Sandia National Laboratories/New Mexico

PROPOSALS FOR NO FURTHER ACTION ENVIRONMENTAL RESTORATION PROJECT SWMUs 2, 30, 94B, and 94F

Volume 1 of 3
(SWMU 30)

September 2001

Environmental
Restoration
Project

United States Department of Energy
Albuquerque Operations Office

EXECUTIVE SUMMARY

Sandia National Laboratories/New Mexico (SNL/NM) is proposing risk-based no further action (NFA) decisions for Solid Waste Management Units (SWMUs) 2, 30, 94B, and 94F. Review and analysis of all relevant data for these SWMUs indicate that concentrations of constituents of concern (COCs) at these sites are less than applicable risk assessment action levels. Thus, these SWMUs are proposed for an NFA decision based on confirmatory sampling data demonstrating that COCs that could have been released from the SWMUs into the environment pose an acceptable level of risk under current and projected future land use, as set forth by Criterion 5, which states, "the SWMU/AOC [area of concern] has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use" (NMED March 1998). The executive summary briefly describes each of the above-listed SWMUs.

SWMU 2 (the Classified Waste Landfill in Operable Unit [OU] 1303) is an inactive site located on the eastern side of Technical Area (TA)-II. TA-II was used for weapons assembly in the late 1940s and 1950s, then dedicated to explosives research until the mid-1990s. Classified material was buried at SWMU 2 reportedly from the early 1950s through 1987, but could have begun as early as 1947. SWMU 2 was characterized through three investigations: the Comprehensive Environmental Assessment and Response Program (CEARP) conducted in the mid-1980s, Environmental Restoration (ER) Preliminary Investigations begun in 1991, and an ER Project Voluntary Corrective Measure from March 1998 to February 2000. The COCs identified at SWMU 2 during the three investigations through February 2000 were metals, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and radionuclides, none of which were present at concentrations considered hazardous to human health under either residential or industrial land-use settings. It was determined that no complete ecological pathways will exist for SWMU 2 when the excavation is backfilled and capped, and thus, no ecological risks are associated with COCs at SWMU 2 under current or potential future scenarios. However, an additional investigation for polychlorinated biphenyls (PCBs) will be required at SWMU 2.

SWMU 30 (the Reclamation Yard in OU 1302) is an inactive site in TA-I. SWMU 30 was used in salvage operations and the selling of surplus supplies and scrap materials for an approximate 40-year period (1950s-1990). During the 40-year operational period of SWMU 30, waste oil (contaminated with PCBs) was used for dust control at the site. SWMU 30 was characterized through 15 separate investigations from 1986 through 2000, and PCB-contaminated soils (containing greater than 1 part per million of total PCBs) were removed and disposed off-site. The COCs at SWMU 30 were inorganic compounds, SVOCs, and PCBs, none of which were present at concentrations considered hazardous to human health under an industrial land-use setting. After considering the uncertainties associated with the available data and modeling assumptions, it was determined the ecological risks associated with SWMU 30 were very low.

SWMU 94B (the Debris/Soil Mound Area in OU 1333) is an inactive subunit in the south-central portion of the Lurance Canyon Burn Site (LCBS). SWMU 94B is most likely associated with grading, earthmoving, and facility improvement activities at the LCBS but has never been a location where documented testing occurred in the past. SWMU 94B was characterized through four investigations: the CEARP conducted in the mid-1980s, an ER Preliminary

TABLE OF CONTENTS

EXECUTIVE SUMMARY i
LIST OF FIGURES ix
LIST OF TABLES xv
LIST OF ANNEXES xxiii

1.0 INTRODUCTION 1-1

2.0 SOLID WASTE MANAGEMENT UNIT 30, THE RECLAMATION YARD 2-1

2.1 Summary 2-1
2.2 Description and Operational History 2-1

2.2.1 SWMU Description 2-1
2.2.2 Operational History 2-6

2.3 Land Use 2-6

2.3.1 Current Land Use 2-6
2.3.2 Future/Proposed Land Use 2-9

2.4 Investigatory Activities 2-9

2.4.1 Summary 2-9
2.4.2 Investigation #1—1986 Soils Investigation 2-9
2.4.3 Investigation #2—1987 CEARP Investigation 2-13
2.4.4 Investigation #3—1989/1990 Investigations of PCBs, Asbestos, and Metals 2-17
2.4.5 Investigation #4—1991 Investigation of an Unknown Substance 2-21
2.4.6 Investigation #5—March–April 1992 Investigation for Site Clearance 2-22
2.4.7 Investigation #6—1993 Investigation of an Unknown Substance 2-27
2.4.8 Investigation #7—March–April 1995 RFI Field Investigation 2-28
2.4.9 Investigation #8—February and June 1997 RFI Field Investigation Supplemental Sampling 2-117
2.4.10 Investigation #9—February 1999 RFI Field Investigation Supplemental Sampling of Mercury Hot Spots 2-125
2.4.11 Investigation #10—January 2000 RFI Field Investigation Supplemental Sampling 2-127
2.4.12 Investigation #11—Winter 2000 RCRA Metals Waste Characterization Sampling 2-139
2.4.13 Investigation #12—Spring 2000 EC/VCM—Phase 1 2-142
2.4.14 Investigation #13—Summer 2000 EC/VCM—Phase 2 2-172

TABLE OF CONTENTS (Continued)

3.5 Site Conceptual Model 3-76

3.5.1 Nature and Extent of Contamination 3-76
3.5.2 Environmental Fate 3-79

3.6 Site Assessments 3-83

3.6.1 Summary 3-83
3.6.2 Screening Assessments 3-83
3.6.3 Baseline Risk Assessments 3-84
3.6.4 Other Applicable Assessments 3-85

3.7 No Further Action Proposal 3-85

3.7.1 Rationale 3-85
3.7.2 Criterion 3-85

4.0 SOLID WASTE MANAGEMENT UNIT 94F, LAARC DISCHARGE PIT, LURANCE CANYON BURN SITE 4-1

4.1 Summary 4-1

4.2 Description and Operational History 4-1

4.2.1 Site Description 4-2
4.2.2 Operational History 4-11

4.3 Land Use 4-11

4.3.1 Current Land Use 4-11
4.3.2 Future/Proposed Land Use 4-11

4.4 Investigatory Activities 4-17

4.4.1 Summary 4-17
4.4.2 Investigation #1–CEARP 4-17
4.4.3 Investigation #2–SNL/NM ER Preliminary Investigations 4-18
4.4.4 Investigation #3–SNL/NM ER Phase 1 RFI 4-20
4.4.5 Investigation #4–SNL/NM ER Phase 2 RFI 4-39
4.4.6 Investigation #5–SNL/NM ER VCA and Confirmatory Sampling 4-57

4.5 Site Conceptual Model 4-119

4.5.1 Nature and Extent of Contamination 4-119
4.5.2 Environmental Fate 4-120

TABLE OF CONTENTS (Concluded)

5.8 Site Conceptual Model 5-133

5.8.1 Nature and Extent of Contamination 5-133
5.8.2 Environmental Fate 5-133

5.9 Site Assessments 5-137

5.9.1 Summary 5-137
5.9.2 Screening Assessments 5-141
5.9.3 Baseline Risk Assessments 5-142
5.9.4 Other Applicable Assessments 5-142

5.10 No Further Action Proposal 5-143

5.10.1 Rationale 5-143
5.10.2 Criterion 5-143

LIST OF FIGURES

Figure		Page
2.2.1-1	SWMU 30, Location of SWMU 30 (Reclamation Yard)	2-3
2.2.2-1	SWMU 30 Oblique Aerial Photograph of the Reclamation Yard (circa 1989), View is to the Southwest with M Street in the Foreground	2-7
2.4.2-1	SWMU 30: Surface Soil Sampling Locations from 1986 Investigations	2-15
2.4.4-1	SWMU 30: Surface Soil Sampling Locations from 1989/1990 Investigation	2-19
2.4.6-1	SWMU 30: Surface Soil Sampling Locations from 1992 Investigations	2-25
2.4.8-1	SWMU 30 Sediment, Surface, and Near-Surface Soil Sampling Locations from the 1995 through 1997 RCRA Facilities Investigations	2-29
2.4.11-1	SWMU 30 Surface Soil Sampling Composite Group Locations for PCBs from January 2000 Investigation	2-129
2.4.11-2	SWMU 30 Surface Soil Sampling Locations for Metals from the January 2000 Investigation	2-133
2.4.13-1	SWMU 30 Areas with PCB Concentrations >1,000 µg/kg (Hot Spots)	2-147
2.4.13-2	SWMU 30 Photograph (View to the East) from Hot Spot A Showing PCB-Contaminated Soil Being Loaded into Dump Trucks for Off-site Disposal	2-149
2.4.13-3	SWMU 30 Photograph (View to the Northeast) from Hot Spot K Showing PCB-Contaminated Soil Being Excavated from the Storm-Water Channel	2-151
2.4.13-4	SWMU 30 Photograph (View to the North) from Hot Spot G Showing Verification Sampling Method	2-155
2.4.13-5	SWMU 30 VCM Final Excavation Depths and Residual PCB Concentrations	2-157
2.4.15-1	SWMU 30 Storm-Water Channel Sample Locations South of the Site	2-175
2.4.16-1	SWMU 30 Photograph (View to the Southwest) of the Building 897X Demolition	2-179
2.4.16-2	SWMU 30 Location and Analytical Results of Composite Characterization Samples Collected beneath the Concrete Slab of Former Building 897X	2-181

LIST OF FIGURES (Continued)

Figure		Page
4.4.5-1	SWMU 94F Phase 2 RFI Soil Gas Sample Locations	4-41
4.4.5-2	SWMU 94F Phase 2 RFI Soil Boring and Soil Gas Sample Locations	4-43
4.4.6-1	Clearing Brush and Aboveground Discharge Line Prior to Starting Excavation	4-61
4.4.6-2	Removal of Aboveground Portion of Wastewater Discharge Line	4-63
4.4.6-3	Removing Clean Overburden from Around the LAARC Discharge Pit	4-67
4.4.6-4	Initial Area of Soil Contamination Observed Immediately Under the Discharge Pit	4-69
4.4.6-5	Horizon of Petroleum-Contaminated Soil Visible Above Bedrock	4-71
4.4.6-6	Excavator Removing Petroleum-Contaminated Soil and Fractured Bedrock	4-73
4.4.6-7	Overview of Completed Excavation (view to east)	4-77
4.4.6-8	Overview of Completed Excavation (view to south)	4-79
4.4.6-9	Excavator on Upper Bench Cut to Access Petroleum-Contaminated Soil in Base of Excavation	4-81
4.4.6-10	Excavator in Area Where DU-Contaminated Soil Was Encountered While Cutting Upper Bench to Access Petroleum-Contaminated Soil in Base of Excavation	4-83
4.4.6-11	View of Petroleum-Contaminated Soil Piles (larger pile is CY94F-SP01)	4-85
4.4.6-12	SWMU 94F VCA Completed Excavation and Soil Piles	4-87
4.4.6-13	Loading Petroleum-Contaminated Soil into Trucks for Transport to Disposal Facility	4-91
4.4.6-14	Using Screen-All to Remove Rocks from CY94F-SP01 Prior to Off-Site Transport	4-95
4.4.6-15	Staging Area for Rock Removed from CY94F-SP01	4-97

LIST OF FIGURES (Concluded)

Figure		Page
5.7.2-1	Location of Final VCM Verification Soil Samples, SWMU 2, August 2000	5-117
5.8.2-1	Conceptual Model Flow Diagram for SWMU 2, Classified Waste Landfill	5-139

LIST OF TABLES

Table		Page
2.4.1-1	Historical Timeline for SWMU 30	2-10
2.4.6-1	Summary of SWMU 30 Soil Sampling Parameters, March–April 1992 (from IT July 1992)	2-23
2.4.8-1	Summary of SWMU 30 Immunoassay Field Screening Results (Detections Only), March–April 1995 (ERCL)	2-33
2.4.8-2	Summary of SWMU 30 Surface Soil Sampling VOC Analytical Results, March–April 1995 (Off-Site Laboratory)	2-35
2.4.8-3	Summary of SWMU 30 Subsurface Soil Sampling VOC Analytical Results, March–April 1995 (Off-Site Laboratory)	2-41
2.4.8-4	VOC Analytical Method Detection Limits Used for SWMU 30 Soil Sampling, March–April 1995 (Off-Site Laboratory)	2-47
2.4.8-5	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 1 of 4) (Off-Site Laboratory)	2-48
2.4.8-6	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 2 of 4) (Off-Site Laboratory)	2-53
2.4.8-7	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 3 of 4) (Off-Site Laboratory)	2-58
2.4.8-8	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 4 of 4) (Off-Site Laboratory)	2-63
2.4.8-9	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 1 of 2) (Off-Site Laboratory)	2-68
2.4.8-10	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 2 of 2) (Off-Site Laboratory)	2-72
2.4.8-11	SVOC Analytical Method Detection Limits Used for SWMU 30 Soil Sampling, March–April 1995 (Off-Site Laboratory)	2-76
2.4.8-12	Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results, March–April 1995 (Off-Site Laboratory)	2-79
2.4.8-13	Summary of SWMU 30 Subsurface Soil Sampling PCB Analytical Results, March–April 1995 (Off-Site Laboratory)	2-83
2.4.8-14	PCB Method Detection Limits Used for SWMU 30 Soil Sampling, March–April 1995 (Off-Site Laboratory)	2-87

LIST OF TABLES (Continued)

Table		Page
2.4.12-2	Summary of SWMU 30 Soil Sampling, Comparison of 1995 Total Lead and Cadmium Concentrations Versus 2000 TCLP Lead and Cadmium Concentrations (Off-Site Laboratory)	2-141
2.4.12-3	Summary of SWMU 30 Soil Sampling, Comparison of Range of Concentrations of 1995 Total Metals Results Versus 2000 TCLP Metals Results	2-142
2.4.13-1	Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results, May–July 2000 (Off-Site Laboratory)	2-159
2.4.13-2	PCB Analytical Method Detection Limits Used for SWMU 30 Soil Sampling, May–July 2000 (Off-Site Laboratory)	2-169
2.4.13-3	Summary of SWMU 30 PCB Relative Percent Differences, May–July 2000 (Off-Site Laboratory)	2-170
2.4.16-1	Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results, August 2000, Building 897X Demolition (Off-Site Laboratory)	2-183
2.4.16-2	PCB Analytical Method Detection Limits Used for SWMU 30 Soil Sampling, August 2000, Building 897X Demolition (Off-Site Laboratory)	2-184
2.5.1-1	Summary of Residual COCs for SWMU 30	2-186
3.2.2-1	Correlation of Burn Testing Structures and Associated Features to SWMU 94 Subunits	3-17
3.4.3-1	Summary of Background Information Review for SWMU 94B	3-29
3.4.4-1	Summary of SWMU 94B RFI Soil Sampling Metals Analytical Results, April 1998 (Off-Site Laboratory)	3-36
3.4.4-2	Summary of SWMU 94B RFI Soil Sampling VOC Analytical Results, April 1998 (Off-Site Laboratory)	3-37
3.4.4-3	VOC Analytical Method Detection Limits Used for SWMU 94B RFI Soil Sampling, April 1998 (Off-Site Laboratory)	3-38
3.4.4-4	Summary of SWMU 94B RFI Soil Sampling SVOC Analytical Results, April 1998 (Off-Site Laboratory)	3-40
3.4.4-5	SVOC Analytical Method Detection Limits Used for SWMU 94C RFI Soil Sampling, April 1998 (Off-Site Laboratory)	3-41

LIST OF TABLES (Continued)

Table		Page
4.4.4-1	Summary of SWMU 94F Passive Soil Gas Survey Analytical Results, February 1998	4-25
4.4.4-2	Summary of SWMU 94F Phase 1 RFI Soil Sampling Metals Analytical Results, March 1998 (Off-Site Laboratory)	4-27
4.4.4-3	Summary of SWMU 94F Phase 1 RFI Soil Sampling VOC Analytical Results, March 1998 (Off-Site Laboratory)	4-28
4.4.4-4	VOC Analytical Method Detection Limits Used for SWMU 94F Phase 1 RFI Soil Sampling, March 1998 (Off-Site Laboratory)	4-30
4.4.4-5	Summary of SWMU 94F Phase 1 RFI Soil Sampling SVOC Analytical Results, March 1998 (Off-Site Laboratory)	4-32
4.4.4-6	SVOC Analytical Method Detection Limits Used for SWMU 94F Phase 1 RFI Soil Sampling, March 1998 (Off-Site Laboratory)	4-34
4.4.4-7	Summary of SWMU 94F Phase 1 RFI Soil Sampling Gamma Spectroscopy Analytical Results, March 1998 (On-Site Laboratory)	4-36
4.4.4-8	Summary of SWMU 94F Phase 1 RFI Soil Sampling Gross Alpha and Beta Analytical Results, March 1998 (Off-Site Laboratory)	4-37
4.4.4-9	Summary of SWMU 94F Phase 1 RFI Soil Sampling Field Duplicate RPDs	4-38
4.4.5-1	Summary of SWMU 94F Phase 2 RFI Soil Gas Survey Analytical Results, November 1998 (On-Site Laboratory)	4-46
4.4.5-2	Summary of SWMU 94F Phase 2 RFI Soil Sampling Metals Analytical Results, November 1998 (On-Site Laboratory)	4-50
4.4.5-3	Summary of SWMU 94F Phase 2 RFI Soil Sampling VOC and DRO/GRO Analytical Results, November 1998 (On- and Off-Site Laboratories)	4-52
4.4.5-4	VOC Analytical Method Detection Limits Used for SWMU 94F Phase 2 RFI Soil Sampling, November 1998 (On-Site Laboratory)	4-53
4.4.5-5	HE Analytical Method Detection Limits Used for SWMU 94F Phase 2 RFI Soil Sampling, November 1998 (On-Site Laboratory)	4-54
4.4.5-6	Summary of SWMU 94F Phase 2 RFI Soil Sampling Gamma Spectroscopy Analytical Results, November 1998 (On-Site Laboratory)	4-55

LIST OF TABLES (Continued)

Table		Page
5.6.3-1	Summary of SWMU 2 Excavated Soil Sampling VOC Analytical Results, March 1998–August 1999 (On-Site Laboratory, except where noted)	5-39
5.6.3-2	Summary of VOC Analytical Method Detection Limits Used for SWMU 2 Excavation Confirmatory Soil Sampling, March 1998–August 1999 (On- and Off-Site Laboratories)	5-43
5.6.3-3	Summary of SWMU 2 Excavated Soil and Confirmatory Soil Sampling SVOC Analytical Results, March–November 1998 (Off-Site Laboratory)	5-44
5.6.3-4	Summary of SVOC Analytical Method Detection Limits Used for SWMU 2 Excavation Confirmatory Soil Sampling, March–November 1998 (Off-Site Laboratory)	5-45
5.6.3-5	Summary of HE Analytical Method Detection Limits Used for SWMU 2 Excavated Soil Sampling, August 1999 (On- and Off-Site Laboratories)	5-47
5.6.3-6	Summary of SWMU 2 Excavated Soil Sampling RCRA Metals Plus Beryllium, Nickel, and Uranium Analytical Results, March 1998–June 2000 (On-Site Laboratory, except where noted)	5-48
5.6.3-7	Summary of SWMU 2 Field Duplicate Relative Percent Differences for Excavated Soil and Excavation Confirmatory Soil Sampling RCRA Metals Plus Beryllium, Nickel, and Uranium Analyses, March 1998–August 2000 (On-Site Laboratory, except where noted)	5-75
5.6.3-8	Summary of SWMU 2 Excavated Soil Sampling Gamma Spectroscopy Analytical Results, March 1998–July 2000 (On-Site Laboratory)	5-85
5.6.3-9	Gamma Spectroscopy Minimum Detectable Activities Used for SWMU 2 Excavated Soil and Excavation Confirmatory Soil Sampling, March 1998–August 2000 (On-Site Laboratory)	5-101
5.6.3-10	Summary of SWMU 2 Excavated Soil Sampling Tritium Analytical Results, April 1998–October 1999 (On-Site Laboratory, except where noted)	5-104
5.6.3.1-1	Comparison of Excavated Soil Analytical Results to Background and Preliminary Remediation Goal Values	5-109
5.7.3-1	Summary of SWMU 2 Excavation Confirmatory Soil Sampling VOC Analytical Results, March 1998–August 1999 (On-Site Laboratory, except where noted)	5-120
5.7.3-2	Summary of SWMU 2 Excavation Confirmatory Soil Sampling RCRA Metals Plus Beryllium, Nickel, and Uranium Analytical Results, March 1998–August 2000 (Off-Site Laboratory)	5-121

LIST OF ANNEXES

Annex

2-A	Data Validation Results
2-B	Risk Screening Assessment
2-C	Self-Implementing VCM Cleanup Notification
2-D	Surface-Water Assessment
3-A	Summary of Testing Activities at SWMU 94, Lurance Canyon Burn Site
3-B	Gamma Spectroscopy Results
3-C	SWMU 94B Voluntary Corrective Action Plan, July 1999
3-D	Radiation Walk-Over Surveys
3-E	Data Validation Reports
3-F	Risk Screening Assessment
4-A	Summary of Testing Activities at SWMU 94 Lurance Canyon Burn Site
4-B	Gamma Spectroscopy Results
4-C	Data Validation Reports
4-D	Radiological Survey Results
4-E	Diesel Range Organics Results
4-F	Risk Screening Assessment
5-A	Landfill Remediation Process
5-B	Landfill Debris Disposition
5-C	X-Ray Fluorescence Results
5-D	Large Area Gamma Spectroscopy Results
5-E	Data Validation Reports
5-F	Risk Screening Assessment

1.0 INTRODUCTION

Sandia National Laboratories/New Mexico (SNL/NM) is proposing no further action (NFA) recommendations for three Environmental Restoration (ER) Solid Waste Management Units (SWMUs). The following SWMUs are listed in the Hazardous and Solid Waste Amendments Module IV of the SNL/NM Resource Conservation and Recovery Act Hazardous Waste Management Facility Permit (NM5890110518) (EPA August 1993). Proposals for each SWMU are located in this document as follows:

- SWMU 30, Reclamation Yard (Chapter 2.0)
- SWMU 94B, Debris/Soil Mound Area, Lurance Canyon Burn Site (Chapter 3.0)
- SWMU 94F, Light Airtransport Accident Resistant Container Discharge Pit, Lurance Canyon Burn Site (Chapter 4.0)
- SWMU 2, Classified Waste Landfill (Chapter 5.0)

These proposals each provide a site description, history, summary of investigatory activities, and the rationale for the NFA decision, as determined from assessments predicting acceptable levels of risk under current and projected future land use.

