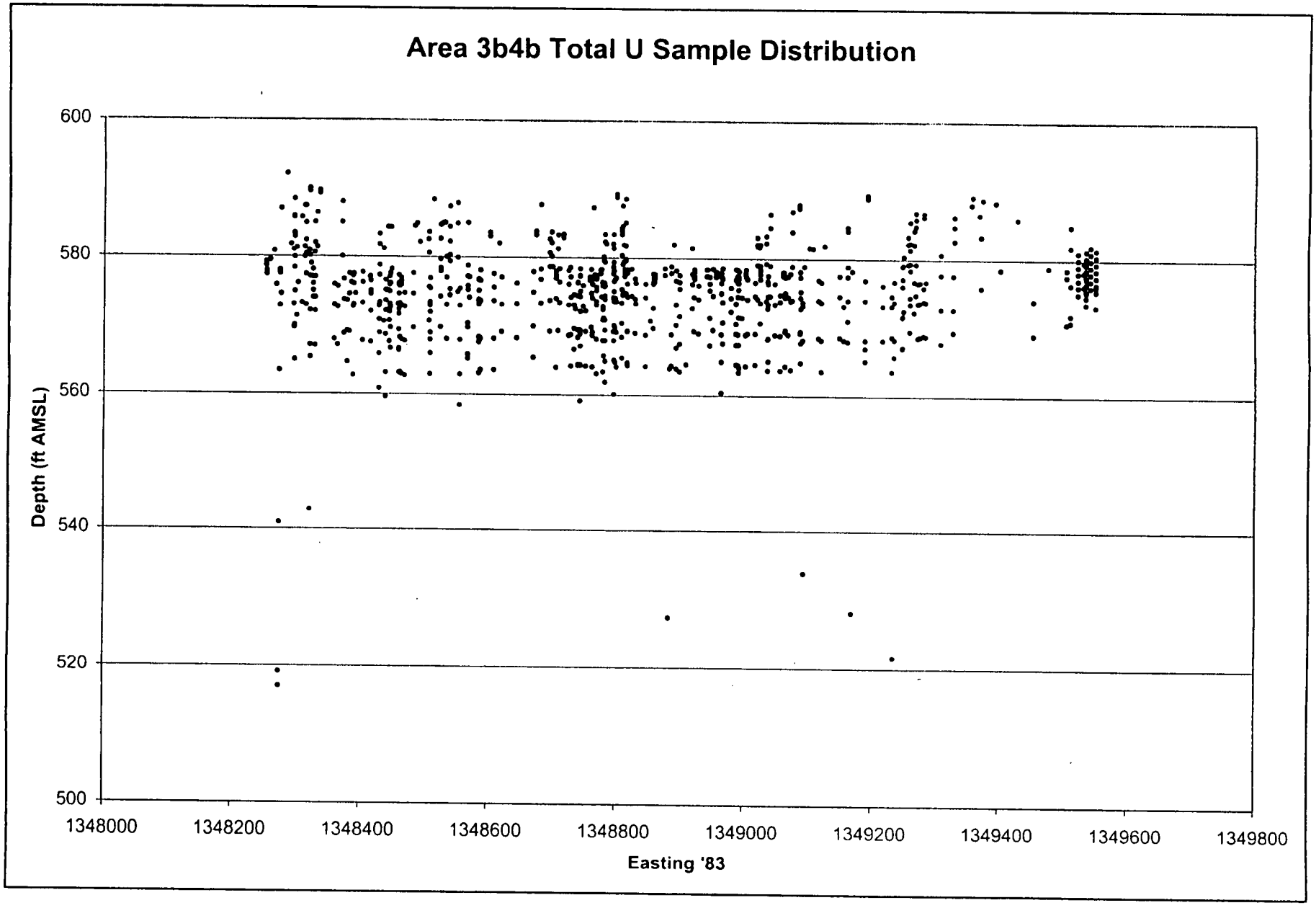
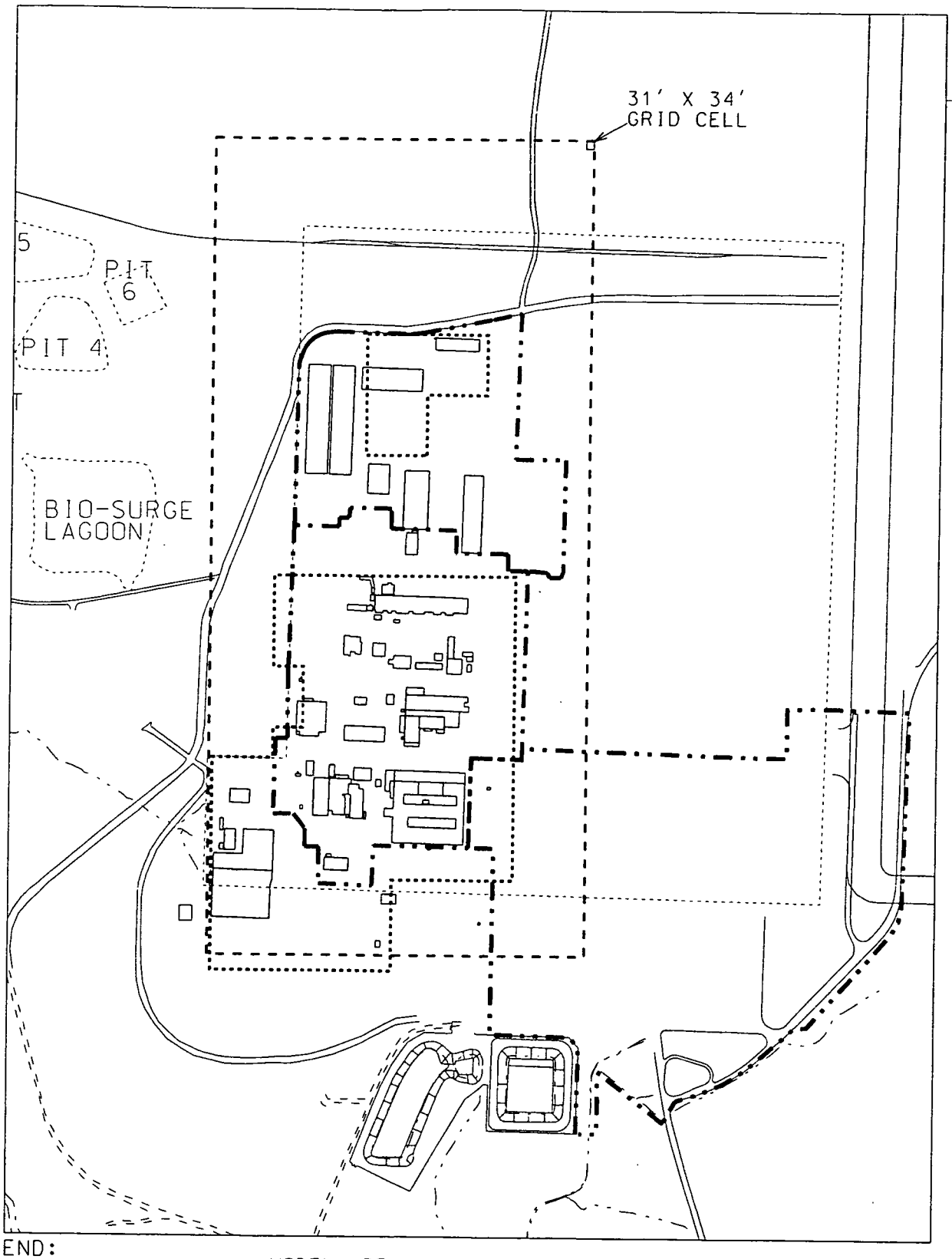

Area 3b4b Total U Sample Distribution
Depth (ft AMSL)
600
580
560
540
520
500
1348000
1348200
1348400
1348600
1348800
1349000
1349200
1349400
1349600
1349800
Easting '83

FIGURE E-5



LEGEND:

- MODEL AREA
- ZONES OF HIGH LEACHABILITY
- BUILDING FOOTPRINTS
- EXCAVATION BOUNDARIES

SCALE

600 300 0 600 FEET

FIGURE E-6. RECTANGULAR MODEL GRID

STATE PLANAR COORDINATE SYSTEM 1983

11-DEC-2003

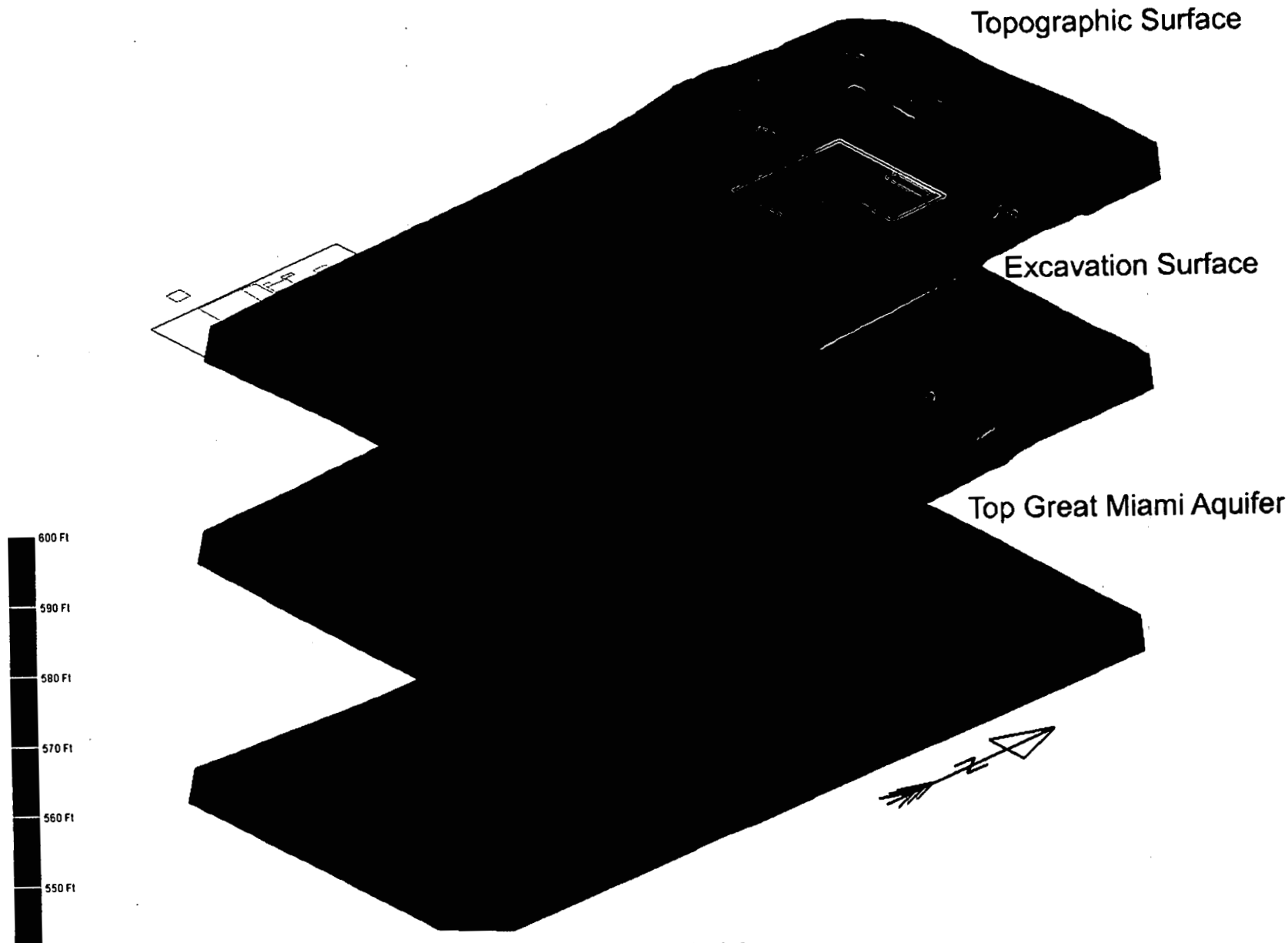


Figure E.7 Model Layers

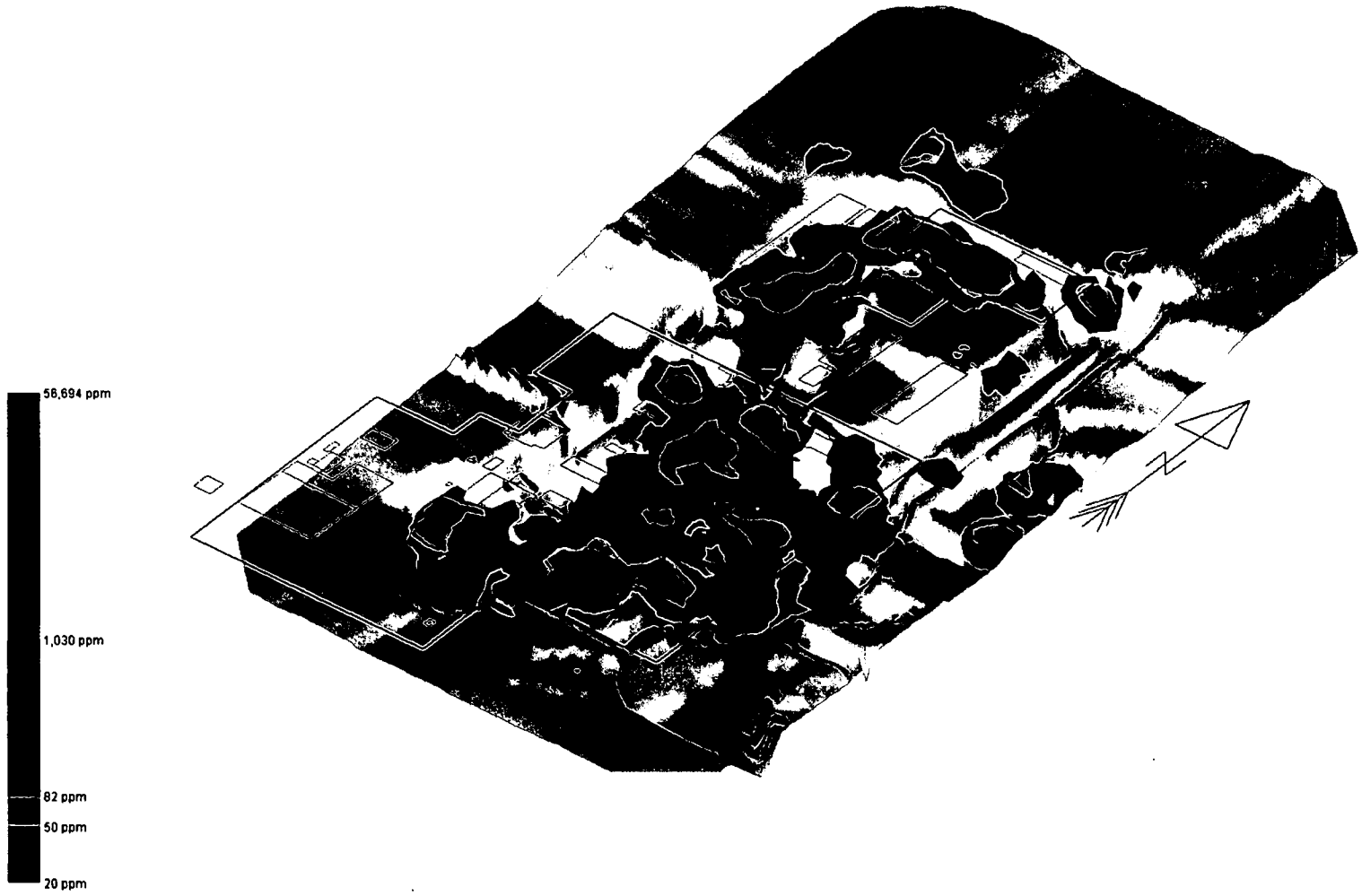
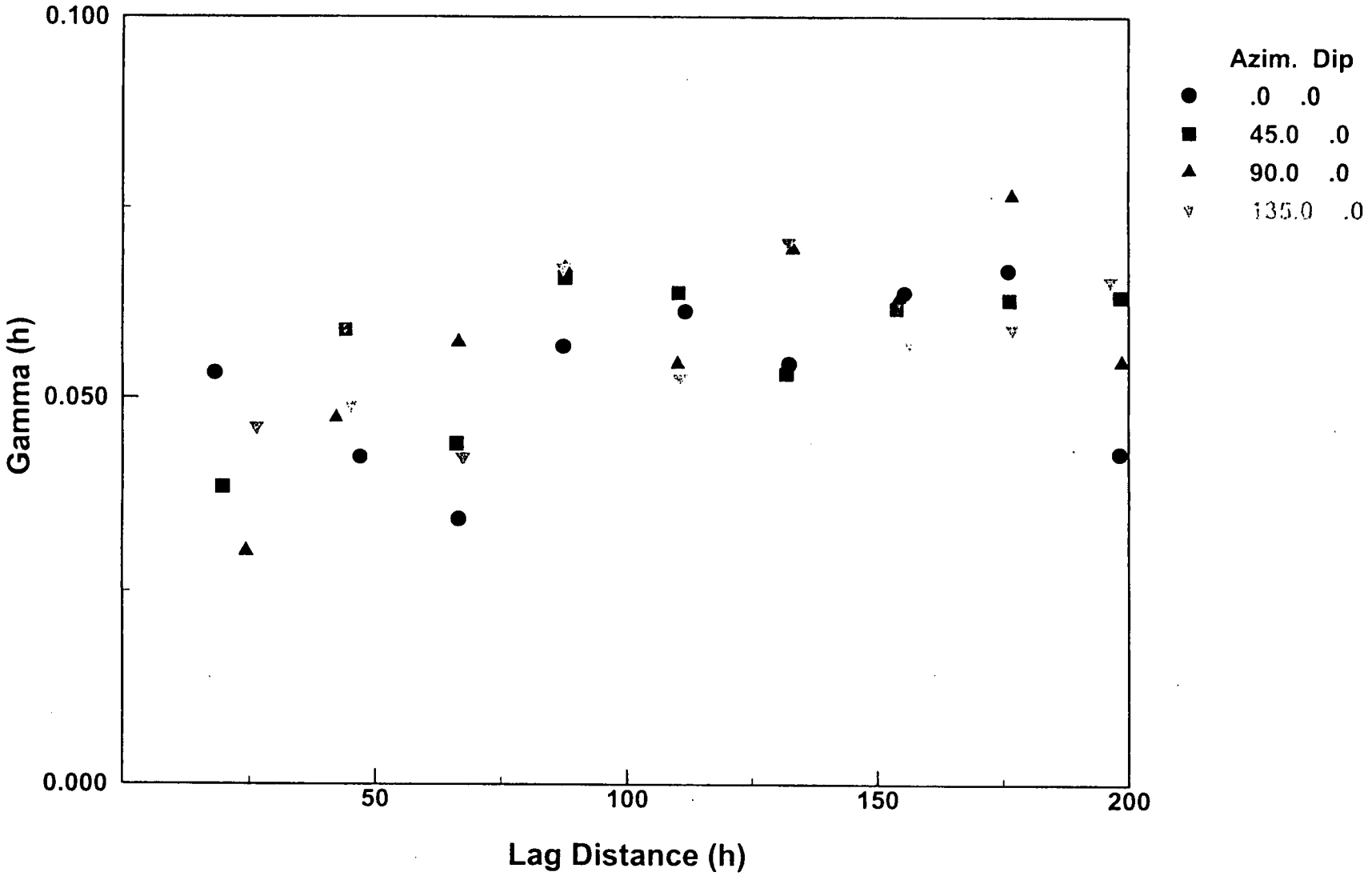


Figure E.8 Excavation Surface and Total Uranium Contamination

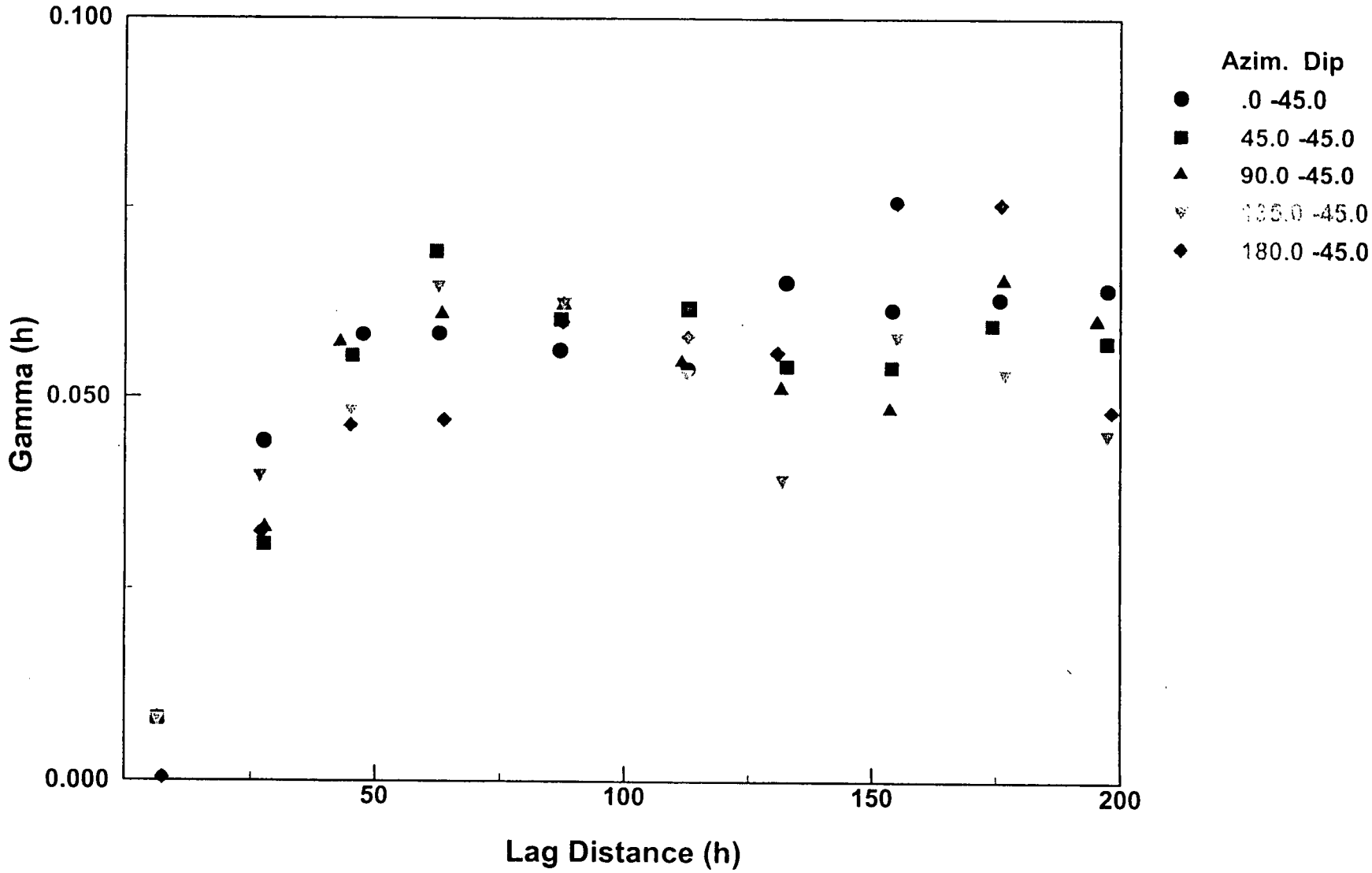
ATTACHMENT E-I

ATTACHMENT E-I

Calculate Sample Variograms



Calculate Sample Variograms



5330

A THREE DIMENSIONAL VARIOGRAM PROGRAM

Project Title -- Calculate Sample Variograms

Program started at 02/06/02 09:07:50
Sample data input file name ==> G:\CRU5RDW\area3b4b\DATA\variotest.sag
Printer or program documentation file ==> G:\CRU5RDW\area3b4b\DATA\variotest.rpt
Output file for modeling program ==> G:\CRU5RDW\area3b4b\DATA\variotest.pli

DATA SELECTION

	MINIMUM	MAXIMUM	FIELD
Attribute	12.000	1000.000	4
X coord	0.0	1296.8	1
Y coord	0.0	2680.0	2
Z coord	0.0	1988.4	3

DIRECTIONS IN WHICH TO COMPUTE VARIOGRAMS

AZIMUTH	ANGTOL	DIP	LAG	LAG TOL
0.00	45.00	0.00	22.00	11.00
45.00	45.00	0.00	22.00	11.00
90.00	45.00	0.00	22.00	11.00
135.00	45.00	0.00	22.00	11.00
180.00	45.00	0.00	22.00	11.00
225.00	45.00	0.00	22.00	11.00
270.00	45.00	0.00	22.00	11.00
315.00	45.00	0.00	22.00	11.00
0.00	45.00	-45.00	22.00	11.00
45.00	45.00	-45.00	22.00	11.00
90.00	45.00	-45.00	22.00	11.00
135.00	45.00	-45.00	22.00	11.00
180.00	45.00	-45.00	22.00	11.00
225.00	45.00	-45.00	22.00	11.00
270.00	45.00	-45.00	22.00	11.00
315.00	45.00	-45.00	22.00	11.00
0.00	45.00	-90.00	22.00	11.00

SWITCHES / OPTIONS:

Make log transform on input data
DO NOT Make down-the-hole variogram
Variogram type = Pairwise Relative Variogram
Horizontal Band Width ==> 200.00
Vertical Band Width ==> 200.00
811 RECORDS READ
370 RECORDS SELECTED
SUMMARY STATISTICS:
Maximum ==> 6.865662
Minimum ==> 2.484907
Mean ==> 3.918495
Variance ==> 1.178202
Std. Dev. ==> 1.085450

SAMPLE VARIOGRAMS FOR AZIMUTH 0.0 and DIP = 0.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
2	11	18.3	0.5384	0.05327	4.1519	3.6135	1.2304	0.9946
3	33	47.1	0.1220	0.04233	4.4407	4.3187	1.2132	1.0192
4	29	66.7	-0.0663	0.03437	3.8051	3.8715	0.8191	0.9650
5	44	87.5	0.1002	0.05682	4.0186	3.9184	1.1609	1.1202
6	95	111.7	0.5007	0.06144	4.5738	4.0731	1.2479	0.8748
7	78	132.4	0.1033	0.05449	4.3631	4.2598	1.1370	0.9755
8	94	155.4	0.2776	0.06384	4.4027	4.1252	1.2627	1.0919
9	102	176.1	-0.0852	0.06678	4.1709	4.2561	1.2550	1.0497
10	64	198.2	0.2685	0.04277	4.2293	3.9608	1.1575	1.0342

SAMPLE VARIOGRAMS FOR AZIMUTH 45.0 and DIP = 0.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL

5330

2	7	19.7	0.1756	0.03851	3.9448	3.7691	1.3632	0.4649
3	27	44.3	-0.1494	0.05898	4.1904	4.3398	1.1615	0.9212
4	38	66.3	-0.2477	0.04403	3.8091	4.0567	0.8659	1.1069
5	50	87.9	0.6742	0.06584	4.3650	3.6908	1.0961	1.0749
6	71	110.4	0.5764	0.06391	4.5660	3.9896	1.3139	0.8823
7	72	131.9	0.3925	0.05319	4.5694	4.1770	1.2262	0.9775
8	66	153.8	0.2294	0.06180	4.1951	3.9657	1.1832	1.1134
9	55	176.3	-0.4053	0.06293	3.7677	4.1730	0.9411	1.1582
10	67	198.3	0.0960	0.06336	4.0930	3.9970	0.9928	1.2439

SAMPLE VARIOGRAMS FOR AZIMUTH 90.0 and DIP = 0.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
2	18	24.4	0.0768	0.03012	4.0188	3.9420	1.2121	0.8660
3	41	42.4	0.0539	0.04735	4.1512	4.0974	0.9850	0.8587
4	42	66.8	0.1103	0.05735	4.0305	3.9202	0.9459	1.0194
5	45	87.9	0.6801	0.06715	4.4780	3.7979	1.0920	0.8437
6	80	110.2	-0.0516	0.05451	3.6834	3.7350	0.8447	1.0743
7	46	133.1	-0.0341	0.06959	3.9467	3.9808	1.0237	1.1096
8	56	154.3	0.1127	0.06318	3.9615	3.8489	1.0432	1.0132
9	67	176.8	0.1079	0.07650	3.9495	3.8415	1.0083	0.9641
10	65	198.6	0.1586	0.05470	3.6489	3.4903	0.8343	0.9835

SAMPLE VARIOGRAMS FOR AZIMUTH 135.0 and DIP = 0.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
2	11	26.5	-0.1802	0.04614	3.9520	4.1322	1.0619	0.7544
3	25	45.3	-0.0382	0.04893	4.1369	4.1752	0.8683	1.0465
4	30	67.6	-0.0430	0.04229	3.9212	3.9642	0.8155	0.9035
5	44	87.5	0.1716	0.06712	4.2129	4.0413	0.9623	1.1923
6	85	110.6	-0.1160	0.05260	3.8247	3.9407	0.7918	1.1287
7	56	132.3	0.2900	0.07047	4.2106	3.9206	0.9813	0.9450
8	60	156.3	-0.4836	0.05715	3.9684	4.4520	0.9591	1.2523
9	82	176.8	-0.0045	0.05914	4.2450	4.2495	0.9784	1.2881
10	38	196.4	-0.1458	0.06548	3.6654	3.8112	0.9545	1.0729

SAMPLE VARIOGRAMS FOR AZIMUTH 180.0 and DIP = 0.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
2	11	18.3	-0.5384	0.05327	3.6135	4.1519	0.9946	1.2304
3	33	47.1	-0.1220	0.04233	4.3187	4.4407	1.0192	1.2132
4	29	66.7	0.0663	0.03437	3.8715	3.8051	0.9650	0.8191
5	44	87.5	-0.1002	0.05682	3.9184	4.0186	1.1202	1.1609
6	95	111.7	-0.5007	0.06144	4.0731	4.5738	0.8748	1.2479
7	78	132.4	-0.1033	0.05449	4.2598	4.3631	0.9755	1.1370
8	94	155.4	-0.2776	0.06384	4.1252	4.4027	1.0919	1.2627
9	102	176.1	0.0852	0.06678	4.2561	4.1709	1.0497	1.2550
10	64	198.2	-0.2685	0.04277	3.9608	4.2293	1.0342	1.1575

SAMPLE VARIOGRAMS FOR AZIMUTH 225.0 and DIP = 0.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
2	7	19.7	-0.1756	0.03851	3.7691	3.9448	0.4649	1.3632
3	26	44.7	0.1695	0.06105	4.3746	4.2051	0.9212	1.1819
4	38	66.3	0.2477	0.04403	4.0567	3.8091	1.1069	0.8659
5	50	87.9	-0.6742	0.06584	3.6908	4.3650	1.0749	1.0961
6	71	110.4	-0.5764	0.06391	3.9896	4.5660	0.8823	1.3139
7	72	131.9	-0.3925	0.05319	4.1770	4.5694	0.9775	1.2262
8	66	153.8	-0.2294	0.06180	3.9657	4.1951	1.1134	1.1832
9	55	176.3	0.4053	0.06293	4.1730	3.7677	1.1582	0.9411
10	67	198.3	-0.0960	0.06336	3.9970	4.0930	1.2439	0.9928

SAMPLE VARIOGRAMS FOR AZIMUTH 270.0 and DIP = 0.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
2	18	24.4	-0.0768	0.03012	3.9420	4.0188	0.8660	1.2121
3	41	42.4	-0.0539	0.04735	4.0974	4.1512	0.8587	0.9850
4	42	66.8	-0.1103	0.05735	3.9202	4.0305	1.0194	0.9459
5	45	87.9	-0.6801	0.06715	3.7979	4.4780	0.8437	1.0920
6	80	110.2	0.0516	0.05451	3.7350	3.6834	1.0743	0.8447
7	46	133.1	0.0341	0.06959	3.9808	3.9467	1.1096	1.0237
8	56	154.3	-0.1127	0.06318	3.8489	3.9615	1.0132	1.0432
9	67	176.8	-0.1079	0.07650	3.8415	3.9495	0.9641	1.0083
10	65	198.6	-0.1586	0.05470	3.4903	3.6489	0.9835	0.8343

SAMPLE VARIOGRAMS FOR AZIMUTH 315.0 and DIP = 0.0

5330

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
2	41	26.5	0.1802	0.04614	4.1322	3.9520	0.7544	1.0619
3	25	45.3	0.0382	0.04893	4.1752	4.1369	1.0465	0.8683
4	30	67.6	0.0430	0.04229	3.9642	3.9212	0.9035	0.8155
5	44	87.5	-0.1716	0.06712	4.0413	4.2129	1.1923	0.9623
6	85	110.6	0.1160	0.05260	3.9407	3.8247	1.1287	0.7918
7	56	132.3	-0.2900	0.07047	3.9206	4.2106	0.9450	0.9813
8	60	156.3	0.4836	0.05715	4.4520	3.9684	1.2523	0.9591
9	82	176.8	0.0045	0.05914	4.2495	4.2450	1.2881	0.9784
10	38	196.4	0.1458	0.06548	3.8112	3.6654	1.0729	0.9545

SAMPLE VARIOGRAMS FOR AZIMUTH 0.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
2	42	27.6	-0.3016	0.04405	4.1917	4.4933	1.1812	1.2934
3	12	47.5	-0.5183	0.05838	3.5450	4.0633	1.1786	0.9683
4	38	62.8	-0.2163	0.05850	4.0434	4.2597	1.0929	1.1363
5	67	87.1	-0.0352	0.05627	3.9591	3.9943	0.9882	1.1248
6	85	112.8	0.0761	0.05383	4.1967	4.1205	1.1298	1.0256
7	68	132.6	-0.2541	0.06538	4.0533	4.3074	1.1861	1.0673
8	72	154.0	0.4435	0.06169	4.4628	4.0193	1.2166	1.0243
9	70	175.8	0.3523	0.06314	4.3783	4.0260	1.1812	0.9877
10	51	197.4	0.1528	0.06438	4.1298	3.9770	1.1984	0.9735

SAMPLE VARIOGRAMS FOR AZIMUTH 45.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	2	6.6	-0.7259	0.00805	5.3141	6.0399	0.9314	1.1524
2	47	27.6	-0.2568	0.03080	4.1223	4.3790	1.1875	1.1964
3	27	45.4	-0.1984	0.05555	3.9550	4.1534	1.2039	1.0207
4	49	62.3	-0.0452	0.06934	4.0190	4.0642	1.1067	1.1318
5	69	87.2	-0.0681	0.06046	4.0736	4.1417	1.0659	1.1779
6	84	113.0	0.2451	0.06189	4.3139	4.0688	1.1995	1.0244
7	67	132.7	-0.1155	0.05427	4.0244	4.1400	1.2357	1.0638
8	75	153.9	0.2327	0.05408	4.1310	3.8983	1.1846	0.9985
9	50	174.2	0.1678	0.05974	3.9498	3.7821	1.0393	0.9172
10	51	197.3	0.2412	0.05739	4.2974	4.0562	1.1699	1.0019

SAMPLE VARIOGRAMS FOR AZIMUTH 90.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	2	6.6	-0.7259	0.00805	5.3141	6.0399	0.9314	1.1524
2	43	27.8	-0.2807	0.03289	4.1910	4.4717	1.2100	1.2025
3	27	42.9	0.0490	0.05732	4.1637	4.1146	1.1906	0.9253
4	57	63.3	0.0126	0.06109	4.1215	4.1089	1.1615	1.1568
5	71	87.8	-0.1977	0.06237	4.0759	4.2737	1.0630	1.1370
6	76	111.5	-0.1228	0.05479	3.8288	3.9515	0.9780	1.0337
7	61	131.5	-0.2172	0.05114	3.8234	4.0406	1.0609	1.0385
8	62	153.5	0.1362	0.04842	3.9490	3.8127	1.0480	0.9613
9	43	176.5	-0.0399	0.06561	4.0775	4.1173	1.0523	0.8577
10	35	195.3	0.4062	0.06024	4.0688	3.6626	1.1214	0.9789

SAMPLE VARIOGRAMS FOR AZIMUTH 135.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	2	6.6	-0.7259	0.00805	5.3141	6.0399	0.9314	1.1524
2	47	26.8	-0.1944	0.03982	4.2514	4.4459	1.2631	1.2450
3	32	45.2	-0.6358	0.04836	3.9015	4.5372	0.9563	1.1645
4	51	62.7	0.0288	0.06486	4.1040	4.0752	1.1460	1.1529
5	68	87.8	-0.0372	0.06271	4.2783	4.3155	1.1442	1.1538
6	82	112.5	-0.1422	0.05319	3.9240	4.0663	0.9762	1.0741
7	60	131.8	-0.3431	0.03940	3.7015	4.0446	0.8937	0.9616
8	62	155.0	0.0573	0.05819	4.0671	4.0098	0.9313	1.1601
9	58	176.8	-0.2049	0.05327	4.3076	4.5125	0.9016	1.0981
10	36	197.4	-0.1297	0.04517	3.9588	4.0884	1.0689	1.1865

SAMPLE VARIOGRAMS FOR AZIMUTH 180.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	1	7.5	0.1855	0.00041	6.5554	6.3699	42.9727	40.5756
2	41	27.1	-0.3238	0.03238	4.2267	4.5505	1.2444	1.2595
3	30	45.1	-0.7857	0.04616	4.0148	4.8005	1.0346	1.2976
4	52	63.8	0.2233	0.04688	4.2573	4.0341	1.0333	1.1757
5	61	87.5	-0.1269	0.06009	4.1886	4.3155	1.1403	1.1752
6	86	112.7	-0.2213	0.05813	3.9688	4.1901	0.9086	1.2037
7	66	130.8	-0.1958	0.05597	4.1135	4.3093	0.9289	1.1761

5330

8	53	155.0	0.0061	0.07571	4.0841	4.0780	1.0130	1.2342
9	78	176.0	0.0515	0.07546	4.2686	4.2171	1.0592	1.2001
10	45	198.2	0.1925	0.04811	4.0094	3.8169	1.1433	1.2408

SAMPLE VARIOGRAMS FOR AZIMUTH 225.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	1	7.5	0.1855	0.00041	6.5554	6.3699	42.9727	40.5756
2	46	26.2	-0.3351	0.04108	4.2306	4.5656	1.2256	1.3170
3	35	42.4	-0.2632	0.03741	4.0221	4.2854	0.9645	1.1399
4	55	63.8	0.2301	0.05864	4.2122	3.9821	1.1975	1.1447
5	75	87.6	-0.1482	0.05870	4.0794	4.2276	1.0598	1.1452
6	78	112.5	-0.3000	0.06349	3.8888	4.1887	0.9493	1.2442
7	61	131.4	-0.2601	0.06201	4.0245	4.2846	0.9400	1.2218
8	47	153.3	0.0722	0.07109	4.0039	3.9317	1.0143	1.1286
9	57	176.3	0.0495	0.08892	4.2570	4.2075	1.1309	1.1798
10	46	197.7	0.2765	0.05839	4.1473	3.8708	1.2426	1.1150

SAMPLE VARIOGRAMS FOR AZIMUTH 270.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	1	7.5	0.1855	0.00041	6.5554	6.3699	42.9727	40.5756
2	49	27.2	-0.3920	0.03315	4.1203	4.5123	1.0617	1.2651
3	33	42.0	-0.1181	0.02762	3.9205	4.0387	0.8634	0.9967
4	56	65.0	0.0012	0.06451	4.0810	4.0798	1.1098	1.1361
5	63	86.6	-0.0871	0.04274	3.9984	4.0855	0.8356	1.0584
6	77	112.2	0.1044	0.05422	3.7660	3.6616	1.0190	0.8875
7	48	133.1	-0.1002	0.08111	3.9454	4.0456	1.0182	1.2029
8	43	153.5	-0.1938	0.07620	3.8664	4.0602	0.9918	1.0932
9	50	176.2	-0.2410	0.08259	3.8840	4.1249	1.1370	1.1274
10	37	197.7	-0.0044	0.06512	3.8457	3.8500	1.2841	0.9535

SAMPLE VARIOGRAMS FOR AZIMUTH 315.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
2	50	27.6	-0.3381	0.03452	4.1621	4.5003	1.0247	1.2692
3	25	42.0	0.0061	0.02888	3.9571	3.9510	0.9229	0.9276
4	53	64.1	0.0887	0.05436	4.0790	3.9903	1.0580	1.1320
5	76	87.3	-0.0796	0.04958	3.9532	4.0328	0.9393	1.0747
6	79	113.1	0.0091	0.04932	3.8802	3.8711	0.9410	0.9624
7	57	132.3	-0.3188	0.06296	3.7694	4.0882	0.8928	1.0170
8	58	154.6	0.0619	0.06552	4.1253	4.0633	1.1471	1.1319
9	61	176.1	0.1921	0.06851	4.3429	4.1508	1.2782	0.9615
10	38	195.6	-0.1653	0.07055	3.7298	3.8952	1.1831	0.9808

SAMPLE VARIOGRAMS FOR AZIMUTH 0.0 and DIP = -90.0

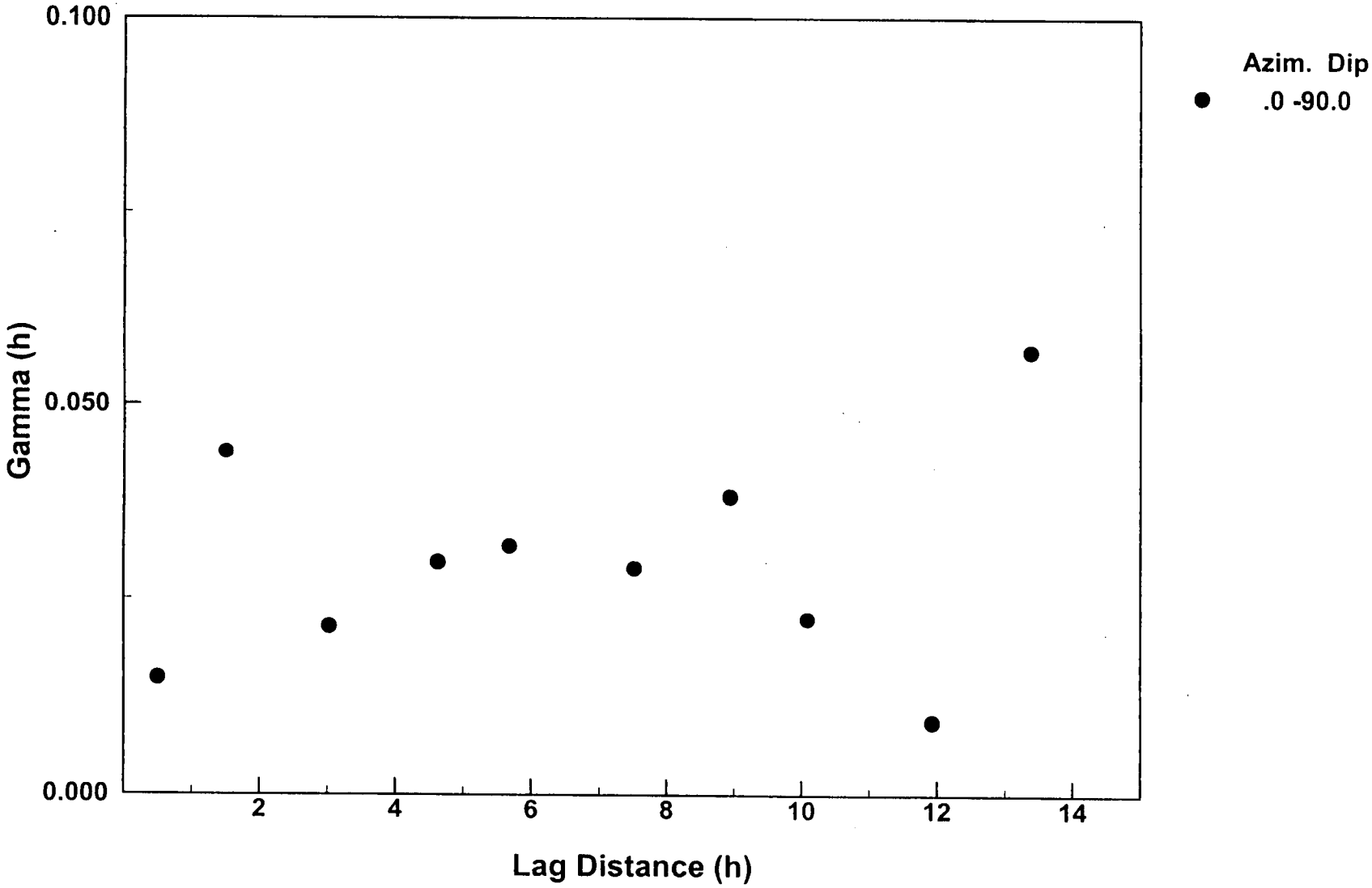
LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	3	6.9	-0.4221	0.00551	5.7278	6.1499	0.9733	0.8368
2	54	27.3	-0.2676	0.04418	4.1783	4.4459	1.2176	1.2861
3	30	42.1	-0.2602	0.04903	3.8859	4.1462	1.1079	1.1297
4	56	62.9	-0.0303	0.06056	4.1264	4.1567	1.1711	1.2316
5	93	87.3	0.0347	0.05597	4.1765	4.1417	1.0178	1.1909
6	76	112.4	0.0724	0.05615	3.9466	3.8742	1.0010	1.0029
7	73	130.9	-0.0845	0.05994	3.8225	3.9069	1.0924	0.9923
8	64	152.7	0.3144	0.06279	4.2134	3.8989	1.1823	1.0934
9	97	176.0	0.1358	0.04918	4.3544	4.2187	1.0755	1.1137
10	61	198.5	0.1830	0.05275	4.1881	4.0051	1.1736	1.2895

Program ran to successful completion on 02/06/02 09:07:52

ATTACHMENT E-II

ATTACHMENT E-II

Calculate Sample Variograms



5330

-- S37 -- A THREE DIMENSIONAL VARIOGRAM PROGRAM

Project Title -- Calculate Sample Variograms

Program started at 02/13/02 08:52:22
Sample data input file name ==> G:\CRU5RDW\area3b4b\DATA\vertical.sag
Printer or program documentation file ==> G:\CRU5RDW\area3b4b\DATA\vertical.rpt
Output file for modeling program ==> G:\CRU5RDW\area3b4b\DATA\vertical.pli

DATA SELECTION

	MINIMUM	MAXIMUM	FIELD
Attribute	15.00	1000.00	4
X coord	1348254.0	1349551.0	1
Y coord	479601.6	482281.6	2
Z coord	530.0	585.0	3

DIRECTIONS IN WHICH TO COMPUTE VARIOGRAMS

AZIMUTH	ANGTOL	DIP	LAG	LAG TOL
0.00	45.00	0.00	1.50	0.75
90.00	45.00	0.00	1.50	0.75
180.00	45.00	0.00	1.50	0.75
270.00	45.00	0.00	1.50	0.75
0.00	45.00	-45.00	1.50	0.75
90.00	45.00	-45.00	1.50	0.75
180.00	45.00	-45.00	1.50	0.75
270.00	45.00	-45.00	1.50	0.75
0.00	45.00	-90.00	1.50	0.75

SWITCHES / OPTIONS:

Make log transform on input data
DO NOT Make down-the-hole variogram
Variogram type = Pairwise Relative Variogram
Horizontal Band Width ==> 10.00
Vertical Band Width ==> 10.00
820 RECORDS READ
309 RECORDS SELECTED
SUMMARY STATISTICS:
Maximum ==> 6.865662
Minimum ==> 2.708050
Mean ==> 4.050562
Variance ==> 1.085090
Std. Dev. ==> 1.041676

SAMPLE VARIOGRAMS FOR AZIMUTH 0.0 and DIP = 0.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
4	4	5.0	0.7453	0.02992	5.1219	4.3766	0.9497	1.4700
5	3	5.9	0.5250	0.02210	5.1570	4.6320	1.5836	1.6663
6	1	7.0	0.6042	0.01182	4.2312	3.6270	17.9031	13.1552
7	10	9.3	-1.3974	0.06065	3.4713	4.8686	0.2750	0.9519
8	9	10.0	-0.9736	0.05273	3.2655	4.2391	0.2946	0.7968
9	1	12.7	0.9359	0.04138	3.7209	2.7850	13.8448	7.7563
10	2	13.1	0.2173	0.00213	3.4638	3.2465	0.0377	0.0000

SAMPLE VARIOGRAMS FOR AZIMUTH 90.0 and DIP = 0.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
3	4	3.0	-0.7259	0.02451	5.3141	6.0399	0.7605	0.9409
4	3	4.0	-0.1782	0.06102	3.9611	4.1393	1.7716	0.0000
5	8	6.4	-0.1847	0.02087	3.8699	4.0546	0.1990	0.9494
6	15	7.7	-0.5033	0.07930	3.6202	4.1235	1.0941	1.4037
7	5	8.9	0.3527	0.01244	4.1393	3.7866	0.0007	0.5200
8	1	11.2	-0.5812	0.01731	2.8332	3.4144	8.0271	11.6584
9	14	12.3	0.1324	0.06117	4.0396	3.9072	1.4641	0.4450
10	6	13.0	-0.2348	0.05810	3.4436	3.6784	1.2560	0.4544

SAMPLE VARIOGRAMS FOR AZIMUTH 180.0 and DIP = 0.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
4	43	5.0	-0.7453	0.02992	4.3766	5.1219	1.4700	0.9497
5	5	5.9	-0.5250	0.02210	4.6320	5.1570	1.6663	1.5836
6	1	7.0	-0.6042	0.01182	3.6270	4.2312	13.1552	17.9031
7	10	9.3	1.3974	0.06065	4.8686	3.4713	0.9519	0.2750
8	9	10.0	0.9736	0.05273	4.2391	3.2655	0.7968	0.2946
9	1	12.7	-0.9359	0.04138	2.7850	3.7209	7.7563	13.8448
10	2	13.1	-0.2173	0.00213	3.2465	3.4638	0.0000	0.0377

SAMPLE VARIOGRAMS FOR AZIMUTH 270.0 and DIP = 0.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
3	4	3.0	0.7259	0.02451	6.0399	5.3141	0.9409	0.7605
4	3	4.0	0.1782	0.06102	4.1393	3.9611	0.0000	1.7716
5	8	6.4	0.1847	0.02087	4.0546	3.8699	0.9494	0.1990
6	15	7.7	0.5033	0.07930	4.1235	3.6202	1.4037	1.0941
7	5	8.9	-0.3527	0.01244	3.7866	4.1393	0.5200	0.0007
8	1	11.2	0.5812	0.01731	3.4144	2.8332	11.6584	8.0271
9	14	12.3	-0.1324	0.06117	3.9072	4.0396	0.4450	1.4641
10	6	13.0	0.2348	0.05810	3.6784	3.4436	0.4544	1.2560

SAMPLE VARIOGRAMS FOR AZIMUTH 0.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	22	0.5	-0.3710	0.01487	4.6178	4.9888	1.0603	1.1173
2	37	1.5	0.1210	0.04486	4.2251	4.1040	1.0289	0.9947
3	33	3.0	0.1276	0.02209	4.5376	4.4100	1.1235	1.1747
4	53	4.6	-0.1800	0.03031	4.1097	4.2896	1.0015	0.9687
5	15	5.8	-0.1548	0.03218	3.8902	4.0450	0.9701	0.9081
6	5	6.9	-0.0415	0.04955	4.4620	4.5035	1.3603	1.1919
7	2	9.6	-0.8831	0.02697	3.3564	4.2395	0.4344	0.8662
8	3	10.2	-1.6414	0.08749	3.3169	4.9583	0.3367	0.4086
9	1	12.6	-3.2708	0.21997	3.2958	6.5667	10.8625	43.1212
10	1	13.7	-1.1632	0.04499	3.2958	4.4590	10.8625	19.8826

SAMPLE VARIOGRAMS FOR AZIMUTH 90.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	22	0.5	-0.3710	0.01487	4.6178	4.9888	1.0603	1.1173
2	37	1.5	0.1210	0.04486	4.2251	4.1040	1.0289	0.9947
3	36	3.0	0.0156	0.02272	4.5840	4.5684	1.1006	1.2635
4	52	4.6	-0.1913	0.03040	4.1170	4.3082	1.0302	0.9708
5	19	5.9	-0.2537	0.02960	3.9236	4.1773	0.8557	0.8833
6	12	7.3	-0.0650	0.03921	4.2453	4.3103	1.1803	1.1193
7	3	8.7	0.9225	0.04057	4.8700	3.9476	1.0015	0.4462
8	1	10.8	1.4780	0.04925	5.4483	3.9703	29.6838	15.7632

SAMPLE VARIOGRAMS FOR AZIMUTH 180.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	22	0.5	-0.3710	0.01487	4.6178	4.9888	1.0603	1.1173
2	37	1.5	0.1548	0.04438	4.2497	4.0949	1.0350	0.9883
3	34	3.0	0.1263	0.02145	4.5252	4.3989	1.1087	1.1586
4	52	4.6	-0.2443	0.02959	4.0686	4.3129	0.9983	0.9705
5	17	5.6	-0.3207	0.03005	4.1445	4.4651	1.2262	1.1700
6	5	7.0	-0.0719	0.04706	4.3422	4.4141	1.3847	0.5919
7	3	9.5	1.7738	0.08530	5.4351	3.6614	1.1382	0.6968
8	2	10.0	0.3880	0.01707	3.8677	3.4797	1.1777	0.2600
9	2	11.9	0.7148	0.01915	4.3521	3.6372	0.4927	0.0372
10	1	12.9	-1.5818	0.08302	3.0910	4.6728	9.5545	21.8353

SAMPLE VARIOGRAMS FOR AZIMUTH 270.0 and DIP = -45.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	22	0.5	-0.3710	0.01487	4.6178	4.9888	1.0603	1.1173
2	37	1.5	0.1548	0.04438	4.2497	4.0949	1.0350	0.9883
3	35	3.0	0.1014	0.02109	4.5452	4.4438	1.0987	1.1720
4	53	4.6	-0.1776	0.03072	4.0822	4.2597	0.9854	0.9968
5	18	5.8	-0.2721	0.02954	3.9057	4.1778	1.1053	0.9839
6	6	7.5	1.1226	0.12220	4.5896	3.4669	1.6181	0.7425
7	1	9.1	-0.8584	0.02677	3.2809	4.1393	10.7644	17.1340
9	1	11.6	-0.5745	0.01205	3.4144	3.9890	11.6584	15.9120

SAMPLE VARIOGRAMS FOR AZIMUTH 0.0 and DIP = -90.0

LAG	NPAIRS	DISTANCE	DRIFT	GAMMA	MEAN HEAD	MEAN TAIL	STD. HEAD	STD. TAIL
1	22	0.5	-0.3710	0.01487	4.6178	4.9888	1.0603	1.1173

2	38	1.5	0.1268	0.04375	4.2439	4.1171	1.0215	0.9845
3	34	3.0	0.1263	0.02145	4.5252	4.3989	1.1087	1.1586
4	51	4.6	-0.2316	0.02967	4.0799	4.3116	1.0049	0.9801
5	14	5.7	-0.2892	0.03172	3.8308	4.1200	0.9144	0.9444
6	14	7.5	-0.2144	0.02891	4.2906	4.5050	1.0715	1.2488
7	16	8.9	0.0612	0.03799	4.0994	4.0382	1.1562	1.0357
8	18	10.1	-0.1482	0.02247	4.3743	4.5225	1.1709	1.0516
9	7	11.9	-0.0010	0.00937	3.7160	3.7170	0.5816	0.6859
10	12	13.4	-0.1743	0.05704	4.6463	4.8206	1.2607	1.4777

Program ran to successful completion on 02/13/02 08:52:23

Appendix F

APPENDIX F

FACILITY HISTORICAL INFORMATION

APPENDIX F
FACILITY HISTORICAL INFORMATION

Appendix F describes information about facilities and buildings that are located within the excavation areas related to Area 3B/4B/5 and MDC. It gives a brief description of each facility and a detailed description of the processes that took place within the facility.

This appendix is divided into four subsections relating to excavation areas, as follows:

- Area 3B Facility Historical Information
- Area 4B Facility Historical Information
- Area 5 Facility Historical Information
- MDC Facility Historical Information.

AREA 3B FACILITY HISTORY INFORMATION

Facilities located in Area 3B excavation area (see Figure F-1) include the Preparation Plant (1A), Plant 1 Storage Building (1B), Drum Reconditioning Building, Plant 1 Ore Silos (1C), NFS Storage and Pump House (2E), Conveyor Tunnel (2H), Chemical Warehouse (30A), Drum Storage Warehouse (30B), CP Storage Warehouse (56A), General In-Process Warehouse (71), and Plant 1 Storage Pad (74T).

Building 1A - Preparation Plant

Facility Description

Building 1 (Preparation Plant) was a four-story building located north of 2nd Street and east of "A" Street. It had an irregular shape measuring approximately 82 ft. x 202 ft. x 50 ft. high and a ground floor area of 22,040 square feet.

Process Description

Uranium ores and ore concentrates and both normal and enriched uranium process residues generated at the facility were received in Building 1A. Materials were weighed, sampled, and milled in this plant for distribution to other production processes. Uranyl nitrate (UNH) solution was also prepared in Building 1A for use in the Ore Refinery Plant (2A). Several other support operations were performed in the plant, including drum sampling and washing, solvent recovery, repackaging, and wastewater handling.

Building 1A had seven process areas. Three were dry: drum sampling, crushing/milling, and repackaging. The other process areas were wet: enriched materials reclamation, drum washing, solvent reclamation, and wastewater handling.

Drum Sampling. A main function of the Preparation Plant was to sample and weigh recycle and feed material, both those produced by the facility and those from off-site facilities. Weight and uranium assay determinations provided official data for payment of vendor-supplied ores and concentrates. The level of enrichment of recycle materials was also determined, as were chemical constituents that could affect other plant operations. Materials received in large quantities were sampled with an automatic sampling unit. Smaller lot sizes and wet materials were pipe-sampled manually on the sampling pad outside the northwestern corner of Building 1A.

Sampling of materials contained in 55- and 30-gallon drums was performed at the sampling station located in the northwestern corner of Building 1A. The automatic sampling facilities consisted of a "U"-shaped roller drum conveyor, two drum pushers, a set of inline scales, an automatic closed auger sampling station, a dust enclosure and collector, an air-capping device, and a drum roller/mixer.

Crushing/Milling. Building 1A housed six milling operations to produce smaller-sized particles. Enriched uranium materials, magnesium fluoride (MgF_2), and orange oxide (UO_3) were among the materials milled.

The Fitzpatrick Hammer Mill was used to prepare unirradiated enriched uranium dioxide (UO_2) having enrichments less than 20% for recovery by the safe geometry digester unit. The uranium dioxide arrived as spent fuel pellets, encased in tubes, that originated from other nuclear facilities. The tubes were run through the Pincutter, which split the tubes longitudinally for easy removal of the UO_2 pellets for subsequent milling. The Fitzpatrick Hammer Mill has been replaced, and the new mill has never been operated. The Sly dust collector controlled dust generated during this process.

The Williams-Titan Mill processed magnesium fluoride (MgF_2) slag leach from the Metals Production Plant (5A). Other materials that contained uranium enrichments of 2.1% or less were also periodically processed. The mill facility consisted of several pieces of equipment for receiving raw material, feeding the material to the mill, pulverizing, classifying, discharging product, product packaging, dust collection, and was equipped for explosion suppression. Among the equipment used were the pulverizer, hopper, and cyclone system. All processed material from this mill was either sent back to the Metals Production Plant for reuse as reduction pot liner material or digested for uranium recovery in the Ore Refinery Plant.

These smaller mills were also historically associated with Building 1A. The Zenith Mill, located on the second floor, was used to process UO_3. The jaw crusher and Hammer Mill, both located on the third floor, were used to process ore materials.

Repackaging. A repackaging system for two types of materials was used in Building 1A. One type of repackaging pertained to those materials from Building1A, and the other pertained to materials associated with the Plant 1 Pad (74T). The materials requiring repackaging included materials milled in Building 1A and materials received from off-site facilities. Materials with varying uranium enrichments required repackaging to meet feed specifications of the plant or process where further processing was to be done. Only enriched materials to be used in other plant processes were handled in the area. The materials associated with the Plant 1 Pad that required repackaging were leaking drums found on the pad. Leaking drums were either repackaged into new drums or overpacked with a barrel-turning truck. During repackaging operations, any damaged containers were emptied of all materials before disposal.

Enriched Materials Reclamation. The safe geometry digestion unit was used in Building 1A to digest uranium enriched up to 10%. Uranyl nitrate was produced by adding nitric acid to uranium compounds such as UO_2, UO_3, and U_3O_8. The resulting UNH solution was pumped to the Ore Refinery Plant for blending with other UNH solutions to specified enrichments. The safe geometry digestion unit prevented concentrations of enriched uranium from reaching nuclear criticality levels during the process. As the name suggests, the digestion unit was designed with thick, stainless steel walls to withstand acid corrosion and protect personnel working in the area. A stainless steel floor sump collected UNH leakage and spills, which were returned to the digester unit. The enriched material reclamation unit process ceased in the early 1980s.

Drum Washing. Drum washers were used to clean ore concentrate drums for reuse. Most of the ore received in Building 1A was delivered in drums. The drums were lifted to the fourth floor, where a series of rinsers and washers were located. The wastewater generated during the process was transferred to the wastewater handling system on the first floor. Operation of this unit ceased when all concentrate operations ceased in 1962. All drum washing was consolidated at the Plant 8 West Pad (74D).

Solvent Reclamation. Solvents were reclaimed in the Detrex Still located on the first floor of Building 1A. Spent dry-cleaning solvents and others from vapor degreasing in Plant 6 were entered into the still to be purified for reuse in the Laundry and other processing plants. The Detrex Still is considered an HWMU under RCRA regulations.

Wastewater Handling. Two liquid waste handling facilities served Building 1A. The systems were identical except for their sources of influent. One system collected wastes from the eastern half of the building, and other collected from the western half of the building. Liquid wastes were collected in sumps and transferred by pumps to the settling talks until the tanks became full. At this point, the water was recirculated through a filter using slurry pumps. When the filtrate appeared clear, recirculation of the wastewater through the filter was discontinued and the filtrate was discharged to the General Sump (18B), if acceptable, or to the Ore Refinery if not Residual solids were spread into drying pans, dried in the drying oven and reprocessed through the system.

Building 1B - Plant 1 Storage Shelter

Facility Description
Building 1B (Plant 1 Storage Shelter) is the steel roof that covers a portion of the Plant 1 Pad (74T). Building 1B is located just north of the former Preparation Plant (Building 1A). The steel roof has a height of 18 feet and covers 12,780 square feet of storage area on the Plant 1 Pad.

Process Description
Building 1B provided covered storage for a portion of the Plant 1 Pad. Covered storage was considered a dry process area.

Drum Reconditioning Building

Facility Description
The Drum Reconditioning Building located north of the Storage Shelter (1B).

Process Description
It housed the drum shot blaster, conveyor, paint-spray booth, drying tunnel and a separate drum baler for compacting drums that could not be reconditioned.

1C - Plant 1 Ore Silos

Facility Description
1C (Plant 1 Ore Silos) was a multilevel platform structure located south of the Preparation Plant (1A) and east of "A" Street. The structure supported two groups of silos, including six concrete and eight tile silos. The open-steel frame structure rose over 80 ft. high, covering an "L"-shaped area approximately 54 ft. x 115 ft. 1C was temporarily used for overflow storage of cold metal oxides. The silos have not been used since 1962.

Process Description
1C had one dry process area, milled ore storage. The silos were originally intended to store milled uranium ores for processing in the Ore Refinery Plant (2A). Instead, the silos were used to temporarily store dried extraction raffinates with a low radium concentration (also referred to as "cold" metal oxides) from the raffinate treatment systems. This material is similar to material stored in Silo 3 of Operable Unit 4. Herculite dikes were placed under the silos in 1991 as a spill prevention measure for the deteriorating silos.

2E – Nuclear Fuel Services (NFS) Storage and Pump House

Facility Description
2E (NFS Storage and Pump House) consisted of a pump house and four outside tanks. The pump house was a cinder block building that measures approximately 14 ft. x 16 ft. and 9 ft. high. The tank area was approximately 51 ft. x 61 ft., with a concrete dike where the four tanks were mounted. The building was located south of the Preparation Plant (1A) and the Plant 1 Ore Silos (lC).

Process Description
2E was the Nuclear Fuel Services (NFS) storage area where enriched uranyl nitrate (UNH) solution produced by the safe geometry digester and received from other DOE sites were stored in the four horizontally mounted tanks. Solutions from off-site facilities were received by tank truck and eventually were pumped to the enriched calciner or used for blending enrichments of other UNH solutions in 2A.

2H – Conveyor Tunnel (From Plant 1)

Facility Description
2H (Conveyor Tunnel from Plant 1) housed a subgrade conveyor. The approximate dimensions of the conveyor trench are 15 ft. x 190 ft. and 5 ft. deep. 2H extends from the former Plant 1 Ore Silos (1C) to the former Ore Refinery Plant (Building 2A).

Process Description
2H contained one dry process area, the Ore Conveyor which was intended to transport milled uranium ores underground from the Plant 1 Ore Silos to the Ore Refinery Plant. The conveyor system was difficult to operate and had problems with accountability of uranium and was aborted in 1955.

Building 30A – Chemical Warehouse

Facility Description
Building 30A (Chemical Warehouse) is a single-level structure measuring approximately 82 ft. x 321 ft. x 16 ft. high and is located north of the Ore Refinery Plant (Building 2A) at the northwest corner intersection of 2nd and "B" Streets.

Process Description
Until the late 1980's, Building 30A served as a warehouse to store various chemicals and items used throughout the production site. This included graphite crucibles, lime, and magnesium fluoride as examples. Later, the warehouse was divided into a northern restricted access area and a southern unrestricted access area. The northern portion was used to access the Plant 1 Pad and to store operating supplies. An x-ray machine was installed in the northeast corner and used for examining bundled process area trash prepared for off-site shipment. The southern portion was a large storage area for excessed materials along with restroom facilities. Building 30 was also used for repackaging of mixed and low level waste containers.

Building 30B - Drum Storage Warehouse

Facility Description
Building 30B (Drum Storage Warehouse) was a single-level building located south of the General In-Process Warehouse (71). It was rectangular, measuring approximately 20 ft. x 33 ft. x 12 ft. high.

Process Description
Building 30B was formerly used for a truck dock office, scale house and staging area for drummed material for special shipments off-site. Additionally, it was used for RCRA sampling of drums, and as a radiological clothing change area.

Building 56A – CP Storage Warehouse (Butler Building)

Facility Description
Building 56A (CP Storage Warehouse, also known as the Butler Building) is a single-story; rectangular building that measures approximately 50 ft. x 180 ft. x 14 ft. high.

Process Description
Building 56A was formerly used to receive process equipment for the various production plants before the equipment was installed. In the mid 1980's, the building was used to store excess furniture equipment, and supply storage for the site. Later, Building 56A was permitted and used as an approved RCRA storage unit. Building 56A was also used as a nuclear materials disposition packaging facility.

Building 71 – General In-Process Warehouse

Facility Description
Building 71 (General In-Process Warehouse) is a single-story, rectangular building measuring approximately 100 ft. x 241 ft. x 13 ft. high. The inside is one large open area except for the Isotopic Verification Room (41 ft. x 27 ft.) in the southwest corner of the building.

Process Description
Building 71 was built to store dry enriched uranium materials. The Isotopic Verification unit was installed in 1972 to verify various enrichments of uranium materials. The Isotopic Verification Room was also used for thorium legacy work. Most of the building was used for storage and staging for shipping drums of fissile materials to other facilities. A special, one-time receipt of unirradiated fuel assemblies were also stored in Building 71 until they were manually disassembled in the Pilot Plant. Building 71 was also used for repackaging of mixed and low level waste containers.

Pad 74T - Plant 1 Storage Pad

Facility Description
Pad 74T (Plant 1 Storage Pad) is a reinforced poured concrete pad. Pad 74T is irregularly shaped, containing approximately 375,000 ft. of storage space to the north, east, and west of the Preparation Plant (lA). To cover the entire Pad 74T area, the pad has been divided into four process areas: the new drum storage area, copper shredder/drum straightener, copper pile storage, and old drum storage area. The old drum storage area takes up most of Pad 74T. This process area has been divided into four geographic quadrants.

Process Description
Pad 74T originally was the drum storage location for low-level wastes and recoverable uranium residues used to support the Preparation Plant operations. In 1990, several portions of the pad were repaired. The removed concrete was drummed for disposal.

New Drum Storage Area. Two tension support structures were constructed as an addition to Pad 74T. New concrete was poured northeast of the existing pad to support these structures. The two rectangular sprung structures were designed to store a minimum of 2,500 drums. The drum contents included primarily uranium residues, non-RCRA process waste, waste oils, barium salts, and solid residues containing solvents. Herculite dikes surrounded the drummed liquid wastes in the new drum storage area.

Copper Shredder/Drum Straightener. The copper shredder/drum straightener area currently exists under the Plant 1 Storage Shelter (lB). The copper shredder removed the insulation around the scrap copper wire. The copper would then be shredded for reclamation. A Panghorn Dust Collector unit, located just west of the Drum Reconditioning Building (66), was used to contain the copper dust generated from the shredding process. Drum straightening equipment, associated with the Drum Reconditioning Building, was operated on Pad 74T.

Copper Pile Storage. Two scrap piles of insulated copper metal wire were stored on Pad 74T. These piles stored scrap copper metal that was to be processed through the copper shredder. The copper mainly was obtained from electric motor windings, discarded wire and cable products generated from the upgrading the three DOE Gaseous Diffusion Plants in the 1970's.

Old Drum Storage Area. This area included a vast storage area that held all of the drums on Pad 74T except those stored in the two sprung structures in the new drum storage area. The old drum storage area has been divided into four geographic quadrants. The four quadrants store similar items. The drums contained an assortment of solid and liquid wastes, similar to those stored in the new drum storage area. Many of the drums contained uranium residues from plant operations. Metal boxes were primarily stored in the southeastern quadrant area of Pad 74T. Three sprung structures, two rectangular and one oval, were located in the northwestern quadrant The two rectangular sprung structures provided cover to a maximum of 5,000 drums. The oval sprung structure was considerably smaller.

AREA 4B FACILITY HISTORY INFORMATION

Facilities located in Area 4B excavation area (see Figure F-2) include the Ore Refinery Plant (2A), General/Refinery Sump Control Building (2B), Bulk Lime Handling Building (2C), Metal Dissolver Building (2D), Cold Side Ore Conveyor (2F), Hot Side Ore Conveyor (2G), Maintenance Building (3A), Ozone Building (3B), Nitric Acid Recovery (NAR) Control House (3C), NAR Towers (3D), Hot Raffinate Building (3E), Harshaw System (3F), Refrigeration Building (3G), Refinery Sump (3H), Combined Raffinate Tanks (3J), Old Cooling Tower (3K), Electrical Power Center Building (3L), Recovery Plant (8A), Plant 8 Maintenance Building (8B), Rotary Kiln/Drum Reconditioning (8C), Plant 8 Railroad Filter Building (8D), Drum Conveyor Shelter (8E), Plant 8 Old Drum Washer (8F), Trash Compactor (8G), Soil Washing (8H), Pilot Plant Wet Side (13A), Pilot Plant Maintenance Building (13B), Sump Pump House (13C), Pilot Plant Thorium Tank Farm (13D), Laboratory (15A), General Sump (18B), Biodentrification Towers (18D), Well House #1 (20E), Well House #2 (20F), Well House #3 (20G), Scale House and Weigh Scale (22D), Pump House-HP Fire Protection (26A), Elevated Water Storage Tank (26B), Pilot Plant Annex (37), Construction Division Building [Laboratory Machine Shop] (45A), Six to Four Reduction Facility #1 (54A), Pilot Plant Warehouse (54B), Pilot Plant Dissociator Building (54C), Pilot Plant Warehouse (68), Plant 2 East Pad (74A), Plant 2 West Pad (74B), Plant 8 East Pad (74C), Plant 8 West Pad (74D), Plant 8 Old Metal Dissolver Pad (74Q), Plant 8 North Pad (74R), Pilot Plant Pad (74U), Laboratory Pad (74V), and Incinerator Building Pad (74W).

Building 2A – Ore Refinery Plant

Facility Description

Building 2A (Ore Refinery Plant) consists of a structural steel frame with transite panel outside walls and roof that is approximately 62 ft. x 382 ft. and 50 ft. high. It is a multilevel building having five levels and a penthouse. The building floor has a ground floor area of 36,604 square feet and is a combination of acid brick and concrete. The building is located south of 2nd Street, east of "A" Street, and west of "B" Street.

Building 2A is divided into three main process areas that are separated by concrete block walls: digestion, extraction, and denitration areas. The digestion area is located in the west portion and is divided into two distinct process areas. The extraction area is located in the central portion and the denitration area is located in the eastern portion of the building. The northern half of the digestion and extraction areas were used for digesting uranium ores that had a high radium content (the "hot" side). The southern half of the digestion and extraction areas handled uranium materials with little to no radium (the "cold" side). There were two feed bucket elevators and drum dumping pit located outside the westend of Building 2A.

In addition to the three main process areas located inside Building 2A, seven storage/treatment areas are located just outside Building 2A that supported Building 2A operations, as follows:

- Slop Liquor Aqueous Feed (AF) Storage (located north of the digestion process area)
- Slop Liquor Concentration Area (located north of the extraction process area)
- Solvent Storage Area (located north of the extraction process area)
- Solvent Treatment Area (located north of the denitration process area)
- O.K. Liquor Storage Area (located south of the denitration process area)
- Nitric Acid Storage (located south of the digestion process area)
- Metal Dissolver Building (2D) (located north of the digestion process area)

Process Description

The FEMP production process began with the conversion of impure uranium feed materials and recycled residues to pure uranium trioxide (UO_3) in the Ore Refinery Plant, otherwise known as Plant 2/3. The conversion of uranium feed materials to pure UO_3 was accomplished in a three-step operation designated digestion, extraction, and denitration.

Uranium contained in dry feed materials was leached in nitric acid to produce a slurry of impure uranyl nitrate. Uranium ores and residues were received on the top floor of Plant 2/3 from the bucket elevators associated with the cold side ore conveyor (2F) and the hot side ore conveyor (2G). The digestion process, known as Continuous Digestion, prepared dilute uranyl nitrate by dissolving these uranium ores and uranium-bearing residues in nitric acid. The uranyl nitrate was then transferred to the extraction area for purification processing.

In addition to Continuous Digestion, there were two batch digestion processes located within the digestion area: Drum Digestion, and Slag Leach Digestion.

Enriched uranium residues and metallic scraps were processed in the Drum Digestion system. The facility was also used to recover selected enriched uranium from low-grade residues, if these materials could not be processed in the Plant 1 Safe Geometry Digester. Acid-leached slurries generated from individual batches were filtered and the uranyl nitrate filtrate was combined in a storage tank. Blended filtrate was used for blending Continuous Digestion uranyl nitrate batches to adjust enrichments to standard assays. Spent decoppering acid (high levels of copper digested in nitric acid) from the Plant 9 Zirnlo process was transferred to this area for use in preparing feed batches.

A Slag Leach Digestion process digested low-grade slag residues and was established as an alternative to a costly hydrochloric acid leach process located in Plant 8. Feeds prepared from Plant 8 typically contained sufficient amounts of residual chlorides to cause severe corrosion problems when processed in Plant 2/3 for uranium recovery.

In the second step, the digestion slurry was processed through the solvent extraction refining operation to produce high-purity uranyl nitrate solution. The uranyl nitrate solution was purified through a liquid-liquid countercurrent solvent extraction operation. This was accomplished by contacting the aqueous feed solution with organic solvent (tributyl phosphate in kerosene) in stainless steel, perforated plate pulse columns. In so doing, uranyl nitrate transferred to the solvent phase, leaving most of the metallic and anionic impurities in the aqueous raffinate waste stream. The solvent phase was then scrubbed by contacting it with a small amount of deionized water to remove residual contaminants. The uranyl nitrate was returned to an aqueous solution by contacting the uranium-rich scrubbed solvent with hot, deionized water, yielding a solution of uranyl nitrate. The product was partially neutralized using ammonia to prevent equipment corrosion and cationic contamination during evaporation and boil-down. The ammoniated uranyl nitrate solution was called OK Liquor. Degraded solvent was treated by an in-line sodium carbonate unit to maintain solvent quality. Severely degraded solvent was withdrawn from the inventory and batch treated in the Metal Dissolver Building (2D) using nitric acid-charcoal treatment.

The final step of denitration converted the pure uranyl nitrate solution to UO_3 by thermal decomposition. Purified aqueous uranyl nitrate solution was thermally decomposed into UO_3 powder in the denitration area. The main elements of denitration equipment were evaporators, boildown tanks, sparge tanks, and denitration pots. A solution of uranium at 100 grams/liter was feed to the evaporators from the O.K Liquor Storage Area and cascaded to the boildown tanks, through the sparge tanks, and to the denitration pots by gravity. Concentration of pure uranyl nitrate solution was accomplished in the evaporator, boildown tanks and sparge tanks. Molten uranyl nitrate hexahydrate was fed to denitration pots for conversion to UO_3. From the denitration pot, UO_3 was gulped and packaged for further processing. After milling and screening, UO_3 was loaded into portable metal hoppers either for transport to Plant 4 or shipment offsite.

Permanent concrete shielding was provided around appropriate equipment on the north side of the digestion and extraction areas for processing high-radium uranium ores. Unshielded operations were conducted in similar equipment on the south side for processing low-radium uranium ore concentrates.

Other facilities associated with Plant 2/3 operations included the Metal Dissolver Building (2D), Combined Raffinate Area (3J), Hot Raffinate Building (3E), Nitric Acid Recovery (3D), and Refinery Sump (3H).

Process History

Operations commenced at Plant 2/3 in December 1953, when the first UO_3 product was packaged. Significant operational changes were made in the early 1960's in Plant 2/3 as a result of process technology improvements. Early in 1962, Plant 2/3 was shut down and placed on standby. At this time, all uranium refining operations were consolidated at the Weldon Spring site located in Missouri.
In 1963, limited activities were initiated in Plant 2/3 to use part of the plant's facilities for recovering normal uranium process residues that had accumulated in the inventory. This operation became known as the Supplemental Recovery Facility (SRF), whose product was a solution of uranyl nitrate that was shipped to the Weldon Spring Refinery. When the Weldon Spring site was closed in 1966, full operations were slowly implemented in Plant 2/3 to further reduce the sizable inventory of uranium residues and returning the uranium content to the production stream. Eventually, the operation was extended to processing enriched uranium residues and scraps, and the process operation was designated E-SRF. Enriched uranyl nitrate solution produced by E-SRF processing was stored in available tanks in Plant 2/3 for possible future use. Records do not indicate that enriched uranyl nitrate solution was ever sent to Weldon Spring.

In May 1965, a new process called the Slightly Enriched Recovery facility (SERF) was started to convert accumulated uranyl nitrate solution from E-SRF to enriched UO_3 to meet emerging demand. The SERF operation utilized all three process areas of Plant 2/3 and continued intermittently until 1971. Enriched uranium feed assaying up to 1.25% U-235 were process in 1967; the maximum permissible enrichment of 2.0% U-235 was produced in 1968. Operations were curtailed once again in 1970, when they were limited to maintaining the inventory of recoverable residues at minimal levels. In April 1971, uranium ore concentrates from inventory were processed through Plant 2/3 for shipment of product UO_3 to the Paducah Gaseous Diffusion Plant.

In 1972, a five-year concentrate conversion campaign was conducted to produce UO_3 for shipment to the Paducah Gaseous Diffusion Plant instead of advancing to the Green Salt Plant (4) to support uranium metal production. The installation of a safe-geometry evaporator/calciner system for converting high-purity enriched uranyl nitrate to cascade quality black oxide (U_3O_8) was begun late in 1972. Performance testing of equipment was completed in 1973, and the system became fully operational in 1974. This operation produced U_3O_8 in the isotopic range of 2.0 to 5.0% U-235. The product U_3O_8 was shipped to the Portsmouth Gaseous Diffusion Plant, but was eventually returned to the FEMP, because of process difficulties at Portsmouth. The safe geometry evaporator/calciner was located on the southern side of the third level in the denitration area. Upon completion of the concentrate campaign in 1977, operations were shifted to process accumulated inventories of enriched uranium process residues and scraps in intermittent periods through 1988.

Building 2B – General/Refinery Sump Control Building

Facility Description

Building 2B (General/Refinery Sump Control Building) is a two-story building comprised of an older original building and a newer annex attached on the south side. The original building consists of a concrete first floor and metal diamond plate second floor; it is constructed with a structural steel frame and transite panels for the walls and roof. This part of Building 2B is approximately 39 ft. x 43 ft. The annex is approximately 20 ft. x 20 ft. with a concrete floor covered with floor tile on the first floor and only concrete on the second floor. The walls consist of structural steel and wallboard. The ceiling on the first floor is metal decking, while the second floor has metal decking covered with fiberglass insulation. The building is located south of the General Sump (18B) and the Refinery Sump (3H) and north of the Bulk Lime Handling Building (Building 2C).

Process Description

In Building 2B, the magnesium oxide was mixed with water to form a slurry for precipitating uranium from process wastewater generated in Building 2A in the Refinery Sump operation. Precipitated slurries were transferred to a sedimentation tank to concentrate the solids removed in the underflow. Clarified water was routed to General Sump operations. Lime was mixed with water to form a slurry for neutralizing treated wastewater received from other plants in the General Sump operation. Storm-water runoff collected from diked control pads in this area was also treated by lime neutralization in the General Sump operation. The annex housed new laboratory facilities to support the refinery sump.

Building 2C – Bulk Lime Handling Building

Facility Description

Building 2C (Bulk Lime Handling Building) is a three-level building located immediately south of the Refinery Sump Control Building (Building 2B) and east of the Maintenance Building (Building 3A). The first and third levels of the building are rectangular, with dimensions of 17 ft. x 28 ft. x 10 ft. The second level consists of a steel silo that is 50 ft. tall and 18 ft. wide. Building 2C has a structural steel frame, transite siding and roofing, and a concrete foundation. A cement loading dock or pad for Building 2C is located east of the building. As part of the foundation of Building 2C, 28 1foot-diameter wooden piles have been driven approximately to an elevation of 550 ft.

Process Description

Building 2C had one wet process area, bulk lime handling for producing a lime slurry for General Sump neutralization operations. Bulk lime (CaO), in the form of pebbles, was delivered via rail cars to the building. Bagged lime was obtained from the Chemical Warehouse (30A) and unloaded at the building dock. Rail cars were unloaded by pneumatic conveying lime to the steel silo. The silo released the lime proportionally to the lime slaker. The lime slaker mixed the lime with water to create a lime slurry. The slurry exited the lime slaker to the break tank for further agitating. When the slurry was completely mixed, it was pumped to a holding tank located immediately north of the building before being distributed to other process areas.

Building 2D – Metal Dissolver Building

Facility Description

Building 2D (Metal Dissolver Building) is a two-story building located south of 2nd Street. It's shape is irregular, measuring approximately 39 ft. x 50 ft. x 20 ft. high. The building consists of a structural steel frame with transite panels for the roof and exterior walls and is situated on a poured concrete base. The first floor is concrete except for the acid brick located in the area previously occupied by the original metal dissolver and in the pit around the west and east metal dissolvers. A mezzanine, constructed of diamond plate, extends more than halfway across the building from the south wall.

Process Description

Operations in Building 2D used nitric acid solution to dissolve uranium or other metal contaminants, batch digestion of hard-to-process materials, and acid-charcoal solvent treatment.

Metal Dissolution. The metal dissolver tank received solid uranium scrap metal from the Metal Production Plant (Building 5A) and the Special Products Plant (Building 9A). Top crops, derbies, slugs, and out-of-specification ingots and fuel rods were among the products received. The scrap metal was sprayed with nitric acid in the metal dissolver tank to dissolve the scrap uranium into uranyl nitrate (UNH). Temperature controls were used to optimize the performance of the nitric acid to reach the specified concentration of 250 to 400 g/L U required before the solution was diverted to the digestion process in the Ore Refinery Plant (Building 2A). The nitric oxide fumes were routed directly to the NAR Towers (3D). The metal dissolver tank was replaced in 1990 with a new tank, which was never used. The original metal dissolver tank was located in the southwestern section of Building 2D; the new metal dissolver tank was located in the north-central section. An electrical control room was also included as part of this process area.

West Metal Dissolution. The west metal dissolver tank received various end products from the Recovery Plant (Building 8A), primarily black oxides and calcium uranate. The west metal dissolver tank was filled with heated UNH solution from the digestion process in the Ore Refinery Plant. Additional nitric acid was added to dissolve the metal oxides. If fluoride salts were known to be present, alumina was also added to the solution for corrosion control. The solution was required to reach 200 g/L U for use as product solution.

Charcoal Treatment. Severely degraded tributyl phosphate (TBP) and kerosene solvents from the extraction process in the Ore Refinery Plant were reclaimed through the charcoal treatment process. The spent solvents were mixed with nitric acid in the east metal dissolver tank. Charcoal was added to adsorb the solvent contaminants. The resulting slurry was filtered through a small rotary drum vacuum filter located on the second floor. The filtrate was routed through an in-line carbon polishing system and reused. The filtered solids were disposed of in drums. Reclaimed solvent was returned to extraction area.

2F – Cold Side Ore Conveyor

Facility Description
2F (Cold Side Ore Conveyor) provided a means for uranium ores and residues to reach the digestion process in the Ore Refinery Plant (Building 2A). It measured approximately 92 ft. x 24 ft. and sat on the Plant 2 West Pad (74B). A 20-ft. deep elevator pit is located at the northwest corner of Building 2A.

Process Description
The system was initially designed to handle drummed ores that contained very low levels of radium (referred to as "cold"). Drummed ores or residues were loaded onto the roller conveyor to be dumped into the bucket elevator system, which carried the material to the top floor of the Ore Refinery Plant. A series of screw conveyors and seal tanks transferred the material to the digester tanks for leaching the uranium using nitric acid. Milled magnesium fluoride slag was unloaded to the bucket elevator from mobile hoppers for conveyance to the Slag Leach operation.

2G - Hot Side Ore Conveyor

Facility Description
2G (Hot Side Ore Conveyor) provided a means for uranium ores and residues to reach the digestion process in the Ore Refinery Plant (2A) and measured approximately 110 ft. x 65 ft. and sat on the Plant 2 West Pad (74B).

Process Description
The system was initially designed to handle drummed ores that contained high levels of radium (referred to as "hot"). Drummed ores or residues were loaded onto the roller conveyor to be dumped into the bucket elevator system, which carried the material to the top floor of the Ore Refinery Plant. A series of screw conveyors and seal tanks transferred the material to the digester tanks for leaching the uranium using nitric acid. Mobile hoppers could not be unloaded at this station.

Building 3A – Maintenance Building

Facility Description
Building 3A (Refinery Maintenance Building) is a single story building located just north of 101st Street and west of the Bulk Lime Handling Building (Building 2C). The building is square, measuring 60 ft. x 60 ft. and 14 ft. high. Building 3A has a structural steel frame, transite panels covering cinder block walls, and a concrete floor. The building has one room and some office space. Two small steel-grate mezzanines provided storage for motors and pumps.

Process Description
Building 3A was the maintenance facility for the Ore Refinery Plant (Building 2A). The building was used to repair various equipment used in the Ore Refinery Plant, including pumps and motors. Among the tasks performed on the equipment were welding and electrical work. Solvents and oils were frequently used throughout the building. Tools and spare parts, required to repair and maintain the equipment, were also stored in Building 3A. Only one process area has been identified for the building; because of the use of degreasing solvents in the maintenance activities, the process was considered wet.

Building 3B – Ozone Building

Facility Description

Building 3B (Ozone Building) was a rectangular, single story building which measures 27 ft. x 33 ft. x 14 ft. high. The building was comprised of a steel frame on a poured concrete foundation floor and has transite panel walls and roof.

Process Description

Building 3B originally housed the equipment that generated ozone for removing chlorides from nitric acid absorber towers in the NAR system. The equipment was removed prior to 1975.

Building 3C – NAR Control House

Facility Description

Building 3C (Nitric Acid Recovery Control House) was a single-story building located just north of 101st Street and west of the Maintenance Building (Building 3A). The building was rectangular, with approximate dimensions of 26 ft. x 110 ft. and 14 ft. high. Building 3C was constructed with a structural steel frame and transite panels on a poured concrete base. The interior of the building was divided into several rooms for administrative operations. Building 3C houses the electrical control panels for the NAR Towers (3D). This building also contained an office, conference room, and breakroom.

Process Description

Building 3C had one dry process area: NAR control. The NAR control process area occupied only a fraction of the space in the building. Most of the space was used for administrative purposes. The NAR control process involved the operation of the electrical control panels that control the NAR system. The NAR system used a closed-loop design that consists of a series of tanks, pumps, and transfer lines to recover nitric acid from digestion, metal dissolver, and denitration processes in and around the Ore Refinery Plant (Building 2A).

3D – NAR Towers

Facility Description
3D (Nitric Acid Recovery Towers or NAR Towers) is a six-level open steel supported structure that was approximately 46 ft. x 60 ft. and 60 ft. high. The ground floor of the structure is contained in a concrete diked area that is approximately 70 ft. x 108 ft. The concrete dike is not covered with acid brick. The upper five levels have steel plating as flooring. 3D is located north of the NAR Control House (Building 3C) and the Ozone Building (Building 3B).

Process Description
3D was part of a closed-loop system designed to recover nitric acid. The system consisted of two absorber towers in which nitrogen oxide fumes were drawn through a series of bubble cap trays. The fumes were collected from the Metal Dissolver (2D) and from the digestion and denitration processes in the Ore Refinery Plant (2A). Nitric acid was recovered for reuse in the Ore Refinery Plant. The system was shut down in 1988.

Building 3E – Hot Raffinate Building

Facility Description
Building 3E (Hot Raffinate Building) is a three-story building located north of 2nd Street. Its shape is irregular, measuring approximately 50 ft. x 90 ft. x 60 ft. high at its greatest dimensions. The building consists of a structural steel frame with a poured concrete base. Heavy concrete walls and double-pane water-filled windows protected operators from being exposed to radiation from high-radium raffinate streams. Building 3E housed one process referred to as "filtration", which used a combination of several filters, pumps, and tanks.

Process Description
Building 3E housed a system of tanks, pumps, and filters that were used initially for filtering insolubles from treating raffinate solutions derived from processing high-radium (hot) uranium ores The facilities were later adapted for filtering slag leaching solutions to recover uranyl nitrate (UNH) filtrate.

3F - Harshaw Digestion Fume Recovery

Facility Description
3F (Harshaw Digestion Fume Recovery) was a multilevel open-steel structure that measures approximately 19 x 35 ft. x 35 ft. high. Under the structure was a concrete dike covered with acid brick. 3F was located east of the Refrigeration Building (3G).

Process Description
3F was installed in 1957 to serve the fume load generated by the calcination of treated raffinate derived from processing low-radium (cold) feed materials. Nitrogen oxide fumes were generated by the thermal decomposition of metallic nitrate compounds present in treated raffinate. The process was shut down in 1960; since that time, the structure has not been used.

Building 3G - Refrigeration Building

Facility Description

Building 3G (Refrigeration Building) was a transite building measuring approximately 16 ft. x 44 ft. x 11 ft. high, with a concrete floor and a transite roof. The building originally housed a refrigeration process, but that equipment was removed. The building was located west of the Harshaw Digestion Fume Recovery Tower (3E).