REFERENCES

U.S. Environmental Protection Agency (EPA), August 1993, "Module IV of RCRA Permit No. NM5890110518-1," EPA Region VI, issued to Sandia National Laboratories, Albuquerque, New Mexico.

CHAPTER 2.0
TABLE OF CONTENTS

2.0 SOLID WASTE MANAGEMENT UNIT 30, THE RECLAMATION YARD 2-1
2.1 Summary 2-1
2.2 Description and Operational History 2-1
2.2.1 SWMU Description 2-1
2.2.2 Operational History 2-6
2.3 Land Use 2-6
2.3.1 Current Land Use 2-6
2.3.2 Future/Proposed Land Use 2-9
2.4 Investigatory Activities 2-9
2.4.1 Summary 2-9
2.4.2 Investigation #1—1986 Soils Investigation 2-9
2.4.3 Investigation #2—1987 CEARP Investigation 2-13
2.4.4 Investigation #3—1989/1990 Investigations of PCBs, Asbestos, and Metals 2-17
2.4.5 Investigation #4—1991 Investigation of an Unknown Substance 2-21
2.4.6 Investigation #5—March–April 1992 Investigation for Site Clearance 2-22
2.4.7 Investigation #6—1993 Investigation of an Unknown Substance 2-27
2.4.8 Investigation #7—March–April 1995 RFI Field Investigation 2-28
2.4.9 Investigation #8—February and June 1997 RFI Field Investigation Supplemental Sampling 2-117
2.4.10 Investigation #9—February 1999 RFI Field Investigation Supplemental Sampling of Mercury Hot Spots 2-125
2.4.11 Investigation #10—January 2000 RFI Field Investigation Supplemental Sampling 2-127
2.4.12 Investigation #11—Winter 2000 RCRA Metals Waste Characterization Sampling 2-139
2.4.13 Investigation #12—Spring 2000 EC/VCM—Phase 1 2-142
2.4.14 Investigation #13—Summer 2000 EC/VCM—Phase 2 2-172
2.4.15 Investigation #14—Summer 2000 Characterization Sampling in the Storm-Water Channel South of Hardin Boulevard 2-174
2.4.16 Investigation #15—Summer 2000 Building 897X Demolition and Soil Characterization 2-177
2.5 Site Conceptual Model 2-184
2.5.1 Nature and Extent of Contamination 2-185
2.5.2 Environmental Fate 2-187
2.6 Site Assessments 2-188
2.6.1 Summary 2-188
2.6.2 Screening Assessments 2-188
2.6.3 Baseline Risk Assessments 2-189
2.6.4 Other Applicable Assessments 2-190
2.7 No Further Action Proposal 2-190
2.7.1 Rationale 2-190
2.7.2 Criterion 2-190

This page intentionally left blank.

CHAPTER 2.0
LIST OF FIGURES

Figure		Page
2.2.1-1	SWMU 30, Location of SWMU 30 (Reclamation Yard)	2-3
2.2.2-1	SWMU 30 Oblique Aerial Photograph of the Reclamation Yard (circa 1989), View is to the Southwest with M Street in the Foreground	2-7
2.4.2-1	SWMU 30: Surface Soil Sampling Locations from 1986 Investigations	2-15
2.4.4-1	SWMU 30: Surface Soil Sampling Locations from 1989/1990 Investigation	2-19
2.4.6-1	SWMU 30: Surface Soil Sampling Locations from 1992 Investigations	2-25
2.4.8-1	SWMU 30 Sediment, Surface, and Near-Surface Soil Sampling Locations from the 1995 through 1997 RCRA Facilities Investigations	2-29
2.4.11-1	SWMU 30 Surface Soil Sampling Composite Group Locations for PCBs from January 2000 Investigation	2-129
2.4.11-2	SWMU 30 Surface Soil Sampling Locations for Metals from the January 2000 Investigation	2-133
2.4.13-1	SWMU 30 Areas with PCB Concentrations >1,000 µg/kg (Hot Spots)	2-147
2.4.13-2	SWMU 30 Photograph (View to the East) from Hot Spot A Showing PCB-Contaminated Soil Being Loaded into Dump Trucks for Off-site Disposal	2-149
2.4.13-3	SWMU 30 Photograph (View to the Northeast) from Hot Spot K Showing PCB-Contaminated Soil Being Excavated from the Storm-Water Channel	2-151
2.4.13-4	SWMU 30 Photograph (View to the North) from Hot Spot G Showing Verification Sampling Method	2-155
2.4.13-5	SWMU 30 VCM Final Excavation Depths and Residual PCB Concentrations	2-157
2.4.15-1	SWMU 30 Storm-Water Channel Sample Locations South of the Site	2-175
2.4.16-1	SWMU 30 Photograph (View to the Southwest) of the Building 897X Demolition	2-179
2.4.16-2	SWMU 30 Location and Analytical Results of Composite Characterization Samples Collected beneath the Concrete Slab of Former Building 897X	2-181

This page intentionally left blank.

CHAPTER 2.0
LIST OF TABLES

Table		Page
2.4.1-1	Historical Timeline for SWMU 30	2-10
2.4.6-1	Summary of SWMU 30 Soil Sampling Parameters, March–April 1992 (from IT July 1992)	2-23
2.4.8-1	Summary of SWMU 30 Immunoassay Field Screening Results (Detections Only), March–April 1995 (ERCL)	2-33
2.4.8-2	Summary of SWMU 30 Surface Soil Sampling VOC Analytical Results, March–April 1995 (Off-Site Laboratory)	2-35
2.4.8-3	Summary of SWMU 30 Subsurface Soil Sampling VOC Analytical Results, March–April 1995 (Off-Site Laboratory)	2-41
2.4.8-4	VOC Analytical Method Detection Limits Used for SWMU 30 Soil Sampling, March–April 1995 (Off-Site Laboratory)	2-47
2.4.8-5	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 1 of 4) (Off-Site Laboratory)	2-48
2.4.8-6	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 2 of 4) (Off-Site Laboratory)	2-53
2.4.8-7	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 3 of 4) (Off-Site Laboratory)	2-58
2.4.8-8	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 4 of 4) (Off-Site Laboratory)	2-63
2.4.8-9	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 1 of 2) (Off-Site Laboratory)	2-68
2.4.8-10	Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results, March–April 1995 (Table 2 of 2) (Off-Site Laboratory)	2-72
2.4.8-11	SVOC Analytical Method Detection Limits Used for SWMU 30 Soil Sampling, March–April 1995 (Off-Site Laboratory)	2-76
2.4.8-12	Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results, March–April 1995 (Off-Site Laboratory)	2-79
2.4.8-13	Summary of SWMU 30 Subsurface Soil Sampling PCB Analytical Results, March–April 1995 (Off-Site Laboratory)	2-83
2.4.8-14	PCB Method Detection Limits Used for SWMU 30 Soil Sampling, March–April 1995 (Off-Site Laboratory)	2-87

CHAPTER 2.0
LIST OF TABLES (Continued)

Table		Page
2.4.8-15	Summary of SWMU 30 PCB Relative Percent Differences, March–April 1995 (Off-Site Laboratory)	2-88
2.4.8-16	Summary of SWMU 30 Soil Sampling in the Stormwater Channel PCB Analytical Results, 1995 and 1998 (Off-Site Laboratory)	2-89
2.4.8-17	Summary of SWMU 30 Surface Soil Sampling TAL Inorganics Analytical Results, March–April 1995 (Off-Site Laboratory)	2-92
2.4.8-18	Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results, March–April 1995 (Off-Site Laboratory)	2-103
2.4.8-19	TAL Inorganics Method Detection Limits Used for SWMU 30 Soil Sampling, March–April 1995 (Off-Site Laboratory)	2-114
2.4.8-20	Summary of SWMU 30 TAL Inorganics Relative Percent Differences, March–April 1995 (Off-Site Laboratory)	2-115
2.4.9-1	Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results, February and June 1997 (Off- and On-Site Laboratories)	2-120
2.4.9-2	PCB Analytical Method Detection Limits Used for SWMU 30 Soil Sampling, February and June 1997 (On-Site and Off-Site Laboratories)	2-123
2.4.9-3	Summary of SWMU 30 PCB Relative Percent Differences, February and June 1997 (On-Site vs Off-Site Laboratory)	2-124
2.4.10-1	Summary of SWMU 30 Surface Soil Sampling Mercury Analytical Results, February 1999 (On-Site Laboratory)	2-126
2.4.11-1	Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results, January 2000 (Off-Site Laboratory)	2-131
2.4.11-2	PCB Analytical Method Detection Limits Used for SWMU 30 Soil Sampling, January 2000 (Off-Site Laboratory)	2-132
2.4.11-3	Summary of SWMU 30 Surface Soil Sampling Metals Analytical Results, January 2000 (Off-Site Laboratory)	2-135
2.4.11-4	Metals Analytical Method Detection Limits Used for SWMU 30 Soil Sampling, January 2000 (Off-Site Laboratory)	2-137
2.4.11-5	Summary of SWMU 30 Metals Relative Percent Differences, January 2000 (Off-Site Laboratory)	2-138

CHAPTER 2.0
LIST OF TABLES (Concluded)

Table		Page
2.4.12-1	Summary of SWMU 30 Soil Sampling, Metals Exceeding 20 Times the TCLP Regulatory Limits, March–April 1995 (Off-Site Laboratory)	2-140
2.4.12-2	Summary of SWMU 30 Soil Sampling, Comparison of 1995 Total Lead and Cadmium Concentrations Versus 2000 TCLP Lead and Cadmium Concentrations (Off-Site Laboratory)	2-141
2.4.12-3	Summary of SWMU 30 Soil Sampling, Comparison of Range of Concentrations of 1995 Total Metals Results Versus 2000 TCLP Metals Results	2-142
2.4.13-1	Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results, May–July 2000 (Off-Site Laboratory)	2-159
2.4.13-2	PCB Analytical Method Detection Limits Used for SWMU 30 Soil Sampling, May–July 2000 (Off-Site Laboratory)	2-169
2.4.13-3	Summary of SWMU 30 PCB Relative Percent Differences, May–July 2000 (Off-Site Laboratory)	2-170
2.4.16-1	Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results, August 2000, Building 897X Demolition (Off-Site Laboratory)	2-183
2.4.16-2	PCB Analytical Method Detection Limits Used for SWMU 30 Soil Sampling, August 2000, Building 897X Demolition (Off-Site Laboratory)	2-184
2.5.1-1	Summary of Residual COCs for SWMU 30	2-186

This page intentionally left blank.

CHAPTER 2.0
LIST OF ANNEXES

Annex

2-A	Data Validation Results
2-B	Risk Screening Assessment
2-C	Self-Implementing VCM Cleanup Notification
2-D	Surface-Water Assessment

This page intentionally left blank.

CHAPTER 2.0
ACRONYMS AND ABBREVIATIONS

AOP	Administrative Operating Procedure
AR/COC	analysis request/chain-of-custody
bgs	below ground surface
CEARP	Comprehensive Environmental Assessment and Response Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	constituent of concern
DOE	U.S. Department of Energy
DV	data validation
E&E	Ecology and Environment
EC	Expedited Cleanup
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ERCL	Environmental Restoration Chemical Laboratory
°F	degrees Fahrenheit
GEL	General Engineering Laboratory
GPS	Global Positioning System
HRS	hazard ranking system
HWB	Hazardous Waste Bureau
KAFB	Kirtland Air Force Base
kg	kilogram(s)
L	liter
MDL	method detection limit
MESA	Microsystems and Engineering Science Applications
µg	microgram(s)
mg	milligram(s)
MO	Mobile Office
NFA	No Further Action
NIOSH	National Institute of Occupational Safety and Health
NMED	New Mexico Environment Department
PCB	polychlorinated biphenyl
ppm	parts per million
Q&A	Questions and Answers
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RPD	relative percent difference
SAP	Sampling and Analysis Plan
SNL/NM	Sandia National Laboratories/New Mexico
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TA	Technical Area
TAL	target analyte list

CHAPTER 2.0
ACRONYMS AND ABBREVIATIONS (Concluded)

TCLP	toxicity characteristic leaching procedure
TOP	Technical Operating Procedure
VCM	voluntary corrective measure
VOC	volatile organic compound

2.0 SOLID WASTE MANAGEMENT UNIT 30, THE RECLAMATION YARD

2.1 Summary

Sandia National Laboratories/New Mexico (SNL/NM) is proposing a risk-based No Further Action (NFA) decision for Environmental Restoration (ER) Solid Waste Management Unit (SWMU) 30, the Reclamation Yard, Operable Unit 1302 on Kirtland Air Force Base (KAFB) on federally-owned land controlled by KAFB. Environmental concern for SWMU 30 is primarily based upon polychlorinated biphenyl (PCB) soils contamination.

The Expedited Cleanup (EC)/Voluntary Corrective Measure (VCM) at SWMU 30 consisted of removal and disposal of soils containing a toxic substance and the backfilling of the excavation with fill material. This action was designed to reduce the likelihood of exposing humans and/or the environment to hazardous materials at the site, to reduce the overall cost of Resource Conservation and Recovery Act (RCRA) corrective actions, and to compress the clean-up schedule, rendering the site available for future industrial reuse. The EC/VCM entailed excavating soils contaminated with PCBs with elevated concentrations (>1,000 micrograms [μg] per kilogram [kg]) and backfilling with clean soil. Verification soil sampling was completed at regular intervals from the bottom of the excavation to confirm adequate cleanup prior to backfilling, and then the area encompassing SWMU 30 (excluding the storm-water channel) was graded to restore the pre-excavation contour.

Review and analysis of all relevant data for SWMU 30 indicate that concentrations of constituents of concern (COCs) are less than applicable risk-assessment action levels. Thus, SWMU 30 is being proposed for an NFA decision based upon confirmatory sampling data. This NFA demonstrates that residual contamination associated with SWMU 30 poses an acceptable level of risk under current and projected future land use as set forth by NFA Criterion 5, which states, "the SWMU/AOC [area of concern] has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicated that contaminants pose an acceptable level of risk under current and projected future land use" (NMED March 1998).

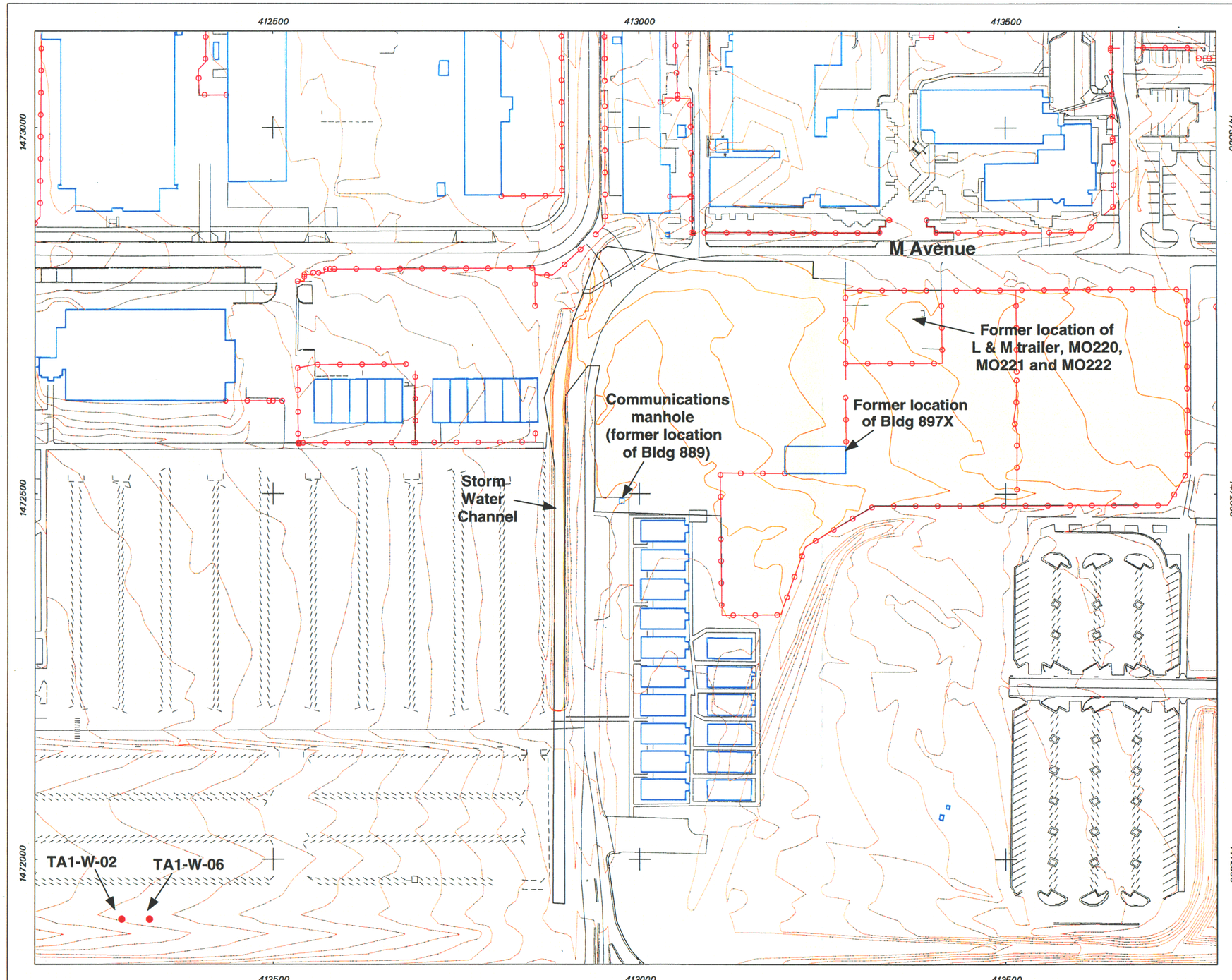
2.2 Description and Operational History

This section describes SWMU 30 and discusses its operational history.

2.2.1 SWMU Description

SWMU 30 is located southeast of M and 14th Streets, in the southeastern portion of Technical Area (TA)-I (Figure 2.2.1-1). The main portion of the 6.62-acre site is fenced; the western portion of the site within the storm-water channel is not fenced. This storm-water channel was originally investigated as part of SWMU 96, the Storm Drain System. The SWMU 96 investigation was responsible for characterizing all the storm water channels and underground storm-water conveyance pipes in TA-I, including the storm-water channel west and south of SWMU 30. When it became evident in 1995 that the PCBs had migrated from SWMU 30 into the storm-water channel west of SWMU 30, the SWMU 30 boundary was expanded and

This page intentionally left blank.

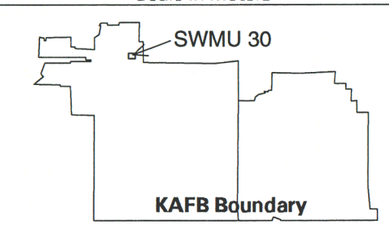


Legend

- Road/paved walkway
- Fence
- 1-Foot Contour
- Building/structure
- SWMU 30
- Monitor Well

0 150 300
Scale in Feet

0 36 72
Scale in Meters



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 2.2.1-1
SWMU 30
Location of SWMU 30
(Reclamation Yard)

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=010780

Unclassified

SNL GIS ORG. 6135

ddrizor dr010780.aml 08/07/01

assumed responsibility for characterization and remediation of PCB-contaminated sediment/ soils in the storm-water channel (further discussed in Section 2.4.8.4).

Up until July 2000, Building 897X was located within the site boundary and was most recently used for storage of geologic core samples by the ER Project. Until their removal in the early 1990s, other on-site structures included Building 889 (the Storage Shed Building) on the site's western boundary and a caretaker's office in the north-central part of the site. Until 1999, T-Buildings (L&M Technologies Trailer, Mobile Offices [MOs] 220, 221, and 222) in the north central part of the site were used as office space. The majority of the site was unpaved and flat, with little or no engineering control for surface-water runoff.

The ground surface at the site is nearly level, with a gradual slope to the west of 1 to 2 percent. Elevations from east to west across the site vary from 5,432 to 5,425 feet above mean sea level, for a total relief across the site of 7 feet including the invert on the storm drain culvert on the western boundary. A major drainage feature in the vicinity of the site is the Tijeras Arroyo, which drains to the west and is located approximately 0.75 miles south and 0.5 miles southeast of the site. Surface runoff is collected in a combined above-ground and underground storm drain system that discharges adjacent to TA-IV into Tijeras Arroyo. The site is one of only a few undeveloped areas remaining in TA-I.

The site rests on a partially dissected bajada formed by coalescing multiple alluvial fan complexes that originate in the mountain ranges to the east. The Holocene and Pleistocene deposits on the surface are comprised of alluvial fan deposits shed from the eastern uplifts that interfinger with valley alluvium west of the site. The thickness of these Holocene and Pleistocene deposits is thought to be less than 10 feet. Surficial deposits derived from the Tijeras Arroyo drainage contain granitic and sedimentary lithologies from the Sandia Mountains and sedimentary and metamorphic lithologies from the Manzanita Mountains.