Process Description

Building 3G originally housed equipment that provided cooling support for the Harshaw nitric acid recovery process. The Harshaw process was active for only three years, from 1957 to 1960. Following the shutdown of the Harshaw process, the equipment in Building 3G was removed. The building housed an instrument repair shop until 1991. At that time, the building was converted to a storage area for sampling equipment and supplies.

3H – Refinery Sump

Facility Description

3H (Refinery Sump) provided treatment of contaminated effluents from the Ore Refinery Plant (Building 2A) with MgO (magnesium oxide) to precipitate uranium. It is located south of the General Sump (Component 18B) and west of "B" Street. The Refinery Sump consists of six tanks and is located outside in an acid brick containment area measuring 55 ft. x 100 ft.

Process Description

Wastewater generated by all operations conducted in the Ore Refinery Plant was transferred to 3H to be treated with MgO to precipitate uranium. The MgO was slurried with water in the General/Refinery Sump Control Building (Building 2B) for use in the process. Precipitated slurries were transferred to a sedimentation tank to concentrate the solids removed in the underflow as cake slurry. Clarified water was routed to adjacent General Sump for further treatment. Cake slurry was recycled through the digestion area of the Ore Refinery Plant. Several of the tanks stored uranyl nitrate (UNH) but were removed and processed for disposal.

3J – Combined Raffinate Tanks

Facility Description

3J (Combined Raffinate Tanks) is a multilevel open tank farm area measuring 39 ft. x 169 ft. and 20 ft. high. Beneath the tanks is a concrete pad and dike covered with acid brick. Structural steel is used as the structural support for the 17 vertical tanks and the stairs and catwalks. 3J is located north of the Hot Raffinate Building (Building 3E) and west of the NAR Towers (3D).

Process Description

3J received raffinate from the extraction operation in 2A to verify that discard specifications were met before sending them to the General Sump for neutralization. Slag leach filtrate from 3E was concentrated by evaporation for reprocessing in the Ore Refinery Plant (Building 2A).

3K – Old Cooling Water Tower

Facility Description
3K, the Old Cooling Water Tower, was a one story, redwood structure with dimensions of 30 ft. x 50 ft. It was located at the intersection of "A" Street and 101st Street. The wooden tower was removed during FEMP production, leaving an at grade and below-grade structure consisting of a concrete basin and a diked pad.

Process Description
3K consisted of a single, wet process referred to as process water cooling and provided process water cooling for the Harshaw system. A redwood cooling tower provided process water to cool four of the towers of the Harshaw System (3F). This system was replaced by the Refrigeration Building (3G) in the mid-1960s.

Building 3L – Electrical Power Center Building

Facility Description
Building 3L (Electrical Power Center Building) is a single-story building measuring approximately 24 ft. x 91 ft. and 10 ft. high and consists of a concrete floor and structural steel frame with transite siding and roof. The building contained electrical meters, panels, and main circuit breakers. The building is attached to the north side of the Maintenance Building (Building 3A).

Process Description
Building 3L served as a secondary unit substation that received 13.2 kV and transformed it down to 480 V. The electricity powered general-use equipment, including lighting, receptacles, and miscellaneous equipment in the Ore Refinery Plant (Building 2A) and the Recovery Plant (Building 8A). Inside the building was a cinder block room that was used as a breakroom.

Building 8A – Recovery Plant

Facility Description

Building 8A (Recovery Plant), a two-story structure measuring 239 ft. x 280 ft. and 37 ft. high, and having a ground floor area of 25,500 square feet. It is located on the south side of 101st Street between "A" and "B" Streets. The building consists of a structural steel frame on a reinforced poured concrete foundation, reinforced concrete ground floors, transite interior and exterior siding panels (insulation material between panels), and transite roof panels. The second floor is primarily steel grating with some concrete flooring. Building 8A is attached to the new Rotary Kiln/Drum Reconditioning Building (Building 8C), which was south of Building 8A.

The western portion of Building 8A contained most of the wet processing units for scrap recovery and wastewater treatment. This area included the Hydrometallurgical System, WINLO Process, and water treatment and filtration systems.

Process Description

The Recovery Plant converted uranium-containing residues and off-specification scrap uranium metal to more suitable chemical forms for recycling to the production process in the Ore Refinery Plant (Building 2A). Process residues were generated by all FEMP production plants and received from off-site DOE facilities. The residues were classified as either high-grade or low-grade according to the type of material and its uranium assay. Examples of high-grade residues are uranium chips and turnings that could not be briquetted for remelting; saw chip from metal fabrication operations, and black oxide (U_3O_8). Low-grade residues included MgF_2 slag from metal reduction operations; solidified salts from furnace cleanout and desludging; sump filter cakes, dust collector materials, and incinerator ash.

There were two primary processes established at Plant 8 for processing residues: the Feed Preparation Furnace system and the Hydrometallurgical system. Other processes located in Building 8A included green salt and thorium tetrafluoride reversion, oil centrifuge, WINLO process, water treatment/filtration, thorium storage, and bulk storage. Plant 8 processes that took place just outside of Building 8A included drum washing on the pad west of Building 8A and metal dissolver vessels located west of this pad, and sand filter located near the pad east of Building 8A.

Feed Preparation Furnace System. The feed preparation furnace system consisted of a series of furnaces specific for the type of material to be roasted. Miscellaneous metallic and alloyed scrap were sent to the Oxidation Furnaces; massive metal pieces to the Muffle Furnace; and other miscellaneous metal forms to the Box Furnace. Black-oxide furnace product was rotex-screened to separate the coarse fraction that contained most of the unoxidized metal. This fraction was recycled to the furnaces to complete the oxidation of metal. The screened fraction was drummed as product and sampled to determine that refinery specifications were met.

Hydrometallurgical System. The Hydrometallurgical system was the wet processing system that used hydrochloric acid (HCl) for leaching uranium recovery from milled, crushed, and rotexed low-grade residues. Two processes were used: uranyl ammonium phosphate (UAP) and ammonium diuranate (ADU) processes. The UAP process was used from 1958 to 1967. The ADU process was used form 1955 to 1957 and again from 1967 to 1971. The Hydrometallurgical system was to upgrade the overall quality and uranium assay of the material. A primary consideration was the removal of fluoride and chloride constituents that would be corrosive to stainless steel process equipment in Plant 2/3. Some process residues were of sufficient quality for direct dissolution in the hydrochloric acid leach equipment.

The Hydrometallurgical system consisted of three rubber-lined digest tanks (6,000 gal capacity each), one rubber-lined filter feed tank, two 169 ft^2 rotary vacuum Eimco filters for filtering the digest slurry, one-20,000 gallon filtrate hold tank, and one 150 ft^2 rotary vacuum filter for filtering the precipitated diuranate slurry. In the operation, uranyl chloride liquor was reacted with a suitable precipitant at a pH in the range of 6.0 to 7.0, yielding a slurry that was subsequently filtered to produce a wet cake for oxidation.

The process to precipitate and filtrate hot ADU included a 20,000 gallon filtrate hold tank, two 4,300 gallon precipitation tanks equipped with steam sparge and Karbate coolers, 10,000 gallon filter feed tank, 1,000 gallon ammonia supply tank, and west Dorr-Oliver rotary vacuum filter. In operation, filtered uranyl chloride solution, obtained from HCl digestion of selected feeds, was heated and reacted with ammonia to precipitate uranium as an ADU slurry. Subsequent filtration yielded product wet ADU cake for oxidation.

UAP Furnace. Was located west of the old rotary kiln along the south wall of Building 8A. The UAP furnace contained six hearths comprising a total hearth are of 276 ft^2. The unit was equipped with a furnace shaft cooling fan, hot well agitators, scrubbers recycle and exhaust fans, a drumming station exhaust fan, a chute for feed materials and a discharge conveyor. The feed material was dumped onto the feed chute by means of a barrel drum grab, fed to the furnace, oxidized, and drummed for subsequent consumption in the Hydrometallurgical system, or processing in the Ore Refinery Plant, if suitable.

No.1 Oxidation Furnace. Was located near the east end of Building 8A, along the north wall. The furnace was a six hearth 54" ID furnace with a total hearth area of 85 ft^2. Three open-flame, gas burners are used for combustion of feed materials. Three open-flame, gas burners are used for combustion of feed materials. Burners #2 and #3 were located on opposite sides of the fourth hearth and burner #1 on the second hearth. Each burner was equipped with a flame detector which automatically shut off the gas if the flame went out. A vertical, air-cooled shaft supported rabble arms and was driven by a ¾ hp, 1800 rpm motor. Cooling air, supplied by a blower located beneath the furnace, passed upward through the center of the shaft and was discharged to the atmosphere.

A dust collector supplied exhaust ventilation for the feed charging tray, the drumming station into which dust form the collector was discharged, and the product drumming station. Off-gas from the furnace passed through a Venturi-type water and was discharged to the atmosphere. If the scrubber failed to provide sufficient draft for the furnace, gas to the burners automatically turned off. A purge timer was activated which locked out the pilot light for a set period, after which the gas burners and scrubber could be put back into operation. Dust collected at the drumming stations were coded as residues and included in the material balance for each campaign. They were then oxidized in other Plant 8 furnaces.

Instrumentation for the furnace included a multi-point temperature recorder and circular chart recorder-controller, a Leeds-Northrup strip chart indicator-recorder, and a Pyr-o-vane indicator to maintain the proper feed rate. Feed material was dumped from drums onto the charging tray, and the liquid was allowed to drain to a decant tank on the first floor. Feed was then shoveled into the charge chute at a rate which would yield a black oxide product containing essentially no free uranium metal. In passing from hearth to hearth, feed was mechanically rabbled to the outer edge of one hearth, dropped through port holes and was rabbled to the center of the hearth below. Black oxide product was discharged from the sixth hearth into drums located at the drumming station. After the drums were allowed to cool in the drumming station, they were removed, weighed, and stored for screening in the Rotex unit.

No. 2 Oxidation Furnace. Was installed in 1953 in the southeastern corner of Building 8A. The furnace was a six hearth 54" ID furnace with a total hearth area of 85 ft^2. An open flame type natural gas burner was located on alternate sides of each hearth. The burners were equipped with flame detectors which automatically shut off the gas supply to both the pilot and main burners whenever a pilot failed. Combustion air was provided by an auxillary blower. A vertical air-cooled shaft supported rabble arms on each hearth.

Combustion gases from the furnace passed through a cyclone separator and a water scrubber before exhausted to the atmosphere. A dust collector provided ventilation for the drum dumping station, bucket elevator, cyclone separating and product packaging stations, and the dust collector's own packaging station. Dusts from the cyclone and dust collector were drummed and recycled as feed. Feed material was dumped from a drum dumping station onto a rubber conveyor belt, which discharged to the periphery of the top hearth. The material was rabbled to the center of the odd numbered hearths and provided to the next hearth. The furnace product was discharged form the periphery of the sixth hearth into a water cooled screw, conveyed to a bucket elevator, lifted, and dropped through the packaging system into a product drum.

A secondary usage for No. 2 Oxidation Furnace was the conversion of uranium tetrafluoride (UF_4) to calcium uranate ($CaUO_4$) and calcium fluoride (CaF_2) using calcium hydroxide $Ca(OH)_2$. Lime and UF_4 were simultaneously conveyed at a predetermined rate to a V-shaped connecting pipe leading to the top of the furnace. The combined materials were discharged to the periphery of the top hearth. The two materials were blended together by the rabble arm action inside the furnace. The materials were rabbled to the center on the odd numbered hearths and to the periphery on the even numbered hearth where drop holes are provided to the next hearth. Inside the furnace, UF_4 reacted with lime to produce calcium uranate and calcium fluoride. The furnace discharge was discharged from the hearth onto a screw conveyor to a bucket elevator, lifted, and dropped through the packaging system into product drums. The product drums were weighed, identified, and accumulated to await further refinement.

Williams Hammer Mill. Was located on the first floor of Building 8A, between the old Rotary Kiln and No. 1 Oxidation Furnace process areas. It was also known as the Williams Slugger Crusher and was taken out of service in the 1960s. The Mill was equipped with a stationary breaker plate and designed for crushing both wet and dry solids having a maximum size of 6", with grid openings of various sizes. The Mill was equipped with a metal trap and driven by a 40 hp motor. Product from this mill was processed through the furnace or Hydrometallurgical systems.

Drums of feed were delivered by fork trucks to the roller conveyor, delidded, positioned in the drum dumper, inverted, and contents discharged at a controlled rate onto the moving apron conveyor. The material entered the mill and was reduced to a ½" fraction which passed through the grids and into a production drum. Large pieces were taken from the Mill by removing the inspection plate. Tramp metal was hand picked from the large U metal fraction and discarded. The recycle oversize was carried through on the underside of the apron conveyor and removed by gravity to a drumming station, where it accumulated awaiting recycle. The entire unit was served by an Amerjet dust collector.

Ball Mill. Was located on the east end of the first floor of Building 8A and was used for milling scrap uranium residues to facilitate dissolution in hydrochloric acid digesters. Low-grade wet and dry feed unsuitable for other Plant 8 processes were fed to a Ball Mill where they were conditioned for digestion in the Hydrometallurgical system. The purpose of the ball milling was to produce a slurry which would digest quickly and ensure that the residual trailer cake would meet specifications for discard.

Muffle Furnace. Was a single hearth, direct fired unit, used primarily to convert burnable uranium scrap materials into black oxide and to roast sump and filter cake and MgF_2. The burner assembly consisted of a single, gas-fired burner equipped with a safety shut off valve and a pilot light with a flame detection system. Two dust collecting units were used for ventilation of the furnace system. One dust collector supplied ventilation for the drum dumping station, one of the three furnace access doors, and the dust collector's own drumming station. The other dust collector supplied ventilation for the remaining two furnaces access doors, product drumming station, and the dust collector's own drumming station.

Off-gases from the furnace passed through a cyclone separator and then were routed to either the caustic scrubber or dust collector depending on enrichment of the material being processed. Dust from the cyclone separator was discharged into the drumming station under one of the dust collectors. If the scrubber failed to provide sufficient draft for the furnace, gas to the burner and pilot was automatically shut off.

The furnace was charged batchwise by operation of a pneumatic slide valve to admit feed material into the furnace chamber from the drum dumping mechanism and charge chute. Manual loading of the furnace was required when charging massive metal, and the rabble arms were removed. Mechanical or manual rabbling of the charge was performed in order to insure its complete oxidation. When this operation was complete, the furnace discharge slide valve was opened and the charge was rabbled into a product drum. The product drum was weighed, identified, and accumulated on a lot basis for subsequent screening in the Rotex unit.

D&D will remediate the Tc-99 contaminated concrete associated with the Muffle Furnance operation by removing the top inch of concrete prior to the area being turned over for soil remediation. This area is located between the eastside of columns 10 through 13 and midway between Columns B and C to Column D.

Wheelabrator. Dust collector and a scrubber system provided treatment of dust and off gases from No. 1 Oxidation Furnace. The Wheelabrator unit collected dust from the furnace product drumming station and feed drum dumping station. The dedicated scrubber system was a Venturi scrubber using 10 percent caustic soda (NaOH) as the scrubber solution for off gases from the furnace vents.

Box Furnace. Was a single, gas-fired furnace located outside Building 8A, immediately adjacent to the north wall of the building next to the muffle furnace. The box furnace was constructed of angle iron and sheet metal and was lined with refractory brick. It was installed in the mid-1950s and operated intermittently for more than 30 years, converting scrap uranium into black oxide and burning other contaminated materials into ash suitable for reprocessing in the Ore Refinery Plant. The box furnace operation was relatively simple, with batch feeding, manual rabbling, and hand raking of ash into product drums. Scrap materials fed to the box furnace included off-specification uranium and thorium tetrafluoride, dirty prill, off-specification uranium derbies from the Metals Production Plant, high-uranium-content mill cleanout from the Preparation Plant (Building 1A), and partially oxidized metal. Contaminated materials included rags, filters, cloth, paper, and other burnable trash containing uranium; dust collector bags from air pollution control equipment; and Rockwell furnace cleanings from the Metals Production Plant. A dedicated Venturi scrubber system handled off gases from the box furnace. Water was the scrubbing solution; a holding tank near oxidation furnace no. 1 collected used scrubber water for reuse and solids settling. The box furnace has been classified as an HWMU (HWMU No. 14).

Graphite Furnace. Was installed in 1953 and used for only about three months in early 1960 and was completely removed. The 2-ft. wide, 10-ft. long furnace was a moving hearth (chain grate) gas-fired furnace used for processing contaminated graphite. This graphite was mostly furnace crucibles that were jaw-crushed in the Metals Production Plant (Building 5A), as well as select feed material, processed for the recovery of black oxide.

Rotex Screener. Was located west of the primary calciner and spanned both the first and second floors in Building 8A. The vibrating rotex screening unit operated intermittently from the mid-1950s to 1989, separating particles of reclaimed and waste material that are larger than 8 mesh from those smaller than 8 mesh. The latter was shipped to the Ore Refinery Plant, while the former was incinerated in Building 8A. An additional use of the rotex unit was for repackaging both recyclable and waste materials into drums. Airborne emissions from the rotex screen were handled in a dust collector situated in the penthouse area on the roof of Building 8A. During routine operation, collector residues were reprocessed in the Ore Refinery Plant, sent to the Plant 8 Old Metal Dissolver Pad (74Q), or drummed as waste for disposal off-site.

Old Rotary Kiln was located in the southeastern part of Building 8A and operated from 1952 to 1989. It was a 5.5-ft. diameter, rotating steel cylindrical kiln and was lined with refractory brick. The kiln was used for the drying, roasting, and oxidation of recoverable materials, which were fed to the unit by a feed dumping station located on the second-floor at the west end of the kiln. The end products contained recoverable uranium exited the east end of the kiln at the first-floor product drumming station and were reused as feed stock in the Ore Refinery Plant. The old rotary kiln also treated waste by volume reduction (dewatering) before shipment off-site.

The old rotary kiln was equipped with both a dust collector and a scrubber system. The dust collector was configured to collect particulate emissions from the drum dumper, feed tray, breach chamber, and drum packaging station of the kiln as well as the primary calciner. The dust was handled either as recovered feed material for the Ore Refinery Plant or waste, depending on uranium levels. The dust collector has been removed. The scrubber system was similar to those discussed for other process areas in Plant 8.

The materials fed to the old rotary kiln consisted of a large variety of uranium and thorium process materials, including sump cakes, magnesium fluoride, machining chips and turnings, and thorium oxide, oxalate, and hydroxide. Dry material feeding was by screw conveyor, while wet feeding was by manual raking from a drum dump tray. Kiln products could be conveyed to a silo on the Plant 8 East Pad (74C) in addition to being packed in drums.

Primary Calciner. Was installed in 1953, located on the east side of Building 8A, and was operated intermittently until 1989. The calciner consisted of an eight-hearth, gas-fired industrial furnace with poured concrete hearth decks and an automatic rabble. The unit was 13.5 ft. in diameter with a refractory-lined steel shell. The primary calciner was used for drying and roasting of recoverable uranium and thorium residues and wastes, but it was used exclusively for waste management processing after 1985. Many of the feeds were the same as were fed to the old rotary kiln; some of the post-1985 wastes dried in the primary calciner included slag leach cake, neutralized raffinate, and sump cake from the Eimco filter in the water treatment/filtration process. The primary calciner had a dust collector that also served the old rotary kiln, as described above. The scrubber system for the primary calciner was shared with the muffle furnace.

Green Salt and Thorium Tetrafluoride Reversion. The green salt reverter was a horizontal, electrically heated, ribbon flight retort reactor used to revert scrap green salt to black oxide. It was first operated for green salt reversion from 1956 to 1958, the reverter used superheated steam flowing countercurrent to the green salt feed material. The reverter unit was used for six months in 1966 to process 59 metric tons of thorium tetrafluoride (ThF_4) and produce thorium hydroxide, generating hydrofluoric (HF) acid as a by-product. The green salt reverter was equipped with a dust collector and scrubber; all of this equipment has been removed.

Oil Centrifuge. Was located next to the uranyl ammonium phosphate (UAP) furnace and was intended to remove solids from waste oil for use as fuel for the UAP furnace. Contaminated waste oil was first held in a decant tank to remove water and then passed through the centrifuge and stored in two large storage tanks. The tanks were located on a diked concrete pad south of Building 8A. The centrifuged waste oil was never used in the UAP furnace and the centrifuge and tankage have been removed.

WINLO Process. Was developed as a wet-way process for producing relatively pure, high-assay UF_4 from acid leach liquors of high-grade uranium process residues. The process was and implemented in 1962, and operated for two years before being shut down because of high costs and the inability to produce UF_4 suitable for the Green Salt Plant. Black oxide from the furnaces and UAP and metal dissolver liquor were dissolved in HCl and filtered on the Eimco filters. The filtered leachate containing uranium was then treated with 30 percent hydrofluoric acid, copper sulfate, and sulfur dioxide. The resultant UF_4 precipitate was filtered on a horizontal pan filter, passed through a dryer, and sent to the Green Salt Plant for further processing. Filtrate from the pan filter was neutralized with lime slurry and pumped to Waste Pit 3.

Water Treatment/Filtration. Process served as a wastewater treatment system for the site, including storm water, process water, and perched water. Wastewater streams were pumped into the digesters, where hydrated lime was added for neutralization, and the wastewater was then filtered through the Oliver filters. The filtrate was transferred to holding tanks on the north side of the Recovery Plant before being pumped to the General Sump. The Oliver filter cake was drummed and sent to the old rotary kiln or primary calciner for drying. An exception to the above process scheme for wastewater from other plants was the handling of raffinate sump water from the Ore Refinery Plant during the 1980s. This raffinate sump water was transferred to Building 8A for the recovery of recyclable material and handled by first segregating the stream in holding tanks. Then the wastewater was treated with caustic at a pH of 10 to 11. The treated wastewater was filtered on the east Eimco filter, and the filtrate was analyzed for uranium, copper, and pH. The filtrate was pumped to the General Sump if it proved to be in-specification. Wastewater from the building were collected mostly in the main floor sump, except for the spent scrubber solutions and a few small diked and sump areas on the second floor, which were pumped directly from their points of generation. From 1955 through 1971 when the hydrometallurgical processes were in operation, these wastewaters were neutralized with caustic in a neutralization tank. After 1971, the wastewaters were treated in the digester tanks, filtered, sampled, and discharged to the General Sump like the other plant wastewater.

The Plant 8 perched water treatment unit was situated in the northwestern corner of Building 8A. The system operated under the requirements of a CERCLA removal action. This particular area was not used during the historical operating period of Building 8A according to available plant records.

Filtration of Raffinates and Uranium Bearing Slops. Neutralized Acid Raffinates from the General Sump (18B) or neutralized uranium bearing slops from the Refinery Area (3H) where pumped to Plant 8 for filtration at the Eimco or Oliver filters. The filter cake from these operations were collected in drums and sent to Plant 1 for sampling. The filtrate was sent back to the General Sump.

Thorium Storage Silo. Thorium compounds recovered in Building 8A processes were stored in an elevated steel silo located on the Plant 8 East Pad (74C). The southeastern corner of the old rotary kiln area was the feed point for a conveyor that transferred the thorium materials outside to a bucket elevator. A raised conveyor system distributed the material for top entry into the silo. The silo and the conveyor/elevator system were removed in 1988.

Bulk Storage Tanks. Four bulk storage tanks were located north of Building 8A within diked concrete containment areas with small corner sumps. Three horizontal cylindrical steel tanks occupied a location east of the filtrate tanks and the Plant 8 North Pad (74R). Two of the tanks were 17,000 gallons each and provide bulk storage for caustic. The third was a 12,250-gallon sodium oxalate storage tank. Historically, this area was used for the bulk storage of phosphoric acid and sulfur dioxide. The phosphoric acid tank was also being used as the sodium carbonate tank.

Drum Washing. Drum washing occurred on the Plant 8 west pad (see 8F Process Description).

Metal Dissolver Vessels. Two metal dissolver vessels were located just to the west of the Plant 8 Old Metal Dissolver Pad (see process description for Pad 74Q).

Sand Filter. Sand filter operations occurred at the Plant 8 Railroad Building (see the process description for Plant 8D).

Building 8B – Plant 8 Maintenance Building

Facility Description

Building 8B (Plant 8 Maintenance Building) was a single-story structure measuring 31 ft. x 42 ft. and 15 ft. high. The building was located west of the Recovery Plant (Building 8A) and surrounded on three sides by the Plant 8 West Pad (Component 74D). Building 8B consisted of cinder block walls supported on reinforced concrete footings, with a reinforced poured concrete floor and roof and glass windows.

Process Description

Building 8B housed the maintenance activities for the Recovery Plant and was considered a single process area. The maintenance building consisted of a small corner breakroom and an open room with a roll-up door that admitted small to medium-sized pieces of equipment for servicing and repair. The building housed tools, maintenance equipment, spare parts, and service fluid (e.g., oils and greases) for motors and other rotating equipment in one drum or smaller quantities (on the basis of inspection). Building 8B also was used as a pumping point for transfer of perched water pumped from a shallow well outside the northeastern corner of Building 8B to the Recovery Plant for treatment. A small (less than 50-gallon) raised metal tank along the north wall received the well discharge, and a small centrifugal pump mounted on the tank transferred the perched water via pipe to the northwest corner of the Recovery Plant.

A floor sump at the midpoint of the south wall was used as a pipeway for steam and condensate lines. The steel cover of the sump was not removed during the inspection, so its condition and contents (water or sediment) are not known. This sump may have been used to collect floor washings from maintenance activities when the Recovery Plant was in operation. Although equipment was usually serviced in place in the Recovery Plant, smaller pieces of equipment, some of which may have been radiologically contaminated, were taken to Building 8B and may have spread contamination to the building. Several types of degreasing solvents and cleaners were used and stored in small quantities in Building 8B

Building 8C – Rotary Kiln/Drum Reconditioning

Facility Description

Building 8C (Rotary Kiln/Drum Conditioning Building) was an unused, multi-story structure located directly adjacent to the south side of the Scrap Recovery Plant (8A). The Rotary Kiln/Drum Reconditioning Building was a pre-engineered steel structure with steel siding. The structure was built on a reinforced concrete pad. The approximate dimensions of Building 8C were 50 x 100 x 33 feet in height.

Process Description

Building 8C was easily divisible into two process areas, which were separated by a wall. These process areas are described below.

New Rotary Kiln. The new and unused rotary kiln was installed in Building 8C to receive and dry waste residues from on-site processes. The waste residues were to be oxidized and stabilized for shipment, storage, and disposal. The new equipment included a rotary kiln and a dust collection system.

New Drum Reconditioning. New and unused reconditioning equipment was installed to clean and refurbish storage containers. Neither of these processes was utilized due to production suspension.

Building 8D – Plant 8 Railroad Filter Building

Facility Description

Building 8D (Plant 8 Railroad Filter Building) was a single-level building measuring approximately 30 ft. x 42 ft. and 13 ft. high. Associated with Building 8D was a subgrade Railroad Tank Car Wash Pit and a settling basin. Building 8D was located east of the Plant 8 East Pad (Component 74C) along "B" Street. Building 8D was surrounded by a concrete pad on the south, east, and north sides; and the Railroad Tank Car Wash Pit was located on the west side of Building 8D between the building and the Plant 8 East Pad. The settling basin was located immediately east of Building 8D toward the center of the concrete pad. Building 8D was a pre-engineered structure consisting of a structural steel frame with steel siding panels and sloped steel roof panels. The building was supported on a reinforced poured concrete base. The Railroad Tank Car Wash Pit was constructed of concrete that supported railroad tracks.

Process Description

Building 8D was considered one process area. Railroad gondolas filled with bulk MgF_2 from the Weldon Spring DOE facility were positioned over the Railroad Tank Car Wash Pit and unloaded onto the Plant 8 East Pad. The bulk MgF_2 was then drummed and processed. Residues from the railroad gondolas were washed into the Railroad Tank Car Wash Pit. Runoff from the pad also drained into the Railroad Tank Car Wash Pit. Washwater and pad runoff collected in the Railroad Tank Car Wash Pit were agitated and pumped from Building 8D to Plant 8 for treatment and filtration. At one time, the collected wash water and pad runoff was sand filtered in the pit before being pumped to Plant 8.

Sand Filter. Washing from drums on the two east pads, from plant roof drainage, and from rail cars on line east of the plant, are routed into the south chamber of the sand filter system where larger solids were settled out. Overflow form this chamber went into the north settling chamber (a covered and essentially static pool) where lighter solids were allowed to settle out. The level in this second chamber was regulated by control of movable standpipe to adjust flow to the sand filter.

The liquor flowed from this chamber through a slotted pipe, across brick work which served to break the stream up into a spray and distributed it over the sand filter, and then through successive 6-inch beds of crushed stone and somewhat coarser crushed limestone. The filtered liqour was routed through a connecting line to the storm sewer.

Building 8E – Drum Conveyor Shelter

Facility Description

Building 8E (Drum Conveyor Shelter) was a single-level structure with a structural steel frame and sloped metal roof. It was an extension of the Rotary Kiln/Drum Reconditioning Building (8C). Building 8E was approximately 15 ft. in height and shelters an area of a reinforced poured concrete pad. The dimensions of the area covered by 8E were approximately 40 ft. in length and 15 ft. in width.

Process Description

The Drum Conveyor Shelter was an addition to the Plant 8 complex and was not utilized. The primary function of the shelter was to provide protection to the drum conveyor that was installed to transport drums from the pad to the drum reconditioning equipment inside Building 8C. The area was also used for the storage of miscellaneous equipment, empty drums, and wooden pallets containing 55-gallon drums.

8F - Old Drum Washer

Facility Description

8F (Plant 8 Old Drum Washer) was located adjacent to the west Wall of the Recovery Plant (8A) on the Plant 8 West Pad (74D). 8F was approximately 20 x 20 ft. and 10 ft. high and was used to wash drums from the Recovery Plant and site-wide for reuse.

Process Description

8F constituted a single process area used to wash empty drums in preparation for reconditioning at the Drum Reconditioning Building (66) or for returned to service "as is". The drums were manually placed in the unit. Caustic (NaOH) and water were used to accomplish the washing, and the wash water was discharged to a grated concrete trench in Pad 74D that paralleled the west wall of the Recovery Plant. That trench discharged into the Recovery Plant for treatment.

The drum washer on the Plant 8 west pad consisted of a turntable which indexed over rinsing and washing stations inside a metal enclosure. Rinse and wash waters were directed through jets by two pumps to supply the cleaning action.

Building 8G – Trash Compactor Building

Facility Description
Building 8G is a single-story room on the east end of Building 8C where the former Oxidation Furnace #2 was located. 8G has exterior transite walls and roof.

Process Description
The southern leg of Building 8G was converted in the early 1990s from a structure that housed the former Oxidation Furnace #2 to a trash compactor building. Controlled area trash was compressed in the trash compactor that operated in this building. No process-related debris or wastes were placed in the trash compactor. The trash compactor was relocated on-site in 1999 and Building 8G remains vacant.

Building 8H – Soil Washing Building

Facility Description
This component was a single-story room that made up the west end of Building 8C. It was converted to use for soil washing back in the early 1990s.

Process Description
Building 8H housed the soil washing equipment.

Building 13A – Pilot Plant Wet Side

Facility Description

Building 13A is a multi-level processing facility located south of 1st Street near the southeastern corner of the former Production Area. Building 13A measures 63 ft. x 155 ft. x 35 ft. for approximately 80 percent of the structure. The structural height is 53 ft. for the remaining 20 percent.

Process Description

Numerous processing functions were developed in Building 13A during operation of the Pilot Plant. These processes included size reduction, dissolution, precipitation, filtration, solvent extraction, and drying of several uranium, thorium, and zinc compounds. The testing nature of the Pilot Plant, the duration of the operations, and the rapid turnover of test projects contributed to the incomplete documentation of all processes that occurred in Building 13A.

For purposes of discussion, Building 13A has been divided into four process areas: Northern, Central Southern, and Outside.

Northern Process Area. Included the following known processes: residue oxidation, thorium tetrafluoride precipitation, zinc fluoride precipitation, chemical decladding of aluminum canned cores, potassium fluorzirconate drying, recycled CaF_2 liner preparation, crushing/milling, and sump water treatment.

Oxidation of Residues in the Pilot Plant. The gas-fired oxidation furnace in the wet area of the Pilot Plant was used to oxidize uranium chips, briquettes, turnings, oxide sludges, and particulate matter to convert them to U_3O_8. The furnace exhausted to the atmosphere through a stack burner. A cyclone dust collector which exhausted to the atmosphere through an absolute filter serves the cooling and packaging stations.

Trays were loaded into the furnace by means of tongs or rakes. After the material was oxidized, the trays were moved to an exit vestibule and then lifted to an air-cooling chamber. Each tray was next moved to the tilting device by tongs or rakes, and the contents were packaged into a drum or can.

Precipitation of Thorium Tetrafluoride. Thorium tetrafluoride (ThF_4) was precipitated from a heated, agitated solution of thorium nitrate and hydrofluoric acid in a 400-gallon polypropylene precipitator tank. Thorium nitrate solution, approximately 300 grams/liter Th, was contacted with a 5% excess of aqueous hydrofluoric acid (concentration 20 - 40% HF) semi-continuously to produce a ThF_4 containing some water of crystallization, that would have good filtration characteristics and maximum density. After the ThF_4 was precipitated it was allowed to settle, mother liquor was decanted, and the concentrated slurry was filtered on a rubber lined box filter. The filter cake was washed with deionized water to remove residual impurities. The wet cake was then ready to be dried. The filtrate was neutralized and sent to the sump.

Precipitation of Zinc Fluoride. To provide ZnF_2, a necessary component of the charge to produce a thorium derby, USP grade zinc oxide was added to agitated 20 - 40% aqueous HF to form zinc fluoride hydrate. HF was measured into a polypropylene tank, then ZnO was added. The reaction was exothermic. The temperature was controlled by varying the rate at which ZnO was added. When the zinc fluoride, slurry cooled, waters of crystallization add to the zinc fluoride crystals. Then the slurry was filtered on rubber coated box filters. The cake was washed with a small amount of water to remove most of the excess hydrofluoric acid. Zinc fluoride, was moderately soluble and about 15% was lost in the filtrate. The cake was dried in the shelf dryers to remove most of the water of crystallization.

Chemical Decladding of Aluminum Canned Cores. A necessary step in the recovery of uranium from aluminum canned cores is the removal of the aluminum cladding and bonding material. This was accomplished chemically in the Pilot Plant.

Equipment used for this operation included a horizontal metal dissolver trough tank and heat exchanger with a pump for re-circulating the reagents through them, a conical tank with a constant volume pump to deliver concentrated caustic solution in a controlled manner to the re-circulating material in the metal dissolver tank, a blower operated ventilation, system with a condenser in the ventilation line, and tank used as a hold tank.

The chemical decladding of the aluminum Jacketed cores required two chemical processing steps. In the first step, the clad cores were immersed in a recirculating caustic-sodium nitrate stripping solution to remove the aluminum jacket. Following this processing step, the stripper solution was drained and after the cores had been rinsed, were replaced with a strong caustic treating solution for the second operation, the dissolution of the remainder of the Al-Si braze metal. This solution was reused for treating several batches of cores. Both the stripping and treating solutions (the latter following several usages) were pumped to the Pilot Plant sump for reclamation of uranium values. The declad cores were available to be used as remelt metal.

Drying Potassium Fluozirconate (K_2ZrF_6). Equipment included several "Despatch" drying ovens, stainless steel drying pans, and a scale. K_2ZrF_6 cake from Plant 8 was dried, sampled, repackaged in plastic-lined 30-gallon drums, weighed, and stored pending final disposition.

Preparation of Recycled CaF_2 Liner. The calcium fluoride slag which was produced in the bomb reduction by the reaction between calcium and thorium-zinc fluorides was recovered and used to provide the lining for the steel reduction pots. The slag was received from Plant 9 in 55-gallon drums and was crushed and ball-milled to powder suitable for preparing firm liners by jolting.

Crushing and Milling. Jaw crusher and a ball mill were utilized to size-reduce slag received from uranium and thorium production.

Sump Treatment Area. Floor sumps collected water throughout the Pilot Plant Wet Area where it was pumped to a tank and treated with lime to remove thorium and uranium in the form of sump cake using plate-and-frame filters. The sump cake was sent to Plant 1 Pad for sampling and storage. The filtrate was sent to the General Sump.

Central Process Area. The Central Process Area included the following known processes: thoria gel preparation, thorium oxalate preparation, ammonium diuranate precipitation, and barium chloride conversion.

Preparation of Thoria Gel for Storage. To process Hanford thorium nitrate solution to a storable solid product, concentrated feed containing 2100 pounds of thorium was pumped into a stainless steel precipitation vessel. Deionized water was added to dilute the batch to a concentration of 185 g/l. For precipitation, aqueous ammonia was added to the agitated thorium nitrate solution in two increments. No precipitation occurred during the first incremental addition. During the second increment with slow addition of aqueous ammonia, CO_2 gas was sparged into the precipitation batch at a controlled rate. After the $C0_2$ and ammonia had been added and the thorium had been totally precipitated as thorium hydroxide of small particle size, the agitator was stopped and the precipitate was allowed to settle.

When settling had occurred, the mother liquor containing the soluble ammonium nitrate was decanted to a hold tank. The remaining, concentrated thorium hydroxide was reslurried with deionized water at ambient temperature to 2100 gallons. A small amount of ammonium sulfate crystals is added to impart good dissolution characteristics. The solution's pH is then carefully adjusted to 5.7 by the addition of a small amount of aqueous ammonia. The reslurried thorium hydroxide was filtered in a-stainless steel plate and frame filter press and air-blown to remove residual water. The stiff soapy cake was dropped from the press into a ribbon-type stainless steel blender. A small quantity of 70% HNO_3 was added during blending to aid in forming a smooth fluid paste for easy discharge from the blender into the stainless steel drying pans.

The loaded pans were placed in the drying ovens and heated. The material was dried for approximately 18 hours. After a brief cooling period, the pans of dried, coarse-grained gel were loaded on a cart and rolled to a ventilated enclosure where the contents of the pans were dumped through a chute into polyethylene-lined 55-gallon drums. When each drum was filled, the plastic liner was taped shut, the lid was sealed and the drum was weighed and labeled.

Preparation of Thorium Oxalate. Thorium nitrate solution was contacted with an excess of, oxalic acid solution under carefully controlled conditions in a stainless steel precipitation tank to produce a slurry of fine thorium oxalate particles in a mother liquor of nitric acid.

The slurry was pumped to a plate-and-frame filter press in which the thorium oxalate cake was separated from the mother liquor. The filter cake was washed with deionized water in the press and was then blown with filtered air to reduce the free moisture content. The cake was discharged from the filter and, placed in plastic or plastic lined 5-gallon containers. The material was sent to an off-site facility for calcination to thorium oxide powder of a grade suitable for the preparation of sintered thoria target elements. This process was performed using one of two methods: calcium added or no calcium added.

Precipitating, Filtering, and Drying ADU. Ammonium diuranate (ADU) was to be precipitated in tank W-14 by adding ammonium hydroxide to a dilute solution of uranyl nitrate until a pH of 7 was achieved. The ammonium hydroxide solution which was used was previously prepared in tank F13A-134 by the addition of anhydrous ammonia to deionized water.

Purified uranyl nitrate was supplied from Pilot Plant extraction operation. Following precipitation, the ADU was filtered and washed in the plate and frame filter on the platform. The ADU cake was placed in pans and dried in the drying ovens.

Barium Chloride Conversion. Barium chloride salts were converted to barium sulfate in a batch treatment process.

Southern Process Area. Included the following known processes: thorium and uranium feed materials purification by solvent extraction.

D&D will remediate Tc-99 contaminated concrete associated with the Southern Extraction Area by removing the top 0.5 inch of concrete prior to the area being turned over for soil remediation.

Purification of Thorium Nitrate Feed by Solvent Extraction. Impure thorium feed materials were processed by means of a solvent extraction system to produce thorium nitrate solution meeting high purity specifications. The function of the system was to remove rare earth elements and other chemical impurities. Feed materials were received in drums as thorium nitrate crystals or various thorium oxides. Drummed materials are opened, dissolved, and transferred to storage tanks in the Pilot Plant. Thorium solutions were prepared for extraction in the digestion area and then were routed through the six- or nine-inch diameter, pulsed columns of the extraction area.

Feed materials were thorium nitrate crystals received from domestic and foreign sources. Thorium nitrate crystals dissolve readily in water or dilute nitric acid. Upon complete dissolution, the acidity of the solution was adjusted to the level required for the extraction process that used 30 v/o diamylamyl phosphonate (DAAP) and 70 v/o Solvesso-100, an aromatic naptha organic solvent.

There were four perforated-plate pulse columns. One "A" glass column was used for primary extraction of thorium by the DAAP solvent, leaving rare earth elements and other chemical impurities in the aqueous raffinate. A single "B" glass column served as a scrub column using a small volume of dilute nitric acid to remove impurities entrained in the solvent extract. A 9-inch stainless steel "C" column was used to reextract thorium from the organic phase back into a dilute, slightly acidic aqueous solution. In the "D" column water was used to wash the uranium from the solvent in order to maintain a low uranium level in the system.

Aqueous thorium, nitrate solution from "C" column was transferred to a decant system where entrained solvent was allowed to separate. The aqueous phase (thorium nitrate solution) was then transferred to two boildown tanks (east and west) to concentrate it approximately 4 lb thorium/gallon. The product was then pumped to a proof tank and sampled. If the product met specification, it was pumped to a storage tank, from which it was either loaded into tank trailers for shipment off-site, or was transferred to feed tanks for preparation of thorium compounds.

Purification of Uranyl Nitrate In 2" Extraction. The extraction system was composed of either a compound extraction/scrub column and, a re-extraction column or an extraction column mixer-settler scrub system, and a re-extraction column. Uranyl nitrate was purified by either system of operation using TBP/Kerosene solvent. The mixer-settler scrubbing mode was used to achieve maximum purification of feed materials. This unit was used initially for technical development studies to prototype Plant 2/3 full-scale operability using different feed materials. It was later used to purify higher enrichment UNH solutions because of its safe geometry.

In using the compound (A/B) column system, aqueous uranium bearing feed solution was metered into the top of the A section of the A/B column. Treated organic extractant (tributyl phosphate in kerosene) from solvent storage was metered into the bottom of the A/B column and flows countercurrent to the aqueous feed. Contact between the two phases was provided by pulsing through perforated plates. The uranium content was transferred from the aqueous to the organic' phase, which was scrubbed with a small amount of deionized water in the B section of the A/B column. The product from the A/B column was pumped into the bottom of the re-extraction (C) column where it was contacted by a descending flow of heated, deionized water. In this column, the uranium content was transferred back into the aqueous phase as product solution, which was drummed for future use or technical studies.

Aqueous raffinate from the bottom of the extraction column was collected in drums for neutralization and eventual discard. In the mixer-settler mode, raffinate from the scrub section was recycled into A-column feed. Stripped organic from C-column was returned to the extraction column as the organic (AX) stream. The technology of operating the unit in either mode was essentially the same; only the column configuration was different.

Purification of Uranyl Nitrate By Solvent Extraction. Impure uranyl nitrate from drum digestion, Zimlo process, and other miscellaneous sources is purified by solvent extraction in the Pilot Plant 6-inch extraction system.

The feed solution was extracted with TBP-kerosene in two parallel, 6-inch diameter columns and then the uranium loaded organic is scrubbed in the upper portions of the same two columns. The product (BP) streams from these two compound columns (A_1B_1 and A_2B_2) were combined at the BP surge tank and were pumped into the re-extraction (C) column, entering at that column's base. Purified uranyl nitrate was picked up by hot water which enters the C column's upper end. The uranium stripped solvent stream from C column was recycled through a storage tank and back to the AB columns. The C column product was directed to an organic separation tank where any organic collected on the upper surface. Uranyl nitrate was drawn off from-below the surface. This product solution was used for ADU precipitation.

Extraction raffinate from the "A" column was treated with NaOH to precipitate residual uranium, copper, and other miscellaneous impurities and the neutralized slurry was pumped to the General Sump. Solvent for this operation was taken from the long-term storage inventory and appropriately acidified before use. Degraded solvent was removed from the operation and returned to long-term storage as degraded solvent.

Outside Process Area
Ancillary equipment, consisted of former process storage tanks within concrete secondary containment dikes and dust collectors, were located immediately outside of Building 13A, to the west.

Transfer of Thorium Nitrate Solution from Tank Cars to Pilot Plant Storage Tanks
Thorium nitrate solution was received from Hanford in railroad tank cars, which were spotted on center of concrete pad south of Plant 8 car wash pit. After connections were made to air and acid discharge lines, the solution was transferred via high line to one or more of the receiving tanks at Pilot Plant.

Building 13B – Pilot Plant Maintenance Building

Facility Description

Building 13B is a single-level structure measuring 30 ft. x 60 ft. x 11 ft. in height. It is located northwest of the Pilot Plant Wet Side (Building 13A). Building 13B consists of CMU walls supported by a reinforced, poured concrete floor and built-up roof. The building has two roll-up doors on the east side that face an asphalt apron area which are adjacent to the north side of building 13A. The interior of Building 13B consists of two tile-floored offices and a concrete floor storage area.

Process Description

Equipment maintenance activities were performed in Building 13B during the Pilot Plant operation period. The building was later converted for use as a base of operation for radiological technicians involved in renovation, removal actions, and remediation studies at the FEMP.

Building 13C – Sump Pump House

Facility Description

Building 13C (Sump Pump House and Sump Tanks) is located to the southwest of the Pilot Plant Wet Side (Building 13A) and immediately south of the Pilot Plant Thorium Tank Farm (13D). The Sump Pump House is a single-level CMU structure having dimensions of 12 ft. x 16 ft. x 8 ft. high. Building 13C housed three pumps on concrete pedestals and associated equipment that extracted liquids from adjacent underground concrete sump tanks located adjacent to Building 13C on the east side. These underground tanks have since been abandoned and filled with concrete. Four above-grade storage tanks (TS-1, TS-2, TS-100, TS-101) were surrounded by a concrete dike secondary containment structure.

Process Description

The function of Building 13C was to pump filtered sump system flows from treatment facilities inside the Pilot Plant Wet Side to the General Sump (Building 18B) for final treatment and discharge.

13D – Pilot Plant Thorium Tank Farm

Facility Description

13D (Pilot Plant Thorium Tank Farm) is an above-ground storage tank area located west of the Pilot Plant Wet Side (Building 13A). The tank farm consists of five vertical, cylindrical, steel tanks situated within a 28 ft. x 45 ft. x 18-in high concrete secondary containment structure. 13D contained tank T-2, which was identified as HWMU No. 54.

Process Area Description

13D stored thorium nitrate tetrahydrate liquid, bulk process chemicals, and spent solvents from Building 13A processes. A sump was located in the southeastern corner of the containment area. Overhead piping was used to transfer the liquids between the tanks and Building 13A.

Building 15A - Laboratory

Facility Description

Building 15A (Laboratory) housed the analytical, metallurgical, and chemical process laboratories for the FEMP and was located near the intersection of 1st Street and "B" Street. Building 15A is a multilevel, irregularly shaped building (253 ft. x 292 ft. x 20 ft. high) constructed of concrete block walls and concrete floors. The main floor of Building 15 is composed of north, central, and south, east/west corridors. Courtyards are located between the south and central corridors and between the central and north corridors. A utility tunnel runs underneath the south, central, and a portion of the east hallways and portions of some adjacent rooms. A basement area is located beneath the western portion of the building. The northern portion of the building was extended and a second story addition constructed over the extended northern portion.

A laboratory sump was located in the north courtyard. Wastewater collected in this sump were pumped to the General Sump (18B). A Neutron Generating Analytical Building was also located in the north courtyard just east of the laboratory sump. Although the Neutron Generating Analytical Building was small at only 17 ft. x 25.5 ft., the walls were 4-feet thick concrete used for radiological shielding..

Process Description

The Laboratory provided extensive technical support to the production plants as operations moved through initial start-up to full-scale operations of the primary process streams. Laboratory personnel developed numerous methods for quantitative analysis involving new techniques and applications of equipment. Hundreds of analytical methods were established for supporting the primary processes, ongoing technical development work and attendant changes. Numerous spot tests were devised for chemical operators to perform process quality control checks for ensuring conformance with manufacturing standards. A high performance standard was maintained in all operations through continual improvements of manufacturing methods, technology innovations, emphasis on safety and good housekeeping practices, and upgrades to work facilities.

Around 1986, the Laboratory was divided administratively into both radiological non-restricted and restricted areas. The dividing line for the two areas generally ran from the southwestern corner of the building to the northeastern corner of the building, with the unrestricted access area located to the east of the dividing line and the restricted access area located to the west of the dividing line. The laboratory basement has historically been used as a maintenance area and to store radioactive samples.

Eastern Nonrestricted Access Area. The eastern nonrestricted access area contained a library, two conference rooms, offices, and a secured vault for storing government sensitive documents.

Western Restricted Access Area. Historically, the western restricted access area contained inorganic and isotopic laboratories, an organic laboratory added around 1990, some office space, several satellite accumulation areas, and the following:

- A mercury recycle unit located in Room W-22 and operated last in 1987.
- The Pilot Process, which was the pilot for the thorium process used in the Pilot Plant (13A, 37, and 54A), was developed and performed in Rooms W-4 heat treating) and W-10 (wet chemistry) in 1967.

- Before the laboratory renovations, a photo lab was located at the western end of the north corridor in Room N-27. For about one year (1989), an electrolytic silver recycling unit located in Room N-27 was used to recover silver from the spent photographic solutions that contained either silver nitrate or silver sulfate.

- Wastewater generated at the numerous sinks within the various laboratories as a result of sample preparation and/or cleaning were and are conveyed to a central collection sump located in the north courtyard of Building 15.

- The Neutron Generating Analytical Building, known as the "Cave", stored sealed portable neutron generating sources used in various analytical procedures.

The western restricted access area contained laboratories, some offices, various satellite accumulation areas, a chemical storage area, and a few storage areas for radioactive materials (e.g., outdated uranium standards and samples of uranium products used to check for impurities).

Tunnel. A utility tunnel ran underneath the south, central, and a portion of the east hallways and portions of some adjacent rooms. The tunnel opened into the basement area. The tunnel provided access to utilities such as gas, drain, and vacuum lines that primarily served the numerous laboratories located along the northern and central hallways. The tunnel was also accessible through an opening located in the first floor east corridor.

Basement. The basement was located under the western portion of the Laboratory under the western hallway and first floor rooms. Until late in 1989, the Maintenance Department operated a maintenance shop located in the northern area of the basement. The shop also functioned as a satellite accumulation area temporarily storing wastes such as spent solvents, used oil, and PCBs. The southern area of the basement was once equipped with caged areas that stored uranium products (e.g., green salt, orange oxide, and uranium turnings), thorium, and laboratory chemicals. A dust collector that serviced the buildings vacuum system was located in the southwest corner of the basement.

18B – General Sump

Facility Description

18B (General Sump) provided treatment of contaminated site effluents other than sewage. The General Sump is located north of the Recovery Plant (Building 8A) and west of "B" Street. The General Sump consists of 16 tanks; most of the tanks are located outside in four separate concrete containment areas. 18B is approximately 113 ft. x 116 ft.

Process Description

Effluent from the production plants were transferred to the General Sump and combined for batch processing. The effluents were then neutralized, and coagulants were added. After coagulant addition, the effluent was transferred to the recovery plant filter system for suspended solids and precipitant removal, and the resultant filtrate was transferred back to the General Sump. At 18B, treated effluent was segregated on the basis of nitrate concentration and routed to either the 8-million-gallon low-nitrate Biodenitrification Surge Lagoon (18A) or the 500,000-gallon High-Nitrate Holding Tank (18L). Some of the wastewater streams received at the General Sump (e.g., Cooling Tower blowdown, Boiler Plant blowdown, and coal pile runoff) were permitted to be discharged directly to the Great Miami River after coagulation and settling treatments.

Building 18D – Biodenitrification Towers

Facility Description
Building 18D (Biodenitrification Towers) is a multilevel (six-floor) building. It is irregularly shaped, measuring approximately 72 ft. x 79 ft. and 67 ft. high. Building 18D consists of a structural steel frame on a poured concrete base and floor with uninsulated corrugated metal siding and roofing. The Building 18D foundation includes one very large footer.

Process Description
One process area has been identified for Building 18D. High nitrate wastewater that was collected in the BDN Surge Lagoon (18A) was mixed with methanol from the Methanol Tank (18J) and fed to Building 18D, where they entered one of four 30-ft. towers that operated in series. The wastewater flowed up through the towers, fluidizing coal particles that had bacteria attached. The bacteria fed on and decomposed the methanol and nitrates to form carbon dioxide (CO_2) and nitrogen (N_2) gases, which bubbled off the top of the towers and are released to the atmosphere.

Building 19B – Pilot Plant Ammonia Tank Farm

Facility Description
19B (Pilot Plant Ammonia Tank Farm) was constructed in 1986 and contains two anhydrous ammonia tanks, approximately 20,000 gallons each. The two tanks are located in the open in a concrete-diked partially subgrade structure measuring approximately 40 x 51 ft.

Process Description
19B is considered to be one process area and briefly stored anhydrous ammonia to supply the Pilot Plant UF6 to UF4 operations and the Refinery Plant. Until the summer of 2002, the south tank was used to supply caustic material in support of AWWT operations.

Building 20E – Well House #1

Facility Description
Building 20E (Well House #1) is a single story structure located adjacent to the south side of 2nd Street and directly north of the Elevated Potable Storage Tank (26B). Well House #1 consists of a cement block wall and concrete floor construction with the approximate dimensions of 11 ft. x 20 ft. x 9 ft. in height.

Process Description
Building 20E is one of three on-site pumping stations that supply the process area with water for fire protection and other potable uses. Building 20E houses one electrical water pump and accompanying equipment.

Building 20F – Well House #2

Facility Description
Building 20F (Well House #2) is a single story structure located directly north of Building 45A. Well House #2 consists of a cement block wall and concrete floor construction with the approximate dimensions of 11 ft. x 20 ft. x 9 ft. in height.

Process Description
Building 20F is one of three on-site pumping stations that supply the process area with water for fire protection and other potable uses. Building 20F houses one electrical water pump and accompanying equipment. Well House #2 will remain operational during the remediation of Areas 3B and 4B to supply water for dust control of the excavation area. The remediation of Well House #2 and the soils underneath and immediately adjacent to 20F are not addressed by this IRDP.

Building 20G – Well House #3

Facility Description
Building 20G (Well House #3) is a single story structure located northwest of the Pilot Plant Thorium Tank Farm (13D). Well House #3 consists of a cement block wall and concrete floor construction with the approximate dimensions of 11 ft. x 20 ft. x 9 ft. in height.

Process Description
Building 20G was one of three on-site pumping stations that supply the process area with water for fire protection and other potable uses. Building 20G housed one electrical water pump, associated equipment, and a diesel-powered back-up electrical generator to power the pump if the structure's primary power supply was to be severed. A diesel fuel tank of approximately 150 gallons was located directly south of the building.

22D Scale House and Weigh Scale

Facility Description
22D (Scale House and Weigh Station) is a single story structure located directly east of the Elevated Water Storage Tank (26B). The Scale House consists of a structural steel frame, reinforced concrete floor and transite siding. The facility has the approximate dimensions of 12 x 52 x 10 feet in height (see Figure 22D-1). The scale is situated approximately two feet below grade.

Process Description
22D was utilized to determine the weight of incoming and outbound multi-axle vehicles prior to the installation of the Truck Scale (22C). The scale was also used to weigh outbound sea/land cargo containers. The Scale House contained operational equipment including a digital scale, printer, power control switches and a grated sump.

Building 26A – Pump House – HP Fire Protection

Facility Description
26A (Pump House - HP Fire Protection) is located south of the Elevated Water Storage Tank (26B) and is comprised of a steel water storage tank and cement block wall and concrete floor building. The dimensions of the tank are 35 ft. in diameter by 22 ft. in height. The volume capacity of the tank is approximately 300,000 gallons. The dimensions of the building are 26 ft. x 50 ft. x 11 ft. in height.

Process Description
26A was installed to provide the site with a water supply for fire protection. The building housed three electrical pumps that drew water from the tank as required.

Building 26B – Elevated Water Storage Tank

Facility Description

26B (Elevated Water Storage Tank) is located north of the Pump House-HP Fire Protection (26A). 26B is a steel water storage tank elevated by a steel support to 265 feet above grade. The tank has a diameter of 65 feet, and a capacity of approximately 350,000 gallons. The foundation for 26B includes 29 – 8" concrete piles. Although, no historical drawing or documentation could be found that showed the depth of installation, it is assumed that the elevated water storage tank piles extend into the Great Miami Aquifer. Due to the extreme depth of the elevated water tower foundation piles and the lack of known contamination in this area, there are no plans to remove the piles below the excavation depths required to remove the general elevated water tower foundations (approximately 572 feet in elevation). A clay plug will be placed over the ends of the piles exposed at the excavation surface.

Process Description

26B was installed to provide the site with a water supply for fire protection.

Building 37 – Pilot Plant Annex

Facility Description

Building 37 (Pilot Plant Annex) is a rectangular, single-story building measuring, approximately 52 ft. x 122 ft. x 25 ft. high. The function of Building 37 was to test new processes for uranium and thorium production and recovery.

Process Description

The Pilot Plant Annex performed many operations and frequently changed configuration to meet its mission of testing processes for potential improvement of operations at other plants. The testing nature of the Pilot Plant, the duration of the operations, and the rapid turnover of test projects contributed to the incomplete documentation of all process that occurred in Building 37. The major known processes used in Building 37 are described below.

Uranium Density Determination. Equipment used for determining uranium densities included the following: Toledo Electronic Crane Scale, 1000 lb load cell, junction box containing excitation transformer, indicating head, dial 120 lb x 0.1 lb, Printweigh mechanism with capacity of 820 lb with 0.1 pound increments, Water tank, 27" height x 2711 diameter, one-ton capacity Jib hoist, and derby grab. Following frequent careful checks of the weighing equipment, selected derbies were weighed, both in air and water. The operator could then rapidly determine if a derby's density is within specification requirements by referring to the derby density tables. A more precise density of a derby or other uranium piece could be computed by dividing its correct dry weight by the difference between its dry and wet weights. Because the equipment was located near the shot blaster, it was convenient to weigh derbies both before and after shot blasting if desired.

Shotblasting Derbies. Derbies were shotblasted to remove magnesium fluoride slag and magnesium plate in a Pangborn Rotoblast consisting of a fully enclosed four foot diameter work table, a rotoblast wheel, a shot elevator, and a pneumatic abrasive separator. The unit accommodated work pieces up to two feet in height weighing a total of 4000 pounds. The interior surface of the steel cabinet and door surrounding the work table was protected from the blast by replaceable wear pads and the table surface, by replaceable rubber mats. A one-ton hoist on a swinging jib was used for material handling. Dust generated by the operation was carried through the pneumatic separator by the air draft from the east Wheelabrator dust collector.

Derbies were delivered to the Pilot Plant on skids. By the use of a. hoist, derbies were lifted from the skid to the work table and located on fixtures in assigned positions so that the identification could be correctly reestablished after shotblasting. The hood was closed and the machine started. A stream of abrasive (uranium shot) was directed onto the surface of the derbies as the work table rotated. Rotating scrapers under the work table push accumulated material through the elevator boot into elevator buckets which lifts the material to the elevator head. This material then discharges into a pneumatic separator where it is separated into fines, oversize, and use shot. The classification of the portions could be adjusted by moving skimmer plates. Usable shot was returned to the storage bin for recycling through the machine.

Cleaned derbies were returned to Plant 5 to be checked for density. If the density was too low, the derbies could be blasted a second time. Derbies meeting the density specification (after first or second pass) are coded as suitable for remelt. Those which did not meet the density specification could be sectioned, by sawing, to obtain good remelt metal. It could also be remelted "as is" into primary (double melt) ingots, or consigned to the Metal Dissolver.

Grit Blasting Operation. The grit blasting equipment consisted of a ventilated glove box in which the blasting was done, and a generator which supplied the compressed air and grit mixture (Black Beauty Blasting Grit, 40 mesh) used in the cleaning operation. The cabinet was ventilated to the east wheelabrator.

A derby was placed on the roller platform inside the cabinet, using a hoist or other mechanical lifting equipment. The operator removed the gross slag with a chipping hammer. He then closed the door and put one hand in the glove port to grasp the nozzle. With the other hand he turned on the airstream which picked up grit at a rate predetermined by experience and direct the blasting stream over the derby. When the derby was clean, he moves the stopper valve lever to the "CLOSED" position and turned off the air. The door was opened, the derby removed, weighed and placed in a 10-gallon can filled with argon, lidded and placed in storage until it is to be dezinced.

Slag removed from the derby plus grit that was reduced to powder during the blasting operation were drawn off into the ventilating system. When the grit supply was reduced to the point that the blasting efficiency 4s reduced, the blasting operation was shutdown, the valve on top of the generator was opened and approximately 50 lb. of grit was added. It was also necessary to shutdown periodically and return the grit which accumulates on top of the generator to the blasting operation.

Production Shot. Pieces of uranium or uranium alloy to be made into shot were charged into crucible fitted with a stopper rod and heated until molten in a small induction furnace. Stopper rod was then raised allowing a small stream of molten metal to fall onto rotating ceramic disk whose speed was regulated to control shot diameter.

Metal spun off as globules which fell into a shot tank where they solidified in an atmosphere of helium. Shot was removed from bottom of shot tank, screened, cleaned, and packaged in shipping containers.

Plasma Spraying Operation. The plasma spraying equipment consisted of the following:(1) two plasma flame guns - one Metco type 2MB, and one Thermal Dynamics H-50; (2) a controlled atmosphere spray chamber and an open air spray booth.

The spray booth was ventilated through the west wheelabrator. Two vacuum pumps were used to evacuate the air from the spray chamber so it could be back filled with the desired atmosphere.

The chamber had an inert gas recirculating and cooling system, a crucible rotating and positioning mechanism, a small parts rotating device, an extension in which the plasma gun is mounted, and a control unit for the chamber operations. The chamber has glove ports at one end, sight ports at both ends, and was water cooled. Other equipment included miscellaneous fixtures and holders for positioning and holding the gun and work piece. The power for the gun was provided by a transformer-rectifier type welder power supply and was regulated by a control panel.

The object to be sprayed was first cleaned, by grit blasting if possible, or by some other method such as wire brushing or pickling. The area to be coated was then masked off and the object was placed in a holder in either the open air spray booth or the inert chamber (to be determined by Production Technology personnel). The gun to be used, the inserts, the electrode, the plasma gas, the coating material, the atmosphere, and all of the spraying parameters to be used was determined by Production-Technology personnel.

Milling and Blending ThF_4 and ZnF_2. To prepare ThF_4 and ZnF_2 for the reduction operation, it is necessary to grind and blend the dehydrated fluorides. Each fluoride was prepared separately. They were ground in a Sturtevant disk grinder to pulverize the coarse and lumpy fractions. The ground material was then blended in a Patterson-Kelley twin-shell blender to provide a homogeneous batch for sampling.

Oxidation of Hallam Sludge in Pilot Plant. The S&W electric glow bar furnace in the Pilot Plant Annex was being used to calcine Hallam sludge to uranium oxide. The furnace was located in an enclosure which was ventilated by a Wheelabrator dust collector.

Filled trays were loaded manually into the furnace and were positioned by pushing with tongs or a rake. After the sludge had been oxidized, the hot trays were pulled with a hook onto a metal skid held at oven level by fork truck. The skid bearing the hot trays s then placed on the floor of the enclosure to permit cooling. Each cooled tray was then placed in one of two 10-gallon cans which is permanently fixed to a pallet. Loaded pallets, each one carrying two trays (one per 10-gallon can), were transferred to Plant 1 where the product oxide could be collected in 6-inch diameter by 15-inches high cans.

UF_4 and Briquetting Unit. The briquetting unit consisted of a rotary briquetting press, a drumming station, and roller conveyors. The process involved blending and crushing UF_4 and magnesium into briquettes to make a high-density reduction charge. The press compressed the uranium/magnesium blend into pillow-shaped briquettes. After the material was formed into briquettes, a vibrating-type conveyor with a stainless pan transferred the briquetted material to a drumming station.

Remelt. See process description section in the Building 54A write up for further details on the P-2 Furnace.

NuSal Heat-Treat Furnace and Quench Tank. The heat-treating unit consisted of an immersion electrode salt furnace, an oil quench tank, two wash water tanks and a heat exchanger. A 50/50 blend of molten sodium chloride and potassium chloride salts were used as a medium for heat-treating uranium core blanks on a pilot scale. The pieces to be heat-treated were loaded into fixtures, and the fixtures were totally immersed into the salt bath. After a specified heating time, the fixtures and pieces were transferred from the salt bath to an oil or water quench tank.

Oil Reclaimer. Hilco oil reclaimer for vacuum pump oil was used in support of the P-2 furnace.

Thorium Tetrafluoride Mill. Dehydrated thorium tetrafluoride was milled and packaged for reduction in a mill that has been removed.

Calcium Metal Storage. Drums of fine calcium metal were stored and weighed for the reduction process.

Enriched Derby Furnace. The enriched derby furnace was a small-scale reduction furnace, which used to perform test runs for production of 5-inch diameter enriched uranium derbies up to 5 percent Uranium-235.

Jolter. A charging station and a jolter were located in the southeast corner of Building 54A and where involved in the process for pilot-scale uranium reduction.

Centrifugal Casting Furnace. No information is available for this unit, nor for a nearby tank shown on earlier drawings of the area. Out-of-spec plutonium materials drums were stored in this area.

Dust Collectors. Two dust collects where located outside Building 37 just to the southwest and southeast of the building.

Building 45A – Construction Division Building

Facility Description

Building 45A (Construction Division Building) is a single-story building. It is rectangular, measuring approximately 121 ft. x 150 ft. x 14 ft. high. The building consists of a structural steel frame with corrugated metal siding and a poured concrete base and floor.

Process Description

The original purpose for Building 45A was to develop techniques, machines, and machining tools for the machining of uranium and thorium. The facility also housed an experimental rolling mill in the south bay and induction heat treating equipment in the center bay. Several pits and sumps were filled with sand and capped with concrete during the conversion. Building 45A was decontaminated in 1988, before conversion for office space. Building 45A contained one process area.

Building 54A – Six to Four Reduction Facility

Facility Description

Building 54A (Six to Four Reduction Facility #1) is an irregularly shaped structure, located at the south end of 1st Street. The dimensions of Building 54A are approximately 165 ft. x 123 ft. x 44 ft. Building 13A (Pilot Plant Wet Side) adjoins Building 54A to the immediate west, while Building 37 (Pilot Plant Annex) adjoins to the east.

Process Description

The main processing area contained three three-level steel structures that house the hydrogen fluoride recovery system, the uranium hexafluoride (UF_6) to uranium tetrafluoride (UF_4) reactors, and the acid vapor scrubber equipment. Numerous processing functions were developed in Building 54A during operation of the Pilot Plant. The testing nature of the Pilot Plant, the duration of the operations, and the rapid turnover of test projects contributed to the incomplete documentation of all processes that occurred in Building 54A.

Building 54A known processes include the following: reduction of UF_6 to UF_4; UF_6 autoclave operations; casting uranium ingots and billets, dezincing thorium-zinc derbies, reduction of ThF_4 and ZnF_2 to Th-Zn metal; reduction of UF_4, magnesium, and uranium metals; dehydration of Dried ThF_4 and ZnF_2; molten salt cleaning of derbies; thorium derby production; pressurized low temperature furnace operations; AHF recovery, and HF scrubber operations.

Reduction to UF_6 to UF_4 (2.1% U-235). Solidified uranium hexafluoride (UF_6) was received from off-site in steel cylinders of varying capacities depending on enrichment. Cylinders were placed in a heating chamber and the solid UF_6 vaporized by use of steam. The UF_6 vapor passed through a feed control station and enters the 6 – 4 reactor where, in contact with hydrogen (from dissociated ammonia) it was reduced to UF_4. The off-gasses produced in the reaction consist of nitrogen, hydrogen, and anhydrous HF. Greensalt dust entrained in the off gas was removed by a series of cyclones and an Adams filter and returned to the green salt product stream and packaged.

Reduction of UF_6 to UF_4 DCS Controlled Process. Approximately 1100 lb/hr of UF_6 was reduced with hydrogen inside each of two vertical tubular reactors (14 3/4 inch dia. x 20 foot in length) to yield UF_4, (green salt). The product, green salt, was used for the production of uranium metal. Anhydrous hydrogen fluoride (HF) and a small amount of 30% aqueous hydrogen fluoride (HF) were by-products of the process.

Hydrogen was supplied as "cracked" ammonia from three ammonia dissociators, while UF_6 was vaporized from 10 or 14 ton cylinders using low pressure autoclaves. There were three autoclaves in the UF_6 to UF_4 Reduction Facility, which were designed to safely vaporize UF_6 and to contain UF_6 should a leak occur. The product, a finely-powdered solid, fell from the reactor, was cooled by a jacketed conveying screw, and passed through a seal leg, rotary valve, and pulverizer to a packaging station. At the packaging station, the green salt was weighed and packaged in cans. A dust collection system was in continuous operation to evacuate the packaging area of green salt dust and a backup system was available as required. The reactor area had available a piped vacuum system with hose connection outlets available for general purpose cleaning.

Green salt was collected in the main reactor hopper and cyclone hoppers at two stations. Hoppers discharged through screw conveyors to a seal leg, through a pulverizer, into a product can in the packaging station. The latter was vented through a pre-skimmer and to a dust collector.

Off-gases were routed through an absorber-heat exchanger where the HF is absorbed in water to produce aqueous HF. The scrubbed off-gas stream was passed through an off-gas burner to remove hydrogen and the residual gas was discharged to the atmosphere.

Three instruments controlled the level of green salt in seal leg. The high-level instrument started the valve discharging the seal leg and the mid-level instrument stops valve discharge at point or weight. desired. Bottom level instrument was used as a safety device to shut down discharge valve in case of failure of the mid-leg control instrument. If seal leg was full, up to the screw conveyor, the screw conveyor and flow of UF_6 were stopped until seal leg was ready to receive more material

The dust-laden gases from the reaction passed from the reactor through two cyclones in tandem to remove entrained fine particulate product, two filters in series to remove any remaining dust, and a chemical trap to absorb any unreacted UF_6. The gases were cooled in a water-cooled heat exchanger, a recuperator with previously cooled off-gas (with HF removed), and two refrigeration units to condense anhydrous HF. The remaining off-gases consisting of nitrogen, excess hydrogen, and traces of HF, passed through the recuperator, a train of water scrubbers to remove final traces of HF, before being released to the atmosphere.

The process was controlled through a Distributed Control System (DCS). The operator used either of two Unit Operator Consoles to set and monitor process parameters. A graphics display operated by a Fox 300 computer, gave the operator a quick overview of the process and values of key process parameters.

UF_6 TO UF_4 Ammonia Dissociators. The ammonia dissociators were located north of Building 54A and were used to supply a 75% hydrogen/25% nitrogen mixture to the UF_6 reduction facility where the hydrogen was used to reduce UF_6 to UF_4 (green salt).

Components of the dissociators were the vaporizer, catalyst chamber, cooler, molecular sieves, and compressor. Liquid ammonia from the Tank Farm was heated and vaporized in the outer chamber of the vaporizer. Hot dissociated ammonia (D.A.) exited the catalyst chamber and an electric heater provided the heat necessary to vaporize the liquid ammonia. Gaseous ammonia (NH_3) passed from the vaporizer entered a U-shaped catalyst chamber where it is "cracked" into its basic chemical components, hydrogen (H_2) and nitrogen (N_2), in a ratio of 3:1 (D.A.). The hot D.A. was cooled in the vaporizer by exchanging heat with liquid ammonia and then a water-cooled heat exchanger. Cooled D.A. flowed through a molecular sieve to remove any "uncracked" ammonia and residual traces of moisture. Two sieves were alternately cycled, one "on line" absorbing, while the other is "off line" being regenerated. Sieves were automatically regenerated approximately every eight hours by heat and a D.A. purged to remove the accumulated ammonia and moisture.

Before the D.A. flowed to the reactor process, it was routed through a series of valves controlled by the DCS that allowed any one of the dissociators to feed any one reactor.

UF_6 to UF_4 Reduction Facility Operation. The UF_6 to UF_4 Reduction Facility contained the hoists, cranes, and scales used to receive/ship UF_6 cylinders from/to other DOE facilities.

UF_6 to UF_4 Autoclave Operation. Autoclave Area: UF_6 cylinders, 10- and 14-ton capacities were delivered to the concrete Pilot Plant Pad (74U) south of the autoclave section. The cylinders were placed in one of three low-pressure, steam-heated autoclave units located in the autoclave section of Building 54A. The autoclaves heated the UF_6 to vaporization. The vaporized UF_6 was piped into a heated surge tank, and from the tank to the reactors in the main process area.

AHF Recovery. Gases exiting the reduction reactors passed through two cyclone separators, two sintered metal filters, and an activated carbon tube-type filter for removal of UF_4 dust and unreacted UF_6. The reaction gases were then cooled to condense out hydrogen fluoride as anhydrous (AHF). The AHF refrigeration systems were located along the north and west walls, also within a steel structure. A horizontal, cylindrical steel tank located outside the east wall near the northeastern corner of the Pilot Plant Annex provided intermediate storage for the AHF, which was then pumped to the Old/Main Tank Farm for long-term storage.

HF Scrubbers. The remaining reduction reaction off-gas passed through a series of three aqueous scrubbers to remove residual hydrofluoric acid (HF). Scrubber effluent, dilute hydrofluoric acid (DHF), was collected in polyethylene tanks at the bases of the scrubbers.

Remelt Furnace. The Pilot Plant was equipped with two induction type remelt furnaces which were usable for casting production ingots or billets. These furnaces were dissimilar and in two separate locations P-1, being in the Metals (3037) Area and P-2 in the Pilot Plant Annex.

P-1 furnaces induction coil could accommodate a crucible as large as 16" OD and 28-1/2" long. The crucible support ring would permit the entrance of a 13-l/4" OD mold, having been used for molds of that diameter and 28"in length. Mold lengths may be as great as 50" with 11" OD size. P-2 furnace, whose shell was six feet in diameter and whose dimensions permit a six foot long and 23" maximum diameter mold, features flexibility, having three different size induction coils which will accommodate different sized crucibles.

P2 furnace offers cooling options using perchlorethylene or water circulated through it, while P-1 furnace was cooled by perchlor only. Each furnace had a mold coil whose power was supplied by a motor-generator set which was independent of the crucible coil power source. Each also had its own hydraulic lift pump, Alphatron, capacitor banks, and vacuum recorder. Both furnaces were served by a common vacuum system which included a mechanical pump and a booster blower. A common 200 kw motor-generator powered the P-1 or P-2 crucible coils. An oil diffusion pump was available for use with P-2 furnace if required for higher vacuum work.

A graphite crucible charged with uranium metal of a specified weight and composition was positioned by crane over the furnace body. The operator manually aligned the crucible knockout slot with the knock- out rod and lowered the crucible to seat in the induction coil. Furnace's top and bottom were closed with cover and mold tank containing graphite mold assembly. The furnace was evacuated to a specified pressure and the power applied according to time cycle Standards or temperature readings. When the metal was ready to be pored, the graphite crucible pour plug was sheared, permitting the molten metal to pour into the mold or molds. Power was turned off, furnace cooled, and vacuum broken. The cover was removed, and the mold tank with ingot released and withdrawn from under the furnace body. The crucible was lifted out for transfer to the burnout and reconditioning area. Following a cooling period the mold was stripped from the ingot which was then cropped and sampled.

As part of the P-1 and P-2 furnaces, hydraulic ram were installed. Although no drawing or document could be found that directly identified the depth of the hydraulic ram installations, these furnaces were very similar to the hydraulic rams installed in Plant 5. Using drawings showing the depth of the Plant 5 hydraulic rams installation, the P-1 installation was installed approximately to an elevation of 554 ft: the P-2 installation was installed approximately to an elevation of 553 ft.

Perchlorethylene Cooling System For Remelt Furnace. Pilot Plant remelt furnaces were equipped with a perchlorethylene cooling system so that production-scale uranium melts of enrichments greater than 1.25% ^{235}U may be remelted without the criticality hazard associated with water cooling. The principal items of equipment were the F-1 surge tank, two heat exchangers, perchlorethylene dryer, air dryer and breather reactivator, and two pumps.

Piping was provided so that both remelt furnaces and the screw for the uranium hexafluoride reactor could be cooled by the use of perchlorethylene. The Stokes (P-2) furnace could be cooled by circulating water through the jackets and coils as an alternative method of operation. Water cooling could be selected when the enrichment was low, and a particularly large charge was being melted. A pressure switch was present in the P-1 furnace lines which would disconnect electric power immediately if coolant pressure fell too low.

Perchlorethylene was pumped from the surge tank to the heat exchangers where it was water cooled. It then flowed through a dryer which contained activated alumina. Here water which may have been picked up from the air was removed. Following drying, the perchlorethylene continued under pressure to the coolant lines serving the furnaces.

A dri-breather with a reactivator was installed in the system on top of the furnace room. When in use, air entered the top opening, flowed through the dessicant bed, into the system to maintain near atmospheric pressure. To assist in maintaining near atmospheric pressure, an automatic pressure relief and vacuum breaker were installed in the system. The pressure relief valve was set to operate at pressures between 13 and 24" H_2O. The vacuum breaker was set to operate at a vacuum of 14" H H_2O pressure. Periodically the dessicant was dried to maintain its water collecting capability. The activated alumina in the perchlor dryer was also removed when it becomes saturated, and baked out to maintain its efficiency.

Dezincing Thorium-Zinc Derbies. Thorium-zinc derbies were loaded into graphite pots which were stacked inside the coils of either of two vacuum-induction furnaces. The derbies were slowly heated under vacuum to 2225 °F, and held at that temperature for a sufficiently long period to permit the zinc to vaporize from them. The furnace was cooled for 16 hours. Inert gas was introduced to the cooling drum to prevent chemical reactions, which would result from exposure to the atmosphere. After the derbies had cooled to near room temperature, they were cleaned and then sampled by sawing. Following sampling, derbies were drummed under argon until disposition was determined.

Special materials for this operation included: thorium-zinc derbies, graphite pots, 15" OD x 13" ID x 8" high, P-1 and P-2 vacuum furnaces with auxiliaries (P-1 was closed with a bottom plate rather than a mold tank), argon, power hacksaw, and cooling station.

Reduction of ThF_4 and ZnF_2 to Th-Zn Metal. Measured charges of thorium fluoride (ThF_4), zinc fluoride (ZnF_2), and calcium were thoroughly mixed in a five-cubic-foot, twin-shell blender. Following blending the material was charged into a steel pot which has been lined previously with calcium fluoride or graphite or a combination of those materials. The charge was topped with a calcium fluoride cap and the pot was sealed with a copper gasket between the flange and lid. The reduction reactions,

$$ThF_4 + 2\,Ca \rightarrow Th + 2\,CaF_2$$

and

$$ZnF_2 + Ca \rightarrow Zn + CaF_2$$

were effected by heating the pot in a Rockwell resistance-type furnace. A metallic thorium-zinc regulus and an overlying slag mass of calcium fluoride were produced. The furnace pot was cooled in an air cooling well, and when it approaches room temperature, was ready for breakout.

Great emphasis was placed on safety during this operation. Dehydrated thorium and zinc fluorides were required, and the calcium was stored in argon-filled, sealed drums. The blender was argon-filled while materials were being blended, and the heating and cooling furnace pot was filled with argon to minimize contamination of the thorium-zinc alloy with atmospheric nitrogen and oxygen.

Dehydration of Dried ThF_4 and ZnF_2. The dried filter cake was placed in dehydrator trays after drying and brought to the dehydrator. Dehydration was the next step in feed preparation for producing the thorium derby.

Dehydrator trays filled at the dryer unloading station, or filled from dried cake that had been stored in cans, were placed on the spindle in the Inconel dehydration retort and placed in Rockwell Furnace No. 1 or 2. Rockwell Furnace No. 1 was used for dehydrating ThF_4 only. No. 2 Furnace was used for both ThF_4 and ZnF_2, but the two materials were not processed in the furnace in the same load.

The furnace temperature was set at 1200 ^{0}F. During the heat up period nitrogen gas was introduced into the retort to sweep out the air. Then anhydrous HF was introduced and the N_2 source was turned off. The anhydrous HF was fed into the retort for four hours. The heat was turned off the furnace and the HF was left on for one hour. N_2 was turned on again for 15 minutes and the HF was turned off during this period. This was done to exhaust the HF from the retort and furnace. The retort was removed from the furnace to cool and N_2 was circulated in the retort until it cools to working temperature. When cool enough to unload, the loaded retort was moved to the milling-blending station where the trays were removed and the dehydrated cake was unloaded.

Molten Salt Cleaning of Derbies. Uranium derbies produces for the Oak Ridge Y-12 Plant that contained enfolded and adhering slag were placed in a fixture, heated in molten salt, and air or water cooled to remove the encrustation. The derbies and the skids, on which they were placed, were vacuumed to remove all loose material prior to their shipment to Plant 6, where the remaining uranium oxide and carbonate salt were dissolved by pickling in nitric acid.

Rockwell furnaces which had crown and muffle removed were utilized to heat the carbonate salts to a molten state. Twenty-inch diameter furnace pots were modified to hold the carbonate salts. Other equipment items used included fixtures to carry the derbies into and out of the salt, derby grab, choker chain, hoist, and vessels to hold water (in case water cooling was specified).

Thorium Derby Production. This area contained equipment used to line furnace pots with calcium fluoride; blend thorium tetrafluoride with calcium and zinc fluoride; load furnace pots; produce thorium metal derbies; and sample thorium metal derbies. Jolters, located in the northeastern corner of the building, were used to line furnace pots with calcium fluoride (CaF_2) or magnesium fluoride.

Thorium tetrafluoride was blended with calcium and zinc fluoride in an enclosed blender located near the jolters. The blended material was charged into the CaF_2-lined pots, capped with CaF_2, and enclosed with a lid. The loaded pots were then heated in one of two Rockwell resistance-type furnaces to produce a thorium zinc metal derby and CaF_2 slag.

Derby Saw/Sampling. A power hacksaw was used to saw a thin slice from each thorium zinc derby for chemical analysis. Thorium/zinc dust from the sampling was drummed and sent to Plant 1 for storage. It is believed that, before the UF_6 to UF_4 process upgrade, a scale located near the power hacksaw was removed and that the remaining recession in the floor was filled with concrete.

PLT Furnace. The pressurized low-temperature (PLT) furnace was used to test a continuous process to produce uranium metal.

Building 54B – Pilot Plant Shelter

Facility Description
Building 54B (Pilot Plant Shelter) was a single-level building south of 1st Street in the northeastern corner of the Pilot Plant Complex (Refer to Figure 1-1). The shelter was a steel framed structure that is rectangular in shape with dimensions of 50 ft. x 74 ft. x 10 ft. in height Building 54B stored Pilot Plant materials and processed hydrocarbon materials containing green salt (UF_4).

Process Description
Building 54B originally provided temporary storage of UF_4, which was produced by the reduction process housed in the Six to Four Reduction Facility (Building 54A) and stored other Pilot Plant materials. The shelter also previously housed a heating and centrifuging process designed to remove UF_4 from paraffin. Building 54B was most recently used for storage of inventory materials until their removal under a preparatory action.

Building 54C – Pilot Plant Dissociator Shelter

Facility Description
Building 54C (Pilot Plant Dissociator Shelter) is a single-story structure, measuring 20 ft. x 48 ft. x 19 ft. It is located on 1st Street at the northwest corner of the Six to Four Reduction Facility (Building 54A).

Process Description
Building 54C contained three ammonia dissociators that were used to catalytically dissociate, or "crack", anhydrous ammonia to hydrogen and nitrogen for use in the Pilot Plant Six to Four Reduction Facility. Liquid anhydrous ammonia was first heated to vaporization. The vaporized ammonia was passed over an electrically heated nickel catalyst bed at a controlled temperature, where it was "cracked" to hydrogen and nitrogen. The hot dissociated ammonia (e.g., hydrogen and nitrogen gas) was then passed through a heat exchanger to heat incoming liquid ammonia entering the ammonia dissociators. The dissociated ammonia was passed through a water-cooled heat exchanger, where residual ammonia and moisture were absorbed onto one of the two molecular sieves and then fed to one of two reaction vessels located in the UF_6 to UF_4 reduction process area.

Building 68 – Pilot Plant Warehouse

Facility Description
Building 68 (Pilot Plant Warehouse) is located south of the Pilot Plant complex. It is a single-level, rectangular building 50 ft. x 100 ft. x 14 ft. high, with an attached enclosure, 7.5 ft. x 17.5 ft., at its northwestern corner. Building 68 consists of reinforced, poured concrete footings and floor, a structural steel frame, and transite walls and roof panels. The walls are dual-panel construction with an insulation layer between the inner and outer panels. The building interior consists of an open bay structure, except for a small radiographic control booth in the northwestern corner. An area on the north side of the warehouse is fenced; it is roughly the size of the concrete apron, 30 ft. x 120 ft. The attached structure is within the barbed-wire-topped fenced area.

Process Description
Building 68 stored thorium compounds, Pilot Plant equipment, and RCRA-mixed waste; the attached structure housed a cobalt-60 radiographic source. The building was flanked on the east and south sides with a soil berm and concrete walls, respectively, to shield personnel housed in nearby trailers from radiation. No trenches or sumps were in the building or within the concrete-based fenced area.

Pad 74A - Plant 2 East Pad

Facility Description
Pad 74A (Plant 2 East Pad) is a reinforced poured concrete pad, located due east of the Ore Refinery Plant (2A). It's shape is rectangular, containing approximately 5,000 ft.^{2} of storage space. It is constructed with berms, slopes, and grated trenches to contain any spilled liquid material and collect any storm-water runoff.

Process Description
Pad 74A was historically used as a staging area for UO_3 (black oxide) product produced in the denigration process of the Ore Refinery Plant. The UO_3 was stored in drums if the enrichment of the material exceeded 1.0% 235U; otherwise, it was stored in drums or hoppers. The UO_3 was sent from Pad 74A to long-term storage on the Plant 1 Pad (74T), to the Green Salt Plant (4A) for conversion into UF_4 (green salt) or for off-site shipping for conversion to UF6. Pad 74A was a drum storage area. The storm-water runoff collected in the grated trench was pumped to the Refinery Sump (3H) for eventual wastewater treatment.

Pad 74B - Plant 2 West Pad

Facility Description
Pad 74B (Plant 2 West Pad) is a reinforced poured concrete pad located northwest of the Ore Refinery Plant (2A). This rectangular pad contains approximately 10,000 ft.^{2} of storage space. The pad is constructed with berms, slopes, and grated trenches to contain any spilled liquid material and collect any storm-water runoff.

Process Description
Pad 74B was historically used as the storage pad for drums that contained various types of milled uranium ores. The drums were loaded onto either the Hot Side Ore Conveyor (2G) or the Cold Side Ore Conveyor (2F) and dumped into bucket elevators that carried the powdered ore up to the top floor of the Ore Refinery Plant for digestion in nitric acid. The empty drums were then returned to Pad 74B to await removal for cleaning and reconditioning. Pad 74B was later a Sealand storage area. The storm-water runoff collected in the grated trench was pumped to the Refinery Sump (3H) for eventual wastewater treatment.

Pad 74C - Plant 8 East Pad

Facility Description
Pad 74C (Plant 8 East Pad) is a reinforced concrete pad located east of the Recovery Plant (8A). This irregularly shaped pad has about 10,000 ft.^{2} of storage space. The pad is bordered on the east by a railroad track that ended at the south end of the pad; also, the Plant 8 Railroad Filter Building (8D) was immediately across the track from the east pad. The loading dock for the Recovery Plant at the northern end of Pad 74C consists of reinforced concrete raised 3 to 4 ft. above the pad and was considered part of the pad. One of the process areas of the Recovery Plant, the thorium storage silo, formerly was located on Pad 74C next to the east wall of 8A. 24 wooden piles with steel shoes were driven approximately to elevation 554'-6" as part of the Thorium Storage Silo foundation. Pad 74C has grated concrete trenches for runoff-water collection.

Process Description
Three distinct processes have occurred on Pad 74C: storage of materials for processing, drumming of Weldon Spring 'airport scrap," and storage of pyrophoric uranium for processing. Each activity used roughly the same areas of the pad.

Storage. The Plant 8 East Pad historically stored Recovery Plant products and large lots of drummed uranium and thorium residues that were to be processed in the Recovery Plant for recycling to the Ore Refinery Plant (2A). Both enriched and depleted uranium materials (^{235}U content up to 1.25%) were stored. Later in the history of usage, drummed and other containerized uranium residues were stored for shipment off-site. Additionally, magnesium fluoride (airport scrap), oil and uranium in water mixtures, and pyrophoric uranium materials (uranium chips, turnings, and saw dust) have been stored in drums and portable hoppers on Pad 74C. Both solid materials and materials containing free liquid were stored on the pad.

Airport Scrap. The airport scrap operation involved receipt of bulk MgF_2 from Weldon Spring in railroad gondola cars that were off-loaded to drums on Pad 74C. The gondola cars and other railroad cars were washed over the railroad filter building pit, decanted and filtered through sand filters in the Plant 8 Railroad Filter Building, and then pumped into the Recovery Plant for further treatment.

Pyrophoric Drum Sprinkler. Railroad Filter Pit water was circulated, by using the Plant 8 Railroad Filter Building filters and pumps, to a sprinkler system over the pyrophoric material drum storage area on the pad for use in cooling these drums. Drums of uranium metal fines produced in the Metals Fabrication Plant (6A) and the Special Products Plant (9A) machining operations were temporarily stored on the pad to await furnacing in the Recovery Plant (8A). The fines were stored immersed in water.

Pad 74D - Plant 8 West Pad

Facility Description

Pad 74D (Plant 8 West Pad) is a reinforced concrete pad located west of the Recovery Plant (8A). This irregularly shaped pad has more than 10,000 ft.^{2} of storage space; Pad 74D surrounded the Plant 8 Maintenance Building (8B) on three sides. Also, the Old Drum Washer (8F) unit was located on Pad 74D. The pad has two grated trenches, one on the west and north edges and the other on the east edge.

Process Description

Pad 74D historically stored both full and empty drums in support of Recovery Plant operations and for waste storage before shipment off-site for disposal. Enriched and depleted recovery materials and hazardous wastes were stored here, both in solid form and materials containing free liquid. Empty and refurbished drums were also stored on the pad in conjunction with the Old Drum Washer. The grated trenches of the pad were used to transfer wash water from the Old Drum Washer and pad runoff and spillage to the Recovery Plant for treatment.

74Q - Plant 8 Old Metal Dissolver Pad

Facility Description

Pad 74Q (Plant 8 Old Metal Dissolver Pad) is a reinforced concrete pad overlain by acid brick; it is located west of the Recovery Plant (8A) and between the Plant 8 Maintenance Building (8B) and the Biodenitrification (BDN) Effluent Treatment Facility (18H). This rectangular pad has dimensions of approximately 30 x 50 ft. or 1,500 ft.^{2}. The pad contained a process used as part of the Recovery Plant scrap recovery processes.

Process Description

Pad 74Q was used from 1955 to 1959 for the dissolution of scrap uranium metal. Two 1,500 gallon capacity open-top wooden vessels were located on Pad 74Q. A brick-lined concrete tank 6 ft. x 6 ft. x 3 ft. high on the east part of the pad was filled with water and used as a quench tank in the event of a fire in the materials.