The soil at the site has been identified as being part of the Embudo-Tijeras complex, which consists of deep, well-drained, moderately alkaline soil (pH of 7.9 to 8.4) that formed in decomposed granitic alluvium on old alluvial fans (Hacker 1977). Permeability of this soil is moderate (0.6 to 2.0 inches/hour). As used here, the term "soil" refers to the weathered and biologically altered horizons above and within unconsolidated deposits. This is the sense of the word as soil scientists use it. Throughout the remainder of this NFA Proposal, the term "soil" will be used to refer to any unconsolidated deposits regardless of whether they contain developed soil horizons. This is the sense of the word as it is used by engineers, who have devised a soil classification based upon mixtures of clay, silt, sand, and gravel to describe any unconsolidated deposits.

Groundwater in the vicinity of the site is found in two water-bearing zones at approximately 300 and 526 feet below ground surface (bgs). There are no monitoring or production wells within the site boundaries, but there are several production and monitoring wells within a 1-mile radius. The nearest monitoring wells, TAI-W-02 and TAI-W-06, are located approximately 800 feet southwest of SWMU 30 (Figure 2.2.1-1). Groundwater conditions consist of a perched aquifer at 300 feet bgs at TAI-W-06 and a regional drinking-water aquifer at 526 feet bgs at TAI-W-02. The perched aquifer has a southeasterly flow-direction. Due to pumping of city wells creating a cone of depression in the northern portion of SNL/NM, the regional aquifer has a northerly flow direction.

The climatic conditions are those normally associated with the high desert plateau: low precipitation, sunny days, and wide temperature ranges. Precipitation for the SNL/NM–KAFB area averages 10 to 12 inches/year (SNL/NM 1993). The weather is typically sunny and clear, with an average of 169 sunny days/year. The average diurnal temperature range is 28 degrees Fahrenheit (°F) (NOAA 1990). Daily low winter temperatures normally fall to 23 to 27°F, and high normal temperatures during the summer months range from 82 to 91°F (DOE September 1987). Winds are typically out of the east with an average speed of 9 miles per hour. Evapotranspiration has been estimated at 95 percent of the annual rainfall (Thompson and Smith 1985).

The site has been heavily disturbed by human beings for over 50 years. Generally, the diversity and abundance of nonhuman species in areas in and around TA-I varies at given locations depending on the quantity and quality of necessary habitat. Given the amount of known human intrusion at the site, a great diversity or abundance of nonhuman species is unlikely, although the site-specific species have not been quantified. No suitable habitat remains within the site boundaries to sustain a viable ecological system.

Natural areas outside the site boundaries are dominated by grassland vegetation. Black grama, blue grama, and western wheatgrass comprise 30 to 40 percent of the vegetative mass (SNL/NM 1994). Indigenous wildlife includes amphibians, reptiles, birds, and small mammals. Thirteen species of concern have been identified at SNL/NM KAFB locations (SNL/NM 1994). Within TA-I, however, no threatened or endangered species and no species of concern have been identified. There are no permanent wetlands identified in TA-I.

2.2.2 Operational History

Details of the site's early history are few. By the early 1950s, surplus supplies and scrap materials were sold there every week. Items to be sold were separated by type and organized in different areas of the yard (Figure 2.2.2-1; SNL/NM February 1995). The arrangement of materials in the yard is unknown and is assumed to have changed frequently over time. Materials stored and sold at this site included cabinets, desks, scrap metal, pallets, wood, machines, general equipment, capacitors, transistors, transformers of various sizes, miscellaneous electronic components, hardware (such as bolts), tools, epoxies, polyester resins, and hobby-type material (SNL/NM February 1995). During the approximate 40-year history, waste oil (possibly contaminated with PCBs) was used for dust control at the site (as discussed in more detail in Section 2.4). In September 1990, the site was cleared of salvage to allow for other uses of the property (Jacobs October 1991). Operational history information that pertains to individual investigations are further discussed in Section 2.4.

2.3 Land Use

This section discusses the current and projected future land use for SWMU 30.

2.3.1 Current Land Use

SWMU 30 is located within the boundaries of KAFB and is currently an inactive site. The current land use is industrial.

Figure 2.2.2-1
SWMU 30 Oblique Aerial Photograph of the Reclamation Yard (circa 1989),
View is to the Southwest with M Street in the Foreground

2.3.2 Future/Proposed Land Use

SWMU 30 has been recommended for industrial land use in the future (DOE and USAF September 1995).

Current plans call for using the site as a location to house SNL/NM's Microsystems and Engineering Science Applications (MESA) Program. MESA is a major project that entails constructing four new buildings with associated parking lots, walkways, and landscaping.

2.4 Investigatory Activities

SWMU 30 has been characterized in multiple investigations and remediated during an EC/VCM. This section discusses the SWMU 30 investigatory and clean-up activities.

2.4.1 Summary

Numerous investigations for soil contamination have been conducted at SWMU 30 since the mid-1980s. Highlights of the investigations, operational history, and regulatory interactions are provided in Table 2.4.1-1, with cross-references to sections of the text that discuss the details of the investigations.

SWMU 30 was investigated initially as an industrial hygiene concern in 1986 (Investigation #1, Section 2.4.2). Further investigation was completed under the U.S. Department of Energy (DOE) Comprehensive Environmental Assessment and Response Program (CEARP) in the mid-1980s in conformance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The CEARP investigation included gathering nonsampling data and inspecting the site (Investigation #2, Section 2.4.3). Since 1989, preliminary investigations and RCRA Facilities Investigations (RFIs) were completed to determine the nature and extent of hazardous constituents in soils (Investigation #3 through #11, Sections 2.4.4 through 2.4.12). Based upon the determination from these investigations that the PCB concentrations were above levels of concern, an EC/VCM was conducted in 2000 that included additional site characterization activities, removal and disposal of PCB-contaminated soils, confirmatory sampling, and site restoration (Investigations #12 through #15, Sections 2.4.13 through 2.4.16).

Data for the pre-RFI investigations have been summarized here in text. Due to limited availability and reliability, the data from the pre-RFI investigations are not presented in tables. The RFI data are included in tables and are summarized in the text. Some of the analytical results were originally reported in parts per million (ppm) and parts per billion (ppb), whereas others are reported in milligrams (mg) per kg and µg/kg. Regardless of the units originally reported, this NFA Proposal uses the concentration descriptors of mg/kg for metals concentrations and µg/kg for PCBs, semivolatile organic compounds (SVOCs), and volatile organic compounds (VOCs).

2.4.2 Investigation #1—1986 Soils Investigation

Investigation #1 consisted of a limited soil-sampling program at SWMU 30 to determine if soils contained PCBs.

Table 2.4.1-1
Historical Timeline for SWMU 30

Month	Year	Event	Discussed in Section	Reference
Unknown	Early 1950s	Surplus and scrap materials stored and sold. During ~40-year history, waste oil possibly containing PCBs used for dust control.	2.4	SNL/NM February 1995
February	1986	Collected 11 soil samples along unpaved roadways for PCB analysis. No PCBs detected.	2.4.2	Pei April 1986
Unknown	1987	Listed as a SWMU.	2.4.3	DOE September 1987
September	1989	Eastern 2/3 of site sampled for PCBs, metals, and asbestos. Asbestos and PCBs detected.	2.4.4	BCM October 1989
January	1990	Collected 35 surface (0 to 1 inches) soil samples, 12 located to verify asbestos. Could not verify previous asbestos or PCB concentrations.	2.4.4	E&E January 1990 Hahn February 1990a Hahn February 1990b Hahn February 1990c
September –October	1990	Contents of eastern 2/3 of the yard removed.	--	E&E January 1990 Jacobs October 1991
August	1991	Tar-like substance found in southwestern corner of site; analyzed for TCLP metals, VOCs, and SVOCs.	2.4.5	Cox September 1991
Fall	1991	Sampling and analysis plan prepared to determine the nature and extent of PCBs or other COCs.	--	Cox and Steinborn November 1991 IT February 1992
March	1992	Collected 10 surface soil samples in the northwest portion of the site for toxic metals, radionuclides, VOCs, and PCBs.	2.4.6	IT February 1992 IT July 1992
April	1992	Collected 16 discrete samples at previous composite locations for toxic metals and PCBs; collected background sample.	2.4.6	IT February 1992 IT July 1992
March	1993	Existing data deemed insufficient to characterize the site. The EPA recommends 19-point composite sampling strategy.	--	Miller March 1993 EPA August 1985 EPA May 1986
May	1993	The tar-like substance re-sampled and analyzed for TCLP VOCs, metals, SVOCs, and PCBs.	2.4.7	Stockham June 1993 Stockham August 1993
February	1995	Final Draft of the Technical Area-I RFI Work Plan produced.	--	SNL/NM February 1995
March	1995	Based upon a preliminary review of the RFI Work Plan, the EPA requested an additional 55 discrete samples to augment the composite soil samples.	2.4.8	Miller March 1995
March–April	1995	Phase 1 RFI completed; samples collected at 1 and 5 feet at 202 locations using composite strategy.	2.4.8	SNL/NM February 1995 SNL/NM February 1997

Refer to footnotes at end of table.

Table 2.4.1-1 (Continued)
Historical Timeline for SWMU 30

Month	Year	Event	Discussed in Section	Reference
April	1995	Phase 2 RFI completed; samples collected at 1 and 5 feet at 55 discrete locations.	2.4.8	Miller March 1995 SNL/NM February 1997
Unknown	1996	SWMU 96 Data Evaluation Report produced that discusses sediment data collected from the storm drain channel adjacent to the site.	2.4.8	Kottenstette April 1995 SNL/NM 1996
February	1997	RFI sampling results documented in the Data Evaluation Report.	--	SNL/NM February 1997
February	1997	10 additional locations sampled to characterize the PCB hot spots in the northwest corner and east-central portion of the site.	2.4.9	Lewis February 1997 SNL/NM July 1997
May	1997	Air photos reviewed to determine former site boundaries.	2.4.9	Skelly May 1997
May	1997	Supplemental sampling plan created to characterize the PCB hot spots in the northwest corner and east-central portion of the site.	--	SNL/NM May 1997
June	1997	38 supplemental locations sampled to characterize the PCB hot spots in the northwest corner, the storm-water channel, and east-central portion of the site.	2.4.9	Chavez July 1997 ERCL July 1997 SNL/NM July 1997 SNL/NM May 1997
July	1997	RFI supplemental sampling results documented in a Supplemental Data Evaluation Report	2.4.9	SNL/NM July 1997
February	1998	PCB EC/VCM cleanup activities discussed at a public meeting.	--	SNL/NM April 1998
April	1998	EC/VCM Plan prepared and sent to NMED; soils contaminated with greater than 10,000 µg/kg PCBs to be removed.	--	SNL/NM April 1998
June	1998	Informal, verbal request for supplemental information received from NMED. Additional data submitted to NMED.	--	Skelly June 1998
July	1998	NMED/DOE OB provides review of the EC/VCM Plan.	--	NMED July 1998
August	1998	The EPA establishes unified cleanup criteria for PCB-contaminated soils.	--	40 CFR Part 761
September	1998	NMED HWB submits an RSI for the EC/VCM Plan.	--	NMED September 1998
November	1998	SNL/NM responds to NMED HWB's RSI.	--	SNL/NM November 1998
February	1999	Planned, performed, and reported samples collected from a mercury hot spot.	2.4.10	SNL/NM February 1999

Refer to footnotes at end of table.

Table 2.4.1-1 (Concluded)
Historical Timeline for SWMU 30

Month	Year	Event	Discussed in Section	Reference
April	1999	Notification and Certification of Planned Remediation Under 40 CFR Part 761.61 submitted to the EPA; soils contaminated with greater than 10,000 µg/kg PCBs to be removed	--	SNL/NM April 1999
May	1999	The EPA submits Deficiency Comments of the Planned Remediation.	--	EPA May 1999
August	1999	Site selected as future location of MESA Facility; soils contaminated with PCBs in concentrations exceeding 1,000 µg/kg to be removed in support of high-occupancy usage.	--	--
January	2000	Supplemental sampling completed to characterize north-central portion of the site formerly occupied by Mobile Offices.	2.4.11	Skelly March 2000
February	2000	Samples collected for RCRA metals waste characterization.	2.4.12	--
March	2000	SNL/NM addresses Deficiency Comments and resubmits the PCB Notification and Certification of Planned Remediation Under 40 CFR Part 761.61 to the EPA. Soils contaminated with PCBs in concentrations exceeding 1,000 µg/kg to be removed.	--	SNL/NM March 2000
April	2000	EPA approves the PCB Notification and Certification of Planned Remediation Under 40 CFR Part 761.61.	--	EPA April 2000
May–July	2000	SNL/NM completes field work associated with the PCB remediation.	2.4.13 through 2.4.15	--
August	2000	Building 897X removed and soil samples collected from beneath the former slab.	2.4.16	SNL/NM June 2000

CFR = Code of Federal Regulations.
COC = Constituent of concern.
DOE = U.S. Department of Energy.
E&E = Ecology and Environment
EC/VCM = Expedited Cleanup/Voluntary Corrective Measure.
EPA = U.S. Environmental Protection Agency.
ERCL = Environmental Restoration Chemical Laboratory.
HWB = Hazardous Waste Bureau.
IT = IT Corporation.
MESA = Microsystems and Engineering Science Applications.
µg/kg = Microgram(s) per kilogram.
NMED = New Mexico Environment Department.
OB = Oversight Bureau.
PCB = Polychlorinated biphenyl.
RCRA = Resource Conservation and Recovery Act.
RFI = RCRA Facility Investigation.
RSI = Request for supplemental information.
SNL/NM = Sandia National Laboratories/New Mexico.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.
TCLP = Toxicity characteristic leaching procedure.
VOC = Volatile organic compound.
-- = Information either not discussed in this report or did not have an associated reference.

2.4.2.1 *Nonsampling Data Collection*

No nonsampling data collection activities were conducted as part of Investigation #1.

2.4.2.2 *Sampling Data Collection*

On February 28, 1986 soils at SWMU 30 were sampled to determine whether PCBs were present. Sampling was conducted because it was an alleged ". . . past practice at Sandia's Reclamation Yard [SWMU 30] for workers to puncture drums of oil and spread the oil on the ground in order to pack down dust in the yard driveways. We [SNL/NM group 3314—Industrial Hygiene] wished to determine if oil containing Polychlorinated Biphenyls (PCBs) could have inadvertently spread in the Reclamation Yards. . . ." (Pei April 1986).

Eleven soil samples (Samples 86008 through 86018) were collected at locations along the unpaved driveways throughout the site (Figure 2.4.2-1). The samples were collected with a hand auger from a depth of 0 to 2 feet at locations where the soil was soaked, stained dark, or had a solvent odor. The SNL/NM Industrial Hygiene Services Laboratory analyzed the samples for organics (Analytical Method National Institute of Occupational Safety and Health [NIOSH] 127) and PCBs (Analytical Method NIOSH 244).

2.4.2.3 *Data Gaps*

The sampling team did not survey exact sample locations. Analytical method detection limits (MDLs) and quality assurance (QA)/quality control (QC) protocols were not specified in the data presentation (Pei April 1986).

2.4.2.4 *Results and Conclusions*

No organics or PCBs were detected in the 11 soil samples. The report concluded that " a large and representative area of the Reclamation Yard was sampled and it appears that no PCB-containing liquids or materials were spread in the driveways" (Pei April 1986).

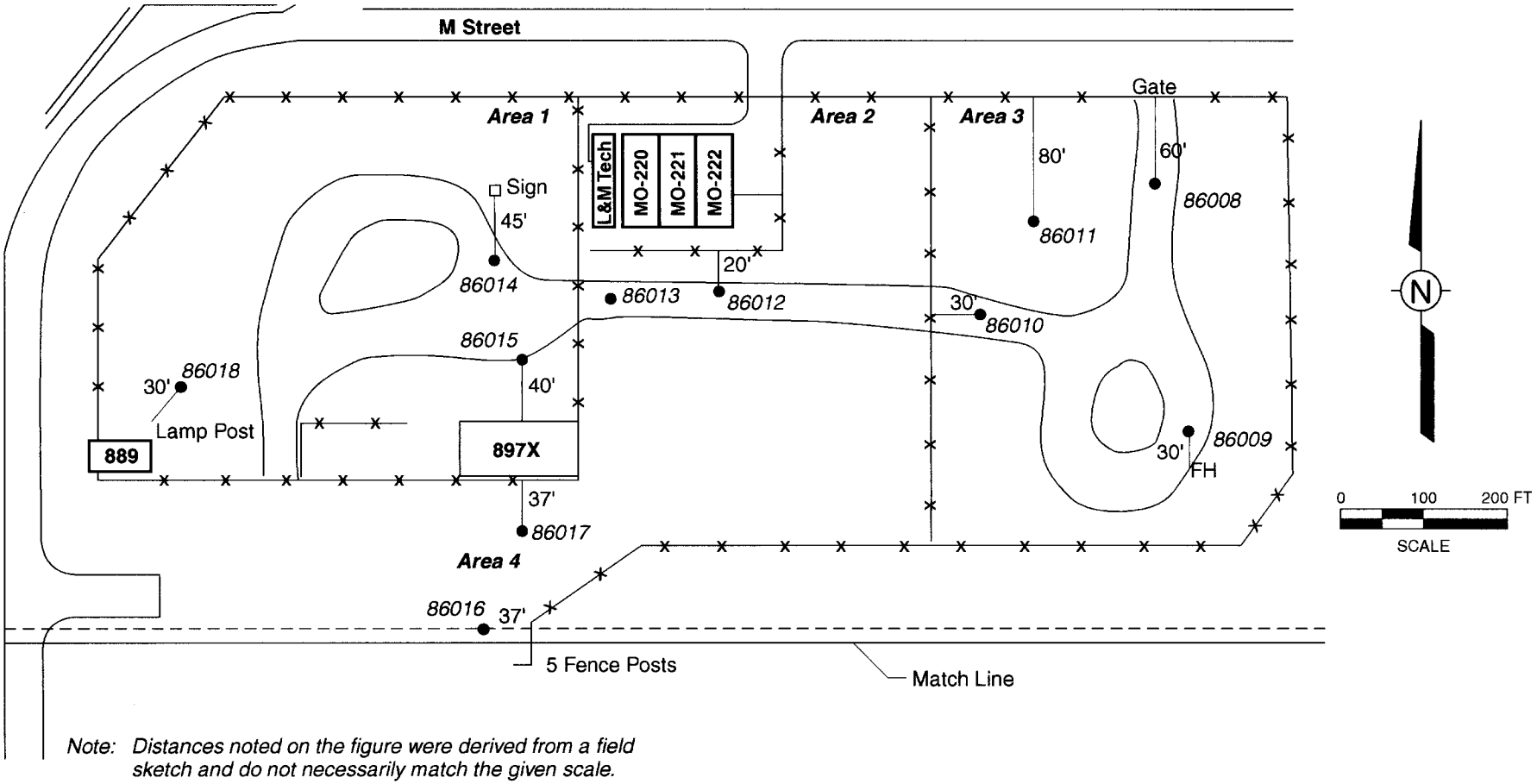
2.4.3 Investigation #2—1987 CEARP Investigation

Investigation #2 consisted of a limited historical review and interviews with employees to determine if the site should be listed as a SWMU.

2.4.3.1 *Nonsampling Data Collection*

SWMU 30 was first listed as a SWMU in 1987, and although the original document (Pei April 1986) did not mention a "PCB spill during waste transfer operations," the CEARP report (DOE September 1987) describes the following release situation:

This page intentionally left blank.



Note: Distances noted on the figure were derived from a field sketch and do not necessarily match the given scale.

Figure 2.4.2-1
SWMU 30: Surface Soil Sampling Locations from 1986 Investigations (Pei 1986)

"During waste transfer operations, some drums containing oil that may have been contaminated with polychlorinated biphenyls (PCBs) were spread in the Area 1 reclamation yards (north of Building 889 and south of Building 953-A) (SWMU 30). Sandia collected 20 soil samples [eleven from SWMU 30] and had them analyzed for PCBs. No PCBs were detected: however, some of the samples were darkly stained and had a solvent odor" (Pei April 1986).

2.4.3.1 Sampling Data Collection

No sampling activities were conducted at SWMU 30 as part of the CEARP investigation.

2.4.3.2 Data Gaps

No confirmation samples were obtained during the CEARP investigation to confirm whether hazardous materials or wastes were stored or released to the surrounding environment. No Hazard Ranking System (HRS) or Modified HRS migration mode scores were calculated for SWMU 30.

2.4.3.3 Results and Conclusions

The CERCLA finding under the CEARP was positive for Federal Facility Site Discovery and identification findings, preliminary assessment, and preliminary site investigation, but insufficient information was available to calculate an HRS score for the SWMU.

2.4.4 Investigation #3—1989/1990 Investigations of PCBs, Asbestos, and Metals

Investigations of PCB, metals, and asbestos-contaminated soils were completed in 1989 and 1990 before all salvage materials were removed from the yard (BCM October 1989; E&E January 1990; and Hahn February 1990a, February 1990b, February 1990c). Investigation #3 consisted of a limited soil-sampling program at SWMU 30. This investigation was conducted to determine COC concentrations for worker safety, waste characterization, and environmental contamination.

2.4.4.1 Nonsampling Data Collection

No nonsampling data collection activities were conducted as part of Investigation #3.

2.4.4.2 Sampling Data Collection

SNL/NM Industrial Hygiene Department 3211 retained BCM Engineers (BCM) in September 1989 to determine whether residual PCB, metals, or asbestos contamination was present in the SWMU 30 soils. The BCM report describes collecting soil samples in the eastern two-thirds of

the site on a grid pattern with a coverage rate of approximately one sample per 1,000 square feet (Figure 2.4.4-1). PCB and metals samples are identified as SEP1 through SEP31.

Four months later (January 1990), the SNL/NM ER Program contractor (Ecology and Environment [E&E]) further investigated site soils in support of an interim response action (E&E January 1990). As part of this investigation, E&E collected 35 surface (0 to 1 inch) soil samples, 12 of which were from the exact locations that had previously been determined by BCM to contain greater than 1 percent asbestos (Sample locations 6, 18, 30, 31, 32, 35, 37, 45, 66, 71, 82, and 126; Figure 2.4.4-1).