Metal Dissolver. Alloyed feeds were dissolved in HCl and HF in prescribed concentrations to produce uranium chloride. The process also included a transfer pump, HCl and HF in prescribed concentrations to produce uranium chloride.

Dezircing Reject Coextrusions. Feed material was received in drums or boxes and were charged into wooden or stainless steel baskets in amounts not to exceed 2000 gross pounds. Dissolver tank was prepared by adding sufficient water to cover material. The required addition of HF was made and dissolver operations continued until bubbling action ceased, and observation indicated all zirconium had been removed. Basket were raised and contents rinsed and returned to containers in which received. Material with undissolved zirconium were recycled. Good product was used as remelt feed. The tanks were emptied and recharged after 5 or 6 tons of material had been processed.

Pad 74R - Plant 8 North Pad

Facility Description
Pad 74R (Plant 8 North Pad) is a reinforced concrete pad located north of the Recovery Plant (8A). It is rectangular and has a surface area of about 5,000 ft.^{2} Pad 74R stored Recovery Plant feed materials and product. Located on the pad were tank and pumping units that are part of the Recovery Plant water treatment/filtration process area; three vertical, cylindrical steel filtrate storage tanks and the filtrate pumps and pump house. The box furnace, a process area for the Recovery Plant, and fan and vent stack for one of the other processes inside the Recovery Plant were located next to the wall of the building on Pad 74R. The pad has a grated trench and sump/pump system along its northern perimeter but no containment curb or berm at the pad edge. On the east edge, the pad is contained by the wall for the bulk chemicals area.

Process Description
The Plant 8 North Pad historically stored Recovery Plant feed materials (drummed residues and scrap metal) and black oxide U_3O_8) furnace products before transfer to the Ore Refinery Plant (2A). Both enriched (U-235 enrichment levels up to 1.25%) and depleted uranium materials were stored there. The filtrate storage tanks were tanks 21A, 22A, and 28A, which receive filtrate from the Oliver filters inside the Recovery Plant. They were vertical, cylindrical steel tanks on grade and located just north of the filtrate pump house. The trench and sump/pump system on the pad contained potential spills or leakage of the filtrate and collects storm-water runoff from the pad for treatment in the Recovery Plant water treatment/filtration system.

Pad 74U – Pilot Plant Pad

Facility Description
Pad 74U (Pilot Plant Pad) is a reinforced concrete pad, located immediately south of the Pilot Plant Six to Four Reduction Facility #1 (Building 54A) (Refer to Figure 1-1). It is rectangular and is comprised of approximately 5,000 ft.^{2} of storage space. 74U is accessed by concrete driveways from the east and west. A hoist system moves equipment and containers (e.g., cylinders of UF_6) between the autoclave room of Building 54A and 74U. The concrete apron of the Pilot Plant Warehouse (Building 68) borders 74U on the south.

Process Description
During production years, Component 74U provided temporary storage of drummed uranium and thorium compounds, equipment, and operating supplies. Materials destined for use in the Six to Four Reduction Facility were unloaded with the exterior bridge crane and fork lifts.

Pad 74V - Laboratory Pad

Facility Description
Pad 74V (Laboratory Pad) is an irregularly shaped, 1,500 ft.^{2}, reinforced concrete storage and loading area located on the west side of the Laboratory (15A). Pad 74V forms a low area next to the Laboratory loading docks, which is at first floor level; the pad is not curbed or bermed and receives runoff from paved and unpaved areas, including the paved north-south access road that runs between the Laboratory and the Pilot Plant complex.

Process Description
Pad 74V has typically been used for storage and loading of drummed laboratory wastes and storage, loading, and unloading of laboratory materials. In the past several years, this area had served as a storage and staging area for a waste/contaminant removal action for the former basement waste storage area in the Laboratory and as a storage and staging area during construction/renovation activities in the laboratory basement and north/west corridor.

Except for the raised dock areas, the storage capacity of Pad 74V for drummed wastes was quite limited.

Pad 74W – Incinerator Building 39A Pad

Facility Description
Pad 74W (Building 39A Pad) is a reinforced concrete pad located directly east of the Incinerator Building (39A) and north of the Hot Raffinate Building (3E). It is rectangular, having approximately 5,400 $ft.^2$ of storage space. Pad 74W stored drums of waste oil waiting to be incinerated in Building 39A. A spray calciner was also situated on Pad 74W for processing raffinate slurry from the Hot Raffinate Building (3E).

Process Description
Pad 74W was historically used for two purposes. First, the pad contained a spray calciner in support of operations in the Hot Raffinate Building. Following the shutdown and removal of the calciner, the pad was primarily used for drum storage in support of Incinerator Building processes. Because these two processes successively occupied the same pad, the entire pad is treated as one process area.

Spray Calciner. A spray calciner located on Pad 74W dehydrated raffinate slurry with a very low radium content that was pumped from the Hot Raffinate Building. Lime was added to adjust the pH and to aid in drying Out the raffinate slurry. The solids were then pneumatically conveyed to the Metal Oxide Storage Tank (Silo 3) in the FEMP waste pit area.

Contaminated Oil Storage. Drums of waste oils, known to be contaminated with 1,1,1 trichioroethane and lead, were stored intermittently on the pad before being incinerated in the Liquid Waste Incinerator in the Incinerator Building. In 1986, on-site incineration ceased.

AREA 5 FACILITY HISTORY INFORMATION

Facilities located in Area 5 excavation area (see Figure F-3) include the Service Building (11), Administration Building (14A), Building 14 EOC Generator Set (14B), Electrical Substation (16B), Electrical Panels and Transformers (16C), Trailer Substation #1 (16F), Trailer Substation #2 (16G), Storm Sewer Lift Station (22B), Security Building (28A), Industrial Relations Building (28B), Vehicle Repair Garage (31A), Old Truck Scale (31B), Vehicle Repair Garage Annex (46), Health and Safety Building (53A), In-Vivo Building (53B), Southeast Parking Lot (89A), and Main Parking Lot (89B).

Building 11 – Service Building

Facility Description

Building 11 (Service Building) was a two-story, rectangular structure that was approximately 230 ft. x 322 ft. x 30 ft. high. The building was located just south of 1st Street in the block that runs east of "C" Street, and west of "B" Street.

Process Description

Building 11 houses four process areas: the FEMP cafeteria and kitchen, locker rooms, maintenance department offices and laundry facilities. Only the laundry facility is considered a wet process.

Laundry. The laundry area was refurbished and enlarged in 1987, this process area provided cleaning services for on-site process clothing using washers, dryers and dry cleaning equipment. Historically, the laundry also serviced articles from off-site operations. Before entry into the process area, clothes were monitored to ensure that all articles are radiologically clean.

Maintenance. The maintenance shop, located near the southwestern corner of the first floor, handled malfunctions associated with laundry facilities and provides storage for small items used for any maintenance or repair work on the administration side of the FEMP. Service fluids were stored in one area of the maintenance office. Although this storage area had a concrete floor, it did not have a dike or any other form of containment. Very little work on equipment was done within the room itself; work was performed radiologically clean.

Locker Room (Changing Room). Changing rooms were located on most of the first floor. This area provided lockers and shower facilities. Numerous drainage pipes carried wastewater to the laundry sump. Like the laundry area, these facilities were refurbished and enlarged in 1987.

Cafeteria/Kitchen. This area was used to prepare and serve food to the workforce it also provided a lunchroom area with vending machines for FEMP employees and subcontractors.

Building 14A – Administration Building

Facility Description

Building 14A (Administration Building) was an irregularly shaped two-level structure measuring 143 x 240 x 24 ft. high. Building 14A was located south of the Service Building (Building 11) and the 10-Plex Trailer Complex (T-23). Building 14A was constructed of cinder block walls supported on reinforced concrete footers with poured concrete floors. The building comprised a central hallway with east and west wings and a partial basement was located under the west wing.

Process Description
Building 14A housed the main offices for site management, the main mailroom, central reproduction, central computing and the Emergency Operations Center (EOC). The building was also equipped with several restrooms/locker rooms.

14B – Building 14 EOC Generator Set

Facility Description
14B (Building 14 EOC Generator) was a diesel powered electrical generator located near the northwest corner of the Administration Building (Building 14A). 14B contained a diesel-powered engine, a diesel fuel tank, an electrical generator and a cement built dike under and around the diesel fuel tank.

Process Description
14B was installed in 1986 to provide electrical power to the site Emergency Operations Center in the event of a primary power loss.

Building 16B - Electrical Substation

Facility Description
Building 16B (Electrical Substation) was a cinder block building measuring approximately 20 ft. x 40 ft. The component contained electrical meters, panels, and main circuit breakers. The building was located north of the Security Building (28A).

Process Description
Building 16B was a secondary unit substation that receives 13.2 kV and transforms it down to 480 V to power the Health and Safety Building (53A), Security Building, Human Resources Building (28B), and east trailers.

16C - Electrical Panels and Transformer

Facility Description
16C (Electrical Panels and Transformer) was a wooden, two-sided structure on an approximately 4 ft. x 20 ft. concrete pad. It sheltered a transformer and electrical meter. 16C was located south of the Heavy Equipment Building (46).

Process Description
16C was used as a secondary unit substation that received 480 V and transformed it down to provide electrical power to the east trailers.

16F - Trailer Substation 1

Facility Description
16F (Trailer Substation 1) was a concrete pad, 4 ft. x 20 ft., with a small fiberglass enclosure for a transformer, main circuit breaker, fuse disconnect, and electrical meters. It was located north of Trailer 11.

Process Description
16F was a power distribution point that receives 480 V from the Electrical Substation (16B) and transforms it down to power the local office trailers.

16G - Trailer Substation 2

Facility Description
16G (Trailer Substation 2) was a 4 ft. x 20 ft. concrete pad with a small fiberglass enclosure for a transformer, main circuit breaker, fuse disconnect, and electrical meters. It was located north of Trailer 14.

Process Description
16G was a power distribution point that receives 480 V from the Electrical Substation (16B) and transforms it down to power the local office trailers.

22B - Storm Sewer Lift Station

Facility Description
22B (Storm Sewer Lift Station) was a single story structure located west of the Services Building (11). 22B had a cement block wall and concrete floor construction with the approximate dimensions of 10 ft. x 16 ft. An access ladder is located in the southwest comer of the concrete floor. The ladder leads down to the pump room which is approximately 20 feet below grade.

Process Description
The Storm Sewer Lift Station was utilized to pump accumulated site stormwater off-site to the Great Miami River. The station was operational and housed two electrical pumps, electrical equipment, control panels, photometer, flow rate meter, NPDES composite sampler, and other accompanying equipment. Stormwater monitoring equipment was also located in the building.

Building 28A - Security Building

Facility Description
Building 28A (Security Building) was an irregularly shaped, single-level structure measuring 109 ft. x 82 ft. x 10 ft. high. It was located south of the Health and Safety Building (53A). Building 28A includes a turnstile area that separates Building 28A from the Human Resources Building (28B).

Process Description
Building 28A was the headquarters for on-site security. The building was equipped with several security offices, a communications center, and a classified document vault. Security turnstiles located between Building 28A and the Human Resources Building was the main access to the site and was staffed by security personnel. A site truck entrance is located immediately east of Building 28A, and this site access was also controlled by security personnel.

Building 28B – Industrial Relations Building

Facility Description
Building 28B (Industrial Relations Building) was a single-story building located adjacent and to the west of the Security Building (28A). The building was irregularly shaped, with approximate dimensions of 80 ft. x 100 ft. x 10 ft. high.

Process Description
Building 28B provided office space for site personnel.

Building 31A – Vehicle Repair Garage

Facility Description
Building 31A (Engine House Garage) was a single-story building located in the southeastern corner of the intersection of 1st Street and "D" Street. It was an irregular shaped building, measuring approximately 62 ft. x 123 ft. x 17 ft. high. The building was constructed of cinder blocks with a concrete roof and floor.

Process Description
Building 31A was operated as a garage for performing general maintenance on the on-site vehicles. The garage also housed the facility's ambulance and fire engine. The garage was considered a wet process area because of the frequent use of solvents and oils.

31B - Old Truck Scale

Facility Description
31B (Old Truck Scale) was located directly adjacent to the west side of the Engine House/Garage (31A). The Old Truck Scale was a concrete platform, approximately 16 ft. x 60 ft.

Process Description
31B was originally used to weigh incoming and outbound multi-axle vehicles. The scale was moved to the new weigh station near the Receiving/Incoming Materials Inspection Building (82A). A concrete base remains where the scale was located.

Building 46 – Vehicle Repair Garage Annex

Facility Description
Building 46 (Heavy Equipment Building) was a single-story building, measuring approximately 220 ft. x 59 ft., located just east of the Engine House Garage. It was a pre-engineered facility consisting of a structural steel frame on a reinforced, poured concrete base, sloped steel roof panels, steel siding panels and glass windows.

Process Description
Building 46 stored forklifts, trucks and other heavy equipment associated with site operations. The building was considered a single process area.

Building 53A – Health and Safety Building

Facility Description
Building 53A (Health and Safety Building) was a rectangular, multilevel building measuring approximately 89 ft. x 221 ft. x 22 ft. high, with two floors and a partial basement under the west section.

Process Description
Building 53A contained three process areas: offices, medical services and security communications headquarters. Offices and conference areas existed on both main floors. The medical services area of the building housed equipment for emergency medical attention, routine examination and testing, X-ray testing, medical laboratory and offices. Site security used much of the basement as a communications headquarters. An acid dilution basin was constructed north of Building 53A. The acid dilution basin was filled with crushed limestone or other material to neutralize waste water from the Building 53A medical laboratory before being discharged into the site's sanitary sewer system.

Building 53B – In-Vivo Building

Facility Description
Building 53B was located on the south side of the Health and Safety Building (53A) and consisted of a cement block wall with concrete floor construction and approximate dimensions of 36 ft. x 72 ft. x 15 ft in height.

Process Description
Building 53B was a radiologically shielded structure housing highly sensitive radiation detection equipment. The facility was utilized to obtain internal radiation measurements of on-site employees. The measurements were generally for uranium content of the lungs. An inspection indicated no visible chemical contamination. A tank of liquid nitrogen was located directly west of the building.

89A – Southeast Parking Lot and 89B – Main Parking Lot

Facility Description
The main parking lot area consists of two asphalt lots (Main and Southeast Parking Lots). The Southeast Parking Lot is approximately 425 ft. x 500 ft. The Main Parking Lot is approximately 500 ft. x 700 ft. The Main and Southeast Parking Lots are located on the south and southeast side, respectively, of the site process area.

Process Descriptions
These Parking Lots was utilized to provide parking for FEMP employees and visitor vehicles. The Main Parking Lot was expanded westward and capped with a new layer of asphalt in 1986. The anticipated contaminants are motor oils, ethylene glycol, and gasoline.

MDC FACILITY HISTORY INFORMATION

Facilities located in the MDC excavation area (see Figures F-1 and F-3)include Main Tank Farm (19A), Tank Farm control House (19C), Old North Tank Farm (19D), Tank Farm Slitter Building (19E), and Pump Station and Power Center (20A).

19A Main Tank Farm

Facility Description
19A (Main Tank Farm) was an open area with the dimensions of 140 ft. x 190 ft. Located within component 19A were four horizontal storage tanks on concrete supports and two vertical tanks situated on concrete pads. The structures were approximately 20 feet high and were within a secondary containment system comprised of concrete diking approximately four feet in height.

Process Description
The Main Tank Farm was installed in 1986 to replace the Old North Tank Farm (19D) for receipt and storage of bulk liquid chemicals. The tanks were never utilized for storage purposes subsequent to installation. The secondary containment system was converted to a sediment basin in support of the area 3A/4A Soil Excavation Project.

19C Tank Farm Control House

Facility Description
Building 19C (Tank Farm Control house) was a single story structure located along 2nd Street and to the southeast of the Main Tank Farm (19A). Building 19C was a steel framed building with metal siding and roofing, built on a reinforced concrete pad. The approximate dimensions of Building 19C were 25 ft. x 43 ft. x 10 ft. in height.

Process Description
Building 19C was originally designed to be the control center for the Main Tank Farm, but was never utilized in that capacity. The Control house has been utilized for office space. Building 19C contained electrical tank control boards, as well as general office equipment.

19D Old North Tank Farm

Facility Description
19D (Old North Tank Farm), measuring approximate 130 ft. x 130 ft. was located north of the Main Tank Farm (19A) near the northeastern corner of 2nd Street and "B" Street. 19D was the reaming north portion of the original 1950s Bulk Tank Farm. 190 contained eight aboveground horizontal tanks one aboveground vertical tank, a sump, and a sump drainage ditch.

Process Description
19D was divided into two process area. The tank farm provided the bulk storage of liquid chemicals for use throughout the FEMP site and dilute hydrofluoric acid recovered during operations of the Green Salt Plant (4A). Also, the tank farm had a sump and drainage ditch that collected storm-water runoff for eventual treatment.

Bulk Storage. 19D consisted of nine steel tanks that stored potassium fluoride, anhydrous hydrofluoric acid, dilute hydrofluoric acid, and anhydrous ammonia. Tank 17 had a capacity of 98,000 gal. And was constructed of steel and was rubber-lined. It was used for temporary storage of liquids collected and neutralized in the sump before being pumped to the General Sump (18B). Tank 18 had a capacity of 31,500 gallon and was historically used to store hydrofluoric acid.

Sump: The sump and drainage ditch were constructed in the 1950s as part of the old tank far. The sump was used to collect storm-water runoff, tank car rinse water, and any spills from the Bulk Tank Farm. As originally constructed, all but one of the sloped walls of the sump was formed from impervious clay lined with grave, and the impervious clay layer was laid directly over a hollowed-out surface impoundment. Much of the dump drainage ditch has either been removed or covered over as a result of the construction of the Main Tank Farm in 1986. Storm water collected in the sump was neutralized with lime and then pumped into Tank 17, from which it was transferred to the General Sump. The sump and drainage ditch made up an HWMU because the unity had been used to neutralized acid runoff that included listed hazardous wastes.

Building19E Tank Farm Slitter Building

Facility Description
Building 19E was a steel-framed building constructed on a reinforced concrete pad. The building measured 15 ft. x 15 ft. x 20 ft. high. It was located immediately north of the Tank Farm Control House (19C).

Process Description
Building 19E was constructed in the late 1980's to slit open bags of hydrated lime. The building was used briefly for the closure of HWMU No38 (HF Tank Car).

Building 20A Pump Station and Power Center

Facility Description
Building 20A (Pump Station and Power Center) was a single story structure located directly to the west of the boiler plant cooling towers (20C). building 20A was a steel framed building with metal roofing and transite siding panels on a reinforced concrete base. The approximate dimensions of the structure were 17 ft. x 83 ft. x 12 ft. in height.

Process Description
Building 20A housed the primary pumps for the site sanitary system. Sanitary wastes were treated with a chlorinator at this facility. The southern third of the building interior housed high voltage control equipment.

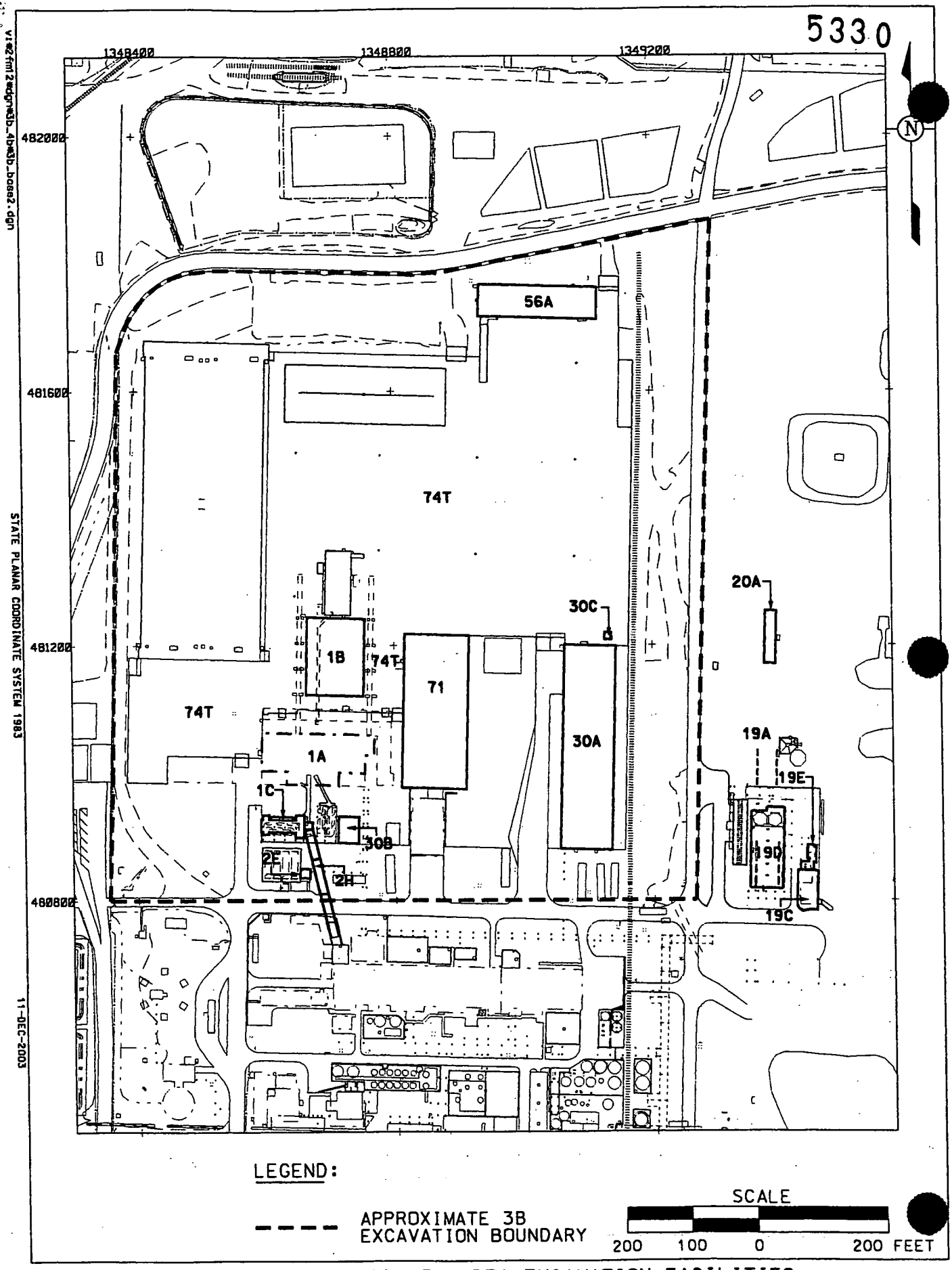
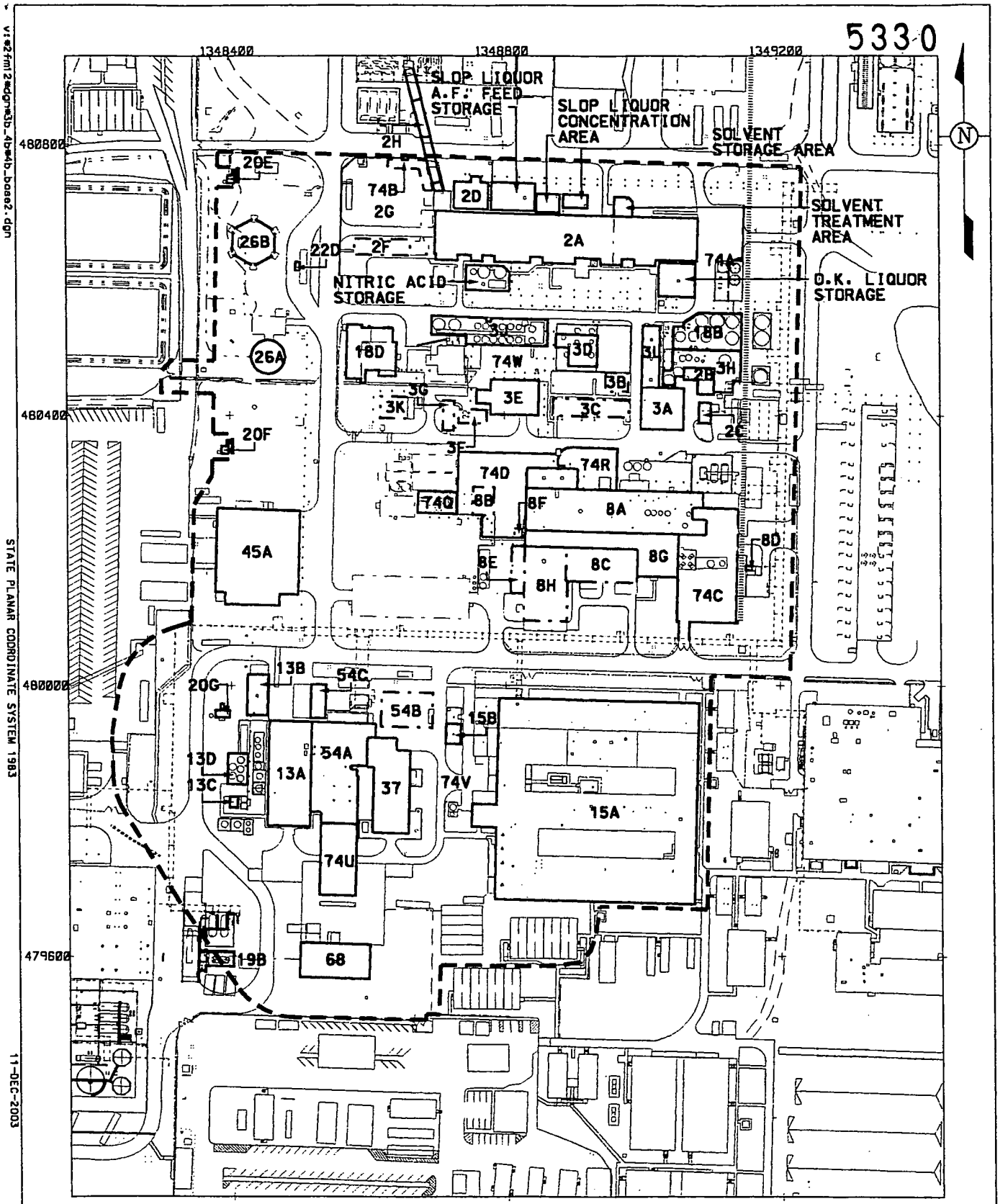


FIGURE F-1. AREA 3B AREA EXCAVATION FACILITIES



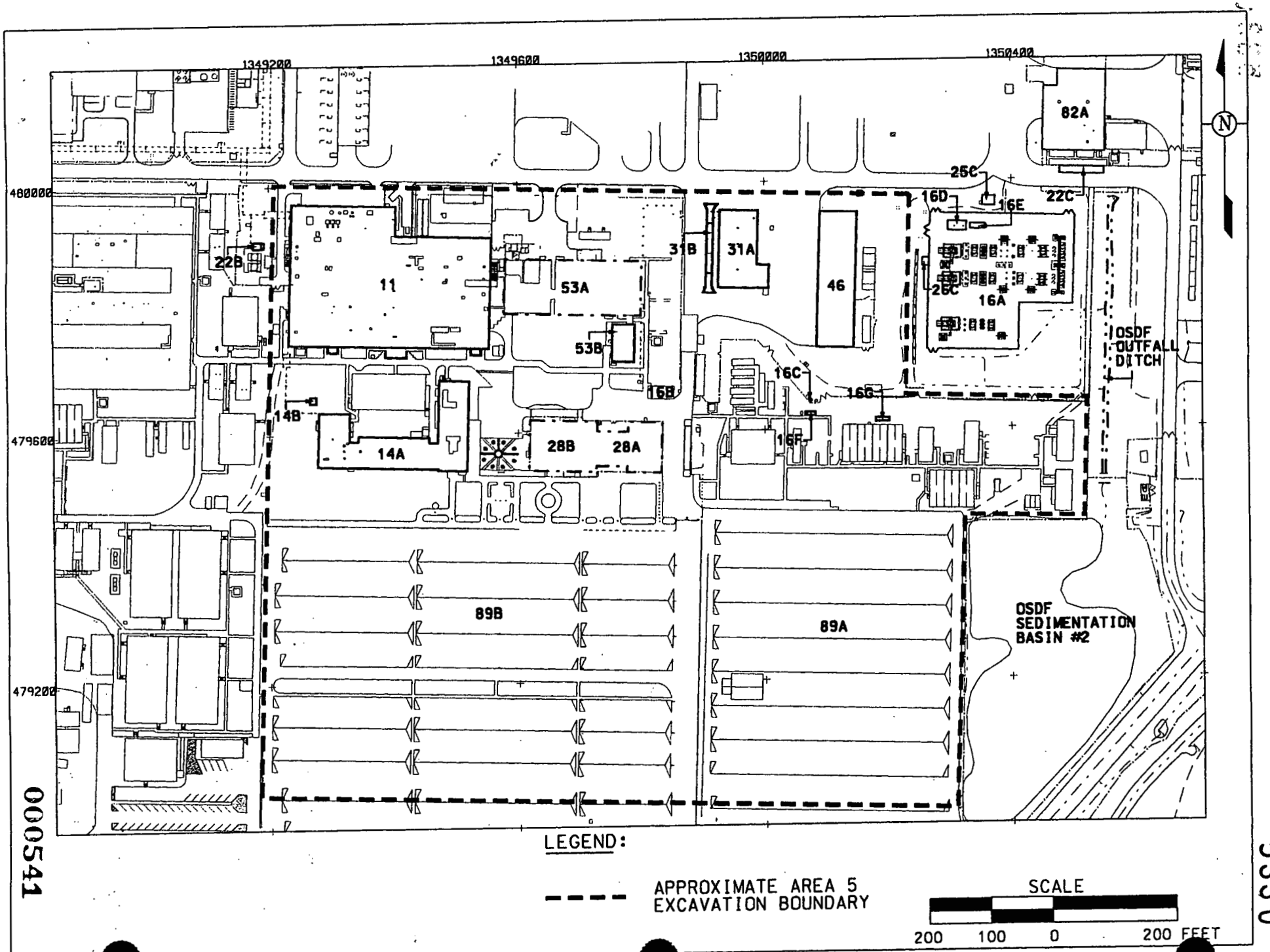
LEGEND:

- - - - APPROXIMATE 4B EXCAVATION BOUNDARY

SCALE

200 100 0 200 FEET

FIGURE F-2. AREA 4B EXCAVATION AREA FACILITIES



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5330

v1#2fm12#dgn#3[redacted]5_base2.dgn
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FIGURE F-3. AREA 5 EXCAVATION AREA FACI[redacted]IES

Appendix G

APPENDIX G

AREAS 3B AND 4B GEOLOGY

APPENDIX G
AREAS 3B AND 4B GEOLOGY

G.1 SUBSURFACE CONDITIONS

Subsurface material encountered in the FPA during the advancement of 10 borings as part of PO-177 is grouped into five categories. Fill is the only material that is not natural, inasmuch as it has been mechanically moved and placed. The remaining four categories of material consist of natural in-place deposits. Although the categorized materials are relatively common at various locations throughout the study area, it is typical to find some combination of them at any particular location, and not necessarily a complete section containing each material at all specific drilled locations. Section G.2 presents Generalized Material Type Descriptions.

This in-place sediments as defined in this report have been previously described in the OU5 RI (DOE 1995) as Glacial Till, Lacustrine Deposits and Loess. These three units comprise what is termed the Glacial Overburden. In this section, because of geotechnical, engineering and hydrologic requirements, it is necessary to further delineate the OU5 RI lithologies. This categorization is based mainly on stratigraphic superposition and probably Pleistocene depositional modes for the area of the FCP as defined in the OU5 RI.

The in-place sediment categories (generalized strata) are:

1) Brown Clay

   Equivalent to the brown-colored Till and Loess as discussed in the OU5 RI. These deposits overlay the Lacustrine Deposits as defined in the OU5 RI

2) Muddy Stream Deposits

   Equivalent to lenses and channels of coarser-grained sediment that lie within the Till as described in the OU5 RI. In this section, the Muddy Stream Deposits have been defined on the basis of subsurface mapping of the silt-, sand- and gravel-sized sediments that are not part of the Lacustrine Deposits

3) Lacustrine Deposits

   Equivalent to the Lacustrine Deposits of the OU5 RI

4) Gray Till

   Equivalent to the gray-colored Till of the OU5 RI.

The definition of the above lithologic units is based on the interpreted depositional paleo-environment as described in the OU5 RI. The RI states: "The depositional environment within the basin is that of a series of deltas formed by muddy streams flowing into the lake that filled the basin behind the dam formed by the terminal moraine." A more detailed discussion of these units is provided in Section G.2.

It should be noted that the lithologic units (Glacial Till, Lacustrine Deposits and Loess) discussed in the OU5 RI are not annotated on the cross-sections that accompanied the RI report. On those cross-sections, the defining criteria for the sediment are based on lithologic types only. Those lithologies include bedrock, clay, silt, sand, gravel, sand and gravel and undifferentiated glacial outwash.

G.1.1 Conceptual Cross-Section

Figure G-1 is a Conceptual Cross-Section that includes all the categories of material and shows their generalized stratigraphic relationships. The Conceptual Cross-Section trends in a northeast/southwest direction through the middle of the FPA and is a view looking toward the northwest. Additional cross-sections based on actual boring log analyses are presented in Figures G-2, G-3, and G-4. Section G.2 in this report presents an interpretation and assessment of the information displayed on the cross-sections and the map (see Figure G-5). Evaluation discussions are organized by quadrant, considering the northeast quadrant first, next the southeast quadrant followed by the southwest quadrant, and finally the northwest quandrant.

In the Conceptual Cross-Section, laterally-continuous sedimentary sequences are depicted because of geotechnical, hydrological and engineering analysis and modeling necessary for the PO-177 FPA excavation report. Though this Cross-Section appears to differ with the originally OU5 RI, conceptual cross-sections, that is only due to the analysis approach being used. The Conceptual Cross-Section is based on the profile in Cross-Section E-E' (Figure G-3) since this section takes into consideration all of the depositional environments believed to have occurred during the Pleistocene glaciation. It would not be feasible to model hydrologic channels within the subsurface based on a series of generally discontinuous coarse-grained lenses and channels as depicted in the OU5 RI, consequently the Parsons' Conceptual Cross-Section should be considered as a conservation approach to model the conditions beneath the FPA and as such, laterally continuous lithologic units must be maintained in the Conceptual Cross-Section.

G.1.2 Extent of Coarse-Grained Deposits

Figure G-5 is a map showing the general location and trends of the various interpreted deposits below or near to the brown/gray interface in the glacial overburden. Unit boundaries are based chiefly on trends in silt-, sand- and gravel-sized sediment within the glacial till clay "matrix." An overlay of the coarse-grained bodies map, as modeled by Flour Fernald, shows that Parsons' map is an extension of the Fluor Fernald model. The OU5 RI stated "Due to the variety of possible depositional environments the sand, silt and gravel units can rarely be correlated over distances greater than a few hundred feet in cross sections." Since Parsons has had access to a number of borings that were not available at the time of the OU5 RI, as well as pre-RI/FS borings (not presented in the OU5 RI) for its subsurface interpretation, it has led to a further refining of the RI data, especially the delineation of probable water-bearing silt and coarse-grained sediment trends. The boundaries of these sediment trends are constrained in part by borings that encountered clay-only materials as annotated on the map of Figure G-5. The Parsons' map also includes coarse-grained sediment (sands and gravels), which were not mapped by the Fluor Fernald model.

Figure G-5 depicts the boundaries of ancient "muddy" streams, which fed sediment into the lake created by glacial meltwaters during the glacial retreat. As noted on the map, paleo-stream channel trends (Pleistocene Age) are uncertain and approximated in some areas because of the lack of adequate subsurface control (borings). Through the trends represented by the silt-, sand-, and gravel-sized sediments strongly corroborate the depositional model as defined in the OU5 RI, they are still interpretive to an extent because of occasional difficulties in correlating trends of coarse sediment within the glacial overburden, the often rapid transition of sediment types within the glacial overburden and the lack of borehole control in some areas of the FPA.

G.2 SUBSURFACE CONDITIONS EVALUATION

Discussion of the subsurface conditions evaluation is structured in the following sections beginning with the general characteristics of the five categories of material, and continuing with a more specific discussion of each of the four quadrants shown on Figure G-6. Discussions of the quadrants begin in the northeast and continue to address each quadrant in turn in a clockwise direction with the southeast quadrant next, followed by the southwest, and finally the northwest quadrant. Figures G-7 and G-8 show boring and section line locations in Areas 3B and 4B, respectively. Figures G-2, G-3, and G-4 show geologic cross-sections for the FPA.

G.2.1 General Characteristics of Subsurface Materials

For discussion and evaluation, the soil materials at the FEMP site can be generalized into the following general categories described below. Grain-size curves for typical sediments can be found in Attachment G-1.

Fill

Fill typically consists of mixtures of earth materials comprised of the other four categories of on-site materials identified within the study area; that is to say that they are composed of varying assemblages of clay, silt, sand, and gravel. These mixtures have been moved and/or mechanically placed, and are typically moist with a wide range of consistencies and thickness. It can be anticipated that during excavation of the upper few feet of fill materials, a greater abundance of gravel is expected compared to other types of earthen materials that comprise the fill. Gravel was imported for use in building pads and road subgrade.

Muddy Stream Deposits

These deposits are equivalent to the coarse-grained lenses and channels of the Till as described in the OU5 RI and are often stratified in appearance. Although many deposits at the FEMP can be categorized as stratified at some scale, for the purpose of this discussion most of the Muddy Stream Deposits are characterized by deposits of interbedded silt, sand and gravel with bed thicknesses on the order of feet. The generally quartzose and sometimes clayey sands range from well-sorted to poorly-sorted and often contain accessory mafic minerals such as biotite and horneblende. The sands range from fine-grained to coarse-grained. As seen on Figure G-5, the areas labeled Muddy Stream Deposits are considered generally to be stratified sediments, and can be correlated with boring log identifications that result in typically coarse-grained textures in multiple layers. The coarse-grained Muddy Stream Deposits range in relative density from loose to very dense, and are moist to wet.

Lacustrine Deposits

As described in the OU5 RI, "the lacustrine deposits consist of distinct thin layers of clay and silt with some sand and gravel in less distinctive layers. Lake clay, in field descriptions, is distinguished from till clay by the lack of sand and gravel within the clay layer."

In addition, many of the coarse-grained sediments of the Fluor Fernald Coarse-Grained Model are present in the western half of the FPA and correspond to the area defined in the OU5 RI as Lacustrine Deposits. Included in this, from this study, would be "varved" sediments which are interbedded and laminated

sediments composed of sand, silt, and clay mixtures generally with bedding thicknesses on the order of fractions of an inch to 1 foot (NAVFAC DM 7.1). These are not typical lacustrine varves, which are consistently fine-grained layers of dark and light sediment representing seasonal deposition of material (winter and summer), but are glacial varves (Picard and High, 1970). Glacial varves contain coarser material than lacustrine varves which is reflected by the variations in water currents and velocities due to freezing and thawing episodes during the period of glacial retreat. Numerous borehole logs indicate that glacial varves are present throughout the western half of the FPA, further supporting the OU5 RI contention that the area represents a glacial lacustrine environment. Glacial varves have been encountered only rarely in the eastern portion of the study area, indicating sediment in that part of the site was not deposited under lacustrine conditions. The Lacustrine Deposits in the subsurface of the FPA exhibit a wide range of consistencies, densities, and moisture contents; from soft to stiff, loose to very dense, and moist to wet.

Brown Clay

The Brown Clay consists predominantly of low to medium plasticity silt/clay mixtures with localized areas of high plasticity clay or silt. The till matrix commonly has scattered gravel throughout, some locally, with silty or clayey sand lenses. Typically the Brown Clay unit is stiff to very stiff, and moist. The Brown Clay is likely a combination of till material and possibly loess, though the OU5 RI indicated that loess deposits were present only to the north and east of the FPA. The gradations for the Brown Clay materials can be found in Attachment G-1.

Gray Till

The Gray Till consists predominantly of low-plasticity sandy clay mixtures with scattered gravel throughout. Sand, silty sand, or clayey sand lenses with scattered gravel are present locally. This unit, which generally has low permeabilities as indicated in the OU5 RI, is believed to be the separation between the perched groundwater zone and the GMA. Typically, the clays of the till are very stiff to locally hard, and moist. The gradations for the Gray Till can be found in Attachment G-1.

G.2.2 Southwest Quadrant

Figure G-2 shows that borings G3-005/12270, G3-007/12272, G3-008/12273, and G3-010/122275 are located within the southwest quadrant, as well as portions of Sections A-A', B-B', and G-G'.

Borings (PO-177)

Boring G3-005/12270, located in the central and western half of the southeast quadrant, was advanced to a depth of 29 feet, encountering a sediment mix typical of the Lacustrine Deposits as noted in the OU5 RI. Brown Clay is present from the surface to 8 feet, then a mixture of silts and sands predominate to 23 feet (Lacustrine Deposits) and Gray Till is encountered from 23 feet to total depth with a few, thin interbedded clayey sands. In the interval from 16 to 23 feet, coarse-grained Glacial Varves are present. Sands and silts are wet below 9 feet. Water was measured in the borehole at 5.8 feet below the ground surface. Most brown sands are poorly sorted, most gray sands well sorted. Clays are generally of low plasticity and soft to hard in consistency.

Boring G3-007/12272, located south of G3-005/12270 near the center of the southwest quadrant, was also drilled in the Lacustrine Deposits of the OU5 RI. Brown Clay is present to 7 feet, then a series of sand, silts and clays are encountered to a depth of 23 feet (Lacustrine Deposits). Glacial Varved Units were encountered from 10 to 15 feet. Below 23 feet, Gray Till is present. Sands and silts are wet below 7 feet. Sands are generally poorly sorted and contain components high in mafic minerals. Clays are of low to medium plasticity and stiff to very hard in consistency.

Boring G3-008/12273 is located east of G3-007 (east-central portion of the southwest quadrant) and was advanced in the Lacustrine Deposits of the OU5 RI. Brown Clay is noted to 13 feet with two, thick wet sand lenses present at roughly 8 and 10 feet. Gray Till is present below 13 feet with two wet sand units interbedded at 17 to 19 feet and 24 to 26 feet respectively. The sands are poor to well sorted. Clays are generally of low plasticity. Consistencies range from stiff to very stiff, except for a gray fat clay at a depth of 21 feet, which is very soft to soft and contains a medium to high plasticity.

Boring G3-010/12275 is located near the bottom-left corner of the quadrant. It was advanced in Lacustrine Deposits as indicated by the sediment recovered though the coarser-grained units were deeper than in other three borings. Brown Clay is present to 15 feet with only one 2-inch sand seam at about 9 feet. At 15 feet, a series of interbedded clays and silts are present to the total depth of the boring at 21 feet. The unit appears to be Glacial Varves. The clayey silt units below 15 feet are wet. Clays are generally stiff to hard with a low plasticity. The exception is a brown fat clay between 3 to 5 feet which was soft with a medium plasticity.

Sections

The south half of Section A-A' generally bisects the southwest quandrant in a north/south direction. The portion of Section A-A' within the southwest quandrant displays a consistent profile composed in general of up to 5 feet of fill underlain by a thick section (up to 22 feet) of generally wet, interbedded layers of Lacustrine Deposits (silt/clay mixtures, silt, sand, and scattered gravel).

The southern portion of Section B-B' from boring 1403 in the south to boring 1130 in the north, extends in a north/south direction near the eastern boundary of the quadrant.

Section G-G' extends in an east/west direction across the central portion of the southwest quadrant from boring 2042 to boring 1237. Throughout the entire area of this relatively deep excavation, materials which will be encountered generally consist of saturated Lacustrine Deposit sediments.

G.2.3 Northwest Quadrant

Borings G3-002/12267, G3-004/12269, and G3-006/12271 are located in the northwest quadrant, as well as portions of Sections A-A', B-B', C-C', D-D', and E-E'.

Borings (PO-177)

Boring G3-002/12267, located in the north-central portion of the northwest quadrant, was advanced in Fill (0 to 2 feet), Brown Clay to 7.5 feet, Gray Till with interbedded silt from 7.5 to 13 feet and gravelly Gray Till to 25 feet. The silts are moist to wet. Below 11 feet the materials are generally wet. Clays are stiff to hard with no to low plasticity. The silts are believed to be indicative of the Muddy Stream deposits in the north of the FPA, which appear from adjacent boring logs to be silty in composition.

Boring G3-004/12269 is located in the south-central portion of the northwest quadrant. Fill is present from 0 to 1 foot. Brown Clay is present from 1 to 9 feet. Thin interbedded clays and silts are present from 9 to 14 feet. From 14 to 21 feet, sands predominate over gray silts and clays. Below 21 feet, the Gray Till is the dominant lithology. This boring was advanced in the Lacustrine Deposits as typified by the lithologies encountered. Probable Glacial Varves are present from 9 to 13 feet. Silts and sands are wet below 9 feet. Sands are poorly sorted. Clays are generally moist, stiff to very stiff and have a low to medium plasticity. A fat clay at 23 feet is very soft to medium stiff, with a high plasticity.

Boring G3-006/12271 is located to the east of G3-004, near the southeast corner of the northwest quadrant. Fill is present from 0 to 1 foot. Brown Clay is present from 1 to 12.5 feet. Interbeds of sand, silt and clay occur from 12.5 to 19.2 feet. Gray Till is present from 19.2 feet to total depth at 27 feet. This boring is located within the Lacustrine Deposits of the OU5 RI, close to the transitional zone of the Muddy Stream Deposits of this report. From 12.5 to 15 feet, coarse-grained Glacial Varves are apparent. Silts and sands are wet below 13 feet, the sands poorly sorted. Clays are generally low in plasticity and stiff to very stiff in consistency.