2.4.4.3 Data Gaps

The sampling team did not survey exact sample locations. QA/QC protocols were not specified in the data presentation.

2.4.4.4 Results and Conclusions

PCB and metals samples were initially collected in areas of obvious soil discoloration at 31 locations. For the metals analysis, the samples were extracted following U.S. Environmental Protection Agency (EPA) Method 1310 (EP Toxic) and the individual metals were analyzed by the referenced methods from "Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods (EPA SW-846)" (EPA November 1986). The PCB samples were analyzed using EPA Method 8080 (BCM 1989). According to BCM's conclusions, there is no metal contamination (using EPA Method 1310 [EP Toxic]) above the EPA-recommended guidelines found in 40 Code of Federal Regulations (CFR) Part 264.24. Also, elevated PCB levels were only found in one sample (SEP-3) in the eastern portion of the site (42,000 µg/kg), with all other PCB detections below 4,000 µg/kg (BCM October 1989).

The resampling completed four months later by E&E did not include metals analysis, but included eight samples for PCB analysis. Of the eight samples, four were collected from a previously unsampled oily stain in the southeastern corner of the site, and the other four were collected near the BCM (BCM October 1989) sample location SEP-3 (Figure 2.4.4-1) to verify the elevated sample analytical result of 42,000 µg/kg (E&E January 1990). At SEP-3, one surface soil (0 to 2 inches) sample was collected at the base of the rebar stake that marked the original BCM location, and three surface soil samples were collected at equidistant points approximately 4 feet north, southeast, and southwest from the rebar stake. Although E&E's report (E&E January 1990) does not state which four of the eight PCB samples correspond to the SEP-3 location, none of the eight analytical results approach the 42,000 µg/kg result for SEP-3 found by BCM. All eight samples had detectable concentrations of PCBs, but they only ranged from 130 µg/kg to 2,350 µg/kg total PCBs (mostly Aroclors 1254 and 1248).

During the September 1989 investigation, asbestos was found in 28 of the 129 soil samples collected across the site (excluding 2 background locations), with concentrations varying from trace amounts to 10 percent fibers. Twelve of the samples contained trace amounts, 12 of the samples contained 2 percent asbestos, and 4 of the samples contained greater than 2 percent asbestos. The types of asbestos found were chrysotile (in 86 percent of the 28 samples) and amosite (in 14 percent of the 28 samples). However, in the 12 January 1990 samples

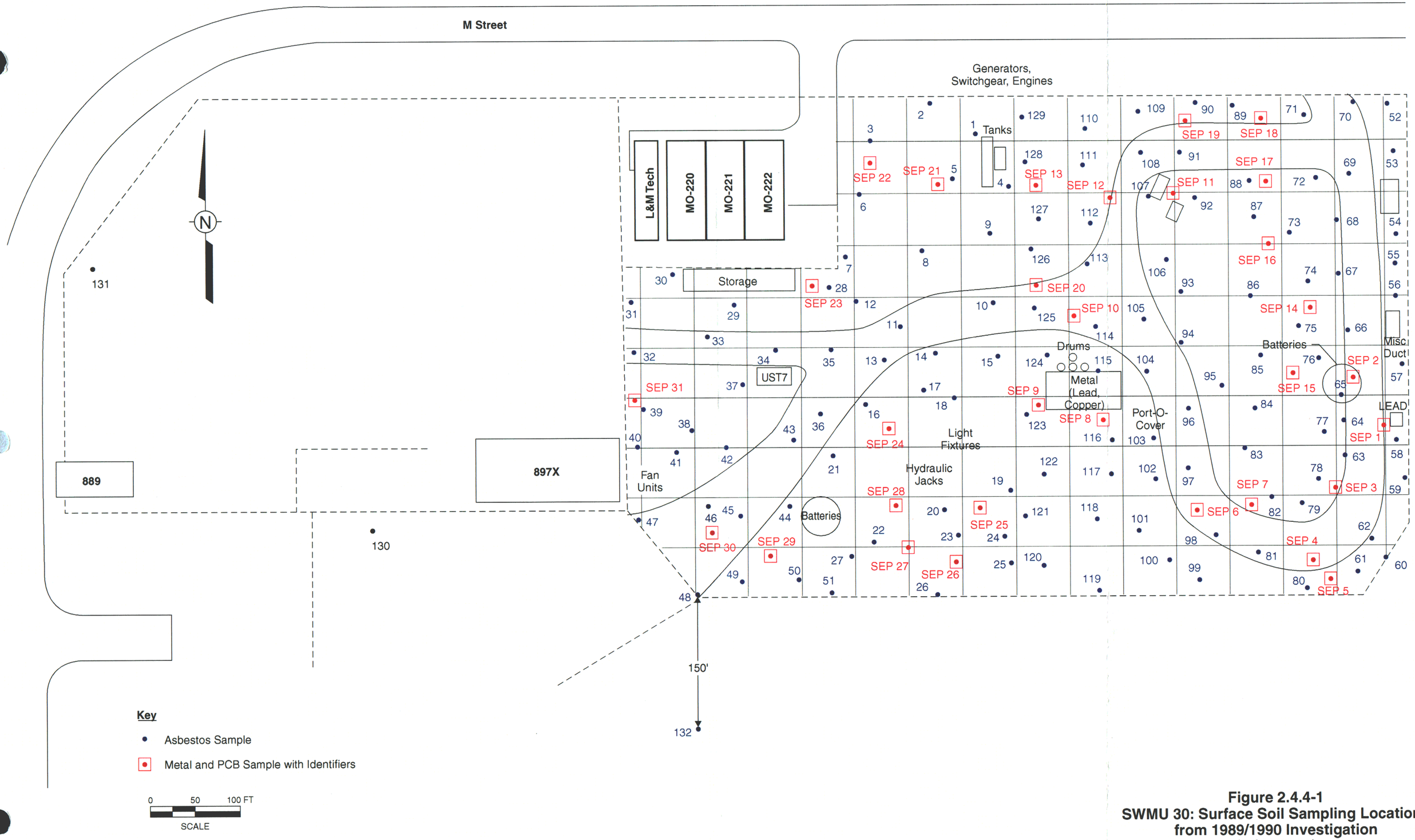


Figure 2.4.4-1
SWMU 30: Surface Soil Sampling Locations from 1989/1990 Investigation (BCM 1989)

recollected from previous sample collections, the analysis did not identify any quantifiable concentrations of asbestos, although traces (less than 1 percent) of chrysotile were found in 13 of the 129 samples (Hahn February 1990a, February 1990b). For comparison purposes, any soil containing less than 1 percent asbestos does not meet the criteria for the New Mexico Environment Department's (NMED's) definition of asbestos-containing material and is therefore not regulated (Evans July 1997). Unfortunately, the results from the E&E sampling activities were only presented as an analytical data package (laboratory report). No report was written that provided an explanation of the discrepancy between the original findings (BCM October 1989) and the verification sampling and analysis (E&E January 1990). The existing levels of asbestos in soils (as determined by E&E January 1990) were deemed negligible and therefore did not require remediation. E&E removed the complete contents of the Reclamation Yard (at the time limited to the eastern two-thirds of the site) in October 1990.

2.4.5 Investigation #4—1991 Investigation of an Unknown Substance

In August 1991, a tar-like substance was found in an excavation completed for a communications system manhole (shown on Figure 2.2.1-1) in the southwestern corner of the area. This soil was tested to determine waste characteristics.

2.4.5.1 Nonsampling Data Collection

Other than two photographs of the tar-like substance in the pit, no nonsampling data collection activities were conducted as part of Investigation #4.

2.4.5.2 Sampling Data Collection

A sample of the substance was collected on August 23, 1991, from a depth of approximately 4 feet bgs. This sample was analyzed for toxicity characteristic leaching procedure (TCLP) metals (EPA Methods 6010, 7470 and 7740), TCLP VOCs (EPA Method 8240), and TCLP SVOCs (EPA Method 8270).

2.4.5.3 Data Gaps

The sampling team did not survey the exact sample location at the communications system manhole shown on Figure 2.2.1-1. QA/QC protocols were not specified in the data presentation. Analytical MDLs were not specified, although reporting limits were provided. It is uncertain why this material was found at depth, perhaps it represents a former topographic surface before 14th Street was constructed.

2.4.5.4 Results and Conclusions

All TCLP metals analytical results were nondetect except for barium (0.73 mg/liter [L]) with reporting limits ranging from 0.020 to 1.0 mg/L. All TCLP VOC analytical results were nondetect with reporting limits ranging from 25 to 50 µg/L. All TCLP SVOC analytical results were nondetect with reporting limits ranging from 50 to 250 µg/L (Cox September 1991).

Table 2.4.6-1
Summary of SWMU 30 Soil Sampling Parameters
March–April 1992
(from IT July 1992)

Sample ID SNLA00-	Quadrant	Sampling Date	Type	Analyses Performed
7584	1	03-25-92	4-Sample Composite[a]	PCB[b], As[c], Ba, Cd[c], Cr, Pb[b], Hg[c], Se, Ag[c], SVOC
7585	2	03-25-92	4-Sample Composite[a]	PCB[b], As[c], Ba, Cd[c], Cr, Pb[b], Hg[c], Se, Ag[c], SVOC
7586	3	03-25-92	4-Sample Composite[a]	PCB[b], As[c], Ba, Cd[c], Cr, Pb, TCLP Pb, Hg[c], Se, Ag[c], SVOC
7587	4	03-25-92	4-Sample Composite[a]	PCB[b], As[c], Ba, Cd[c], Cr, Pb[b], Hg[c], Se, Ag[c], SVOC
7588	All	03-25-92	Visible-Stain Composite	PCB[c], As[c], Ba, Cd[c], Cr, Pb[b], Hg[c], Se, Ag[c], SVOC, TPH[c]
7589	1	03-25-92	Composite[d]	Gamma Spectroscopy
7590	2	03-25-92	Composite[d]	Gamma Spectroscopy
7591	3	03-25-92	Composite[d]	Gamma Spectroscopy
7592	4	03-25-92	Composite[d]	Gamma Spectroscopy
7593-1[e]	Background	03-25-92	Grab	Gamma Spectroscopy
8303-1	1	04-29-92	Resample of 7584-1	PCB, Pb
8303-2	1	04-29-92	Resample of 7584-2	PCB, Pb
8303-3	1	04-29-92	Resample of 7584-3	PCB, Pb
8303-4	1	04-29-92	Resample of 7584-4	PCB, Pb
8304-1	2	04-29-92	Resample of 7585-1	PCB, Pb

Refer to footnotes at end of table.

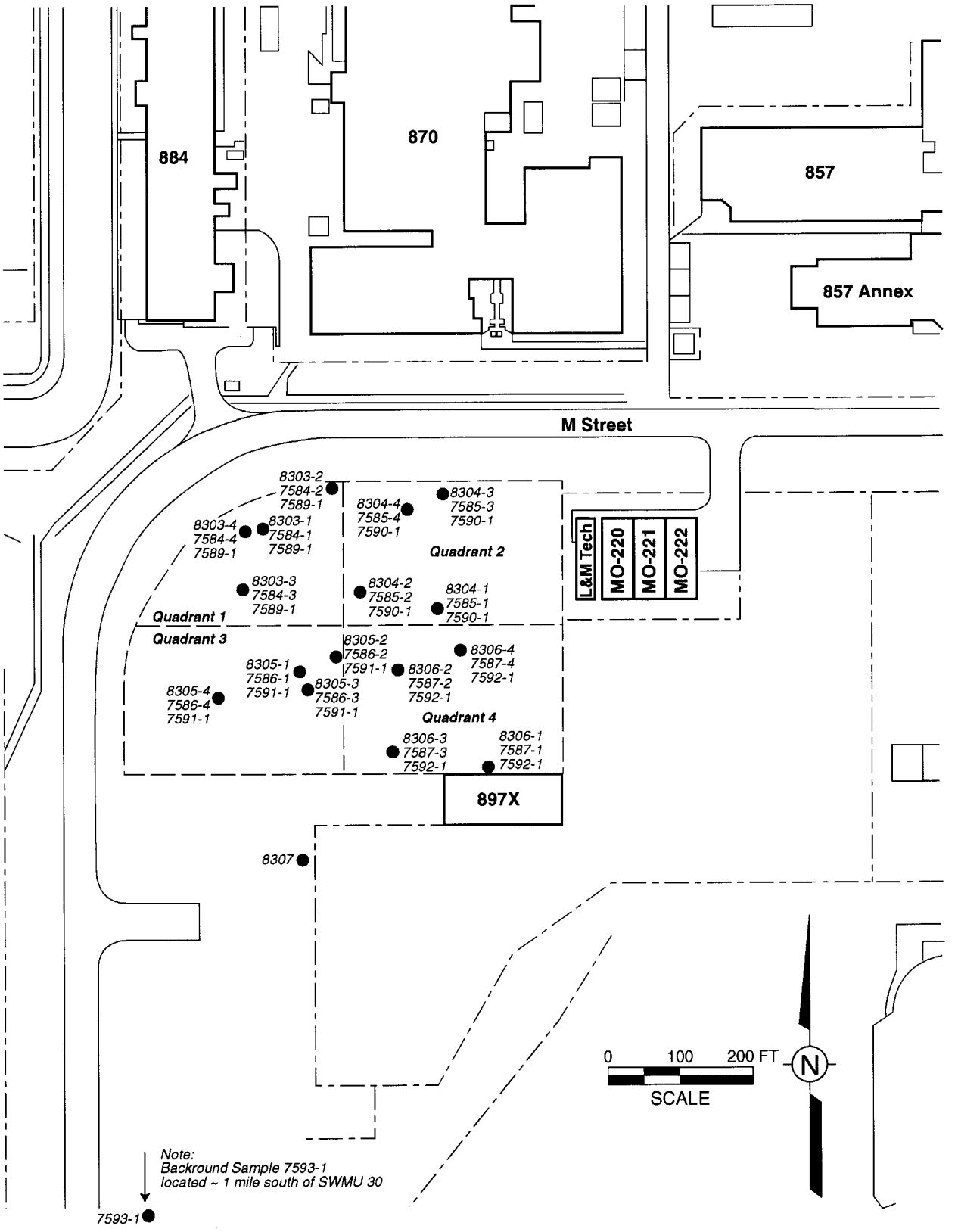


Figure 2.4.6-1

SWMU 30: Surface Soil Sampling Locations from 1992 Investigations (IT Corporation February 1992, July 1992)

indicate that the samples from the site contained isotopic concentrations similar to background concentrations.

Significant concentrations of total petroleum hydrocarbons (TPH) (to 31,900 mg/kg) were measured in the biased visible-stain composite sample (7588) collected from various stained areas throughout the four quadrants. No TPH was found in any other sample. No SVOCs were detected in any of the samples (IT July 1992).

2.4.7 Investigation #6—1993 Investigation of an Unknown Substance

The tar-like substance was again exposed in an excavation approximately 3 feet deep and due east of the communications duct where the tar-like substance was first encountered in 1991 in the southwestern corner of the site (discussed above in Section 2.4.5; manhole shown on Figure 2.2.1-1). This soil was tested to determine waste characteristics.

2.4.7.1 Nonsampling Data Collection

No nonsampling data collection activities were conducted as part of Investigation #6.

2.4.7.2 Sampling Data Collection

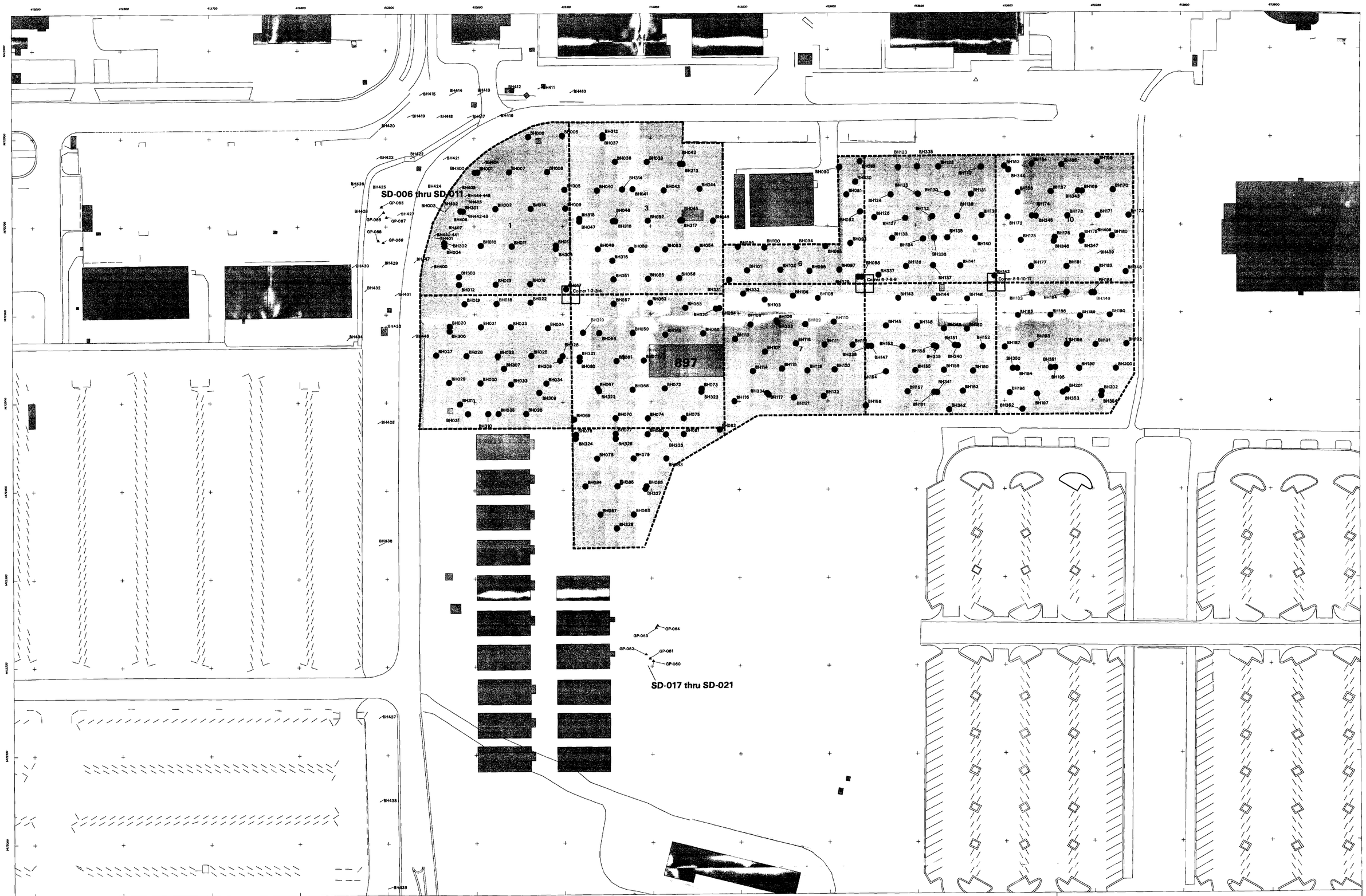
A grab sample of this tar-like substance collected May 18, 1993 was analyzed for TCLP VOCs (EPA Method 8240), TCLP metals (EPA Methods 6010, 7061, 7470, and 7741), TCLP SVOCs (EPA Method 8270), and PCBs (EPA Method 600/4-81-45) (Stockham June 1993).

2.4.7.3 Data Gaps

The sampling team did not survey exact sample location. QA/QC protocols were not specified in the data presentation. Analytical MDLs were not specified, although reporting limits were provided. It is uncertain why this material was found at depth, perhaps it represents a former topographic surface before 14th Street was constructed.

2.4.7.4 Results and Conclusions

All results of the analysis of the tar-based substance were nondetect except for methylene chloride (6 µg/L), xylene (5 µg/L), and barium (0.61 mg/L) (Stockham August 1993). All other VOC analytical results were nondetect with reporting limits ranging from 5 to 300 µg/L. All other metals analytical results were nondetect with reporting limits ranging from 0.0002 to 0.02 mg/L. All SVOC analytical results were nondetect with reporting limits ranging from 20 to 160 µg/L. All PCB analytical results were nondetect with reporting limits of 1.0 mg/kg for all seven Aroclors.



Legend

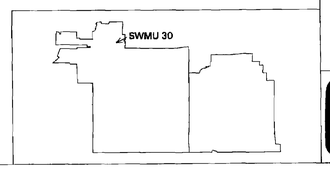
- SWMU 30 (as of 1995)
- Buildings/Structures
- Roads and Parking Lots
- Fences
- Grid Boundary
- Borehole Locations (RFI)
- Borehole locations (Supplemental Sampling)
- Grid Corners
- Sediment Sample Locations (RFI)
- Sediment Sample Locations (Supplement Sampling)

0 40 80 Scale in Feet

0 10 20 Scale in Meters

0 0.01 0.02 Scale in Kilometers

0 0.008 0.015 Scale in Miles



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 2.4.8-1
SWMU 30 Sediment, Surface, and Near-Surface Soil Sampling Locations from the 1995 through 1997 RCRA Facilities Investigations

Compiled by photogrammetric methods from aerial photography dated March 1986, March 1992, September 1993 and July 1995
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone
1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=010440b

Unclassified

SNL GIS ORG. 6135

D Rizor | dr010440.aml | 04/24/01

four subareas within each grid, designated A through D, to produce three or four composite samples for each of the 11 grids. Due to excessive clutter, the subareas are not shown on Figure 2.4.8-1, but generally the samples collected in the northwest corner were grouped as A, northeast as B, southwest as C, and southeast as D. Within each grid subarea, samples were combined for each respective depth. Composite samples were sent to an off-site laboratory for PCBs, SVOCs, and TAL inorganic analyses. Based upon photoionization detector screening results or the judgment of the field samplers, discrete samples for VOC analysis were collected from the surface and subsurface of one location in each grid subarea and were sent to an off-site laboratory. PCB field screening samples were also collected from each borehole location using a hand-scoop or auger and were placed in a Ziplock bag for delivery to ERCL. A total of 404 samples from 202 locations (BH001 through BH202) were analyzed at ERCL with the PCB field-screening test.