Sections

The northern half of Section A-A' bisects the northwest quadrant. Near boring G3-004/12269, the subsurface materials are typical of the Lacustrine Deposits of the OU5 RI. Continuing north along the section to boring G3-002/12267, the Lacustrine units transition into Muddy Stream Deposits. Beneath boring G3-002/12267, the materials are generally clays typical of the Brown Clay and the Gray Till, but a section of Muddy Stream Deposits is also present.

The northern half of Section B-B' extends along the eastern boundary of the northwest quadrant. At boring 1305 the stratigraphy is comprised of typical Brown Clay/Gray Till clays with the subtle exception of a layer of sand and sand-silt mixtures associated with the Lacustrine Deposits located near the bottom of the boring.

The western half of Section C-C' is located near the southern boundary of the northwest quadrant. Stratigraphy in this area consists of a layer of Lacustrine Deposits between the Brown Clay and the Gray Till.

Sections D-D' and E-E' depict a complex system of interlayered sediments and transitional zones that include the Lacustrine Deposits, Muddy Stream Deposits, the Brown Clay and Gray Till. Along Section D-D', an extensive deposit of Muddy Stream sediments lie above the Gray Till and the elevation of the Lacustrine Deposits.

Along Section E-E', the Lacustrine Deposits are transitional with the Stream Deposits, all of which are overlain by the materials of the Brown Clay and underlain by the Gray Till.

fpa_csec5.m po177erma@ws415. Thu Feb 26 15:15:18 CST 1998

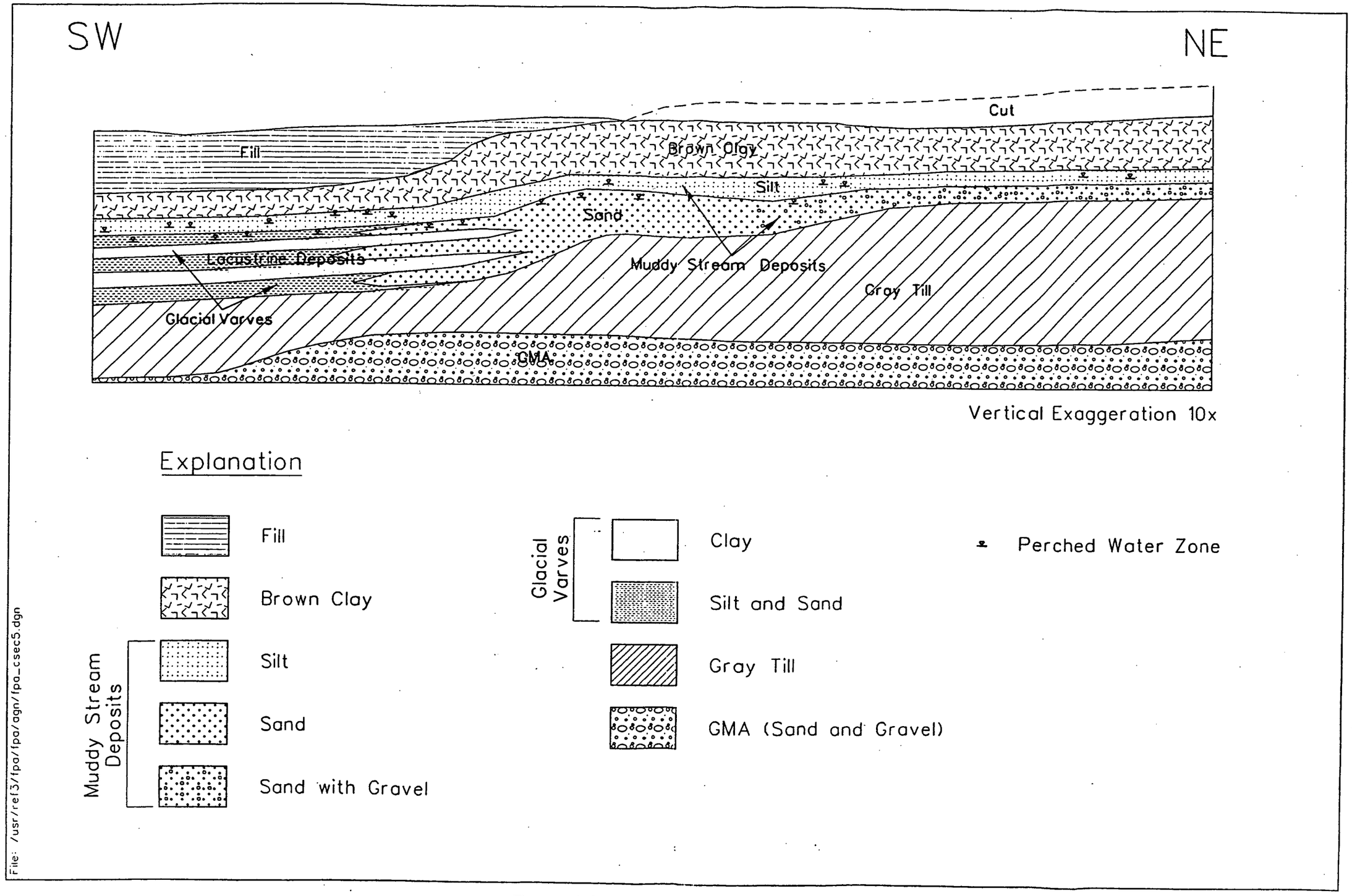
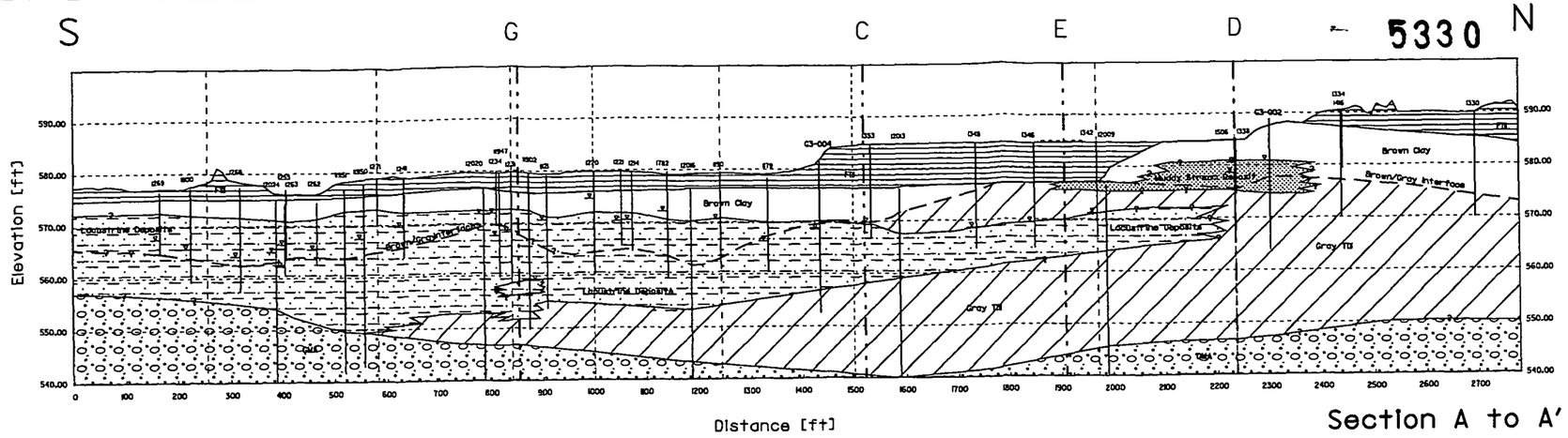
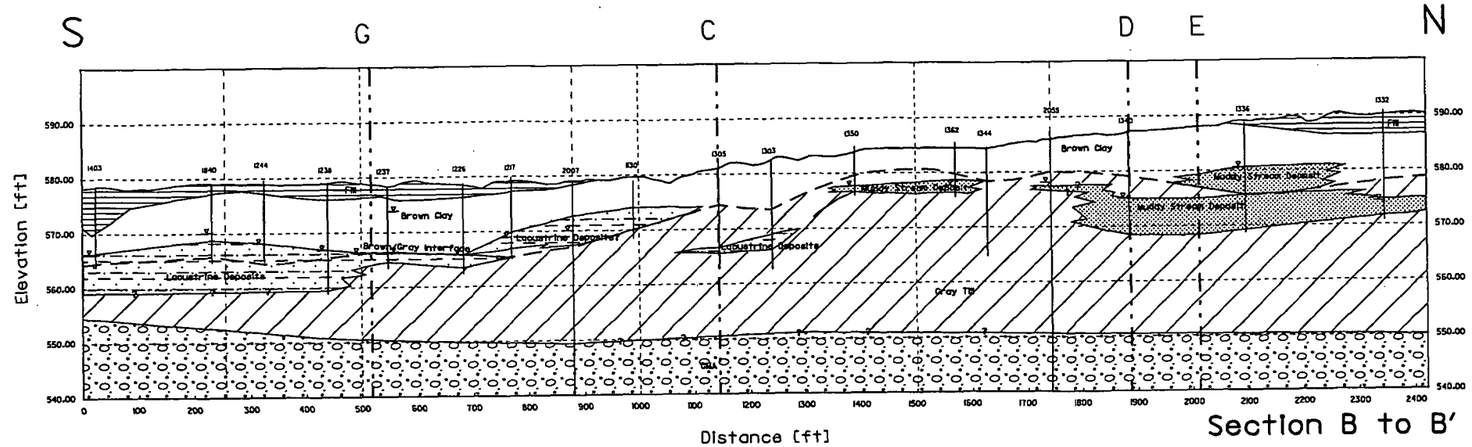


Figure G-1 Conceptual Cross-section of Soil Deposits at FPA

jeology1 HERACLIUS erja1481 Friday December 12 2003 11:00:15 AM EST



Section A to A'



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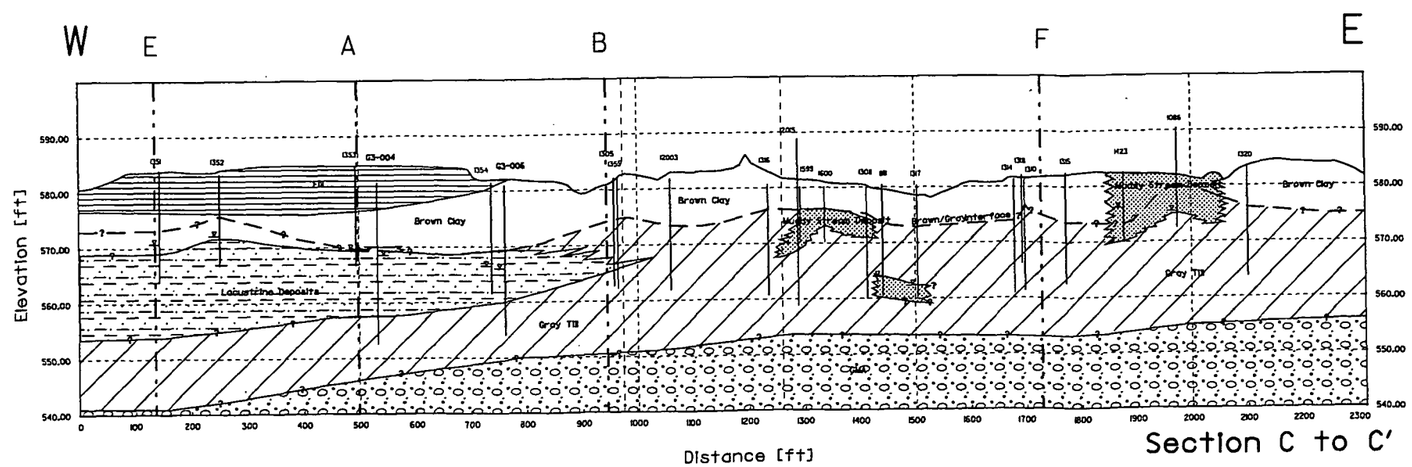

Section C to C'

000552

Vertical Exaggeration 10X

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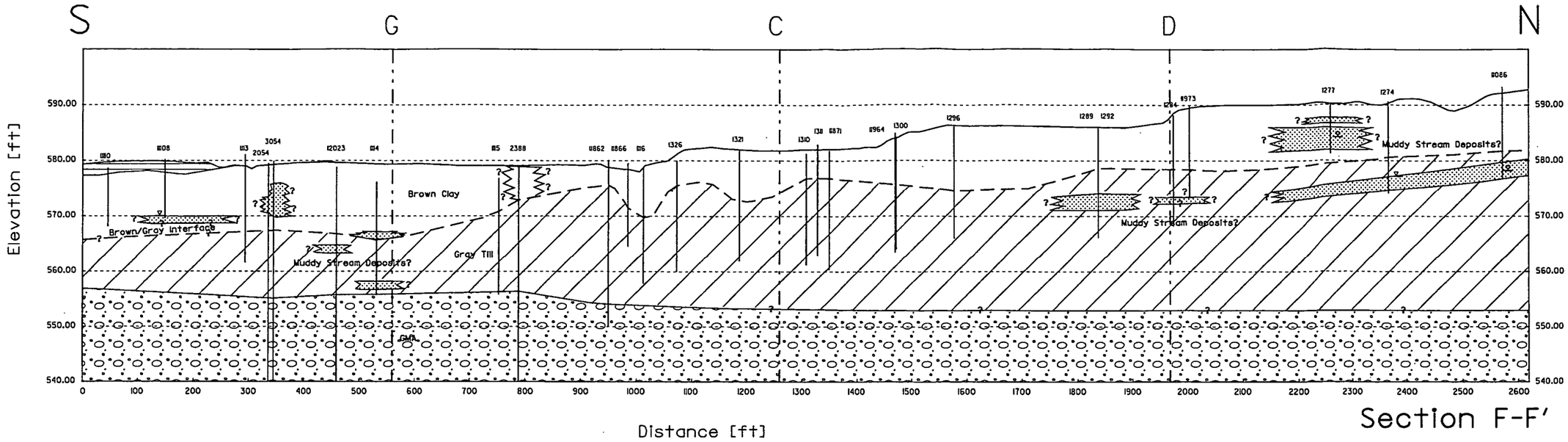
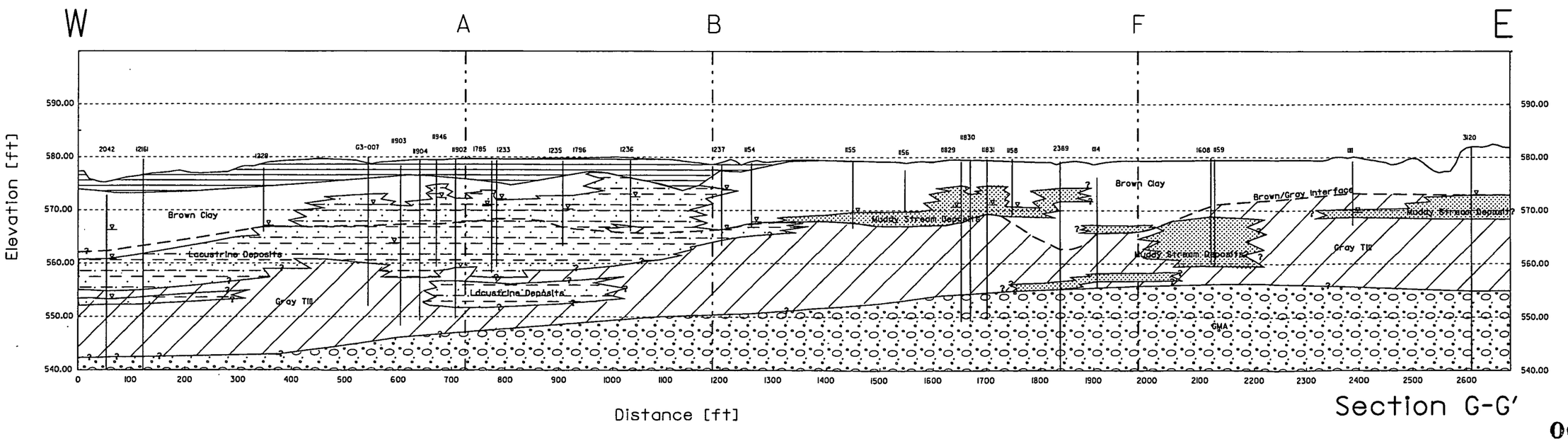
Figure G-2. GEOLOGIC CROSS-SECTIONS A-A' THROUGH C-C'





000553

Vertical Exaggeration 10C

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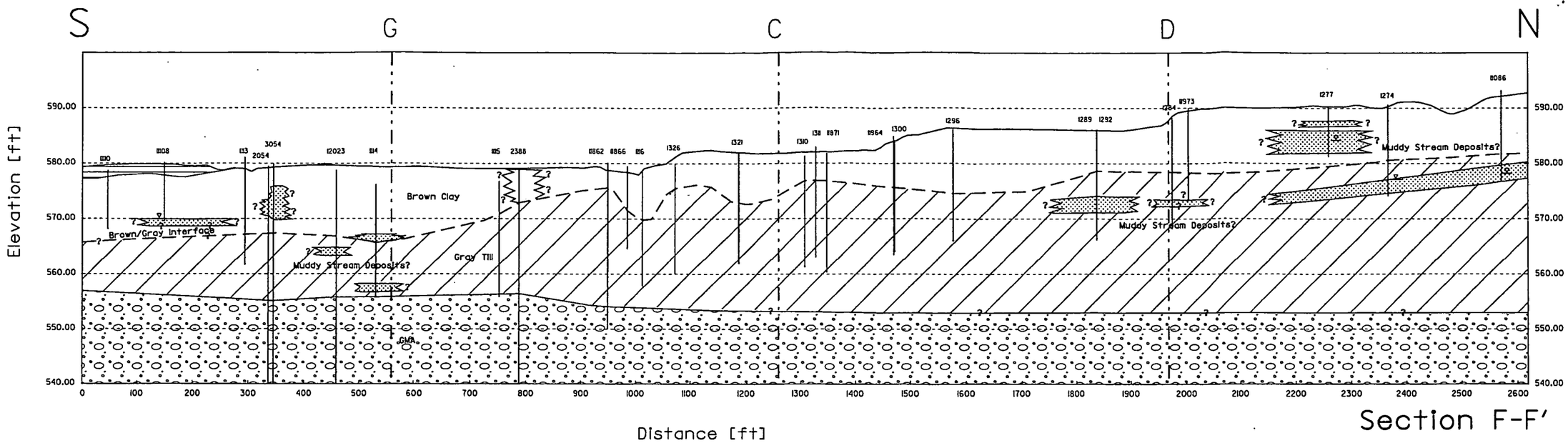
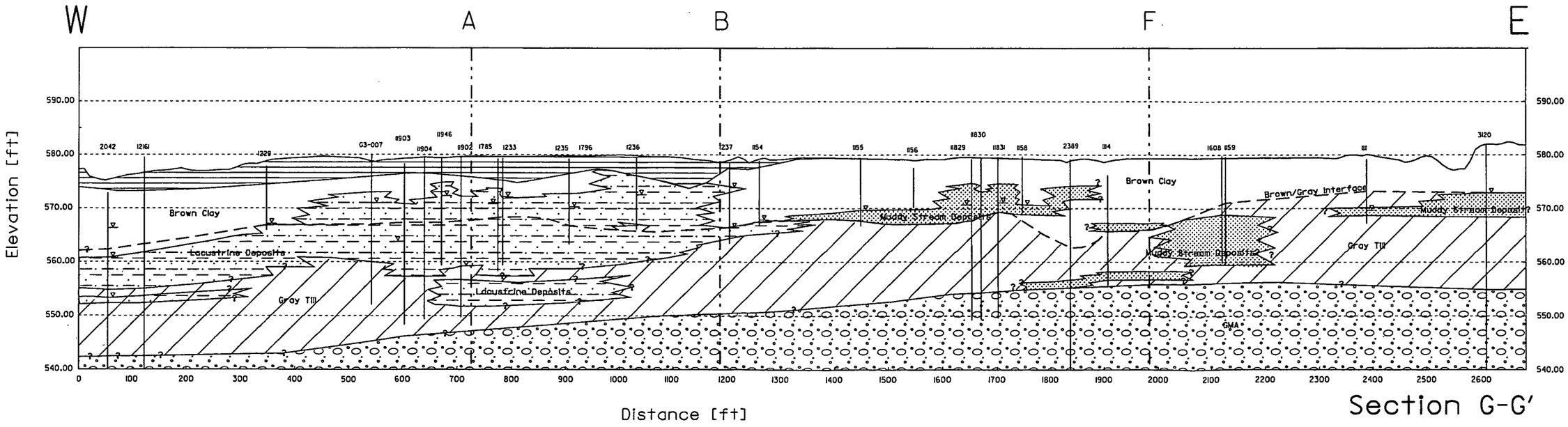
Figure G-3 - GEOLOGIC CROSS-SECTIONS F-F' AND G-G'





Vertical Exaggeration 10X

000554

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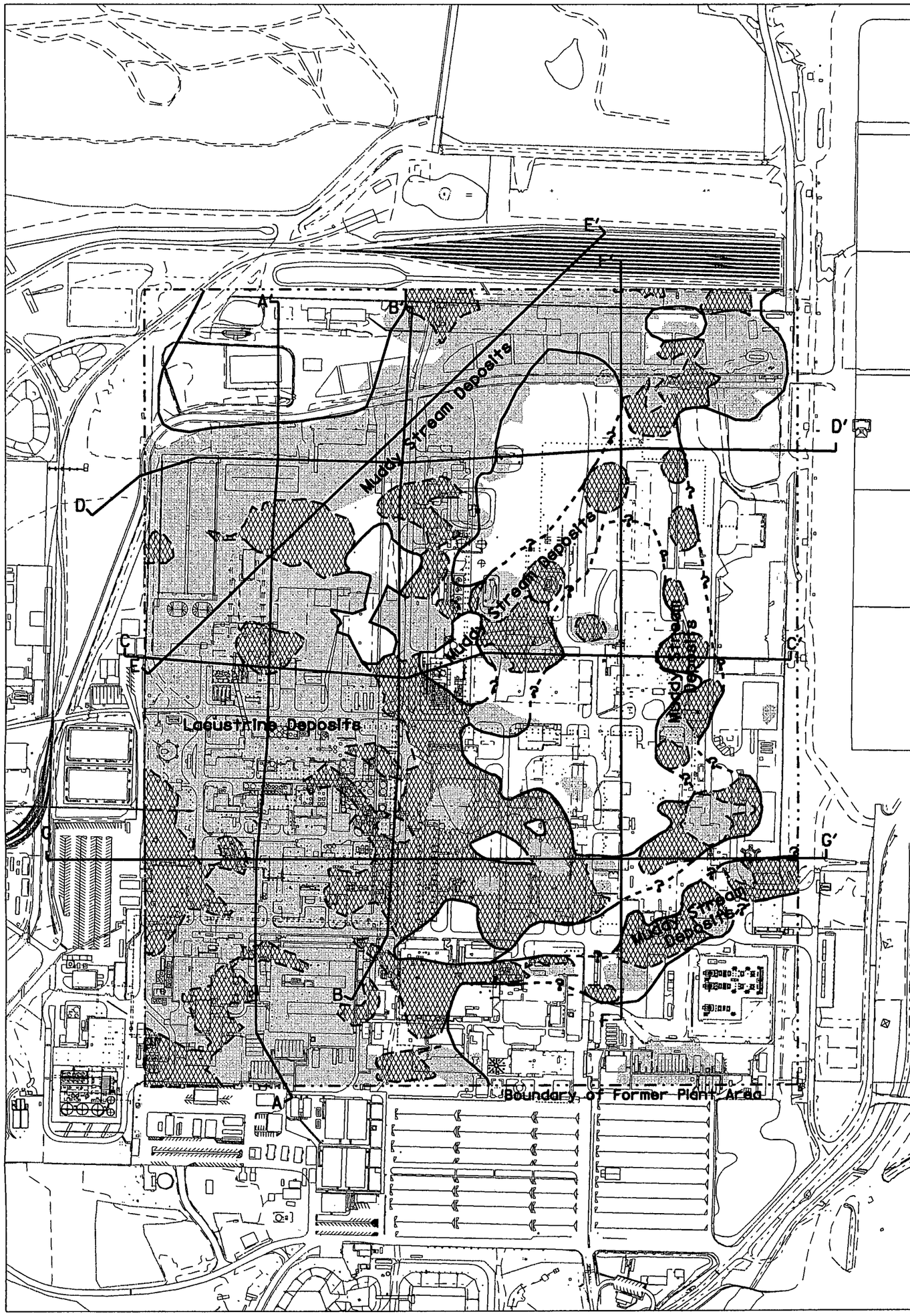
Figure G-4. GEOLOGIC CROSS-SECTIONS F-F' AND G-G'



LEGEND:

Boundary
Mapped Silt, Sands & Gravels
Modeled Coarse-Grained

INTERPRETED LACUSTRINE & MUDDY STREAM DEPOSITS; QUERIED WHERE UNCERTAIN OR APPROXIMATE
(MODELED COARSE-GRAINED DEPOSITS - SHADED
MAPPED SILTS, SANDS AND GRAVELS - HATCHED)

B ——— B' GEOLOGICAL CROSS-SECTION LINES

SCALE
350 175 0 350 FEET

FIGURE G-5. LOCATION OF EXTENT OF INTERPRETED DEPOSITS AT OR BELOW THE BROWN/GRAY GLACIAL OVERBURDEN INTERFACE

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STATE PLANAR COORDINATE SYSTEM 1983

11-DEC-2003

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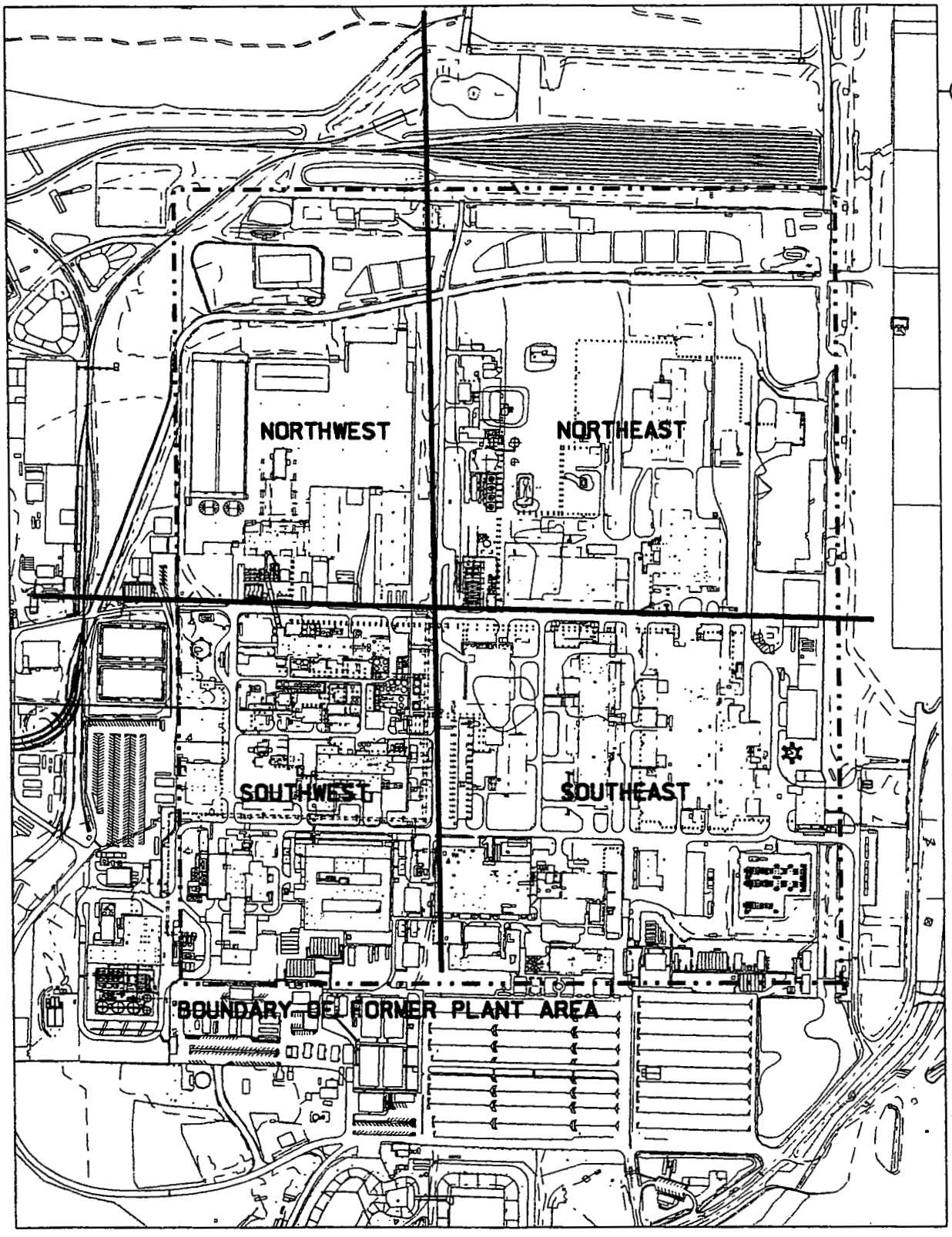

LEGEND:

—··—·· FORMER PLANT AREA

SCALE

500 250 0 500 FEET

000556

FIGURE G-6. QUADRANT MAP USED FOR THE FPA GEOTECHNICAL INVESTIGATION

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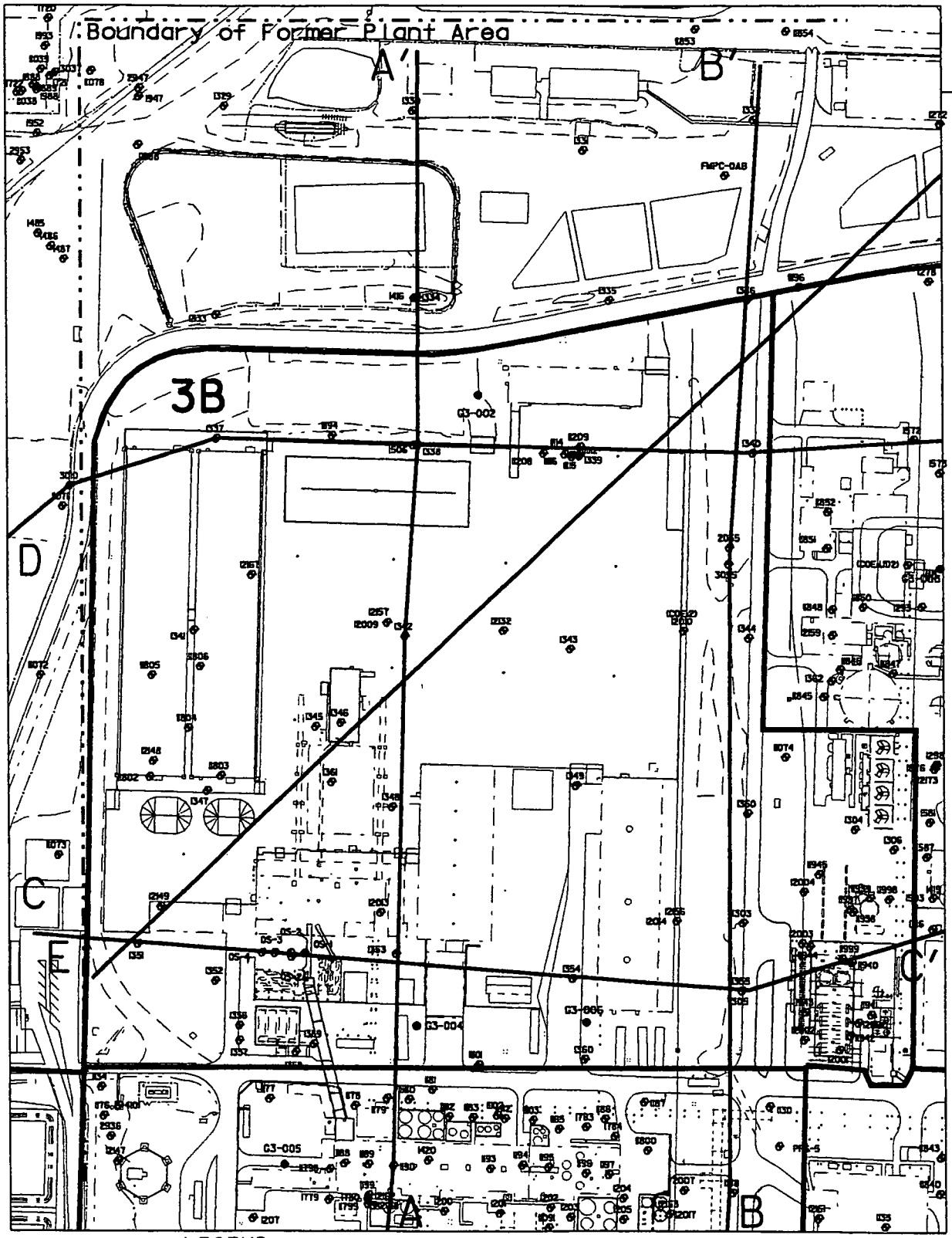
STATE PLANAR COORDINATE SYSTEM 1983
11-DEC-2003



LEGEND:

•• SOIL BORINGS

C —— C' GEOLOGICAL CROSS-SECTION LINES

SCALE

200 100 0 200 FEET

FIGURE G-7. AREA 3B BORING LOCATIONS

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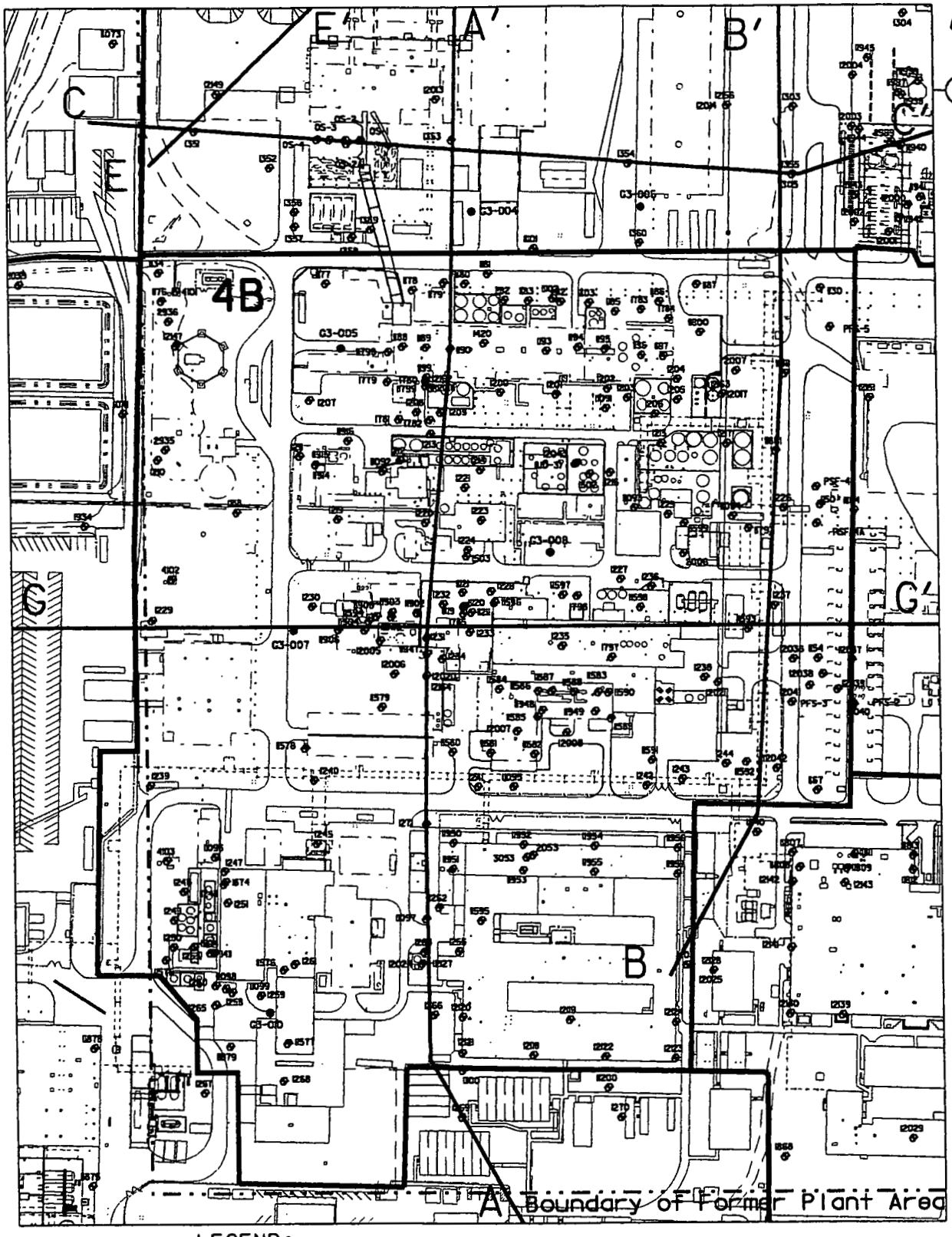
STATE PLANAR COORDINATE SYSTEM 1983
12-DEC-2003



LEGEND:

•• SOIL BORINGS

C —— C' GEOLOGICAL CROSS-SECTION LINES

SCALE

200 100 0 200 FEET

FIGURE G-8. AREA 4B BORING LOCATIONS

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STATE PLANAR COORDINATE SYSTEM 1983

11-DEC-2003

ATTACHMENT G-1

This attachment presents typical grain-size curves for the soils encountered in the PO-177 study. Table G-1 below is a list of the selected typical soil samples representing the various soils encountered. The typical soils were selected by visually determining the approximate median sample for a given USCS classification. The typical grain-size curves are included in this attachment.

TABLE G-1
REPRESENTATIVE GRAIN-SIZE CURVES

USCS Description	USCS Symbol	Boring ID	Sample Number	Sample Depth (ft)
Lean Clay	CL	12275	412443	11.0-13.0
Sandy Lean Clay	CL	12269	412398	21.0-23.0
Sandy Silty Clay	CL-ML	1244	50654, 50655	12.5-13.5
Sandy Silt	ML	12273	412336	9.0-11.0
Silty Sand	SM	12271	412377	17.0-19.0
Clayey Sand with Gravel	SC	1293	19033	9.0-9.5
Silty, Clayey Sand	SC-SM	12269	412392	13.0-29.0
Well-Graded Sand with Gravel	SW	11112	30920A11112-03-05	5.5-8.0
Well-Graded Sand with Silt and Gravel	SW-SM	11112	30902A11112-10-11-12-13	10.0-12.0
Poorly-Graded Sand with Gravel	SP-SM	11115	30915A11115-17-18-20-21	12.0-14.5

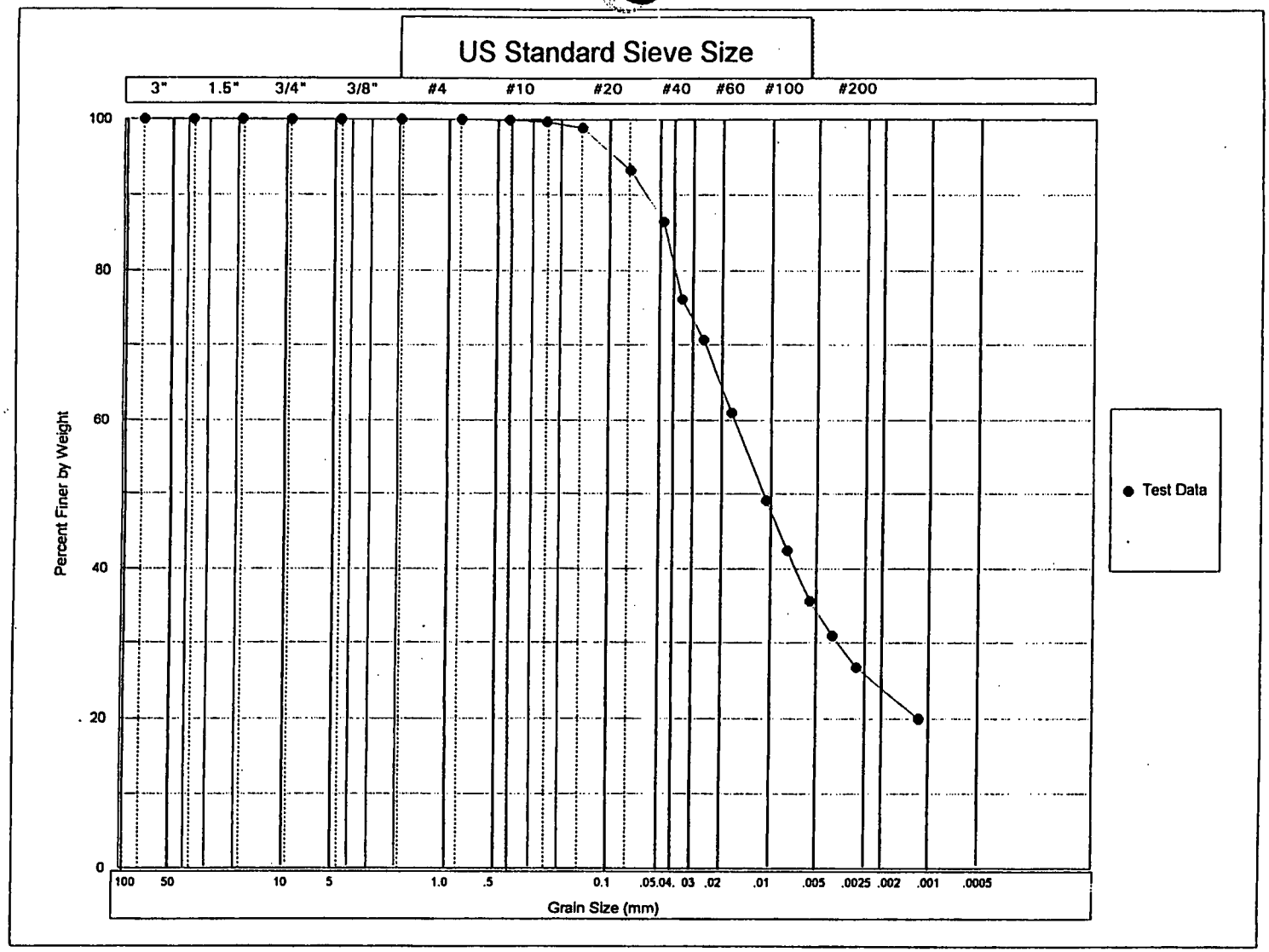
Note: Sample 412392 is a bulk sample and may include several different types of soils mixed together.

The typical grain-size curves from PO-177 were compared to data from Parsons 1959, PO-132. The soils encountered in PO-177 were generally within the range of grain-size curves for similar soils from the area immediately to the east of the FPA (PO-132). The plots of grain-size curve ranges for the Brown and Gray Till from PO-132 are also included in this attachment for reference.

All the PO-177 grain-size data are presented in SAIC 1997.

Typical Range of Grain-Size Curves

for Fine and Coarse-Grained Samples
(Source PO-132)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

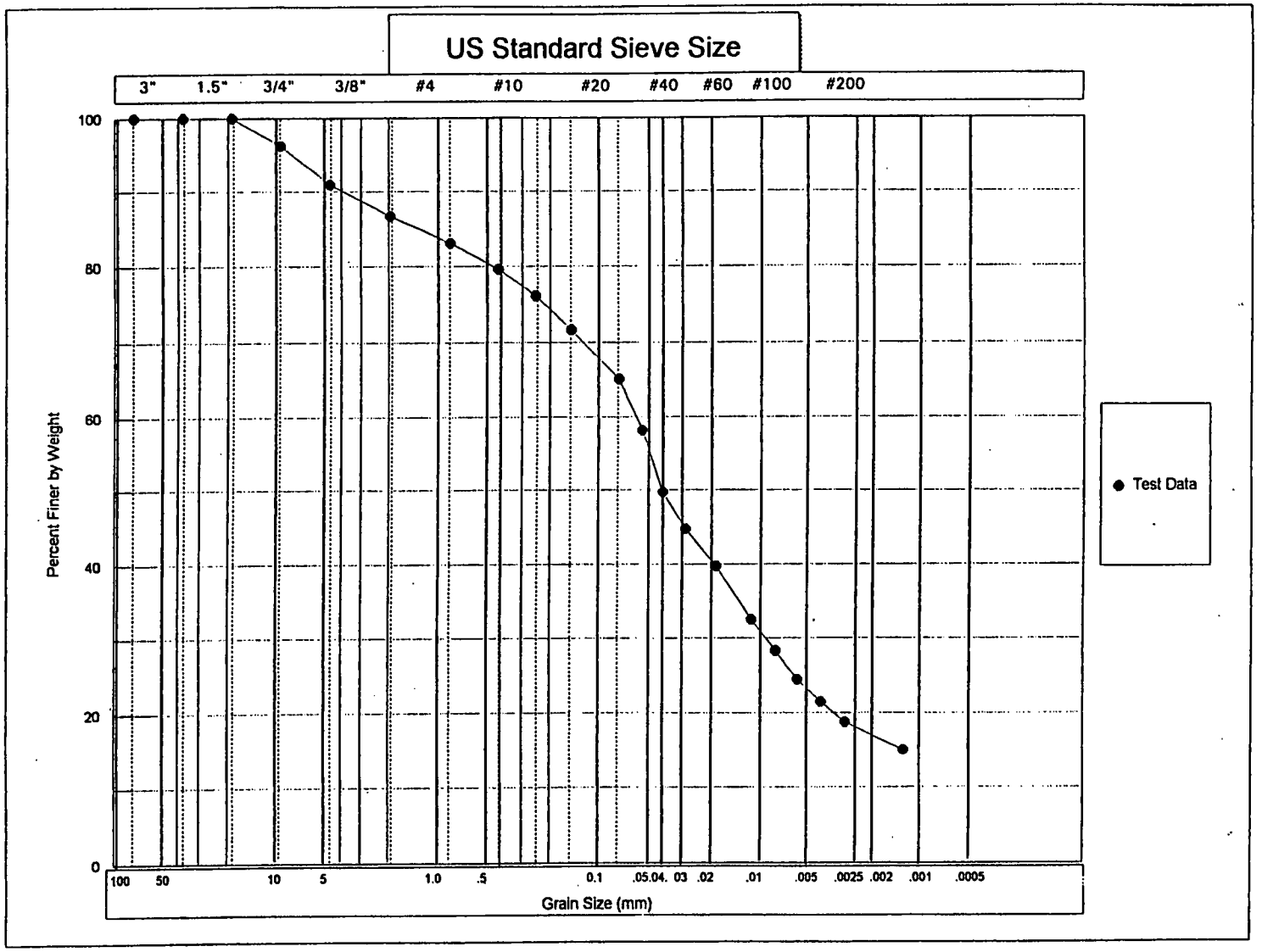
WENTWORTH

Client: SAIC / Parsons PO177 Boring No.: G3-010, 12275 Sample No.: 412443

Depth: 11.0-13.0' Job Number: 2059-19

Classification: Lean Clay (CL)

Advanced Terra Testing, Inc.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WENTWORTH

Client: SAIC / Parsons PO177 Boring No.: G3-004, 12269 Sample No.: 412398

Depth: 21.0-23.0' Job Number: 2059-19

Classification: Sandy Lean Clay (CL)

Advanced Terra Testing, Inc.

0005563

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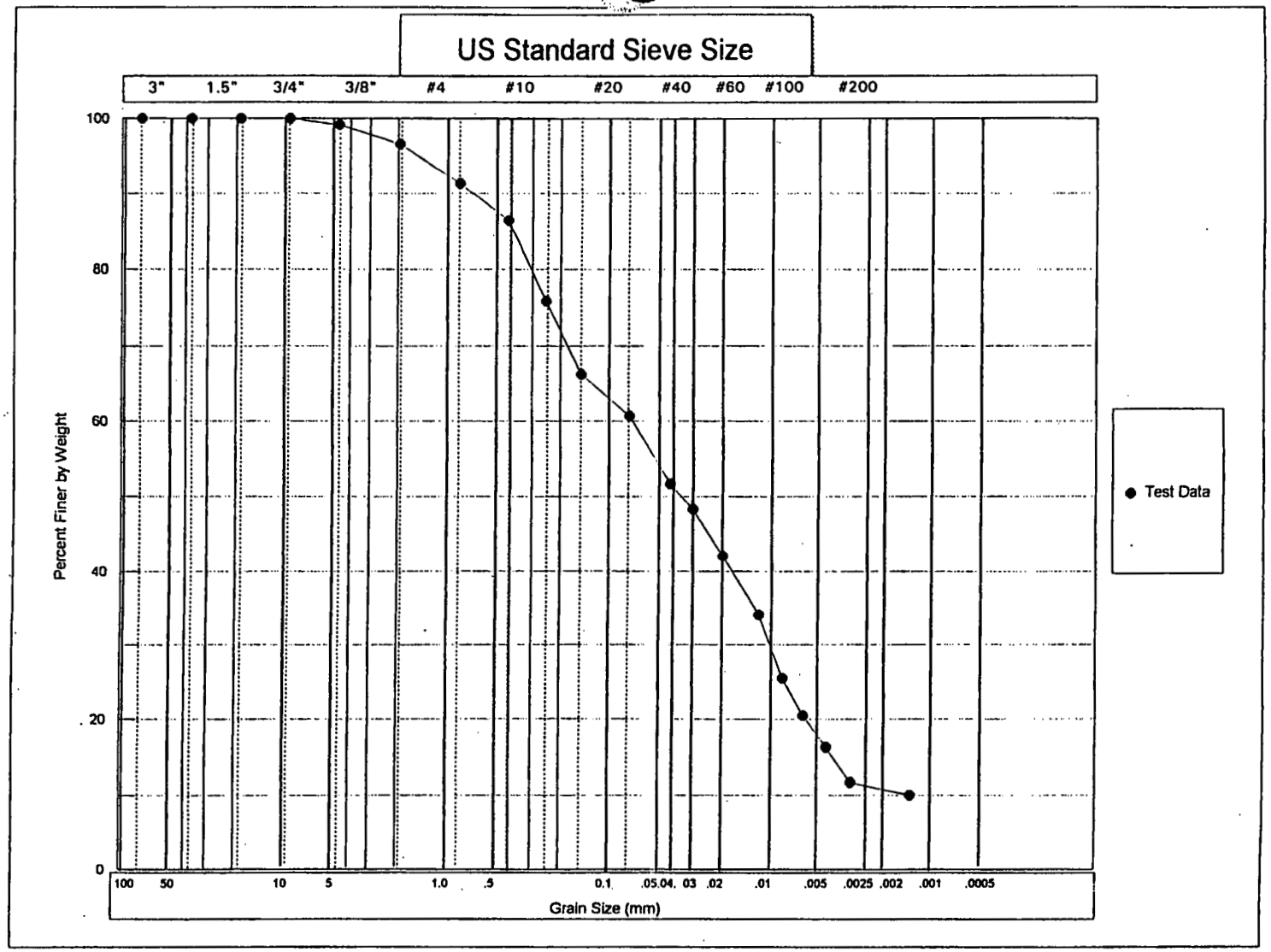


COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

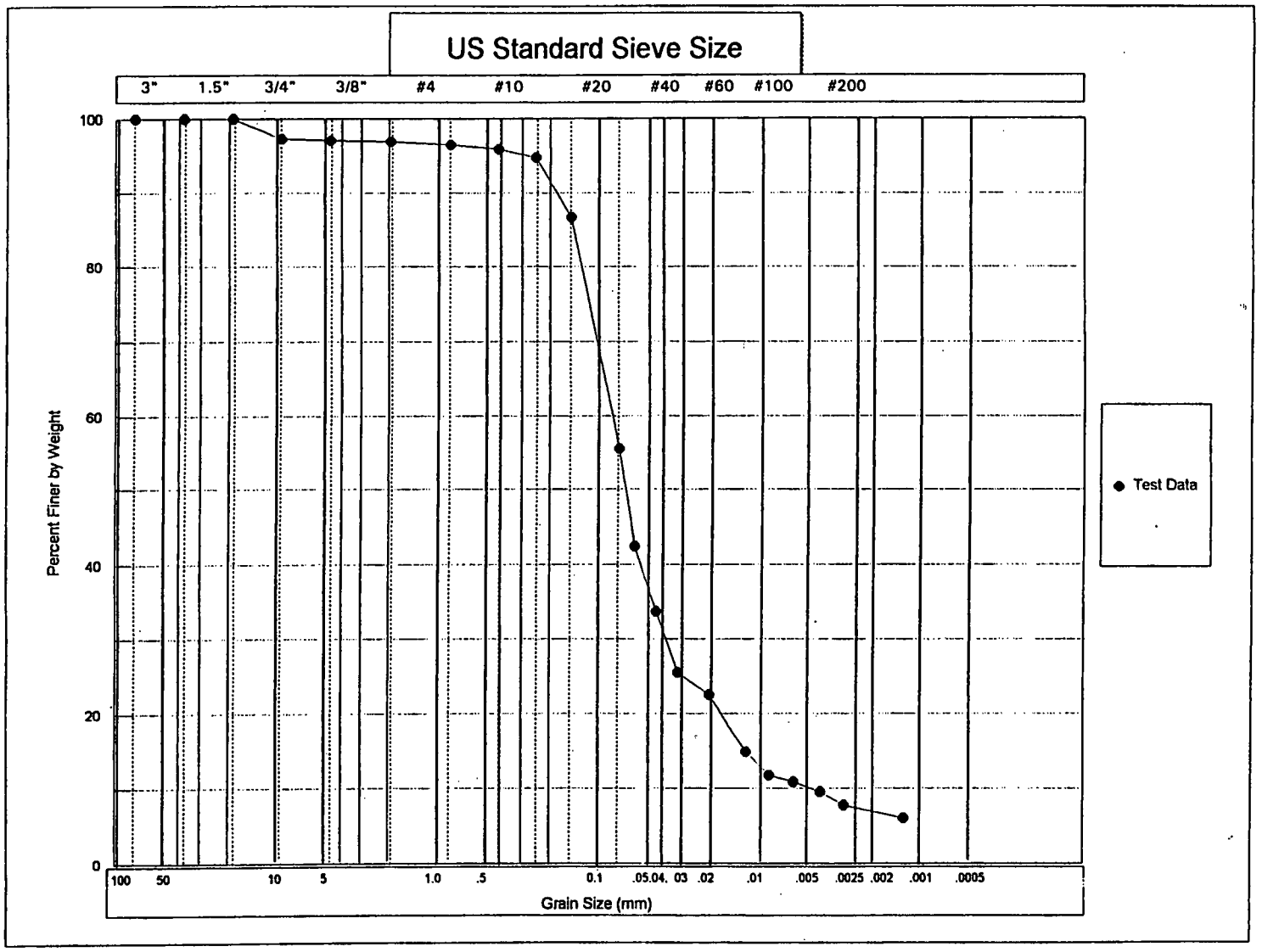
WENTWORTH

Client: SAIC / Parsons PO177 Boring No.: 1244 Sample No.: 50654,50655

Depth: 12.5-13.5' Job Number: 2059-19

Classification: Sandy Silty Clay (CL-ML)

Advanced Terra Testing, Inc.



COBBLES	GRAVEL		SAND			SILT OR CLAY	USCS
	COARSE	FINE	CRS	MEDIUM	FINE		

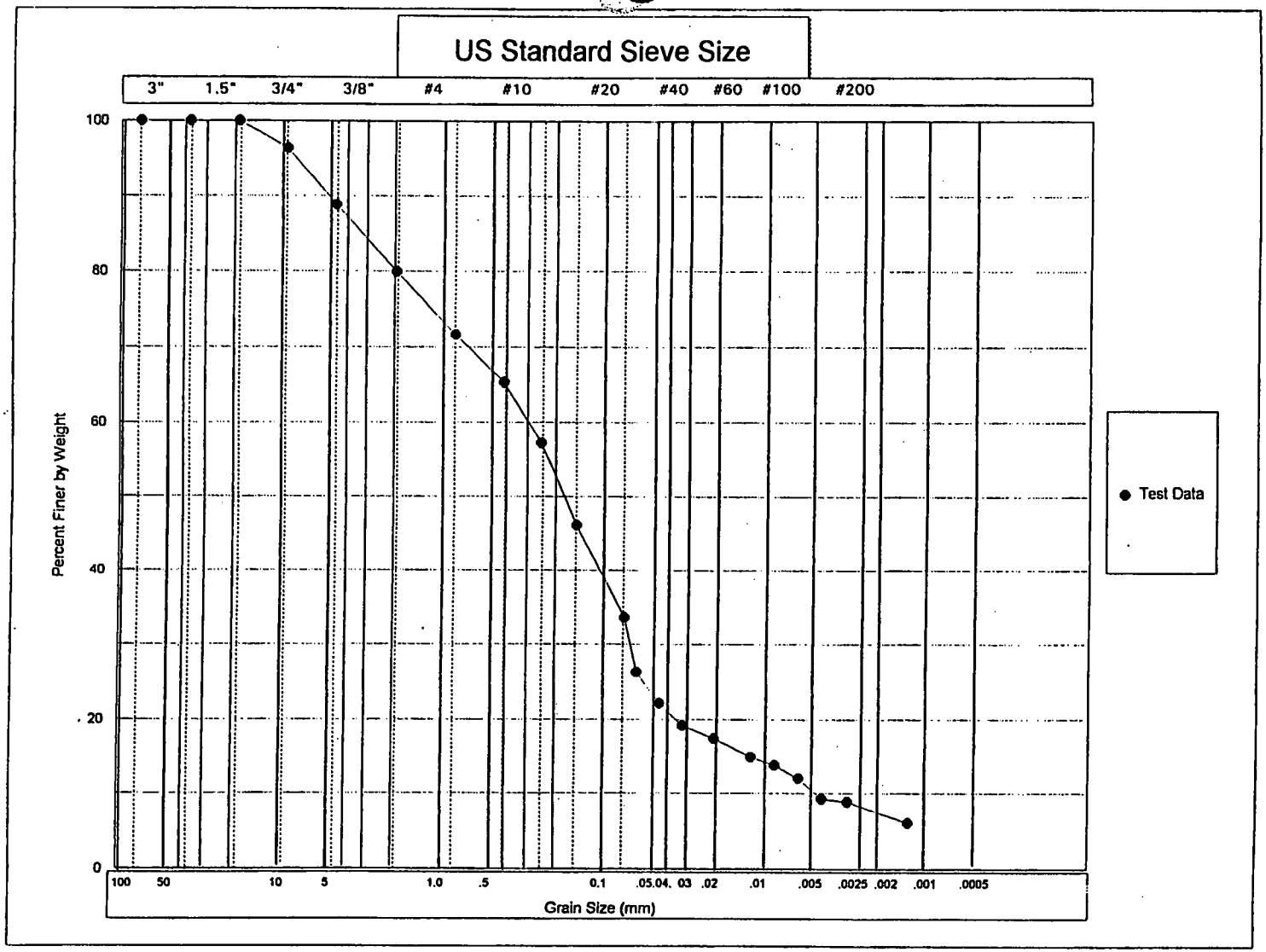
COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY	WENTWORTH
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE			

Client: SAIC / Parsons PO177 Boring No.: G3-008, 12273 Sample No.: 412336

Depth: 9.0-11.0' Job Number: 2059-19

Classification: Sandy Silt (ML)

Advanced Terra Testing, Inc.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

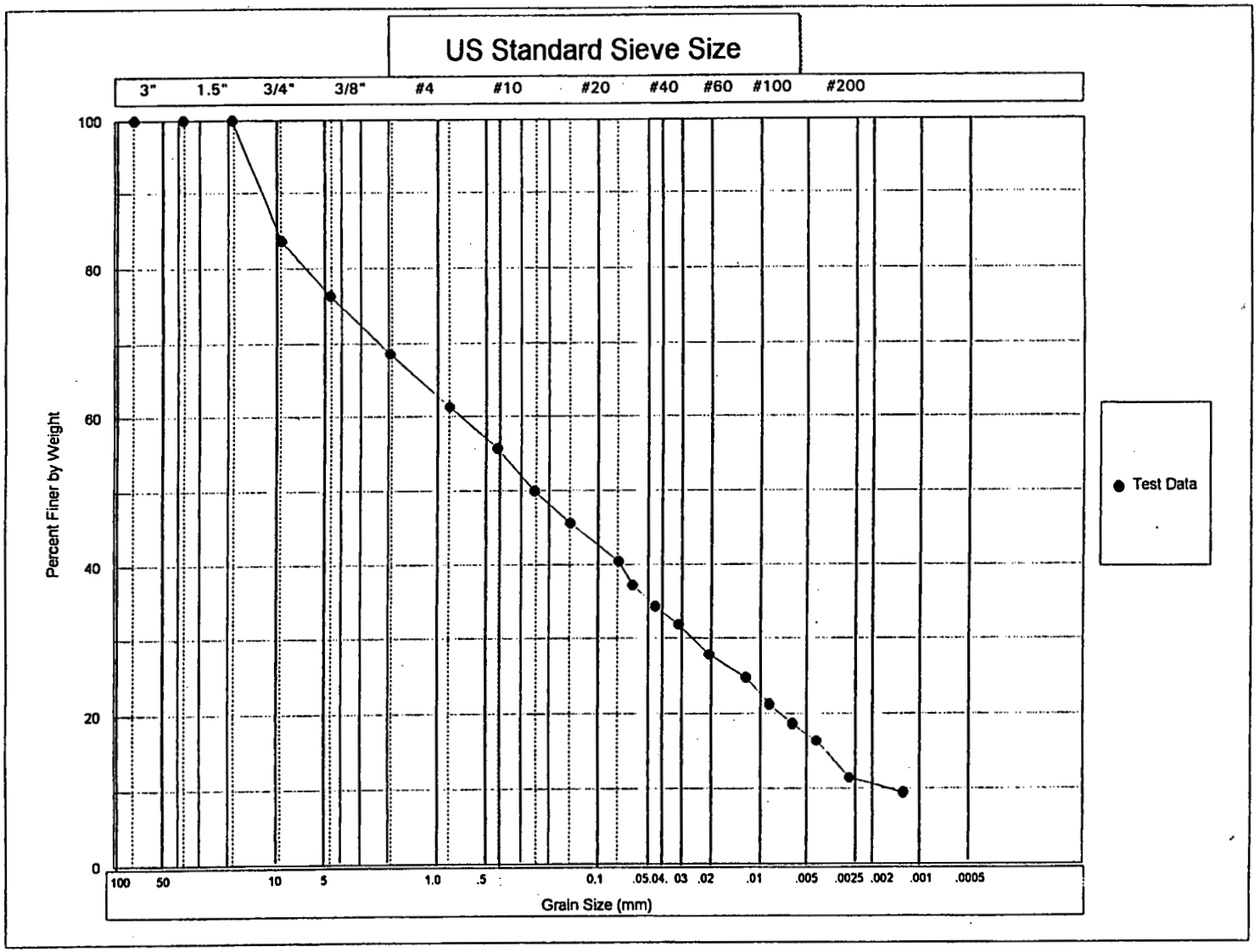
WENTWORTH

Client: SAIC / Parsons PO177 Boring No.: G3-006, 12271 Sample No.: 412377

Depth: 17.0-19.0' Job Number: 2059-19

Classification: Silty Sand (SM)

Advanced Terra Testing, Inc.



COBBLES	GRAVEL		SAND			SILT OR CLAY	USCS
	COARSE	FINE	CRS	MEDIUM	FINE		

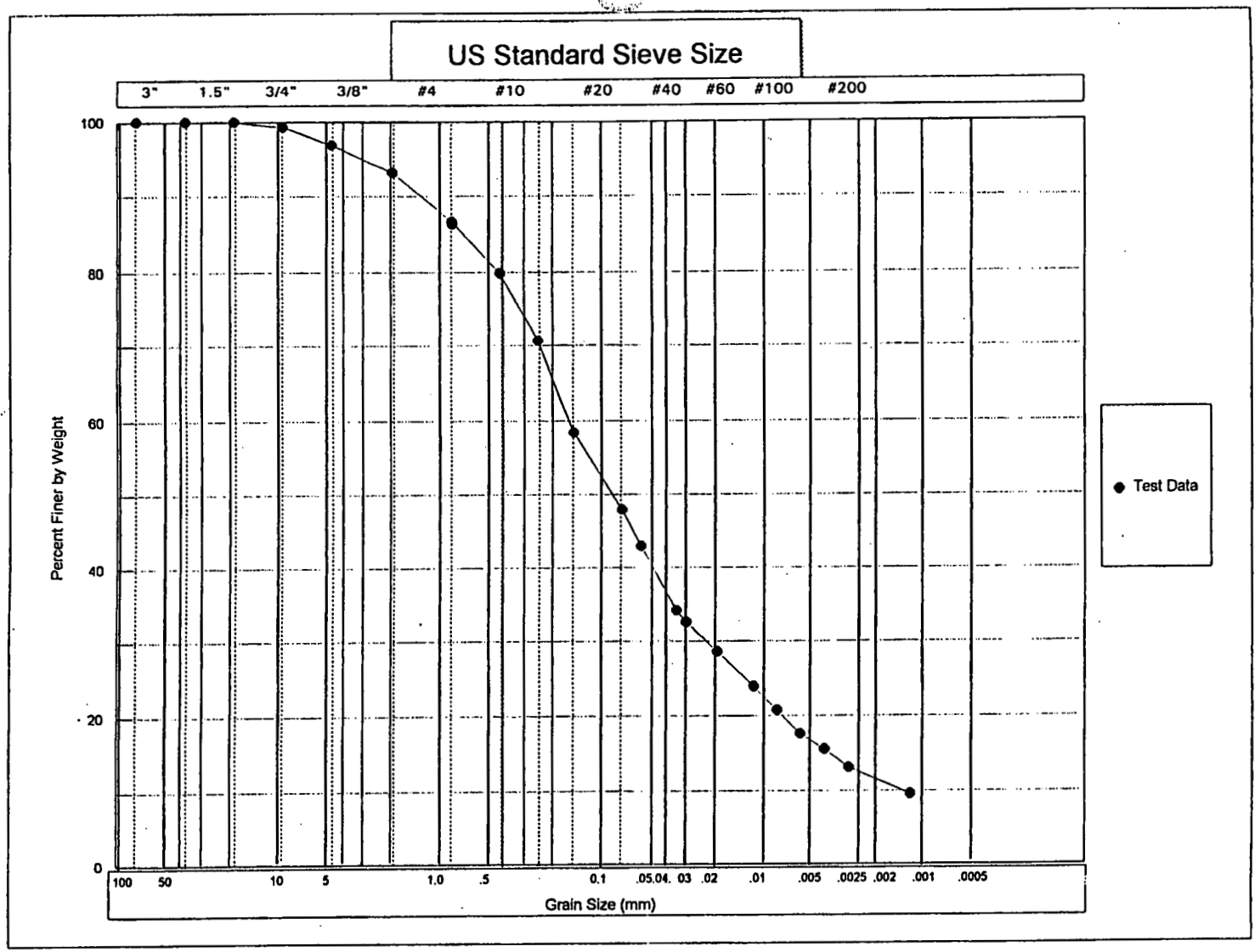
COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY	WENTWORTH
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE			

Client: SAIC / Parsons PO177 Boring No.: 1293 Sample No.: 19033

Depth: 9.0-9.5' Job Number: 2059-19

Classification: Clayey Sand with Gravel (SC)

Advanced Terra Testing, Inc.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WENTWORTH

Client: SAIC / Parsons PO177 Boring No.: G3-004, 12269 Sample No.: 412392

Depth: 13.0-29.0' Job Number: 2059-19

Classification: Silty, Clayey Sand (SC-SM)

Advanced Terra Testing, Inc.

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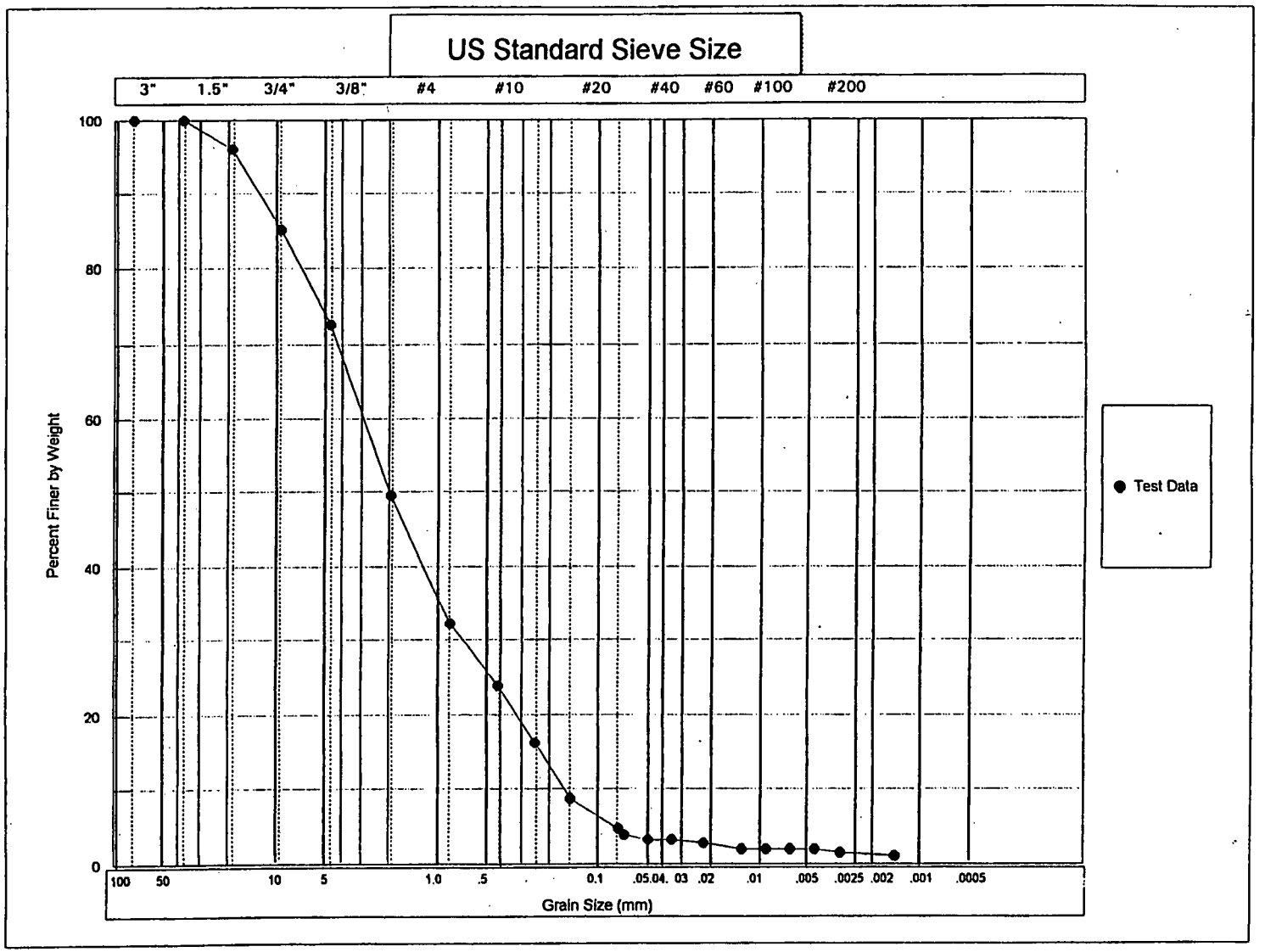


COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

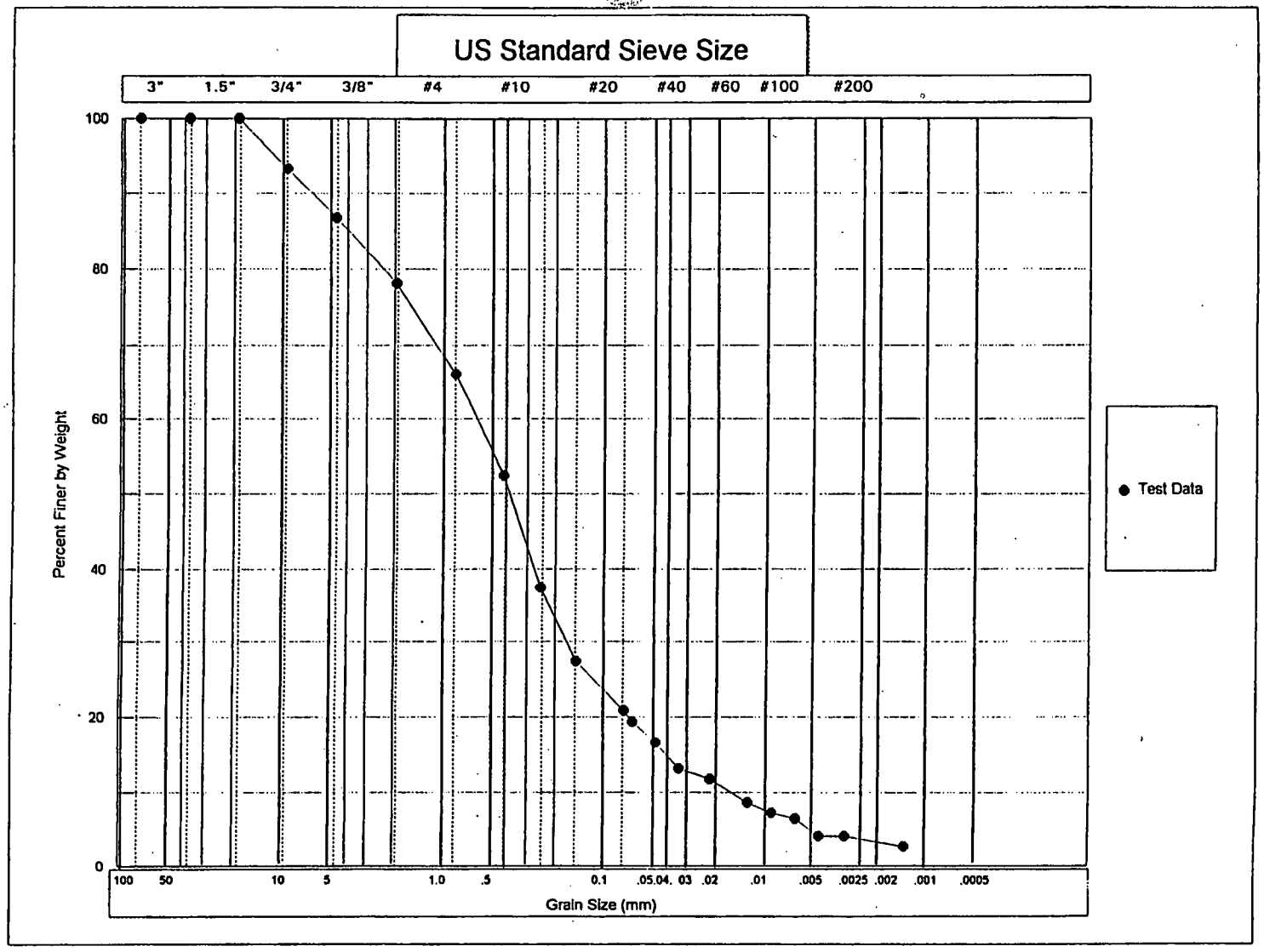
WENTWORTH

Client: SAIC / Parsons PO177 Boring No.: 11112 Sample No.: 30920A11112-05, -03

Depth: 5.5-6.0', 7.5-8.0' Job Number: 2059-19

Classification: Well Graded Sand with Gravel (SW)

Advanced Terra Testing, Inc.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WENTWORTH

Client: SAIC / Parsons PO177 Boring No.: 11211 Sample No.: 30915A11211-13,-16,-17,-19

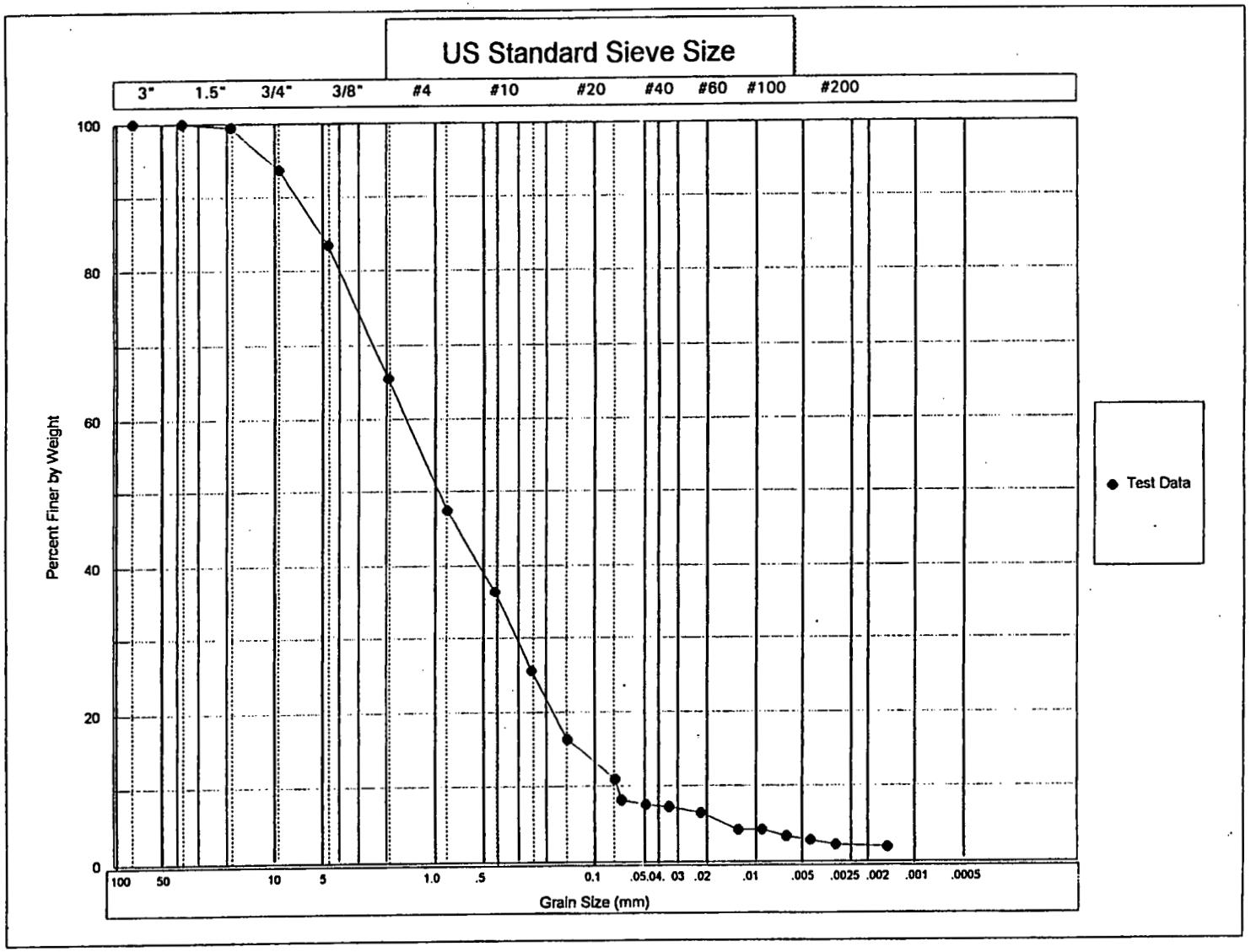
Depth: 9.5-10.0,11.0-12.0,12.5-13.0' Job Number: 2059-19

Classification: Well Graded Sand with Silt and Gravel (SW-SM)

Advanced Terra Testing, Inc.

000570

5330



COBBLES	GRAVEL		SAND			SILT OR CLAY	USCS
	COARSE	FINE	CRS	MEDIUM	FINE		

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY	WENTWORTH
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE			

Client: SAIC / Parsons PO177 Boring No.: 11115 Sample No.: 30915A11115-17,-18,-20,-21

Depth: 12.0-13.0', 13.5-14.5' Job Number: 2059-19

Classification: Poorly Graded Sand with Silt and Gravel (SP-SM)

Advanced Terra Testing, Inc.

000571

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Typical Grain-Size Curves

from PO-177 Investigation

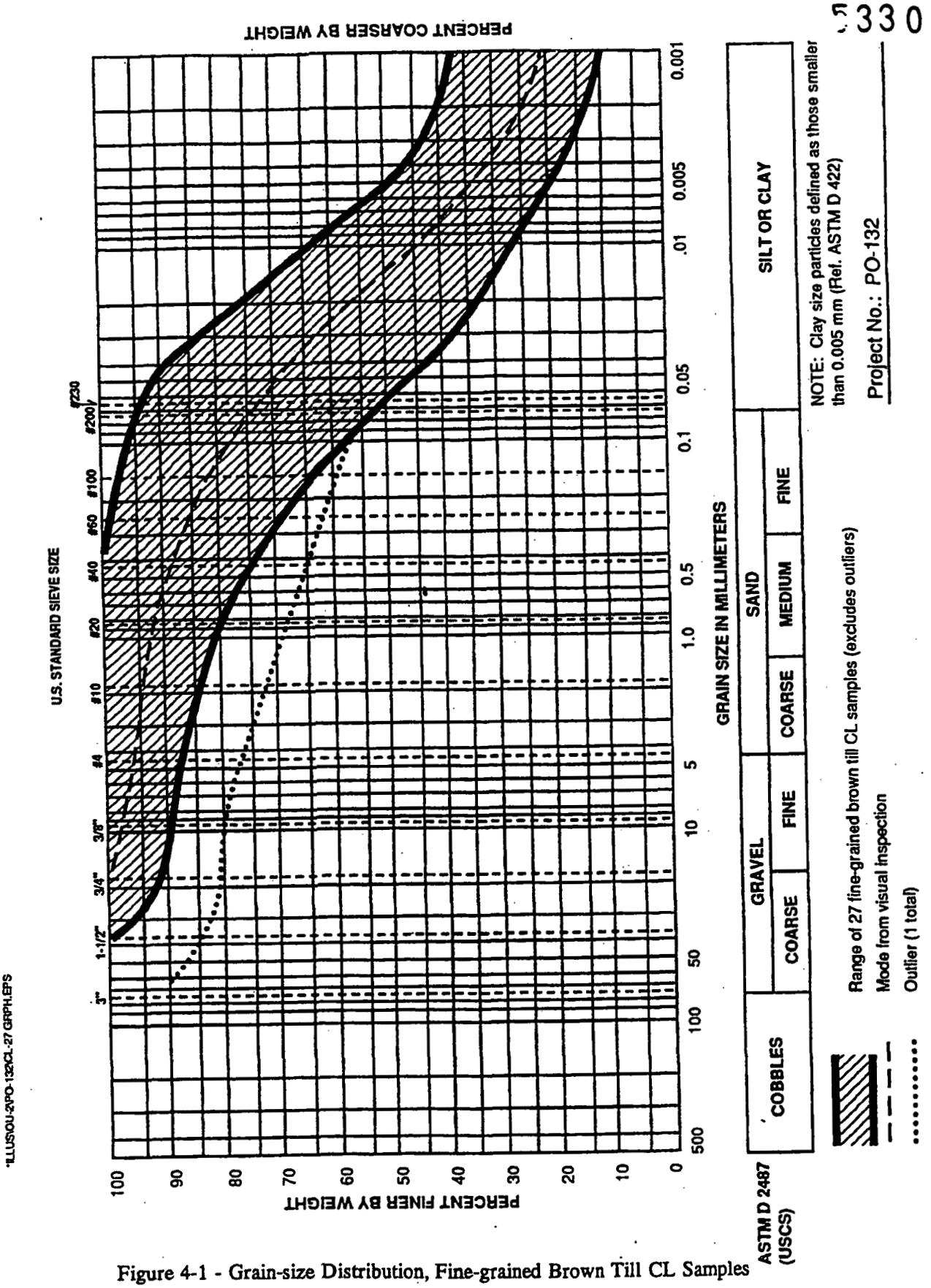


Figure 4-1 - Grain-size Distribution, Fine-grained Brown Till CL Samples

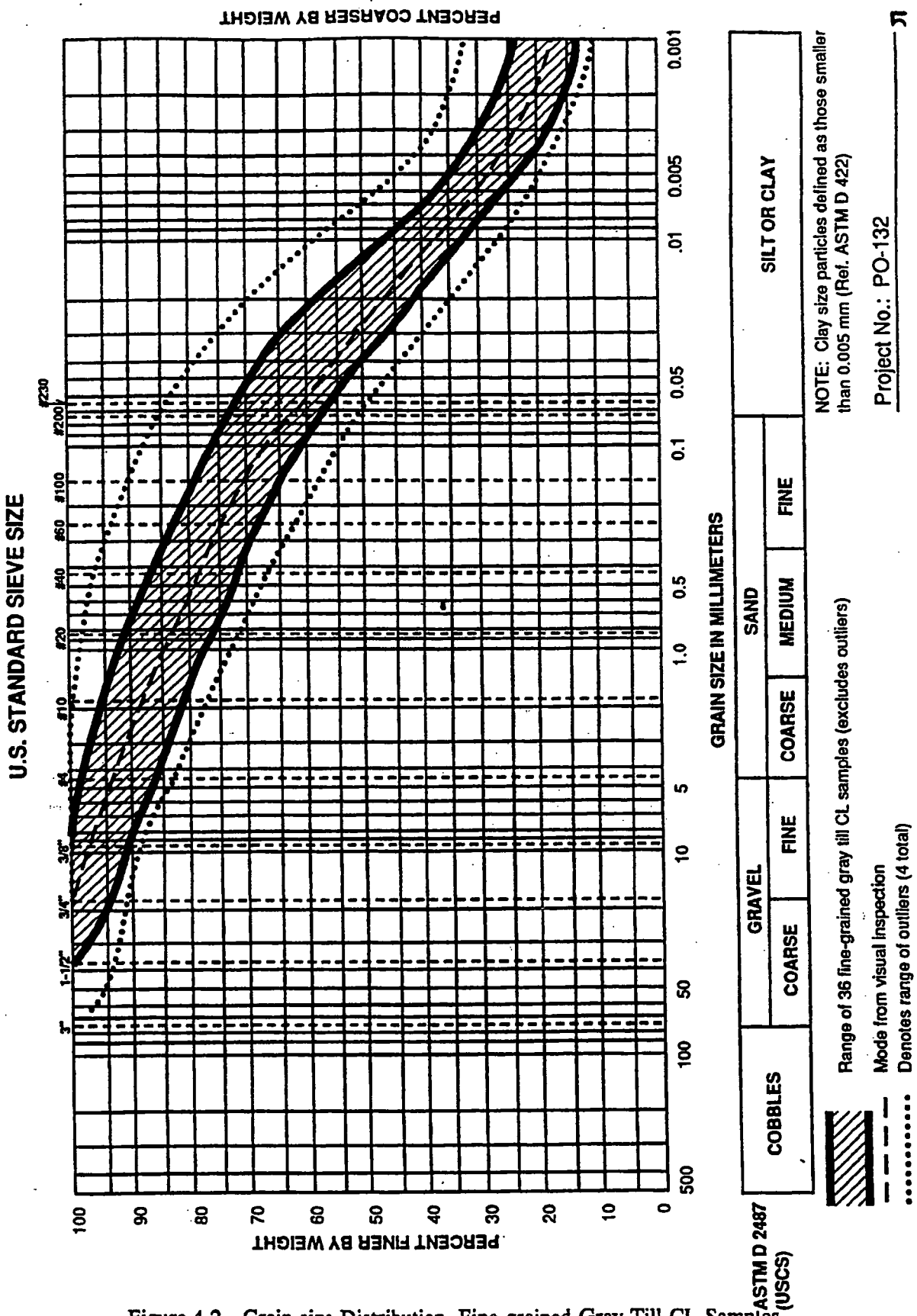


Figure 4-2 - Grain-size Distribution, Fine-grained Gray Till CL Samples

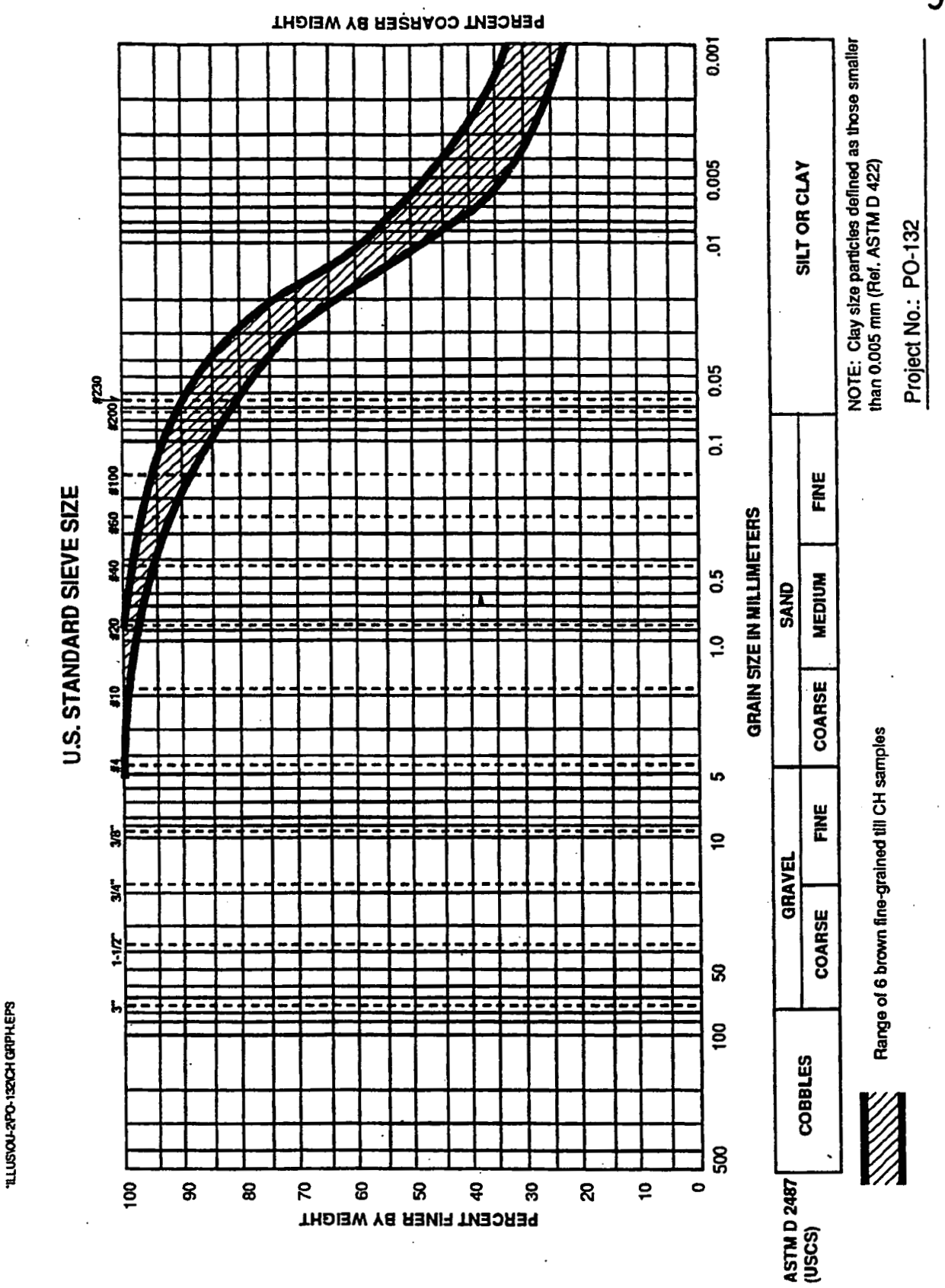
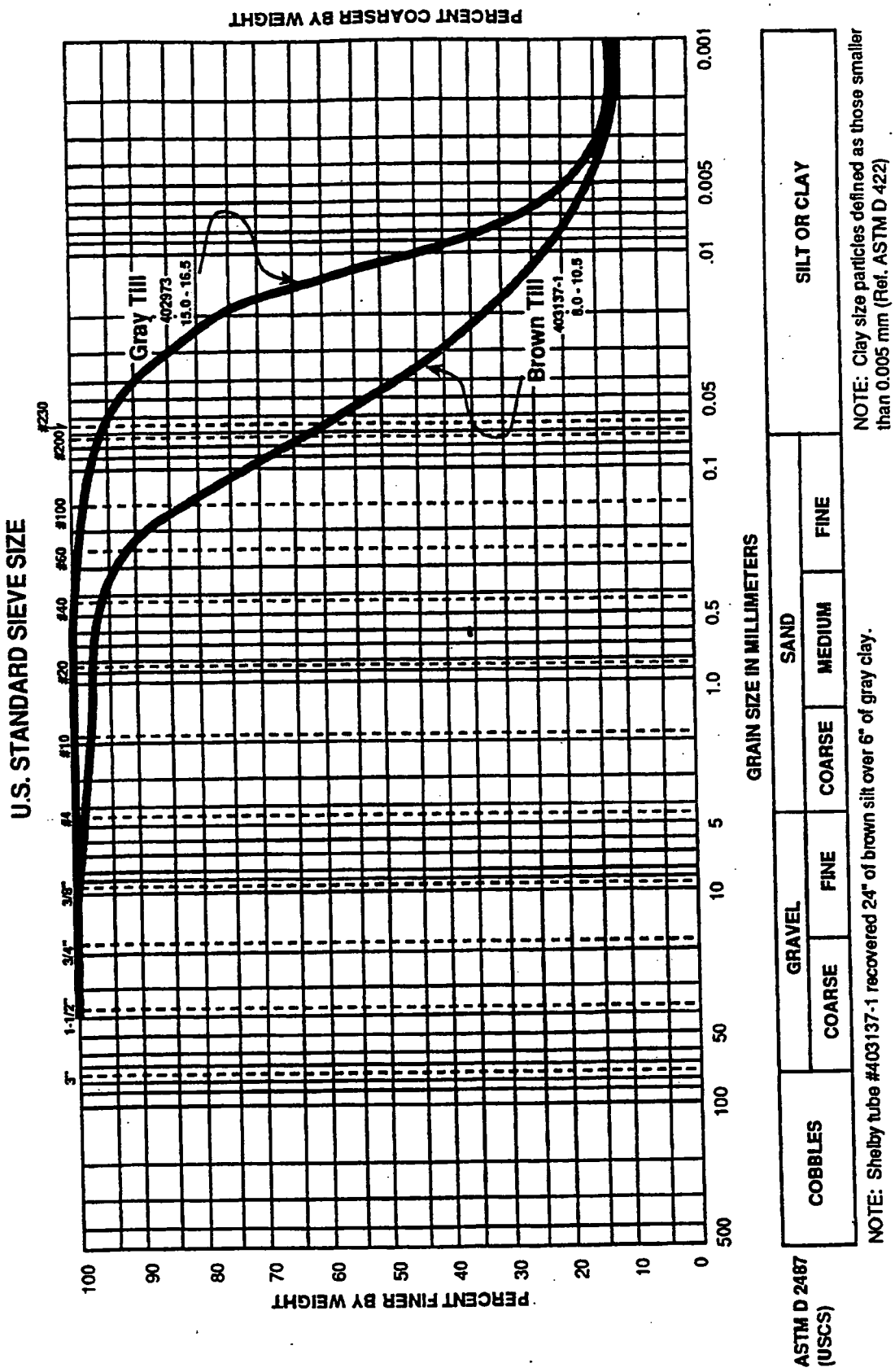


Figure 4-3 - Grain-size Distribution, Fine-grained Brown Till CH Samples



NOTE: Clay size particles defined as those smaller than 0.005 mm (Ref. ASTM D 422)

NOTE: Shelby tube #403137-1 recovered 24" of brown silt over 6" of gray clay.