Additional samples that were not originally designated in the RFI Work Plan were collected from the site (Phase 2 sampling). Based upon a preliminary review of the RFI Work Plan, the EPA requested that five additional soil samples be collected from each grid, for a total of 55 extra samples. The EPA requested that the additional samples be discrete and based upon the Phase 1 PCB field-screening results or be collected from areas where surface staining was evident, areas where surface water accumulated, or areas where small run-off channels occurred. Locations where concentrations of PCBs greater than 400 µg/kg were detected by field screening were automatically resampled on an individual basis and analyzed for PCBs, VOCs, SVOCs, and TAL inorganics. The remaining locations were sampled for the same analytes, based upon the other criteria described above.

Concurrent with the spring 1995 investigation, sediment samples were collected near the site as part of the RFI for SWMU 96, the Storm Drain System (SNL/NM 1996). The SWMU 96 sampling program consisted of sampling outfalls and storm-water channels throughout TA-I. Several of the sample locations were in channels adjacent to SWMU 30. When it became evident the PCBs had migrated from SWMU 30 into the storm-water channel, the SWMU 30 boundary was expanded and assumed responsibility for characterization and remediation of PCB-contaminated sediment/soils in the storm-water channel. Sediment samples were collected from two outfalls near SWMU 30: SD006 through SD011 in the 14th Street storm-drain channel immediately west of the site and SD017 through SD021 in a different storm-drain channel approximately 200 feet south of the site (Figure 2.4.8-1). The sediment samples were collected near the outfalls in a line acute to the water transport direction. Based upon the analytical results of these sediment samples (discussed in Section 2.4.8.4), a follow-up geoprobe sampling program was completed at locations within the channel near the sediment samples to characterize the vertical extent of contamination. The geoprobe program consisted of collecting samples at various depths from 3 to 23 feet bgs at 10 locations (GP-060 through GP-069; Figure 2.4.8-1).

2.4.8.3 Data Gaps

The analytical results discussed below show that the horizontal extent of PCB-contaminated soils was not determined in much of the western portion of the site and at an isolated location on the east side of the site.

2.4.8.4 *Results and Conclusions*

PCB Field-Screening

Of the 404 PCB immunoassay analyses performed at the site, 52 samples had a positive detection for PCBs (Table 2.4.8-1; Kottenstette April 1995). Forty-two samples had greater than 400 µg/kg of PCBs, and 10 samples had greater than 50,000 µg/kg of PCBs. The majority of detections were from Grids 1 through 5 in the western one-third of the site (Figure 2.4.8-1; Table 2.4.8-1), with a minor grouping of PCB detections in Grids 9 through 11 in the eastern part of the site. The majority of detections are from the 1-foot depth.

The detection limits for the immunoassay analyses vary depending on the Aroclor in question. The manufacturer states that this test method has a detection level of 400 µg/kg for Aroclors 1260 and 1254, 1,000 µg/kg for Aroclor 1248, and 2,000 µg/kg for Aroclor 1242. As seen in the laboratory results for PCBs (discussed below), the majority of the PCBs found were Aroclors 1260 and 1254. This implies that the majority of nondetects reported during the immunoassay would contain less than 400 µg/kg of PCBs. According to the manufacturer's product information sheet, the test method has a less than 1 percent occurrence rate of false negative results (i.e., the test reports the sample does not contain PCBs when it actually does contain PCBs). However, in order to achieve this low occurrence rate for false negatives, the test method has a relatively high occurrence rate (4.4 percent) of false positives. Therefore, of the 404 PCB immunoassay performed at the site as many as 18 of the 52 detections at SWMU 30 may actually be false positive results.

VOC Analysis

Eighty-four discrete soil samples (1- and 5-foot depths) from 42 locations were analyzed for VOCs by an off-site laboratory. Most results were nondetect for VOC analytes except for minor detections of 2-butanone, acetone, chlorobenzene, methylene chloride, and toluene (Tables 2.4.8-2 and 2.4.8-3). With rare exceptions, these analytes had J or B qualifiers. The MDLs for analyzed VOCs are provided in Table 2.4.8-4. All the values for the sample pairs were either nondetect or estimated, and thus no RPDs could be calculated.

SVOC Analysis

The results of the SVOC analyses indicate a wide variety of analytes in extremely low concentrations throughout the site. Twenty-eight different SVOC analytes were detected (Tables 2.4.8-5 through 2.4.8-10). The soils from the 1-foot depth had the greatest variety of analytes, with as many as 26 compounds detected (Tables 2.4.8-5 through 2.4.8-8). The 5-foot sample depth had a much shorter analyte list (Tables 2.4.8-9 and 2.4.8-10), with the majority of SVOCs being found in only one or two locations. With rare exception, the detected SVOCs at the 1- and 5-foot levels had J or B qualifiers. Locations of detectable SVOCs were in all 11 grid subareas. The locations that exhibited the highest concentrations of total SVOCs were BH192, BH313, BH319, BH326 all at the 1-foot depth (Figure 2.4.8-1). The highest concentration of any SVOC detected was 4,100 µg/kg of di-n-butyl phthalate found at BH319 at the 1-foot depth. The range of MDLs for analyzed SVOCs are provided in Table 2.4.8-11. All the values for the

Table 2.4.8-1
Summary of SWMU 30 Immunoassay Field Screening Results (Detections Only)
March–April 1995
(ERCL)

Sample Location	Sample Grid[a]	End Depth (ft)	Results (µg/kg)[b, c]
BH001	1A	1	> 400
BH001	1A	5	> 400
BH003	1A	1	> 50,000
BH004	1A	1	> 50,000
BH009	1B	5	> 400
BH011	1C	1	> 400
BH012	1C	1	> 400
BH013	1C	5	> 400
BH015	1D	5	> 400
BH016	1D	5	> 400
BH018	2A	1	> 400
BH019	2A	1	> 400
BH020	2A	1	> 400
BH020	2A	5	> 400
BH026	2B	1	> 50,000
BH034	2D	1	> 400
BH036	2D	1	> 400
BH037	3A	5	> 400
BH042	3B	1	> 400
BH045	3B	5	> 50,000
BH046	3B	5	> 400
BH047	3C	1	> 50,000
BH048	3C	1	> 50,000
BH053	3D	5	> 400
BH060	4A	1	> 400
BH063	4B	1	> 400
BH064	4B	5	> 50,000
BH067	4C	5	> 50,000
BH068	4C	1	> 400
BH073	4D	5	> 400
BH076	5A	1	> 400
BH077	5A	5	> 400
BH083	5B	1	> 400
BH086	5C	5	> 400
BH087	5C	5	> 400
BH098	6B	5	> 50,000
BH106	7A	1	> 400
BH117	7C	5	> 400
BH147	9A	1	> 400
BH151	9B	1	> 400
BH158	9D	1	> 400
BH161	9D	1	> 400
BH163	10A	1	> 400
BH169	10B	1	> 400

Refer to footnotes at end of table.

Table 2.4.8-1 (Concluded)
Summary of SWMU 30 Immunoassay Field Screening Results (Detections Only)
March–April 1995
(ERCL)

Sample Location	Sample Grid[a]	End Depth (ft)	Results (µg/kg)[b, c]
BH174	10C	1	> 400
BH176	10C	1	> 400
BH179	10D	1	> 400
BH188	11B	1	> 400
BH194	11C	1	> 50,000
BH195	11C	5	> 400
BH201	11D	5	> 400
BH202	11D	1	> 400

[a]A = Northwest.
B = Northeast.
C = Southwest.
D = Southeast.
[b]Analysis by SNL/NM ERCL (Building 6540) using EnSys, Inc. PCB RIS© Immunoassay testing kits (Kottenstette April 1995).
[c]Only results greater than 400 µg/kg are reported.
BH = Borehole.
ERCL = Environmental Restoration Chemical Laboratory.
ft = Foot (feet).
µg/kg = Microgram(s) per kilogram.
SNL/NM = Sandia National Laboratories/New Mexico.
SWMU = Solid Waste Management Unit.

Table 2.4.8-2
Summary of SWMU 30 Surface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Methylene chloride	Toluene
2906	T1030-BH004-001-SS	0–1	ND (6.12)	ND (1.75)	**2.2 BJ (5)**	ND (1.56)
2906	T1030-BH009-001-SS	0–1	ND (6.12)	ND (1.75)	**2 BJ (5)**	ND (1.56)
2907	T1030-BH013-001-SS	0–1	ND (6.12)	ND (1.75)	**1.8 BJ (5)**	ND (1.56)
2907	T1030-BH017-001-SS	0–1	ND (6.12)	**3.7 J (10)**	**7.4 B**	ND (1.56)
2907	T1030-BH021-001-SS	0–1	ND (6.12)	ND (1.75)	**2.3 BJ (5)**	**2.8 J (5)**
2907	T1030-BH026-001-SS	0–1	ND (6.12)	ND (1.75)	**5.4 B**	ND (1.56)
2908	T1030-BH029-001-SS	0–1	ND (6.12)	ND (1.75)	**2 BJ (5)**	ND (1.56)
2908	T1030-BH036-001-SS	0–1	**2.3 JX (10)**	ND (1.75)	**1.5 J (5)**	ND (1.56)
2908	T1030-BH041-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2915	T1030-BH046-001-SS	0–1	ND (6.12)	**9.8 BJ (10)**	**1.9 J (5)**	ND (1.56)
2915	T1030-BH051-001-SS	0–1	ND (6.12)	**6.9 BJ (10)**	**2 J (5)**	ND (1.56)
2915	T1030-BH056-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2915	T1030-BH056-002-SS (duplicate)	0–1	ND (6.12)	ND (1.75)	**1.5 J (5)**	ND (1.56)
2915	T1030-BH061-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2909	T1030-BH066-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2909	T1030-BH070-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2910	T1030-BH075-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2910	T1030-BH079-001-SS	0–1	ND (6.12)	**7.8 J (10)**	ND (1.04)	ND (1.56)
2910	T1030-BH083-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2910	T1030-BH088-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2910	T1030-BH088-002-SS (duplicate)	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2911	T1030-BH093-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2911	T1030-BH098-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2911	T1030-BH102-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2911	T1030-BH107-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2912	T1030-BH112-001-SS	0–1	ND (6.12)	ND (1.75)	**2.5 J (5)**	ND (1.56)
2912	T1030-BH117-001-SS	0–1	ND (6.12)	ND (1.75)	**1.7 J (5)**	ND (1.56)

Refer to footnotes at end of table.

Table 2.4.8-2 (Continued)
Summary of SWMU 30 Surface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Methylene chloride	Toluene
2912	T1030-BH122-001-SS	0–1	ND (6.12)	ND (1.75)	**1.6 J (5)**	ND (1.56)
2912	T1030-BH122-002-SS (duplicate)	0–1	ND (6.12)	ND (1.75)	**1.8 J (5)**	ND (1.56)
2912	T1030-BH127-001-SS	0–1	ND (6.12)	ND (1.75)	**2.9 J (5)**	ND (1.56)
2913	T1030-BH132-001-SS	0–1	ND (6.12)	**2.8 J (10)**	ND (1.04)	ND (1.56)
2913	T1030-BH136-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2913	T1030-BH142-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2913	T1030-BH147-001-SS	0–1	ND (6.12)	ND (1.75)	**1.3 J (5)**	ND (1.56)
2914	T1030-BH152-001-SS	0–1	ND (6.12)	ND (1.75)	**1.5 J (5)**	ND (1.56)
2914	T1030-BH157-001-SS	0–1	ND (6.12)	ND (1.75)	**1.2 J (5)**	ND (1.56)
2916	T1030-BH162-001-SS	0–1	ND (6.12)	ND (1.75)	**1.4 BJ (5)**	ND (1.56)
2916	T1030-BH162-002-SS (duplicate)	0–1	ND (6.12)	ND (1.75)	**1.5 BJ (5)**	ND (1.56)
2916	T1030-BH167-001-SS	0–1	ND (6.12)	ND (1.75)	**1.3 BJ (5)**	ND (1.56)
2916	T1030-BH172-001-SS	0–1	ND (6.12)	ND (1.75)	**1.2 BJ (5)**	ND (1.56)
2917	T1030-BH177-001-SS	0–1	ND (6.12)	**3.3 J (10)**	ND (1.04)	ND (1.56)
2917	T1030-BH182-001-SS	0–1	ND (6.12)	ND (1.75)	**2 J (5)**	ND (1.56)
2917	T1030-BH187-001-SS	0–1	ND (6.12)	ND (1.75)	**2.7 J (5)**	ND (1.56)
2917	T1030-BH192-001-SS	0–1	ND (6.12)	ND (1.75)	**2.9 J (5)**	ND (1.56)
2988	T1030-BH197-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2988	T1030-BH202-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2988	T1030-BH202-002-SS (duplicate)	0–1	ND (6.12)	**7.2 BJ (10)**	**1.5 J (5)**	ND (1.56)
2989	T1030-BH300-001-SS	0–1	ND (6.12)	ND (1.75)	**1.3 J (5)**	ND (1.56)
2989	T1030-BH301-001-SS	0–1	ND (6.12)	ND (1.75)	**1.3 J (5)**	ND (1.56)
2989	T1030-BH302-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2989	T1030-BH303-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2989	T1030-BH304-001-SS	0–1	ND (6.12)	ND (1.75)	**1.1 J (5)**	ND (1.56)

Refer to footnotes at end of table.

Table 2.4.8-2 (Continued)
Summary of SWMU 30 Surface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)			
Record Number[a]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Methylene chloride	Toluene
2989	T1030-BH305-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2990	T1030-BH306-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2990	T1030-BH307-001-SS	0–1	ND (6.12)	ND (1.75)	**1.9 J (5)**	ND (1.56)
2990	T1030-BH308-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2990	T1030-BH309-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2990	T1030-BH309-002-SS (duplicate)	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2991	T1030-BH310-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2991	T1030-BH311-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2991	T1030-BH312-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2991	T1030-BH313-001-SS	0–1	ND (6.12)	ND (1.75)	**1.7 J (5)**	ND (1.56)
2991	T1030-BH314-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2991	T1030-BH315-001-SS	0–1	ND (6.12)	**1.7 JX (10)**	ND (1.04)	ND (1.56)
2992	T1030-BH316-001-SS	0–1	ND (6.12)	ND (1.75)	**1.6 J (5)**	ND (1.56)
2992	T1030-BH317-001-SS	0–1	ND (6.12)	ND (1.75)	**1.3 J (5)**	ND (1.56)
2992	T1030-BH318-001-SS	0–1	ND (6.12)	ND (1.75)	**1.4 J (5)**	ND (1.56)
2992	T1030-BH319-001-SS	0–1	ND (6.12)	ND (1.75)	**1 JX (5)**	ND (1.56)
2992	T1030-BH320-001-SS	0–1	ND (6.12)	ND (1.75)	**1.3 J (5)**	ND (1.56)
2992	T1030-BH321-001-SS	0–1	ND (6.12)	**3 J (10)**	ND (1.04)	ND (1.56)
2993	T1030-BH322-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2993	T1030-BH323-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2993	T1030-BH324-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2993	T1030-BH325-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2993	T1030-BH326-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2993	T1030-BH327-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2994	T1030-BH328-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2994	T1030-BH329-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2994	T1030-BH330-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)

Refer to footnotes at end of table.

Table 2.4.8-2 (Continued)
Summary of SWMU 30 Surface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)			
Record Number[a]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Methylene chloride	Toluene
2994	T1030-BH331-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2994	T1030-BH332-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2994	T1030-BH333-001-SS	0–1	ND (6.12)	ND (1.75)	**2.6 J (5)**	ND (1.56)
2994	T1030-BH334-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2995	T1030-BH335-001-SS	0–1	ND (6.12)	**10 B**	ND (1.04)	ND (1.56)
2995	T1030-BH336-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2995	T1030-BH337-001-SS	0–1	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
3392	T1030-BH338-001-SS	0–1	ND (6.12)	ND (1.75)	**3.8 J (5)**	ND (1.56)
3392	T1030-BH339-001-SS	0–1	ND (6.12)	**2.3 J (10)**	**3.1 J (5)**	ND (1.56)
3392	T1030-BH340-001-SS	0–1	ND (6.12)	ND (1.75)	**2.9 J (5)**	ND (1.56)
3392	T1030-BH341-001-SS	0–1	ND (6.12)	ND (1.75)	**3.3 J (5)**	ND (1.56)
3392	T1030-BH342-001-SS	0–1	ND (6.12)	ND (1.75)	**4.1 J (5)**	ND (1.56)
3392	T1030-BH343-001-SS	0–1	ND (6.12)	ND (1.75)	**2.2 J (5)**	ND (1.56)
3392	T1030-BH344-001-SS	0–1	ND (6.12)	ND (1.75)	**1.2 J (5)**	ND (1.56)
3392	T1030-BH345-001-SS	0–1	ND (6.12)	ND (1.75)	**1.1 J (5)**	ND (1.56)
3393	T1030-BH346-001-SS	0–1	ND (6.12)	ND (1.75)	**1.5 J (5)**	ND (1.56)
3393	T1030-BH347-001-SS	0–1	ND (6.12)	ND (1.75)	**1.9 J (5)**	ND (1.56)
3393	T1030-BH348-001-SS	0–1	ND (6.12)	ND (1.75)	**2 J (5)**	ND (1.56)
3393	T1030-BH349-001-SS	0–1	ND (6.12)	ND (1.75)	**2.2 J (5)**	ND (1.56)
3393	T1030-BH350-001-SS	0–1	ND (6.12)	ND (1.75)	**1.6 J (5)**	ND (1.56)
3393	T1030-BH350-002-SS (duplicate)	0–1	ND (6.12)	ND (1.75)	**2.1 J (5)**	ND (1.56)
3393	T1030-BH351-001-SS	0–1	ND (6.12)	ND (1.75)	**2 J (5)**	ND (1.56)
3393	T1030-BH352-001-SS	0–1	ND (6.12)	ND (1.75)	**1.7 J (5)**	ND (1.56)
3393	T1030-BH353-001-SS	0–1	**2 BJX (10)**	**12**	**2.5 BJ (5)**	ND (1.56)
3393	T1030-BH354-001-SS	0–1	ND (6.12)	**4 J (10)**	**1.1 BJ (5)**	ND (1.56)

Refer to footnotes at end of table.

Table 2.4.8-2 (Continued)
Summary of SWMU 30 Surface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Methylene chloride	Toluene
Quality Assurance/Quality Control Samples (µg/L)						
2915	T1030-EB001-001	NA	ND (6.12)	ND (1.75)	**1.3 BJ (5)**	ND (1.56)
2910	T1030-EB002-001	NA	ND (6.12)	**3 J (10)**	**1.6 BJ (5)**	ND (1.56)
2912	T1030-EB003-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2916	T1030-EB004-001	NA	ND (6.12)	ND (1.75)	**1.1 BJ (5)**	ND (1.56)
2988	T1030-EB005-001	NA	ND (6.12)	ND (1.75)	**2.6 J (5)**	ND (1.56)
2990	T1030-EB006-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2992	T1030-EB007-001	NA	ND (6.12)	**21**	ND (1.04)	ND (1.56)
2994	T1030-EB008-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2995	T1030-EB009-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
3393	T1030-EB010-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
Quality Assurance/Quality Control Samples (µg/kg)						
2906	T1030-TB001-001	NA	**25**	**84**	**4 BJ (5)**	**1.1 JX (5)**
2907	T1030-TB002-001	NA	**46**	**120**	**13 B**	**1.6 JX (5)**
2908	T1030-TB003-001	NA	**28**	**76 B**	**4.4 J (5)**	**1.4 JX (5)**
2915	T1030-TB004-001	NA	ND (6.12)	ND (1.75)	**1.6 BJ (5)**	ND (1.56)
2915	T1030-TB005-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2909	T1030-TB006-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2910	T1030-TB007-001	NA	ND (6.12)	ND (1.75)	**1.5 BJ (5)**	ND (1.56)
2910	T1030-TB008-001	NA	ND (6.12)	**3.3 J (10)**	ND (1.04)	ND (1.56)
2911	T1030-TB009-001	NA	ND (6.12)	ND (1.75)	**2.4 J (5)**	ND (1.56)
2912	T1030-TB010-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2912	T1030-TB011-001	NA	ND (6.12)	ND (1.75)	**1.6 J (5)**	ND (1.56)
2913	T1030-TB012-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2914	T1030-TB013-001	NA	ND (6.12)	ND (1.75)	**2.1 J (5)**	ND (1.56)

Refer to footnotes at end of table.

Table 2.4.8-2 (Concluded)
Summary of SWMU 30 Surface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Methylene chloride	Toluene
2916	T1030-TB014-001	NA	ND (6.12)	ND (1.75)	**1.2 BJ (5)**	ND (1.56)
2916	T1030-TB015-001	NA	ND (6.12)	**2.3 BJ (10)**	**1.2 BJ (5)**	ND (1.56)
2917	T1030-TB016-001	NA	ND (6.12)	**22**	**2.4 J (5)**	ND (1.56)
2988	T1030-TB017-001	NA	ND (6.12)	ND (1.75)	**3.2 J (5)**	ND (1.56)
2988	T1030-TB018-001	NA	ND (6.12)	ND (1.75)	**1.7 J (5)**	ND (1.56)
2989	T1030-TB019-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2990	T1030-TB021-001	NA	ND (6.12)	**9.5 J (10)**	**1.2 J (5)**	ND (1.56)
2990	T1030-TB022-001	NA	ND (6.12)	ND (1.75)	**1.3 J (5)**	ND (1.56)
2991	T1030-TB023-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2992	T1030-TB024-001	NA	ND (6.12)	ND (1.75)	**1.6 J (5)**	ND (1.56)
2992	T1030-TB025-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2993	T1030-TB026-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2994	T1030-TB027-001	NA	ND (6.12)	ND (1.75)	**1.2 J (5)**	ND (1.56)
2994	T1030-TB028-001	NA	ND (6.12)	ND (1.75)	ND (1.04)	ND (1.56)
2995	T1030-TB029-001	NA	ND (6.12)	ND (1.75)	**1.4 J (5)**	ND (1.56)
2995	T1030-TB030-001	NA	ND (6.12)	**1.5 JX (10)**	ND (1.04)	ND (1.56)
3392	T1030-TB031-001	NA	ND (6.12)	ND (1.75)	**1.1 J (5)**	ND (1.56)
3393	T1030-TB032-001	NA	ND (6.12)	ND (1.75)	**1.2 J (5)**	ND (1.56)
3393	T1030-TB033-001	NA	**4.5 BJX (10)**	**8.7 J (10)**	ND (1.04)	ND (1.56)

Note: Values in **bold** represent detected analytes.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.

B = Analyte detected in laboratory method blank.
BH = Borehole; conveys location identifiers shown on related figures.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
SS = Discrete soil sample.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.
TB = Trip blank.
VOC = Volatile organic compound.
X = There is presumptive evidence that the analyte is not present based upon documented method detection limit studies performed by the laboratory for the applicable dates.

Table 2.4.8-3
Summary of SWMU 30 Subsurface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)				
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Chlorobenzene	Methylene chloride	Toluene
2906	T1030-BH004-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**2 BJ (5)**	ND (1.56)
2906	T1030-BH007-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.3 BJ (5)**	ND (1.56)
2907	T1030-BH013-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.7 BJ (5)**	ND (1.56)
2907	T1030-BH017-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**5.6 B**	ND (1.56)
2907	T1030-BH021-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**4.8 BJ (5)**	ND (1.56)
2907	T1030-BH026-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.6 BJ (5)**	**1.2 JX (5)**
2908	T1030-BH029-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**4.4 BJ (5)**	ND (1.56)
2908	T1030-BH036-005-SS	4–5	ND (6.12)	**6.9 BJ (10)**	**1.5 J (5)**	**2 J (5)**	ND (1.56)
2908	T1030-BH041-005-SS	4–5	**2.7 JX (10)**	ND (1.75)	ND (1)	**2.2 J (5)**	ND (1.56)
2915	T1030-BH046-005-SS	4–5	ND (6.12)	**8.1 BJ (10)**	ND (1)	**1.6 J (5)**	**1.3 JX (5)**
2915	T1030-BH051-005-SS	4–5	ND (6.12)	**7.8 BJ (10)**	ND (1)	**1.8 J (5)**	ND (1.56)
2915	T1030-BH056-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2915	T1030-BH061-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2909	T1030-BH066-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2909	T1030-BH070-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2910	T1030-BH075-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2910	T1030-BH079-005-SS	4–5	ND (6.12)	**5.4 J (10)**	ND (1)	ND (1.04)	ND (1.56)
2910	T1030-BH081-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2910	T1030-BH084-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2911	T1030-BH093-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2911	T1030-BH098-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2911	T1030-BH102-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2911	T1030-BH107-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2912	T1030-BH112-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2912	T1030-BH117-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.1 J (5)**	ND (1.56)
2912	T1030-BH122-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.3 J (5)**	ND (1.56)
2912	T1030-BH127-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.9 J (5)**	ND (1.56)
2913	T1030-BH132-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)

Refer to footnotes at end of table.

Table 2.4.8-3 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)				
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Chlorobenzene	Methylene chloride	Toluene
2913	T1030-BH136-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2913	T1030-BH142-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2913	T1030-BH147-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2914	T1030-BH152-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.4 J (5)**	ND (1.56)
2914	T1030-BH157-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2916	T1030-BH162-005-SS	4–5	ND (6.12)	**18 B**	ND (1)	**1.2 BJ (5)**	ND (1.56)
2916	T1030-BH167-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.1 BJ (5)**	ND (1.56)
2916	T1030-BH172-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.3 BJ (5)**	ND (1.56)
2917	T1030-BH177-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**3.4 J (5)**	ND (1.56)
2917	T1030-BH182-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**4.4 J (5)**	ND (1.56)
2917	T1030-BH187-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.9 J (5)**	ND (1.56)
2917	T1030-BH192-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2988	T1030-BH197-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2988	T1030-BH202-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2989	T1030-BH300-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2989	T1030-BH301-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2989	T1030-BH302-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.3 J (5)**	ND (1.56)
2989	T1030-BH303-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2989	T1030-BH304-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2989	T1030-BH305-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2990	T1030-BH306-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.8 J (5)**	ND (1.56)
2990	T1030-BH307-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.4 J (5)**	ND (1.56)
2990	T1030-BH308-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2990	T1030-BH309-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2991	T1030-BH310-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2991	T1030-BH312-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2991	T1030-BH313-005-SS	4–5	ND (6.12)	**3.4 J (10)**	ND (1)	ND (1.04)	ND (1.56)
2991	T1030-BH314-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)

Refer to footnotes at end of table.

Table 2.4.8-3 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)				
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Chlorobenzene	Methylene chloride	Toluene
2991	T1030-BH315-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2992	T1030-BH316-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.2 J (5)**	ND (1.56)
2992	T1030-BH317-005-SS	4–5	ND (6.12)	**3.1 J (10)**	ND (1)	**1.3 J (5)**	ND (1.56)
2992	T1030-BH318-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1 JX (5)**	ND (1.56)
2992	T1030-BH319-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.3 J (5)**	ND (1.56)
2992	T1030-BH320-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.1 J (5)**	ND (1.56)
2992	T1030-BH320-006-SS (duplicate)	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.2 J (5)**	ND (1.56)
2992	T1030-BH321-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2993	T1030-BH322-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2993	T1030-BH323-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2993	T1030-BH324-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2993	T1030-BH325-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2993	T1030-BH326-005-SS	4–5	ND (6.12)	**2.5 J (10)**	ND (1)	ND (1.04)	ND (1.56)
2993	T1030-BH327-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2994	T1030-BH328-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2994	T1030-BH329-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2994	T1030-BH329-006-SS (duplicate)	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2994	T1030-BH330-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2994	T1030-BH331-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	**1.3 JX (5)**
2994	T1030-BH332-005-SS	4–5	ND (6.12)	**7.3 J (10)**	ND (1)	ND (1.04)	ND (1.56)
2994	T1030-BH333-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2994	T1030-BH334-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2995	T1030-BH335-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2995	T1030-BH336-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2995	T1030-BH337-005-SS	4–5	ND (6.12)	**6 J (10)**	ND (1)	ND (1.04)	ND (1.56)
2995	T1030-BH337-006-SS (duplicate)	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
3392	T1030-BH338-005-SS	4–5	ND (6.12)	**4.8 J (10)**	ND (1)	**3.4 J (5)**	ND (1.56)
3392	T1030-BH339-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**3.6 J (5)**	ND (1.56)

Refer to footnotes at end of table.

Table 2.4.8-3 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)				
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Chlorobenzene	Methylene chloride	Toluene
3392	T1030-BH340-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**2.4 J (5)**	ND (1.56)
3392	T1030-BH341-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**3 J (5)**	ND (1.56)
3392	T1030-BH342-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**3.3 J (5)**	**1.1 JX (5)**
3392	T1030-BH343-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
3392	T1030-BH344-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.1 J (5)**	ND (1.56)
3392	T1030-BH345-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.1 J (5)**	ND (1.56)
3393	T1030-BH346-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**1.7 J (5)**	ND (1.56)
3393	T1030-BH347-005-SS	4–5	ND (6.12)	**13**	ND (1)	**1.5 J (5)**	ND (1.56)
3393	T1030-BH348-005-SS	4–5	ND (6.12)	**11**	ND (1)	**2.1 J (5)**	ND (1.56)
3393	T1030-BH349-005-SS	4–5	ND (6.12)	ND (1.75)	ND (1)	**2.1 J (5)**	ND (1.56)
3393	T1030-BH350-005-SS	4–5	ND (6.12)	**16**	ND (1)	**1.5 J (5)**	ND (1.56)
3393	T1030-BH351-005-SS	4–5	ND (6.12)	**20**	ND (1)	**1.9 J (5)**	ND (1.56)
3393	T1030-BH352-005-SS	4–5	ND (6.12)	**19**	ND (1)	**1.6 J (5)**	ND (1.56)
3393	T1030-BH353-005-SS	4–5	**3.9 BJX (10)**	**28**	ND (1)	ND (1.04)	ND (1.56)
3393	T1030-BH354-005-SS	4–5	**6 BJX (10)**	**22**	ND (1)	ND (1.04)	ND (1.56)
Quality Assurance/Quality Control Samples (µg/L)							
2915	T1030-EB001-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.3 BJ (5)**	ND (1.56)
2910	T1030-EB002-001	NA	ND (6.12)	**3 J (10)**	ND (1)	**1.6 BJ (5)**	ND (1.56)
2912	T1030-EB003-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2916	T1030-EB004-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.1 BJ (5)**	ND (1.56)
2988	T1030-EB005-001	NA	ND (6.12)	ND (1.75)	ND (1)	**2.6 J (5)**	ND (1.56)
2990	T1030-EB006-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2992	T1030-EB007-001	NA	ND (6.12)	**21**	ND (1)	ND (1.04)	ND (1.56)
2994	T1030-EB008-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2995	T1030-EB009-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
3393	T1030-EB010-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
Quality Assurance/Quality Control Samples (µg/kg)							
2906	T1030-TB001-001	NA	**25**	**84**	ND (1)	**4 BJ (5)**	**1.1 JX (5)**

Refer to footnotes at end of table.

Table 2.4.8-3 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)				
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Chlorobenzene	Methylene chloride	Toluene
2907	T1030-TB002-001	NA	**46**	**120**	ND (1)	**13 B**	**1.6 J (5)**
2908	T1030-TB003-001	NA	**28**	**76 B**	ND (1)	**4.4 J (5)**	**1.4 JX (5)**
2915	T1030-TB004-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.6 BJ (5)**	ND (1.56)
2915	T1030-TB005-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2909	T1030-TB006-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2910	T1030-TB007-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.5 BJ (5)**	ND (1.56)
2910	T1030-TB008-001	NA	ND (6.12)	**3.3 J (10)**	ND (1)	ND (1.04)	ND (1.56)
2911	T1030-TB009-001	NA	ND (6.12)	ND (1.75)	ND (1)	**2.4 J (5)**	ND (1.56)
2912	T1030-TB010-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2912	T1030-TB011-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.6 J (5)**	ND (1.56)
2913	T1030-TB012-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2914	T1030-TB013-001	NA	ND (6.12)	ND (1.75)	ND (1)	**2.1 J (5)**	ND (1.56)
2916	T1030-TB014-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.2 BJ (5)**	ND (1.56)
2916	T1030-TB015-001	NA	ND (6.12)	**2.3 BJ (10)**	ND (1)	**1.2 BJ (5)**	ND (1.56)
2917	T1030-TB016-001	NA	ND (6.12)	**22**	ND (1)	**2.4 J (5)**	ND (1.56)
2988	T1030-TB017-001	NA	ND (6.12)	ND (1.75)	ND (1)	**3.2 J (5)**	ND (1.56)
2988	T1030-TB018-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.7 J (5)**	ND (1.56)
2989	T1030-TB019-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2990	T1030-TB021-001	NA	ND (6.12)	**9.5 J (10)**	ND (1)	**1.2 J (5)**	ND (1.56)
2990	T1030-TB022-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.3 J (5)**	ND (1.56)
2991	T1030-TB023-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2992	T1030-TB024-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.6 J (5)**	ND (1.56)
2992	T1030-TB025-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2993	T1030-TB026-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2994	T1030-TB027-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.2 J (5)**	ND (1.56)
2994	T1030-TB028-001	NA	ND (6.12)	ND (1.75)	ND (1)	ND (1.04)	ND (1.56)
2995	T1030-TB029-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.4 J (5)**	ND (1.56)

Refer to footnotes at end of table.

Table 2.4.8-3 (Concluded)
Summary of SWMU 30 Subsurface Soil Sampling VOC Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			VOCs (EPA Method 8240[a]) (µg/kg)				
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Butanone	Acetone	Chlorobenzene	Methylene chloride	Toluene
2995	T1030-TB030-001	NA	ND (6.12)	**1.5 JX (10)**	ND (1)	ND (1.04)	ND (1.56)
3392	T1030-TB031-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.1 J (5)**	ND (1.56)
3393	T1030-TB032-001	NA	ND (6.12)	ND (1.75)	ND (1)	**1.2 J (5)**	ND (1.56)
3393	T1030-TB033-001	NA	**4.5 BJX (10)**	**8.7 J (10)**	ND (1)	ND (1.04)	ND (1.56)

Note: Values in **bold** represent detected analytes.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
B = Analyte detected in laboratory method blank.
BH = Borehole; conveys location identifiers shown on related figures.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
SS = Discrete soil sample.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.
TB = Trip blank.
VOC = Volatile organic compound.
X = There is presumptive evidence that the analyte is not present based upon documented method detection limit studies performed by the laboratory for the applicable dates.

Table 2.4.8-4
VOC Analytical Method Detection Limits Used for SWMU 30 Soil Sampling
March–April 1995
(Off-Site Laboratory)

Analyte	Method Detection Limit (µg/kg)
1,1,1-Trichloroethane	1.02
1,1,2,2-Tetrachloroethane	1.17
1,1,2-Trichloroethane	1.37
1,1-Dichloroethane	0.88
1,1-Dichloroethene	1.7
1,2-Dichloroethane	0.88
1,2-Dichloroethene	2.28
1,2-Dichloropropane	1.15
2-Butanone	6.12
2-Hexanone	1.79
4-methyl-, 2-Pentanone	1.51
Acetone	1.75
Benzene	1.32
Bromodichloromethane	0.92
Bromoform	1.26
Bromomethane	1.49
Carbon disulfide	1.67
Carbon tetrachloride	1.13
Chlorobenzene	1
Chloroethane	2.42
Chloroform	1.03
Chloromethane	3.33
Dibromochloromethane	1
Ethylbenzene	0.91
Methylene chloride	1.04
Styrene	0.85
Tetrachloroethene	1.19
Toluene	1.56
Trichloroethene	0.93
Vinyl acetate	1.53
Vinyl chloride	2.25
Xylene	1.58
cis-1,3-Dichloropropene	1.09
trans-1,3-Dichloropropene	0.95

µg/kg = Microgram(s) per kilogram.
SWMU = Solid Waste Management Unit.
VOC = Volatile organic compound.

Table 2.4.8-5
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 1 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Chloro phenol	2-Methyl naphthalene	4-Chloro-3-methylphenol	Acenaphthene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene
2906	T1030-BH004-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2906	T1030-BH009-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2907	T1030-BH013-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2907	T1030-BH017-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2907	T1030-BH021-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2907	T1030-BH026-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2908	T1030-BH031-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	**61 J (330)**	**48 J (330)**
2908	T1030-BH036-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2908	T1030-BH041-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2915	T1030-BH046-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2915	T1030-BH051-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	**35 JX (330)**	ND (48)
2915	T1030-BH056-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	**72 J (330)**	**73 J (330)**
2915	T1030-BH056-002-C (duplicate)	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	**58 J (330)**	**63 J (330)**
2915	T1030-BH061-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2909	T1030-BH066-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2909	T1030-BH070-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2910	T1030-BH075-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2910	T1030-BH079-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2910	T1030-BH083-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2910	T1030-BH088-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2910	T1030-BH088-002-C (duplicate)	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2911	T1030-BH093-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2911	T1030-BH098-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2911	T1030-BH102-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2911	T1030-BH107-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	**64 J (330)**	**100 J (330)**
2912	T1030-BH112-001-C	0–1	ND (28)	**170 J (330)**	ND (41)	**74 J (330)**	**45 J (330)**	**61 J (330)**	**58 J (330)**

Refer to footnotes at end of table.

Table 2.4.8-5 (Continued)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 1 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Chloro phenol	2-Methyl naphthalene	4-Chloro-3-methylphenol	Acenaphthene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene
2912	T1030-BH117-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2912	T1030-BH122-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2912	T1030-BH122-002-C (duplicate)	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2912	T1030-BH127-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2913	T1030-BH132-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2913	T1030-BH137-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2913	T1030-BH142-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2913	T1030-BH147-001-C	0–1	ND (28)	ND (40)	ND (41)	ND (41)	ND (44)	ND (52)	ND (48)
2914	T1030-BH152-001-C	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2914	T1030-BH157-001-C	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2916	T1030-BH162-001-C	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2916	T1030-BH162-002-C (duplicate)	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2916	T1030-BH167-001-C	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2916	T1030-BH172-001-C	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2917	T1030-BH177-001-C	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2917	T1030-BH182-001-C	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2917	T1030-BH187-001-C	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2917	T1030-BH192-001-C	0–1	ND (43)	ND (44)	ND (45)	**69 J (330)**	**280 J (330)**	**1,800**	**1,400**
2988	T1030-BH197-001-C	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2988	T1030-BH202-001-C	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	**42 J (330)**	**55 J (330)**
2988	T1030-BH202-002-C (duplicate)	0–1	**46 J (330)**	ND (44)	**39 JX (330)**	ND (47)	ND (26)	**40 J (330)**	**39 J (330)**
2989	T1030-BH300-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2989	T1030-BH301-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2989	T1030-BH302-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	**34 J (330)**	ND (21)
2989	T1030-BH303-001-SS	0–1	ND (86)[c]	ND (88)[c]	ND (90)[c]	ND (47)	ND (52)[c]	ND (42)[c]	ND (42)[c]
2989	T1030-BH304-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)

Refer to footnotes at end of table.

Table 2.4.8-5 (Continued)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 1 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Chloro phenol	2-Methyl naphthalene	4-Chloro-3-methylphenol	Acenaphthene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene
2989	T1030-BH305-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2990	T1030-BH306-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2990	T1030-BH307-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	**48 J (330)**	**50 J (330)**
2990	T1030-BH308-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	**34 J (330)**	ND (21)
2990	T1030-BH309-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	**37 J (330)**	ND (21)
2990	T1030-BH309-002-SS (duplicate)	0–1	ND (43)	ND (44)	ND (45)	ND (47)	**35 J (330)**	ND (21)	ND (21)
2991	T1030-BH310-001-SS	0–1	ND (43 J)	ND (44)	ND (45 J)	ND (47)	ND (26)	ND (21)	**38 J (330)**
2991	T1030-BH311-001-SS	0–1	ND (86)[c]	ND (88)[c]	ND (90)[c]	ND (47)	ND (52)[c]	ND (42)[c]	ND (42 J)[c]
2991	T1030-BH312-001-SS	0–1	ND (43 J)	ND (44)	ND (45 J)	ND (47)	ND (26)	ND (21)	ND (21)
2991	T1030-BH313-001-SS	0–1	ND (43 J)	ND (44)	ND (45 J)	**74 J (330)**	**86 J (330)**	**370**	**320 J (330)**
2991	T1030-BH314-001-SS	0–1	ND (43 J)	ND (44)	ND (45 J)	ND (47)	ND (26)	ND (21)	ND (21)
2991	T1030-BH315-001-SS	0–1	ND (43 J)	ND (44)	ND (45 J)	ND (47)	ND (26)	ND (21)	ND (21)
2992	T1030-BH316-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2992	T1030-BH317-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	**56 J (330)**	**58 J (330)**
2992	T1030-BH318-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	**46 J (330)**	**57 J (330)**
2992	T1030-BH319-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2992	T1030-BH320-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2992	T1030-BH321-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2993	T1030-BH322-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2993	T1030-BH323-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2993	T1030-BH324-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2993	T1030-BH325-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2993	T1030-BH326-001-SS	0–1	ND (43)	**150 J (330)**	ND (45)	**420**	**430**	**1,600**	**1,400**
2993	T1030-BH327-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2994	T1030-BH328-001-SS	0–1	ND (430)[c]	ND (440)[c]	ND (450)[c]	ND (470)[c]	ND (260)[c]	ND (210)[c]	ND (210)[c]
2994	T1030-BH329-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)

Refer to footnotes at end of table.

Table 2.4.8-5 (Continued)
Summary of SWMU 30 Soil Sampling (0- to 1-ft depth) SVOC Analytical Results
March–April 1995 (Table 1 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Chloro phenol	2-Methyl naphthalene	4-Chloro-3-methylphenol	Acenaphthene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene
2994	T1030-BH330-001-SS	0–1	ND (430)[c]	ND (440)[c]	ND (450)[c]	ND (47)	ND (260)[c]	ND (210)[c]	ND (210)[c]
2994	T1030-BH331-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2994	T1030-BH332-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2994	T1030-BH333-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	**72 J (330)**	**86 J (330)**
2994	T1030-BH334-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2995	T1030-BH335-001-SS	0–1	ND (430)[c]	ND (440)[c]	ND (450)[c]	ND (47)	ND (260)[c]	ND (210)[c]	ND (210)[c]
2995	T1030-BH336-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
2995	T1030-BH337-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	**100 J (330)**	**110 J (330)**
3392	T1030-BH338-001-SS	0–1	ND (172)[c]	ND (176)[c]	ND (180)[c]	ND (47)	ND (104)[c]	ND (84)[c]	ND (84)[c]
3392	T1030-BH339-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3392	T1030-BH340-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3392	T1030-BH341-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3392	T1030-BH342-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3392	T1030-BH343-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3392	T1030-BH344-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3392	T1030-BH345-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3393	T1030-BH346-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3393	T1030-BH347-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3393	T1030-BH348-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3393	T1030-BH349-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3393	T1030-BH350-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3393	T1030-BH350-002-SS (duplicate)	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3393	T1030-BH351-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3393	T1030-BH352-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	ND (21)	ND (21)
3393	T1030-BH353-001-SS	0–1	ND (430 J)[c]	ND (440 J)[c]	ND (450 J)[c]	ND (470 J)[c]	ND (260 J)[c]	ND (210 J)[c]	ND (210 J)[c]
3393	T1030-BH354-001-SS	0–1	ND (43)	ND (44)	ND (45)	ND (47)	ND (26)	**75 J (330)**	**74 J (330)**

Refer to footnotes at end of table.