Project No.: PO-132

"LLUS\OU-2\PO-132\ML GRPH.EPS

Figure 4-4 - Grain-size Distribution, Fine-grained Brown Till ML Samples

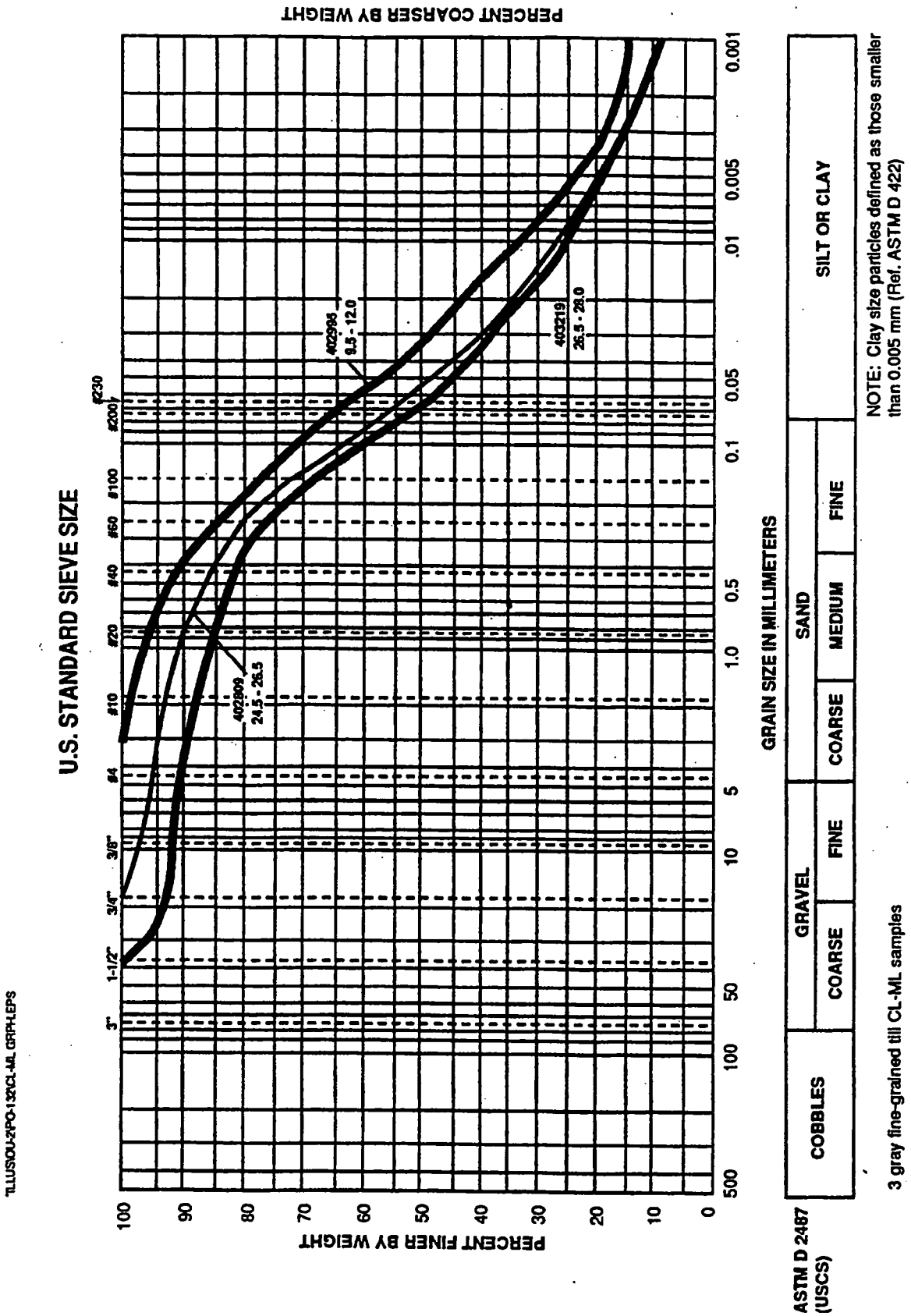
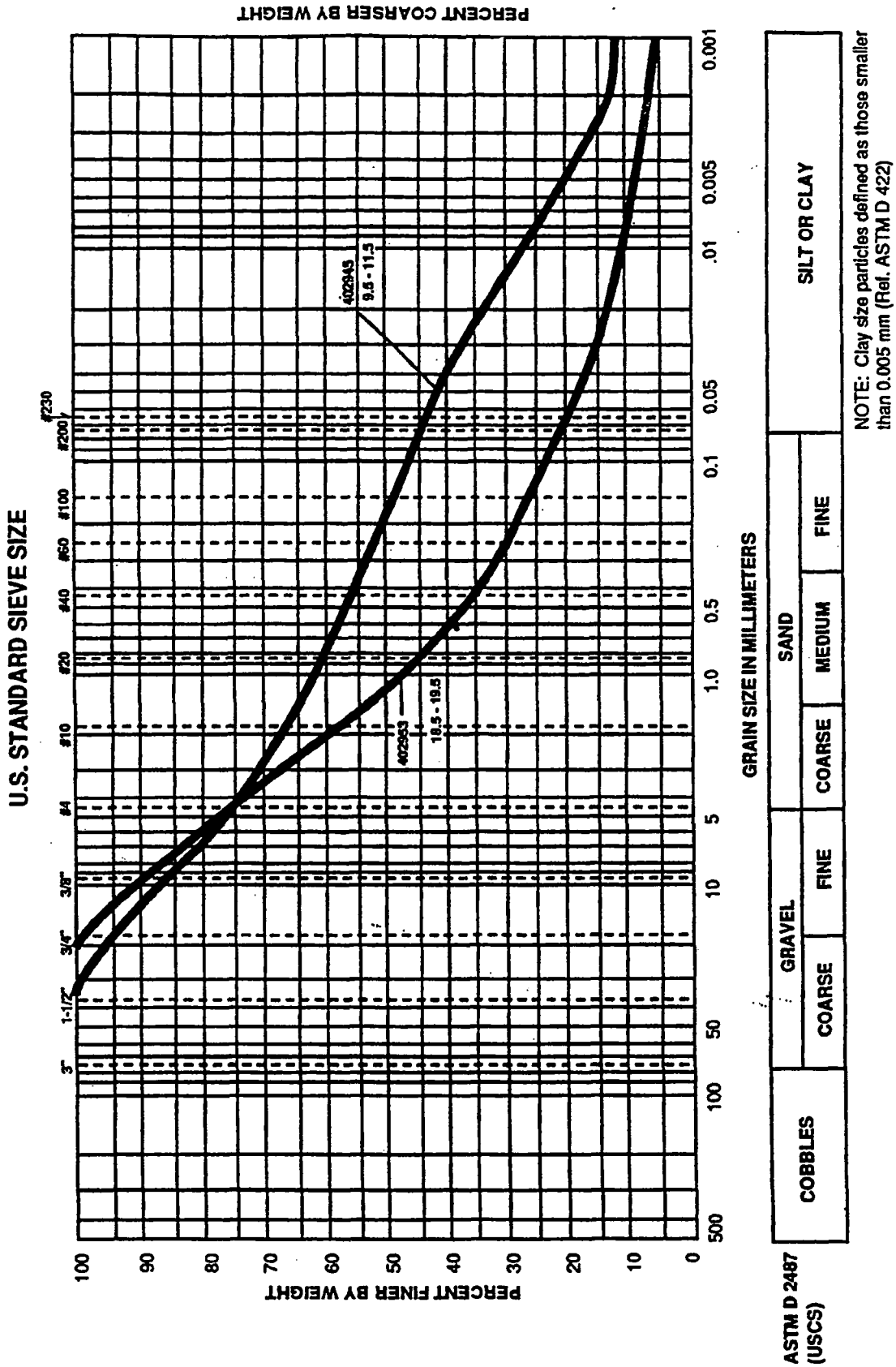


Figure 4-5 - Grain-size Distribution, Fine-grained Gray Till CL-ML Samples



NOTE: Clay size particles defined as those smaller than 0.005 mm (Ref. ASTM D 422)

Project No.: PO-132

*LLUS\OU-2\PO-132\SC GRPH.EPS

Figure 4-6 - Grain-size Distribution, Coarse-grained Brown Till SC Samples

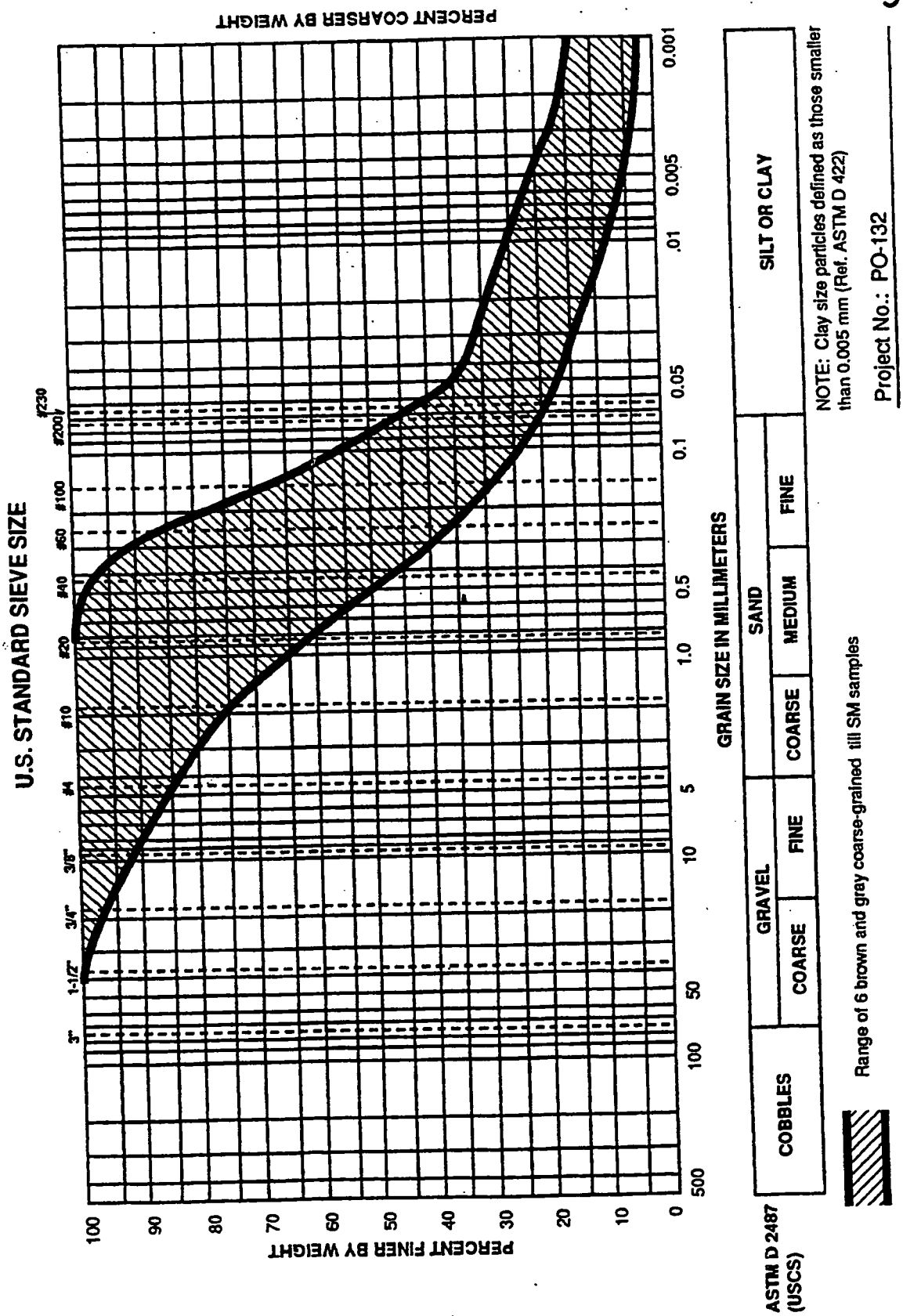


Figure 4-7 - Grain-size Distribution, Coarse-grained Brown and Gray SM Samples

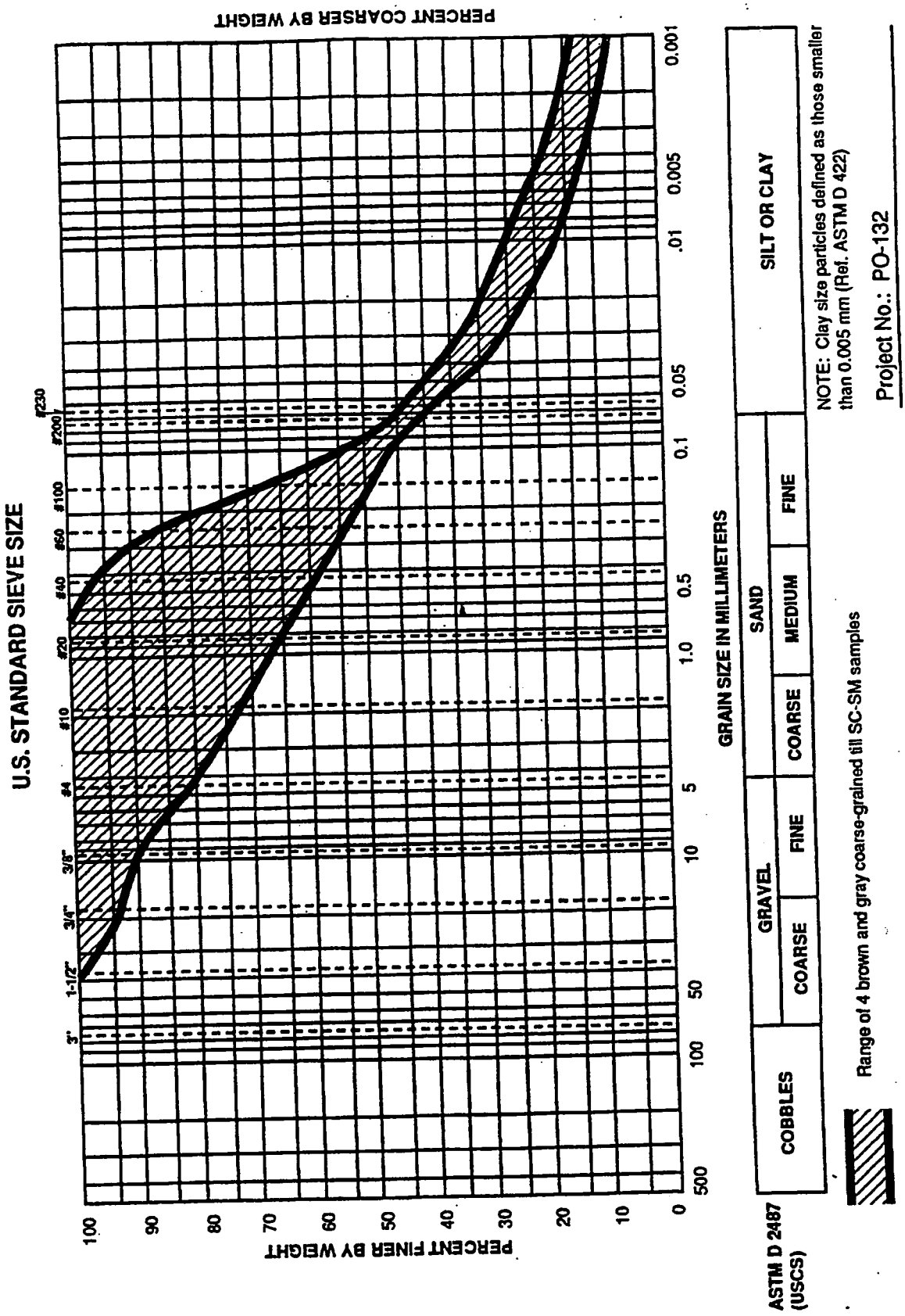


Figure 4-8 - Grain-size Distribution, Coarse-grained Brown and Gray SC-SM Samples

Appendix H

APPENDIX H

LIST OF DRAWINGS AND TECHNICAL SPECIFICATIONS

APPENDIX H
LIST OF DRAWINGS AND TECHNICAL SPECIFICATIONS

The following certified for construction (CFC) drawings have been submitted with this Implementation Plan to compose the Area 3B/4B/5 IRDP:

IRDP DRAWINGS

Area	Drawing No.	Sheet No.	Drawing Title
ALL	99X-5500-X-00641	X-1	Drawing Index
ALL	99X-5500-X-00642	X-2	Foundation Drawing Index
ALL	99X-5500-X-00639	X-3	Legend and General Notes
ALL	99X-5500-G-00640	G-1	Master Plan
3B/4B	99X-5500-G-00674	G-2	Utility Isolation Overview Plan
3B	99X-5500-G-00648	G-3	Utility Isolation Plan (3B North)
3B	99X-5500-G-00649	G-4	Utility Isolation Plan (3B Central)
3B	99X-5500-G-00647	G-5	Utility Isolation Plan (3B SW)
3B	99X-5500-G-00686	G-6	Utility Isolation Plan (3B SE)
4B	99X-5500-G-00786	G-7	Utility Isolation Plan (4B NW)
4B	99X-5500-G-00650	G-8	Utility Isolation Plan (4B CW)
4B	99X-5500-G-00651	G-9	Utility Isolation Plan (4B SW)
4B	99X-5500-G-00652	G-10	Utility Isolation Plan (4B SE)
3B/4B	99X-5500-G-00645	G-11	Traffic Flow and Material Tracking Plan
3B	99X-5500-G-00685	G-12	Layout Plan
3B	99X-5500-G-00687	G-13	Dewatering Plan
3B	99X-5500-G-00700	G-14	Above-WAC Excavation Details and Limits
3B/MDC	99X-5500-G-00711	G-15	HWMU Excavation Details and Limits
3B	99X-5500-G-00688	G-16	Remediation Plan
3B	99X-5500-G-00699	G-17	Contamination Grading (Overview)
3B	99X-5500-G-00695	G-18	Contamination Grading (North)
3B	99X-5500-G-00696	G-19	Contamination Grading (Central)
3B	99X-5500-G-00697	G-20	Contamination Grading (South)
3B	99X-5500-G-00692	G-21	Cross Sections Sheet 1 of 3
3B	99X-5500-G-00693	G-22	Cross Sections Sheet 2 of 3
3B	99X-5500-G-00694	G-23	Cross Sections Sheet 3 of 3
3B	99X-5500-G-00689	G-24	Design Grading / Drainage Plan (North)
3B	99X-5500-G-00690	G-25	Design Grading / Drainage Plan (Central)
3B	99X-5500-G-00691	G-26	Design Grading / Drainage Plan (South)
3B	99X-5500-G-00698	G-27	Foundation Plan
3B	99X-5500-G-00701	G-28	Post-Remediation Grading and Precertification Plan
4B	99X-5500-G-00644	G-29	Layout Plan
4B	99X-5500-G-00646	G-30	Dewatering Plan
4B	99X-5500-G-00677	G-31	Above-WAC Excavation Details and Limits
4B	99X-5500-G-00678	G-32	HWMU Excavation Details and Limits
4B	99X-5500-G-00653	G-33	Remediation Plan
4B	99X-5500-G-00654	G-34	Design Grading / Drainage Plan (NW)
4B	99X-5500-G-00655	G-35	Design Grading / Drainage Plan (NE)

Area	Drawing No.	Sheet No.	Drawing Title
4B	99X-5500-G-00656	G-36	Design Grading / Drainage Plan (CE)
4B	99X-5500-G-00657	G-37	Design Grading / Drainage Plan (CW)
4B	99X-5500-G-00658	G-38	Design Grading / Drainage Plan (SW)
4B	99X-5500-G-00659	G-39	Design Grading / Drainage Plan (SE)
4B	99X-5500-G-00660	G-40	Cross Sections Sheet 1 of 6
4B	99X-5500-G-00661	G-41	Cross Sections Sheet 2 of 6
4B	99X-5500-G-00662	G-42	Cross Sections Sheet 3 of 6
4B	99X-5500-G-00663	G-43	Cross Sections Sheet 4 of 6
4B	99X-5500-G-00664	G-44	Cross Sections Sheet 5 of 6
4B	99X-5500-G-00675	G-45	Cross Sections Sheet 6 of 6
4B	99X-5500-G-00671	G-46	Foundation Plan (North)
4B	99X-5500-G-00672	G-47	Foundation Plan (Central)
4B	99X-5500-G-00673	G-48	Foundation Plan (South)
4B	99X-5500-G-00681	G-49	Basin 4B1 Transfer Line Plan and Profile
4B	99X-5500-G-00682	G-50	Basin 4B2 GMA/Clay Plug Plan and Profile
4B	99X-5500-G-00683	G-51	Transfer Line Details Sheet 1
4B	99X-5500-G-00684	G-52	Transfer Line Details Sheet 2
4B	99X-5500-G-00706	G-53	Interim Grading (South)
4B	99X-5500-G-00745	G-54	Rerouted Storm Sewer Line
4B	99X-5500-G-00679	G-55	Post-Remediation Grading and Precertification Plan
5	99X-5500-G-00702	G-56	Layout and Remediation Plan
5	99X-5500-G-00703	G-57	Traffic Flow and Material Tracking Plan
5	99X-5500-G-00704	G-58	Dewatering Plan
5	99X-5500-G-00707	G-59	Final Grading Restoration Plant (North)
5	99X-5500-G-00708	G-60	Final Grading Restoration Plan (South)
5	99X-5500-G-00709	G-61	Foundation Plan (West)
5	99X-5500-G-00710	G-62	Foundation Plan (East)
5	99X-5500-G-00712	G-63	Post-Remediation Grading and Precertification Plan
MDC	99X-5500-G-00713	G-64	Traffic Flow and Material Tracking Plan
MDC	99X-5500-G-00714	G-65	Dewatering and Remediation Plan
MDC	99X-5500-G-00715	G-66	Design Grading / Drainage Plan (North)
MDC	99X-5500-G-00716	G-67	Design Grading / Drainage Plan (North Central)
MDC	99X-5500-G-00717	G-68	Design Grading / Drainage Plan (South Central)
MDC	99X-5500-G-00718	G-69	Design Grading / Drainage Plan (South)
MDC	99X-5500-G-00719	G-70	Design Grading / Drainage Plan (East)
MDC	99X-5500-G-00720	G-71	Cross Sections Sheet 1 of 5
MDC	99X-5500-G-00721	G-72	Cross Sections Sheet 2 of 5
MDC	99X-5500-G-00722	G-73	Cross Sections Sheet 3 of 5
MDC	99X-5500-G-00723	G-74	Cross Sections Sheet 4 of 5
MDC	99X-5500-G-00724	G-75	Cross Sections Sheet 5 of 5
MDC	99X-5500-G-00705	G-76	Foundation Plan
ALL	99X-5500-G-00738	D-1	Civil Details Sheet 1
ALL	99X-5500-G-00739	D-2	Civil Details Sheet 2
ALL	99X-5500-G-00769	D-3	Utility and Structure Removal Below Design Grade
4B	99X-5500-N-00680	N-1	Wastewater Collection and Transfer Line Piping and Instrumentation Diagram
4B	99X-5500-E-00758	E-1	Electrical Symbols and Legend
4B	99X-5500-E-00759	E-2	Single Line Diagram/Elevations

Area	Drawing No.	Sheet No.	Drawing Title
4B	99X-5500-E-00760	E-3	Single Line Equipment Diagrams
4B	99X-5500-E-00761	E-4	Electrical Power Pole Guy Wires Anchoring and Aerial Details
4B	99X-5500-E-00762	E-5	Electrical Power Pole Guy Wires Anchoring and Aerial Details
4B	99X-5500-E-00763	E-6	Electrical Panel Schedules
4B	99X-5500-E-00764	E-7	Electrical PP-45-2 Location
4B	99X-5500-E-00765	E-8	Electrical Power Pole SW-128 Location

CONSTRUCTION REFERENCE DRAWINGS

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

4B	99X-5500-G-00767	Silos Utility Trench Excavation Plan – Phase I
4B	99X-5500-G-00768	Building 68 Berm Removal

UTILITY GRID REFERENCE DRAWINGS

The following underground utility drawings are attached for reference by Area 3B/4B/5 IRDP. These drawings are listed by remediation area, then by grid number. Some drawings are repeated as they apply to multiple remediation areas.

ALL	22X-5500-P-00659	Master Grid of Underground Utility Plans
3B	22B-5500-P-00676	Grid 17 Underground Utilities
3B	22B-5500-P-00677	Grid 18 Underground Utilities
3B	22D-5500-P-00678	Grid 19 Underground Utilities
3B	22B-5500-P-00681	Grid 22 Underground Utilities
3B	22B-5500-P-00682	Grid 23 Underground Utilities
3B	22B-5500-P-00683	Grid 24 Underground Utilities
3B	22B-5500-P-00686	Grid 27 Underground Utilities
4B	22H-5500-P-00673	Grid 14 Underground Utilities
4B	22D-5500-P-00678	Grid 19 Underground Utilities
4B	22D-5500-P-00679	Grid 20 Underground Utilities
4B	22G-5500-P-00680	Grid 21 Underground Utilities
4B	22D-5500-P-00684	Grid 25 Underground Utilities
4B	22G-5500-P-00685	Grid 26 Underground Utilities
5	22A-5500-P-00664	Grid 5 Underground Utilities
5	22H-5500-P-00666	Grid 7 Underground Utilities
5	22H-5500-P-00667	Grid 8 Underground Utilities
5	22H-5500-P-00673	Grid 14 Underground Utilities
5	22H-5500-P-00674	Grid 15 Underground Utilities
MDC	22F-5500-P-00663	Grid 4 Underground Utilities
MDC	22F-5500-P-00665	Grid 6 Underground Utilities
MDC	22H-5500-P-00666	Grid 7 Underground Utilities

MDC	22C-5500-P-00668	Grid 9 Underground Utilities
MDC	22C-5500-P-00669	Grid 10 Underground Utilities
MDC	22C-5500-P-00670	Grid 11 Underground Utilities
MDC	22E-5500-P-00671	Grid 12 Underground Utilities
MDC	22E-5500-P-00672	Grid 13 Underground Utilities
MDC	22H-5500-P-00673	Grid 14 Underground Utilities
MDC	22H-5500-P-00674	Grid 15 Underground Utilities
MDC	22B-5500-P-00675	Grid 16 Underground Utilities
MDC	22B-5500-P-00676	Grid 17 Underground Utilities
MDC	22B-5500-P-00677	Grid 18 Underground Utilities
MDC	22D-5500-P-00678	Grid 19 Underground Utilities
MDC	22D-5500-P-00679	Grid 20 Underground Utilities
MDC	22G-5500-P-00680	Grid 21 Underground Utilities
ALL	00X-5500-G-01846	Master FEMP GPS Benchmark Location Plan

RIC-WIL REFERENCE DRAWINGS

The following drawings are referenced by Area 3B/4B/5 IRDP for locating ric-wil insulated piping suspected of containing asbestos based on historical information.

5/MDC	14X-7000-P-00067	Yard Piping Main Office Bldg. Area Underground Piping Plan
4B	15X-7000-H-00077	Laboratory Heating and Ventilation & Air Conditioning Basement Plan
4B	15X-7000-H-00079	Laboratory Heating and Ventilation & Air Conditioning 1st Floor Plan – East
4B	15X-7000-P-00081	Laboratory Heating and Ventilation & Air Conditioning 1st Floor Plan – West
MDC	22D-1450-P-00136	Detail Plan Area "C"
5/MDC	22D-1450-P-00208	Underground Services to Buildings South of First Street
MDC	22D-1450-P-00031	Plan of Area C-5 Underground Services
MDC	22E-1450-P-00053	Plan of Area E-5 Underground Services
5/MDC	22E-1450-P-00204	Detail Plan Area "G-G"
5/MDC	22E-1450-P-00217	Detail Plan Area "H-H"
5/MDC	22F-1450-P-00220	Detail Plan Area "K-K"
5/MDC	22G-1450-P-00033	Plan of Area C-6 Underground Services
5/MDC	22H-1450-P-00044	Plan of Area D-6 Underground Services
MDC	22H-7000-P-00085	Yard Piping Service Bldg Area Underground Piping Plan
5/MDC	22H-1450-P-00185	Detail Plan Area "R" & "A-A"
5/MDC	22H-1450-S-00185	Steam Services to Building
5/MDC	53X-7000-P-00046	Yard Piping Health and Safety Bldg Area Underground Piping Plan

TECHNICAL REFERENCE DRAWINGS

The following technical reference drawings are attached for reference by Area 3B/4B/5 IRDP.

Area	Drawing No.	Sheet No.	Drawing Title
3B	56X-1900-S-00050	S-001	Structure 56A Foundation and Slab Plan
3B	30X-5500-S-00091	None	Building 30A Chemical Warehouse Foundation and Slab Plan
3B	67X-1900-S-00006	S-001	Structure 67 Foundation and Slab Plan
3B	74B-1900-S-00077	S-001	Structure 74T Foundation and Slab Plan
3B	01D-1900-S-01388	S-001	Structure 1B Foundation and Slab Plan
3B	01X-1900-S-01389	S-001	Structure North 2H and 1A Foundation and Slab Plan
3B	01C-1900-S-01390	S-001	Structure South 2H, 2E and 1C Foundation and Slab Plan
3B	02X-1900-S-03448	S-001	Structure 2H and Pit Foundation and Slab Plan
3B	66X-1900-S-00005	S-001	Structure 66 Foundation and Slab Plan
3B	71X-1900-S-00071	S-001	Structure 71 North Portion Foundation and Slab Plan
3B	71X-1900-S-00072	S-002	Structure 71 South Portion Foundation and Slab Plan
3B	72X-1900-S-00018	S-001	Structure 72 Foundation and Slab Plan
4B	02X-1900-S-03451	S-001	Structure 2A West and 2D Foundation Plan
4B	02X-1900-S-03452	S-002	Structure 2A West and 2D Slab Plan
4B	02X-1900-S-03453	S-003	Structure 2A East, Solvent Storage and Treatment Areas Foundation Plan
4B	02X-1900-S-03454	S-004	Structure 2A East, Solvent Storage and Treatment Areas Slab Plan
4B	02B-3900-S-02884	None	Plant 02 TBP and Kerosene Storage Foundation Location Plan and Miscellaneous Sections and Details
4B	03X-1900-S-01042	S-001	Structure 3A and 2C Foundation Plan
4B	03X-1900-S-01043	S-002	Structure 3A and 2C Slab Plan
4B	03X-1900-S-01041	S-001	Structure 3C and 3B Foundation and Slab Plan
4B	03X-1900-S-01048	S-001	Structure 3D Foundation Plan
4B	03X-1900-S-01049	S-002	Structure 3D Slab Plan
4B	02X-1900-S-03459	S-001	Structure 3E Foundation Plan
4B	02X-1900-S-03460	S-002	Structure 3E Slab Plan
4B	03A-1900-S-01044	S-001	Structure 3G and 3F Foundation Plan
4B	03A-1900-S-01045	S-002	Structure 3G and 3F Slab Plan
4B	18X-1900-S-01412	S-001	Structure 3H and 2B Foundation Plan
4B	18X-1900-S-01413	S-002	Structure 3H and 2B Slab Plan
4B	02E-1900-S-03457	S-001	Structure 3J Foundation Plan
4B	02E-1900-S-03458	S-002	Structure 3J Slab Plan
4B	03B-1900-S-01050	S-001	Structure 3L Foundation Plan
4B	03B-1900-S-01051	S-002	Structure 3L Slab Plan
4B	18X-1900-S-01414	S-001	Structure 18B Foundation Plan
4B	18X-1900-S-01415	S-002	Structure 18B Slab Plan
4B	18D-1900-S-01416	S-001	Structure 18D Foundation Plan
4B	18D-1900-S-01417	S-002	Structure 18D Slab Plan
4B	39X-1900-S-00073	S-001	Structure 39A Foundation Plan
4B	39X-1900-S-00074	S-002	Structure 39A Slab Plan
4B	02X-1900-S-03455	S-001	Structure 39B and Nitric Acid Storage Area Foundation Plan

Area	Drawing No.	Sheet No.	Drawing Title
4B	02X-1900-S-03456	S-002	Structure 39B and Nitric Acid Storage Area Slab Plan
4B	03X-1900-S-01046	S-001	Structure 39C and 3K Foundation Plan
4B	03X-1900-S-01047	S-002	Structure 39C and 3K Slab Plan
4B	02X-1900-S-03450	S-001	Structure 74B and Elevator Pit Foundation and Slab Plan
4B	34X-5900-S-00151	S0001	K-65 Trench Foundation and Slab Plan
4B	18X-1900-S-01408	S-001	OK Liquor Storage Area and Containment Area for Tanks 10, 11, and 13 Foundation Plan
4B	18X-1900-S-01409	S-002	OK Liquor Storage Area and Containment Area for Tanks 10, 11, and 13 Slab Plan
4B	18X-1900-S-01410	S-001	Containment Area for Tanks 8 and 14 and Containment Area for Tank 9 Foundation Plan
4B	18X-1900-S-01411	S-002	Containment Area for Tanks 8 and 14 and Containment Area for Tank 9 Slab Plan
4B	08X-5900-S-03729	S0001	Building 8A Foundation Plan - West
4B	08X-5900-S-03730	S0002	Building 8A Foundation Plan - East
4B	08X-5900-S-03743	S0003	Building 8A Footing Schedule
4B	08X-5900-S-03731	S0004	Building 8A Slab Plan - West
4B	08X-5900-S-03732	S0005	Building 8A Slab Plan - East
4B	08H-5900-S-03733	S0001	Building 8B Foundation Plan
4B	08H-5900-S-03734	S0002	Building 8B Slab Plan
4B	08H-5900-S-03735	S0001	Building 8C Foundation Plan
4B	08H-5900-S-03736	S0002	Building 8C Slab Plan
4B	24B-5900-S-00202	S0001	Building 8D Foundation and Slab Plan
4B	08X-5900-S-03737	S0001	Building 8G Foundation Plan - West
4B	08X-5900-S-03738	S0002	Building 8G Foundation Plan - East
4B	08X-5900-S-03739	S0003	Building 8G Slab Plan - West
4B	08X-5900-S-03740	S0004	Building 8G Slab Plan - East
4B	08X-5900-S-03741	S0001	Building 8H Foundation Plan
4B	08X-5900-S-03742	S0002	Building 8H Slab Plan
4B	18D-5900-S-01418	S0001	Building 18H Foundation and Slab Plan
4B	74D-5900-S-00079	S0001	Building 74C Foundation Plan
4B	74D-5900-S-00080	S0002	Building 74C Slab Plan
4B	74D-5900-S-00081	S0001	Building 74Q Foundation Plan
4B	74D-5900-S-00082	S0002	Building 74Q Slab Plan
4B	80X-5900-S-00049	S0001	Building 80 Foundation Plan
4B	80X-5900-S-00050	S0002	Building 80 Slab Plan
4B	15X-5900-S-02542	S0001	Building 15A Foundation Plan - North
4B	15X-5900-S-02543	S0002	Building 15A Foundation Plan - South
4B	15X-5900-S-02544	S0003	Building 15A Slab Plan - North
4B	15X-5900-S-02545	S0004	Building 15A Slab Plan - South
4B	15X-5900-S-02546	S0001	Building 15B Foundation Plan
4B	15X-5900-S-02547	S0002	Building 15B Slab Plan
4B	22D-5900-S-00979	S0001	Scale 22D Foundation and Slab Plan
4B	26A-5900-S-00299	S0001	Building 26A Foundation Plan
4B	26A-5900-S-00300	S0002	Building 26A Slab Plan
4B	26B-5900-S-00301	S0001	Elevated Water Storage Tank 26B Foundation and Slab Plan
4B	45X-5900-S-00265	S0001	Building 45A Foundation Plan
4B	45X-5900-S-00266	S0002	Building 45A Slab Plan

Area	Drawing No.	Sheet No.	Drawing Title
4B	34X-5900-S-00150	S0001	K-65 Trench Foundation and Slab Plan
4B	54X-5900-S-00923	S0001	Building 13A, 54A, and 74U Foundation Plan
4B	54X-5900-S-00924	S0002	Building 13A, 54A, and 74U Slab Plan
4B	13X-5900-S-00781	S0001	Building 13B Foundation Plan
4B	13X-5900-S-00782	S0002	Building 13B Slab Plan
4B	13X-5900-S-00779	S0001	Tank Area 13C and 13D Foundation Plan
4B	13X-5900-S-00780	S0002	Tank Area 13C and 13D Slab Plan
4B	19X-3900-S-00320	None	Plant 19 Ammonia Storage Area Foundation Location and Finish Grading Plan
4B	19X-3900-S-00321	None	Plant 19 Ammonia Storage Area Foundation Location and Finish Grading Plan
4B	19X-3900-S-00322	None	Plant 19 Ammonia Storage Area Foundation Location and Finish Grading Plan, and Details
4B	19X-3900-S-00323	None	Plant 19 Ammonia Storage Area Sump Sections and Details
4B	37X-5900-S-01303	S0001	Building 37 Foundation Plan
4B	37X-5900-S-01304	S0002	Building 37 Slab Plan
4B	54D-5900-S-00925	S0001	Building 54B Foundation and Slab Plan
4B	54X-5900-S-00926	S0001	Building 54C Foundation and Slab Plan
4B	68X-5900-S-00091	S0001	Building 68 Foundation and Slab Plan
5	16H-5900-S-00114	S0001	Building 16 Foundation Plan
5	16H-5900-S-00115	S0002	Building 16 Slab Plan
5	25H-5900-S-00227	S0001	Building 25C Foundation Plan
5	25H-5900-S-00228	S0002	Building 25C Slab Plan
5	16X-5900-S-00117	S0001	Building 26C Foundation Plan
5	16X-5900-S-00118	S0002	Building 26C Slab Plan
5	31X-5900-S-00059	S0001	Building 31A and 31B Foundation Plan
5	31X-5900-S-00060	S0002	Building 31A and 31B Slab Plan
5	46X-5900-S-00068	S0001	Building 46A, 46B, and 46C Foundation Plan
5	46X-5900-S-00069	S0002	Building 46A, 46B, and 46C Slab Plan
5	11X-5900-S-00770	S0001	Building 11 Foundation Plan - East
5	11X-5900-S-00771	S0002	Building 11 Foundation Plan - West
5	11X-5900-S-00772	S0003	Building 11 Slab Plan - East
5	11X-5900-S-00773	S0004	Building 11 Slab Plan - West
5	14X-5900-S-00531	S0001	Building 14A and 14B Foundation Plan
5	14X-5900-S-00532	S0002	Building 14A and 14B Slab Plan
5	22G-5900-S-00980	S0001	Building 22B Foundation Plan
5	22G-5900-S-00981	S0002	Building 22B Slab Plan
5	22B-5900-S-00345	S0001	Building 28A and B Foundation Plan
5	22B-5900-S-00346	S0002	Building 28A and B Slab Plan
5	53B-5900-S-00431	S0001	Building 53A Foundation Plan
5	53B-5900-S-00432	S0002	Building 53A Slab Plan
5	53C-5900-S-00433	S0001	Building 53B Foundation Plan
5	53C-5900-S-00434	S0002	Building 53B Slab Plan
MDC	12X-5900-S-00477	S0001	Building 12A – West Foundation Plan
MDC	12X-5900-S-00479	S0002	Building 12A – West Slab Plan
MDC	19X-5900-S-00696	S0001	Tank Farm 19A Foundation Plan
MDC	19X-5900-S-00697	S0002	Tank Farm 19A Slab Plan
MDC	19X-5900-S-00699	S0001	Tank Farm 19D Foundation and Slab Plan
MDC	19X-5900-S-00698	S0001	Building 19C and Tank Farm 19E Foundation and Slab Plan
MDC	20B-5900-S-00456	S0001	Building 20A Foundation and Slab Plan

UNDERGROUND UTILITIES WITHIN FACILITY FOOTPRINTS REFERENCE DRAWINGS

The following reference drawings document research of underground utilities within facility footprints, and are attached for reference by Area 3B/4B/5 IRDP.

Area	Drawing No.	Drawing Title
3B	17X-5500-P-00125	Plant 1 Pad Facilities – Underground Utility Locations
3B	30X-5500-P-00092	Chem Warehouse – Underground Utility Locations
3B	56X-5500-P-00051	CP Storage Warehouse – Underground Utility Locations
4B	13X-5500-P-00786	Pilot Plant – Bldg 13A/54/37A – Underground Utility Locations
4B	18X-5500-P-01419	B.D.N. – Bldg 18D – Underground Utility Locations
4B	15X-5500-P-02584	Lab – Building 15 – Underground Utility Locations
4B	39X-5500-P-00077	Incinerator Bldg – Bldg 39A – Underground Utility Locations
4B	68X-5500-P-00092	Maintenance DOP Shop – Bldg 68 – Underground Utility Locations
4B	02X-5500-P-03480	Ore Refinery – Bldg 2A/3A – Underground Utility Locations
4B	03X-5500-P-01063	Hot Raffinate Bldg – Bldg 3E – Underground Utility Locations
4B	08X-5500-P-03758	Recovery Plant – Plant 8 Complex – Underground Utility Locations

IRDP TECHNICAL SPECIFICATIONS

The following CFC technical specifications make up the combined Area 3B/4B/5 technical specification package for this remediation effort:

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
Section 02668	Transfer Lines
Section 15060	Pipe, Fittings, Valves, and Accessories
Section 15160	Lift Station Pumps
Section 16050	Basic Electrical Materials and Methods
Section 16170	Grounding and Bonding
Section 16370	Overhead Power Distribution
Section 16462	Dry Type Transformers/Panelboards

SPECIFICATIONS REFERENCED FROM OSDF DESIGN

The following CFC technical specifications are referenced in this design from the OSDF technical specifications as 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 02714	Geotextiles
Section 02930	Vegetation