Table 2.4.8-5 (Concluded)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 1 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	2-Chloro phenol	2-Methyl naphthalene	4-Chloro-3-methylphenol	Acenaphthene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene
Quality Assurance/Quality Control Samples (µg/L)									
2915	T1030-EB001-001	NA	ND (0.84)	ND (1.19)	ND (1.24)	ND (1.24)	ND (1.31)	ND (1.55)	ND (1.44)
2910	T1030-EB002-001	NA	ND (0.84)	ND (1.19)	ND (1.24)	ND (1.24)	ND (1.31)	ND (1.55)	ND (1.44)
2912	T1030-EB003-001	NA	ND (0.84)	ND (1.19)	ND (1.24)	ND (1.24)	ND (1.31)	ND (1.55)	ND (1.44)
2916	T1030-EB004-001	NA	ND (1.30)	ND (1.31)	ND (1.35)	ND (1.41)	ND (0.79)	ND (0.64)	ND (0.64)
2988	T1030-EB005-001	NA	ND (1.30)	ND (1.31)	ND (1.35)	ND (1.41)	ND (0.79)	ND (0.64)	ND (0.64)
2990	T1030-EB006-001	NA	ND (1.30)	ND (1.31)	ND (1.35)	ND (1.41)	ND (0.79)	ND (0.64)	ND (0.64)
2992	T1030-EB007-001	NA	ND (1.30)	ND (1.31)	ND (1.35)	ND (1.41)	ND (0.79)	ND (0.64)	ND (0.64)
2994	T1030-EB008-001	NA	ND (1.30)	ND (1.31)	ND (1.35)	ND (1.41)	ND (0.79)	ND (0.64)	ND (0.64)
2995	T1030-EB009-001	NA	ND (1.30)	ND (1.31)	ND (1.35)	ND (1.41)	ND (0.79)	ND (0.64)	ND (0.64)
3393	T1030-EB010-001	NA	ND (1.30)	ND (1.31)	ND (1.35)	ND (1.41)	ND (0.79)	ND (0.64)	ND (0.64)

Note: Values in **bold** represent detected analytes.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]The method detection limit as a result of dilution of the sample. Method detection limits reported in the Environmental Restoration Data Management System are method-specific and not sample-specific method detection limits.

BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
(J) = An estimated quantity. See Data Validation report.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
SS = Discrete soil sample.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.
X = There is presumptive evidence that the analyte is not present based upon documented method detection limit studies performed by the laboratory for the applicable dates.

Table 2.4.8-6
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 2 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Benzo(b) fluoranthene	Benzo(ghi) perylene	Benzo(k) fluoranthene	Benzoic acid	Butylbenzyl phthalate	Carbazole	Chrysene
2906	T1030-BH004-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2906	T1030-BH009-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2907	T1030-BH013-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2907	T1030-BH017-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2907	T1030-BH021-001-C	0–1	**34 JX (330)**	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2907	T1030-BH026-001-C	0–1	**41 JX (330)**	ND (83)	ND (54)	ND (813)	**37 JX (330)**	ND (122)	ND (21)
2908	T1030-BH031-001-C	0–1	**78 JX (330)**	**43 JX (330)**	ND (54)	ND (813)	ND (45)	ND (122)	**59 J (330)**
2908	T1030-BH036-001-C	0–1	**43 JX (330)**	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	**36 J (330)**
2908	T1030-BH041-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2915	T1030-BH046-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2915	T1030-BH051-001-C	0–1	ND (46)	**46 JX (330)**	**100 J (330)**	ND (813)	**44 JX (330)**	ND (122)	**53 J (330)**
2915	T1030-BH056-001-C	0–1	ND (46)	**48 JX (330)**	**98 J (330)**	ND (813)	ND (45)	ND (122)	**100 J (330)**
2915	T1030-BH056-002-C (duplicate)	0–1	ND (46)	**57 JX (330)**	**120 J (330)**	ND (813)	ND (45)	ND (122)	**110 J (330)**
2915	T1030-BH061-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2909	T1030-BH066-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2909	T1030-BH070-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2910	T1030-BH075-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2910	T1030-BH079-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2910	T1030-BH083-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2910	T1030-BH088-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2910	T1030-BH088-002-C (duplicate)	0–1	**44 JX (330)**	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	**34 J (330)**
02911	T1030-BH093-001-C	0–1	**43 JX (330)**	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
02911	T1030-BH098-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
02911	T1030-BH102-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
02911	T1030-BH107-001-C	0–1	**180 J (330)**	**68 JX (330)**	ND (54)	ND (813)	ND (45)	ND (122)	**110 J (330)**
2912	T1030-BH112-001-C	0–1	**80 J (330)**	**48 J*X (330)**	**87 J (330)**	ND (813 J)	**85 J (330)**	ND (122)	**76 J (330)**

Refer to footnotes at end of table.

Table 2.4.8-6 (Continued)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 2 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)[b]	Benzo(b) fluoranthene	Benzo(ghi) perylene	Benzo(k) fluoranthene	Benzoic acid	Butylbenzyl phthalate	Carbazole	Chrysene
2912	T1030-BH117-001-C	0–1	**46 J (330)**	ND (83)	**60 J (330)**	ND (813 J)	ND (45)	ND (122)	**40 J (330)**
2912	T1030-BH122-001-C	0–1	**43 JX (330)**	ND (83)	ND (54)	ND (813 J)	ND (45)	ND (122)	ND (21)
2912	T1030-BH122-002-C (duplicate)	0–1	ND (46)	ND (83)	**37 JX (330)**	ND (813 J)	ND (45)	ND (122)	ND (21)
2912	T1030-BH127-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813 J)	ND (45)	ND (122)	ND (21)
2913	T1030-BH132-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	**680**	ND (122)	ND (21)
2913	T1030-BH137-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2913	T1030-BH142-001-C	0–1	**71 J (330)**	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	**41 J (330)**
2913	T1030-BH147-001-C	0–1	ND (46)	ND (83)	ND (54)	ND (813)	ND (45)	ND (122)	ND (21)
2914	T1030-BH152-001-C	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2914	T1030-BH157-001-C	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2916	T1030-BH162-001-C	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2916	T1030-BH162-002-C (duplicate)	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2916	T1030-BH167-001-C	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2916	T1030-BH172-001-C	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2917	T1030-BH177-001-C	0–1	**44 JX (330)**	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2917	T1030-BH182-001-C	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2917	T1030-BH187-001-C	0–1	ND (96)	ND (225)	**34 J*X (330)**	ND (813)	ND (44)	ND (330)	ND (19)
2917	T1030-BH192-001-C	0–1	ND (96)	**540**	**190 J (330)**	ND (813)	ND (44)	**140 J (330)**	**1,600**
2988	T1030-BH197-001-C	0–1	ND (96)	ND (225)	**34 JX (330)**	ND (813)	ND (44)	ND (22)	ND (19)
2988	T1030-BH202-001-C	0–1	ND (96)	**40 JX (330)**	**65 J (330)**	ND (813)	ND (44)	ND (22)	**53 J (330)**
2988	T1030-BH202-002-C (duplicate)	0–1	ND (96)	ND (225)	**55 JX (330)**	ND (813)	ND (44)	ND (22)	**54 J (330)**
2989	T1030-BH300-001-SS	0–1	ND (96)	ND (225)	**38 JX (330)**	ND (813)	ND (44)	ND (22)	ND (19)
2989	T1030-BH301-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	**37 J (330)**
2989	T1030-BH302-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	**39 JX (330)**	ND (22)	**37 J (330)**
2989	T1030-BH303-001-SS	0–1	ND (184)[c]	ND (450)[c]	ND (128)[c]	ND (1626)[c]	ND (176)[c]	ND (44)[c]	ND (38)[c]

Refer to footnotes at end of table.

Table 2.4.8-6 (Continued)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 2 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Benzo(b) fluoranthene	Benzo(ghi) perylene	Benzo(k) fluoranthene	Benzoic acid	Butylbenzyl phthalate	Carbazole	Chrysene
2989	T1030-BH304-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2989	T1030-BH305-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2990	T1030-BH306-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2990	T1030-BH307-001-SS	0–1	**100 J (330)**	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	**82 J (330)**
2990	T1030-BH308-001-SS	0–1	**64 JX (330)**	ND (225)	ND (64)	**61 JX (1600)**	ND (44)	ND (22)	**41 J (330)**
2990	T1030-BH309-001-SS	0–1	**69 JX (330)**	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	**59 J (330)**
2990	T1030-BH309-002-SS (duplicate)	0–1	**47 JX (330)**	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	**34 J (330)**
2991	T1030-BH310-001-SS	0–1	**60 JX (330)**	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	**49 J (330)**
2991	T1030-BH311-001-SS	0–1	ND (192 J)[c]	ND (450 J)[c]	ND (128 J)[c]	ND (1626)[c]	ND (88)[c]	ND (44)[c]	ND (38)[c]
2991	T1030-BH312-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2991	T1030-BH313-001-SS	0–1	**560**	**210 JX (330)**	ND (64)	ND (813)	**40 JX (330)**	**58 J (330)**	**420**
2991	T1030-BH314-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2991	T1030-BH315-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2992	T1030-BH316-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2992	T1030-BH317-001-SS	0–1	**93 JX (330)**	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	**47 J (330)**
2992	T1030-BH318-001-SS	0–1	**120 J (330)**	**38 JX (330)**	ND (64)	ND (813)	ND (44)	ND (22)	**58 J (330)**
2992	T1030-BH319-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2992	T1030-BH320-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2992	T1030-BH321-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2993	T1030-BH322-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2993	T1030-BH323-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2993	T1030-BH324-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2993	T1030-BH325-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2993	T1030-BH326-001-SS	0–1	**2,200**	**880**	ND (64)	ND (813)	ND (44)	**180 J (330)**	**1,300**
2993	T1030-BH327-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2994	T1030-BH328-001-SS	0–1	ND (960)[c]	ND (2250)[c]	ND (640)[c]	ND (8130)[c]	ND (440)[c]	ND (220)[c]	ND (190)[c]

Refer to footnotes at end of table.

Table 2.4.8-6 (Continued)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 2 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Benzo(b) fluoranthene	Benzo(ghi) perylene	Benzo(k) fluoranthene	Benzoic acid	Butylbenzyl phthalate	Carbazole	Chrysene
2994	T1030-BH329-001-SS	0–1	**35 JX (330)**	ND (225)	**47 JX (330)**	ND (813)	ND (44)	ND (22)	**40 J (330)**
2994	T1030-BH330-001-SS	0–1	ND (960)[c]	ND (2250)[c]	ND (640)[c]	ND (8130)[c]	ND (440)[c]	ND (220)[c]	ND (190)[c]
2994	T1030-BH331-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2994	T1030-BH332-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2994	T1030-BH333-001-SS	0–1	**200 J (330)**	**93 JX (330)**	ND (64)	ND (813)	ND (44)	ND (22)	**120 J (330**
2994	T1030-BH334-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2995	T1030-BH335-001-SS	0–1	ND (960)[c]	ND (2250)[c]	ND (640)[c]	ND (8130)[c]	ND (440)[c]	ND (220)[c]	ND (190)[c]
2995	T1030-BH336-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813)	ND (44)	ND (22)	ND (19)
2995	T1030-BH337-001-SS	0–1	**120 J (330)**	**77 JX (330)**	**84 J* (330)**	ND (813 J)	**150 J (330)**	ND (22)	**130 J (330)**
3392	T1030-BH338-001-SS	0–1	ND (384)[c]	ND (900)[c]	ND (256)[c]	ND (3252 J)[c]	ND (176)[c]	ND (88)[c]	ND (76)[c]
3392	T1030-BH339-001-SS	0–1	**70 JX (330)**	ND (225)	ND (64)	ND (813 J)	**110 J* (330)**	ND (22)	**51 J* (330)**
3392	T1030-BH340-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813 J)	ND (44)	ND (22)	ND (19)
3392	T1030-BH341-001-SS	0–1	ND (96)	ND (225)	ND (64)	**34 J*X (1600)**	ND (44)	ND (22)	ND (19)
3392	T1030-BH342-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813 J)	ND (44)	ND (22)	ND (19)
3392	T1030-BH343-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813 J)	ND (44)	ND (22)	ND (19)
3392	T1030-BH344-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813 J)	ND (44)	ND (22)	ND (19)
3392	T1030-BH345-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813 J)	ND (44)	ND (22)	ND (19)
3393	T1030-BH346-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813) R	ND (44)	ND (22)	ND (19)
3393	T1030-BH347-001-SS	0–1	**62 JX (330)**	ND (225)	ND (64)	ND (813) R	ND (44)	ND (22)	**44 J (330)**
3393	T1030-BH348-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813) R	ND (44)	ND (22)	ND (19)
3393	T1030-BH349-001-SS	0–1	**34 JX (330)**	ND (225)	ND (64)	ND (813) R	ND (44)	ND (22)	ND (19)
3393	T1030-BH350-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813) R	ND (44)	ND (22)	ND (19)
3393	T1030-BH350-002-SS (duplicate)	0–1	**39 JX (330)**	ND (225)	ND (64)	ND (813) R	ND (44)	ND (22)	ND (19)
3393	T1030-BH351-001-SS	0–1	ND (96)	ND (225)	ND (64)	ND (813) R	ND (44)	ND (22)	ND (19)
3393	T1030-BH352-001-SS	0–1	ND (96)	ND (225)	**38 JX (330)**	ND (813) R	ND (44)	ND (22)	**41 J (330)**
3393	T1030-BH353-001-SS	0–1	ND (960 J)[c]	ND (2250 J)[c]	ND (640 J)[c]	ND (8130 J)[c] R	ND (440 J)[c]	ND (220 J)[c]	ND (190 J)[c]
3393	T1030-BH354-001-SS	0–1	**73 JX (330)**	**58 J (330)**	**59 JX (330)**	ND (813) R	ND (44)	ND (22)	**96 J (330)**

Refer to footnotes at end of table.

Table 2.4.8-6 (Concluded)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 2 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Benzo(b) fluoranthene	Benzo(ghi) perylene	Benzo(k) fluoranthene	Benzoic acid	Butylbenzyl phthalate	Carbazole	Chrysene
Quality Assurance/Quality Control Samples (µg/L)									
2915	T1030-EB001-001	NA	ND (1.38)	ND (2.48)	ND (1.61)	ND (24.38)	ND (1.35)	ND (3.67)	ND (0.64)
2910	T1030-EB002-001	NA	ND (1.38)	ND (2.48)	ND (1.61)	ND (24.38)	ND (1.35)	ND (3.67)	ND (0.64)
2912	T1030-EB003-001	NA	ND (1.38)	ND (2.48)	ND (1.61)	ND (24.38 J)	ND (1.35)	ND (3.67)	ND (0.64)
2916	T1030-EB004-001	NA	ND (2.89)	ND (6.76)	ND (1.93)	ND (24.38)	ND (1.32)	ND (0.66)	ND (0.56)
2988	T1030-EB005-001	NA	ND (2.89)	ND (6.76)	ND (1.93)	ND (24.38)	ND (1.32)	ND (0.66)	ND (0.56)
2990	T1030-EB006-001	NA	ND (2.89)	ND (6.76)	ND (1.93)	ND (24.38)	ND (1.32)	ND (0.66)	ND (0.56)
2992	T1030-EB007-001	NA	ND (2.89)	ND (6.76)	ND (1.93)	ND (24.38)	ND (1.32)	ND (0.66)	ND (0.56)
2994	T1030-EB008-001	NA	ND (2.89)	ND (6.76)	ND (1.93)	ND (24.38)	ND (1.32)	ND (0.66)	ND (0.56)
2995	T1030-EB009-001	NA	ND (2.89)	ND (6.76)	ND (1.93)	ND (24.38)	ND (1.32)	ND (0.66)	ND (0.56)
3393	T1030-EB010-001	NA	ND (2.89)	ND (6.76)	ND (1.93)	ND (24.38) R	ND (1.32)	ND (0.66)	ND (0.56)

Note: Values in **bold** represent detected analytes.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]The method detection limit as a result of dilution of the sample. Method detection limts reported in the Environmental Restoration Data Management System are method-specific and not sample-specific method detection limits.
*See Data Validation Report.

BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
(J) = An estimated quantity. See Data Validation Report.
J* = An estimated quantity. See Data Validation Report.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
ND ( ) = Not detected, at or above the method detection limit, shown in parentheses.
ND (J) = Not detected, at or above the method detection limit, shown in parentheses. See Data Validation Report.
R = Data unusable. See Data Validation Report.
SS = Discrete soil sample.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.
X = There is presumptive evidence that the analyte is not present based upon documented method detection limit studies performed by the laboratory for the applicable dates.

Table 2.4.8-7
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 3 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Di-n-butyl phthalate	Di-n-octyl phthalate	Dibenz[a,h] anthracene	Dibenzo furan	Dimethyl phthalate	Fluoranthene	Fluorene
2906	T1030-BH004-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2906	T1030-BH009-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2907	T1030-BH013-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2907	T1030-BH017-001-C	0–1	**100 J (330)**	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2907	T1030-BH021-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2907	T1030-BH026-001-C	0–1	**51 JX (330)**	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2908	T1030-BH031-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	**100 J (330)**	ND (26)
2908	T1030-BH036-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	**64 J (330)**	ND (26)
2908	T1030-BH041-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (26)
2915	T1030-BH046-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (26)
2915	T1030-BH051-001-C	0–1	ND (61)	**49 J (330)**	**36 JX (330)**	ND (25)	ND (40)	ND (40)	ND (26)
2915	T1030-BH056-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	**120 J (330)**	ND (26)
2915	T1030-BH056-002-C (duplicate)	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	**46 J (330)**	ND (26)
2915	T1030-BH061-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (26)
2909	T1030-BH066-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2909	T1030-BH070-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2910	T1030-BH075-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2910	T1030-BH079-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2910	T1030-BH083-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2910	T1030-BH088-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2910	T1030-BH088-002-C (duplicate)	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	**59 J (330)**	ND (29)
2911	T1030-BH093-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	**39 JX (330)**	ND (29)
2911	T1030-BH098-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2911	T1030-BH102-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2911	T1030-BH107-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	**96 J (330)**	ND (29)
2912	T1030-BH112-001-C	0–1	**34 JX (330)**	ND (44)	ND (37)	**67 J (330)**	ND (40)	**140 J (330)**	**68 J (330)**
2912	T1030-BH117-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	**45 J (330)**	ND (29)
2912	T1030-BH122-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	**47 J (330)**	ND (29)
2912	T1030-BH122-002-C (duplicate)	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	**39 JX (330)**	ND (29)

Refer to footnotes at end of table.

Table 2.4.8-7 (Continued)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 3 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Di-n-butyl phthalate	Di-n-octyl phthalate	Dibenz[a,h] anthracene	Dibenzo furan	Dimethyl phthalate	Fluoranthene	Fluorene
2912	T1030-BH127-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2913	T1030-BH132-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2913	T1030-BH137-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2913	T1030-BH142-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	**43 J* (330)**	ND (29)
2913	T1030-BH147-001-C	0–1	ND (61)	ND (44)	ND (37)	ND (25)	ND (40)	ND (40)	ND (29)
2914	T1030-BH152-001-C	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2914	T1030-BH157-001-C	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2916	T1030-BH162-001-C	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**38 J (330)**	ND (26)
2916	T1030-BH162-002-C (duplicate)	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2916	T1030-BH167-001-C	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2916	T1030-BH172-001-C	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2917	T1030-BH177-001-C	0–1	ND (28)	**52 J (330)**	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2917	T1030-BH182-001-C	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2917	T1030-BH187-001-C	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2917	T1030-BH192-001-C	0–1	ND (28)	ND (51)	**310 J* (330)**	ND (21)	ND (37)	**2,500**	**39 J* (330)**
2988	T1030-BH197-001-C	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**53 J (330)**	ND (26)
2988	T1030-BH202-001-C	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**120 J (330)**	ND (26)
2988	T1030-BH202-002-C (duplicate)	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**93 J (330)**	ND (26)
2989	T1030-BH300-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2989	T1030-BH301-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**52 J (330)**	ND (26)
2989	T1030-BH302-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**46 J (330)**	ND (26)
2989	T1030-BH303-001-SS	0–1	ND (56)[c]	**120 J (660)**	ND (48)[c]	ND (42)[c]	ND (74)[c]	ND (52)[c]	ND (52)[c]
2989	T1030-BH304-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2989	T1030-BH305-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2990	T1030-BH306-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2990	T1030-BH307-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**150 J (330)**	ND (26)
2990	T1030-BH308-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**75 J (330)**	ND (26)
2990	T1030-BH309-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**100 J (330)**	ND (26)
2990	T1030-BH309-002-SS (duplicate)	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**58 J (330)**	ND (26)

Refer to footnotes at end of table.

Table 2.4.8-7 (Continued)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 3 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Di-n-butyl phthalate	Di-n-octyl phthalate	Dibenz[a,h] anthracene	Dibenzo furan	Dimethyl phthalate	Fluoranthene	Fluorene
2991	T1030-BH310-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**93 J (330)**	ND (26)
2991	T1030-BH311-001-SS	0–1	ND (56)[c]	ND (102 J)[c]	ND (48 J)[c]	ND (42)[c]	**120 J (660)**	ND (52)[c]	ND (52)[c]
2991	T1030-BH312-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2991	T1030-BH313-001-SS	0–1	**400**	ND (51)	ND (24)	ND (21)	ND (37)	**660**	**59 J (330)**
2991	T1030-BH314-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2991	T1030-BH315-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2992	T1030-BH316-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2992	T1030-BH317-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**74 J (330)**	ND (26)
2992	T1030-BH318-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**67 J (330)**	ND (26)
2992	T1030-BH319-001-SS	0–1	**4,100**	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2992	T1030-BH320-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2992	T1030-BH321-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2993	T1030-BH322-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2993	T1030-BH323-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2993	T1030-BH324-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2993	T1030-BH325-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2993	T1030-BH326-001-SS	0–1	ND (28)	ND (51)	ND (24)	**310 J (330)**	ND (37)	**2,100**	**570**
2993	T1030-BH327-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2994	T1030-BH328-001-SS	0–1	ND (280)[c]	ND (510)[c]	ND (240)[c]	ND (210)[c]	ND (370)[c]	ND (260)[c]	ND (260)[c]
2994	T1030-BH329-001-SS	0–1	ND (28)	**34 JX (330)**	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2994	T1030-BH330-001-SS	0–1	ND (280)[c]	ND (510)[c]	ND (240)[c]	ND (210)[c]	ND (370)[c]	ND (260)[c]	ND (260)[c]
2994	T1030-BH331-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2994	T1030-BH332-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2994	T1030-BH333-001-SS	0–1	ND (28)	ND (51)	**55 J (330)**	ND (21)	ND (37)	**53 J (330)**	ND (26)
2994	T1030-BH334-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2995	T1030-BH335-001-SS	0–1	ND (280)[c]	ND (510)[c]	ND (240)[c]	ND (210)[c]	ND (370)[c]	ND (260)[c]	ND (260)[c]
2995	T1030-BH336-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
2995	T1030-BH337-001-SS	0–1	**34 J (330)**	ND (51)	ND (24)	ND (21)	**150 J (330)**	**160 J* (330)**	ND (26)
3392	T1030-BH338-001-SS	0–1	ND (112)[c]	ND (204)[c]	ND (96)[c]	ND (84)[c]	ND (148)[c]	ND (104)[c]	ND (104)[c]

Refer to footnotes at end of table.

Table 2.4.8-7 (Continued)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 3 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Di-n-butyl phthalate	Di-n-octyl phthalate	Dibenz[a,h] anthracene	Dibenzo furan	Dimethyl phthalate	Fluoranthene	Fluorene
3392	T1030-BH339-001-SS	0–1	**40 J (330)**	ND (51)	ND (24)	ND (21)	ND (37)	**49 J (330)**	ND (26)
3392	T1030-BH340-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3392	T1030-BH341-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3392	T1030-BH342-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3392	T1030-BH343-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3392	T1030-BH344-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3392	T1030-BH345-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3393	T1030-BH346-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3393	T1030-BH347-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3393	T1030-BH348-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3393	T1030-BH349-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3393	T1030-BH350-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3393	T1030-BH350-002-SS (duplicate)	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**42 J (330)**	ND (26)
3393	T1030-BH351-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	ND (26)	ND (26)
3393	T1030-BH352-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**76 J (330)**	ND (26)
3393	T1030-BH353-001-SS	0–1	ND (280 J)[c]	ND (510 J)[c]	ND (240 J)[c]	ND (210 J)[c]	ND (370 J)[c]	ND (260 J)[c]	ND (260 J)[c]
3393	T1030-BH354-001-SS	0–1	ND (28)	ND (51)	ND (24)	ND (21)	ND (37)	**180 J (330)**	ND (26)
Quality Assurance/Quality Control Samples (µg/L)									
2915	T1030-EB001-001	NA	ND (1.83)	ND (1.32)	ND (1.11)	ND (0.76)	ND (1.20)	ND (1.19)	ND (0.88)
2910	T1030-EB002-001	NA	ND (1.83)	ND (1.32)	ND (1.11)	ND (0.76)	ND (1.20)	ND (1.19)	ND (0.88)
2912	T1030-EB003-001	NA	ND (1.83)	ND (1.32)	ND (1.11)	ND (0.76)	ND (1.20)	ND (1.19)	ND (0.88)
2916	T1030-EB004-001	NA	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.63)	ND (1.11)	ND (0.79)	ND (0.79)
2988	T1030-EB005-001	NA	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.63)	ND (1.11)	ND (0.79)	ND (0.79)
2990	T1030-EB006-001	NA	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.63)	ND (1.11)	ND (0.79)	ND (0.79)
2992	T1030-EB007-001	NA	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.63)	ND (1.11)	ND (0.79)	ND (0.79)

Refer to footnotes at end of table.

Table 2.4.8-7 (Concluded)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 3 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Di-n-butyl phthalate	Di-n-octyl phthalate	Dibenz[a,h] anthracene	Dibenzo furan	Dimethyl phthalate	Fluoranthene	Fluorene
2994	T1030-EB008-001	NA	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.63)	ND (1.11)	ND (0.79)	ND (0.79)
2995	T1030-EB009-001	NA	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.63)	ND (1.11)	ND (0.79)	ND (0.79)
3393	T1030-EB010-001	NA	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.63)	ND (1.11)	ND (0.79)	ND (0.79)

Note: Values in **bold** represent detected analytes.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]The method detection limit as a result of dilution of the sample. Method detection limits reported in the Environmental Restoration Data Management System are method-specific and not sample-specific method detection limits.
*See Data Validation Report.

BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
(J) = An estimated quantity. See Data Validation Report.
J* = An estimated quantity. See Data Validation Report.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
SS = Discrete soil sample.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.
X = There is presumptive evidence that the analyte is not present based upon documented method detection limit studies performed by the laboratory for the applicable dates.

Table 2.4.8-8
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 4 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)				
Record Number[b]	ER Sample ID	Sample Depth (ft)	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	bis(2-Ethylhexyl) phthalate
2906	T1030-BH004-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	**54 JX (330)**
2906	T1030-BH009-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2907	T1030-BH013-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2907	T1030-BH017-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2907	T1030-BH021-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	**51 JX (330)**
2907	T1030-BH026-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	**49 JX (330)**
2908	T1030-BH031-001-C	0–1	**34 JX (330)**	ND (30)	**130 J (330)**	**100 J (330)**	ND (233)
2908	T1030-BH036-001-C	0–1	ND (67)	ND (30)	**39 J (330)**	**61 JX (330)**	ND (233)
2908	T1030-BH041-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2915	T1030-BH046-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2915	T1030-BH051-001-C	0–1	**48 JX (330)**	ND (30)	ND (28)	**50 JX (330)**	**1,300 (330)**
2915	T1030-BH056-001-C	0–1	**50 JX (330)**	ND (30)	**54 J (330)**	**120 J (330)**	ND (233)
2915	T1030-BH056-002-C (duplicate)	0–1	**55 JX (330)**	ND (30)	ND (28)	**66 J (330)**	**38 JX (330)**
2915	T1030-BH061-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2909	T1030-BH066-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2909	T1030-BH070-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2910	T1030-BH075-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2910	T1030-BH079-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2910	T1030-BH083-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2910	T1030-BH088-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2910	T1030-BH088-002-C (duplicate)	0–1	ND (67)	ND (30)	**53 J (330)**	**52 JX (330)**	ND (233)
2911	T1030-BH093-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	**59 JX (330)**
2911	T1030-BH098-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2911	T1030-BH102-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (233)
2911	T1030-BH107-001-C	0–1	**60 J*X (330)**	ND (41)	**41 J (330)**	**74 J (330)**	ND (233)
2912	T1030-BH112-001-C	0–1	**38 JX (330)**	**63 J (330)**	**140 J (330)**	**93 J (330)**	**88 JX (330)**
2912	T1030-BH117-001-C	0–1	ND (67)	ND (30)	ND (28)	**37 JX (330)**	**74 JX (330)**
2912	T1030-BH122-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (80)
2912	T1030-BH122-002-C (duplicate)	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (80)

Refer to footnotes at end of table.

Table 2.4.8-8 (Continued)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 4 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)				
Record Number[b]	ER Sample ID	Sample Depth (ft)	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	bis(2-Ethylhexyl) phthalate
2912	T1030-BH127-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (80)
2913	T1030-BH132-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	**420**
2913	T1030-BH137-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	ND (80)
2913	T1030-BH142-001-C	0–1	ND (67)	ND (30)	ND (28)	**57 JX (330)**	ND (80)
2913	T1030-BH147-001-C	0–1	ND (67)	ND (30)	ND (28)	ND (62)	**75 JX (330)**
2914	T1030-BH152-001-C	0–1	ND (22)	ND (41)	ND (23)	ND (25)	**90 J (330)**
2914	T1030-BH157-001-C	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2916	T1030-BH162-001-C	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2916	T1030-BH162-002-C (duplicate)	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2916	T1030-BH167-001-C	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2916	T1030-BH172-001-C	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2917	T1030-BH177-001-C	0–1	ND (22)	ND (41)	ND (23)	ND (25)	**610**
2917	T1030-BH182-001-C	0–1	ND (22)	ND (41)	ND (23)	ND (25)	**38 JX (330)**
2917	T1030-BH187-001-C	0–1	ND (22)	ND (330)	ND (23)	ND (25)	**38 JX (330)**
2917	T1030-BH192-001-C	0–1	**660**	ND (41)	**1,200**	**2,000 J***	ND (80)
2988	T1030-BH197-001-C	0–1	ND (22)	ND (41)	**52 J (330)**	ND (25)	**34 JX (330)**
2988	T1030-BH202-001-C	0–1	**35 J (330)**	ND (41)	**66 J (330)**	**66 J (330)**	**39 JX (330)**
2988	T1030-BH202-002-C (duplicate)	0–1	ND (22)	ND (41)	**52 J (330)**	**120 J (330)**	**50 JX (330)**
2989	T1030-BH300-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2989	T1030-BH301-001-SS	0–1	ND (22)	ND (41)	**35 J (330)**	**49 J (330)**	**53 JX (330)**
2989	T1030-BH302-001-SS	0–1	ND (22)	ND (41)	ND (23)	**43 J (330)**	ND (80)
2989	T1030-BH303-001-SS	0–1	ND (44)[c]	ND (82)[c]	ND (46)[c]	ND (50)[c]	ND (160)[c]
2989	T1030-BH304-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2989	T1030-BH305-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2990	T1030-BH306-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2990	T1030-BH307-001-SS	0–1	ND (22)	ND (41)	**73 J (330)**	**100 J (330)**	**100 J (330)**
2990	T1030-BH308-001-SS	0–1	ND (22)	ND (41)	**45 J (330)**	**68 J (330)**	**89 J (330)**
2990	T1030-BH309-001-SS	0–1	ND (22)	ND (41)	**86 J (330)**	**98 J (330)**	**92 J (330)**
2990	T1030-BH309-002-SS (duplicate)	0–1	ND (22)	ND (41)	**36 J (330)**	**51 J (330)**	**42 JX (330)**

Refer to footnotes at end of table.

Table 2.4.8-8 (Continued)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 4 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)				
Record Number[b]	ER Sample ID	Sample Depth (ft)	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	bis(2-Ethylhexyl) phthalate
2991	T1030-BH310-001-SS	0–1	ND (22)	ND (41)	**73 J (330)**	**110 J (330)**	ND (80)
2991	T1030-BH311-001-SS	0–1	ND (44 J)[c]	ND (82)[c]	ND (46)[c]	**70 J (660)**	ND (160)[c]
2991	T1030-BH312-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2991	T1030-BH313-001-SS	0–1	**190 J (330)**	ND (41)	**490**	**660**	**920**
2991	T1030-BH314-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2991	T1030-BH315-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2992	T1030-BH316-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2992	T1030-BH317-001-SS	0–1	ND (22)	ND (41)	**38 J (330)**	**64 J (330)**	ND (80)
2992	T1030-BH318-001-SS	0–1	ND (22)	ND (41)	ND (23)	**70 J (330)**	**61 JX (330)**
2992	T1030-BH319-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2992	T1030-BH320-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2992	T1030-BH321-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2993	T1030-BH322-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2993	T1030-BH323-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2993	T1030-BH324-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2993	T1030-BH325-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2993	T1030-BH326-001-SS	0–1	**770**	**250 J (330)**	**2,600**	**2,500**	**42 JX (330)**
2993	T1030-BH327-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2994	T1030-BH328-001-SS	0–1	ND (220)[c]	ND (410)[c]	ND (230)[c]	ND (250)[c]	**580 J (3300)**
2994	T1030-BH329-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	**400**
2994	T1030-BH330-001-SS	0–1	ND (220)[c]	ND (410)[c]	ND (230)[c]	ND (250)[c]	ND (800)[c]
2994	T1030-BH331-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	**35 JX (330)**
2994	T1030-BH332-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2994	T1030-BH333-001-SS	0–1	**91 J (330)**	ND (41)	ND (23)	**54 J (330)**	**130 J (330)**
2994	T1030-BH334-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	**77 JX (330)**
2995	T1030-BH335-001-SS	0–1	ND (220)[c]	ND (410)[c]	ND (230)[c]	ND (250)[c]	**1,700 J (3300)**
2995	T1030-BH336-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
2995	T1030-BH337-001-SS	0–1	**71 J (330)**	ND (41)	**74 J (330)**	**140 J (330)**	**220 J (330)**
3392	T1030-BH338-001-SS	0–1	ND (88)[c]	ND (164)[c]	ND (92)[c]	ND (100)[c]	**340 J* (1300)**

Refer to footnotes at end of table.

Table 2.4.8-8 (Continued)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 4 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)				
Record Number[b]	ER Sample ID	Sample Depth (ft)	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	bis(2-Ethylhexyl) phthalate
3392	T1030-BH339-001-SS	0–1	ND (22)	ND (41)	ND (23)	**49 J (330)**	**160 J* (330)**
3392	T1030-BH340-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80 J)
3392	T1030-BH341-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80 J)
3392	T1030-BH342-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80 J)
3392	T1030-BH343-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	**57 J*X (330)**
3392	T1030-BH344-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80 J)
3392	T1030-BH345-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	**100 J* (330)**
3393	T1030-BH346-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
3393	T1030-BH347-001-SS	0–1	ND (22)	ND (41)	ND (23)	**35 J (330)**	**88 J (330)**
3393	T1030-BH348-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
3393	T1030-BH349-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	**40 JX (330)**
3393	T1030-BH350-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	**40 JX (330)**
3393	T1030-BH350-002-SS (duplicate)	0–1	ND (22)	ND (41)	ND (23)	**40 J (330)**	ND (80)
3393	T1030-BH351-001-SS	0–1	ND (22)	ND (41)	ND (23)	ND (25)	ND (80)
3393	T1030-BH352-001-SS	0–1	ND (22)	ND (41)	**64 J (330)**	**65 J (330)**	ND (80)
3393	T1030-BH353-001-SS	0–1	ND (220 J)[c]	ND (410 J)[c]	ND (230 J)[c]	ND (250 J)[c]	ND (800 J)[c]
3393	T1030-BH354-001-SS	0–1	**49 J (330)**	ND (41)	**150 J (330)**	**160 J (330)**	**110 J (330)**
Quality Assurance/Quality Control Samples (µg/L)							
2915	T1030-EB001-001	NA	ND (2.02)	ND (0.90)	ND (0.83)	ND (1.87)	ND (7.00)
2910	T1030-EB002-001	NA	ND (2.02)	ND (0.90)	ND (0.83)	ND (1.87)	ND (7.00)
2912	T1030-EB003-001	NA	ND (2.02)	ND (0.90)	ND (0.83)	ND (1.87)	ND (7.00)
2916	T1030-EB004-001	NA	ND (0.66)	ND (1.22)	ND (0.68)	ND (0.75)	ND (2.41)
2988	T1030-EB005-001	NA	ND (0.66)	ND (1.22)	ND (0.68)	ND (0.75)	ND (2.41)
2990	T1030-EB006-001	NA	ND (0.66)	ND (1.22)	ND (0.68)	ND (0.75)	**2.4 JX (10)**
2992	T1030-EB007-001	NA	ND (0.66)	ND (1.22)	ND (0.68)	ND (0.75)	ND (2.41)
2994	T1030-EB008-001	NA	ND (0.66)	ND (1.22)	ND (0.68)	ND (0.75)	ND (2.41)

Refer to footnotes at end of table.

Table 2.4.8-8 (Concluded)
Summary of SWMU 30 Surface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 4 of 4)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)				
Record Number[b]	ER Sample ID	Sample Depth (ft)	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	bis(2-Ethylhexyl) phthalate
2995	T1030-EB009-001	NA	ND (0.66)	ND (1.22)	ND (0.68)	ND (0.75)	ND (2.41)
3393	T1030-EB010-001	NA	ND (0.66)	ND (1.22)	ND (0.68)	ND (0.75)	ND (2.41)

Note: Values in **bold** represent detected analytes.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]The method detection limit as a result of dilution of the sample. Method detection limits reported in the Environmental Restoration Data Management System are method-specific and not sample-specific method detection limits.
*See Data Validation Report.
BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
J* = An estimated quantity. See Data Validation Report.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
SS = Discrete soil sample.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.
X = There is presumptive evidence that the analyte is not present based upon documented method detection limit studies performed by the laboratory for the applicable dates.

Table 2.4.8-9
Summary of SWMU 30 Subsurface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 1 of 2)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)							
Record Number[b]	ER Sample ID	Sample Depth (ft)	1,2,4-Trichloro benzene	2-Chloro phenol	Acena phthene	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(ghi) perylene	Benzo(k) Fluoranthene	Butylbenzyl phthalate
2906	T1030-BH004-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2906	T1030-BH009-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2907	T1030-BH013-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2907	T1030-BH017-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2907	T1030-BH021-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2907	T1030-BH026-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2908	T1030-BH031-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2908	T1030-BH036-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2908	T1030-BH041-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2915	T1030-BH046-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2915	T1030-BH051-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2915	T1030-BH056-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2915	T1030-BH061-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2909	T1030-BH066-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	**54 J (330)**	ND (45)
2909	T1030-BH070-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2910	T1030-BH075-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2910	T1030-BH079-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2910	T1030-BH083-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2910	T1030-BH088-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2911	T1030-BH093-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2911	T1030-BH098-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2911	T1030-BH102-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2911	T1030-BH107-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2912	T1030-BH112-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2912	T1030-BH117-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2912	T1030-BH122-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2912	T1030-BH127-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2913	T1030-BH132-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2913	T1030-BH137-005-C	4–5	**36 J (330)**	**51 J (330)**	**35 J (330)**	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2913	T1030-BH142-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)

Refer to footnotes at end of table.

Table 2.4.8-9 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 1 of 2)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)							
Record Number[b]	ER Sample ID	Sample Depth (ft)	1,2,4-Trichloro benzene	2-Chloro phenol	Acena phthene	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(ghi) perylene	Benzo(k) Fluoranthene	Butylbenzyl phthalate
2913	T1030-BH147-005-C	4–5	ND (30)	ND (28)	ND (41)	ND (52)	ND (46)	ND (83)	ND (54)	ND (45)
2914	T1030-BH152-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2914	T1030-BH157-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2916	T1030-BH162-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2916	T1030-BH167-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2916	T1030-BH172-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2917	T1030-BH177-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2917	T1030-BH182-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2917	T1030-BH187-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2917	T1030-BH192-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2988	T1030-BH197-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2988	T1030-BH202-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2989	T1030-BH300-005-C	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2989	T1030-BH301-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2989	T1030-BH302-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2989	T1030-BH303-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2989	T1030-BH304-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2989	T1030-BH305-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2990	T1030-BH306-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2990	T1030-BH307-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2990	T1030-BH308-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2990	T1030-BH309-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2991	T1030-BH310-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2991	T1030-BH312-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2991	T1030-BH313-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2991	T1030-BH314-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2991	T1030-BH315-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2992	T1030-BH316-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2992	T1030-BH317-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2992	T1030-BH318-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)

Refer to footnotes at end of table.

Table 2.4.8-9 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 1 of 2)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)							
Record Number[b]	ER Sample ID	Sample Depth (ft)	1,2,4-Trichloro benzene	2-Chloro phenol	Acena phthene	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(ghi) perylene	Benzo(k) Fluoranthene	Butylbenzyl phthalate
2992	T1030-BH319-005-SS	4	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2992	T1030-BH320-005-SS	4	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2992	T1030-BH320-006-SS (duplicate)	4(D)	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2992	T1030-BH321-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2993	T1030-BH322-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2993	T1030-BH323-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2993	T1030-BH324-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2993	T1030-BH325-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2993	T1030-BH326-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2993	T1030-BH327-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2994	T1030-BH328-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2994	T1030-BH329-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2994	T1030-BH329-006-SS (duplicate)	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2994	T1030-BH330-005-SS	4–5	ND (37)	ND (43)	ND (47)	**40 J (330)**	**53 JX (330)**	**42 JX (330)**	**48 JX (330)**	**40 JX (330)**
2994	T1030-BH331-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2994	T1030-BH332-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2994	T1030-BH333-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2994	T1030-BH334-005-SS	4–5	ND (37)	ND (43)	ND (47)	**37 J (330)**	ND (96)	ND (225)	ND (64)	ND (44)
2995	T1030-BH335-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2995	T1030-BH336-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2995	T1030-BH337-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
2995	T1030-BH337-006-SS (duplicate)	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3392	T1030-BH338-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3392	T1030-BH339-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3392	T1030-BH340-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3392	T1030-BH341-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3392	T1030-BH342-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3392	T1030-BH343-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3392	T1030-BH344-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3392	T1030-BH345-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)

Refer to footnotes at end of table.

Table 2.4.8-9 (Concluded)
Summary of SWMU 30 Subsurface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 1 of 2)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)							
Record Number[b]	ER Sample ID	Sample Depth (ft)	1,2,4-Trichloro benzene	2-Chloro phenol	Acena phthene	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(ghi) perylene	Benzo(k) Fluoranthene	Butylbenzyl phthalate
3393	T1030-BH346-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3393	T1030-BH347-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3393	T1030-BH348-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3393	T1030-BH349-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3393	T1030-BH350-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3393	T1030-BH351-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3393	T1030-BH352-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3393	T1030-BH353-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
3393	T1030-BH354-005-SS	4–5	ND (37)	ND (43)	ND (47)	ND (21)	ND (96)	ND (225)	ND (64)	ND (44)
Quality Assurance/Quality Control Samples (µg/L)										
2915	T1030-EB001-001	NA	ND (0.90)	ND (0.84)	ND (1.24)	ND (1.55)	ND (1.38)	ND (2.48)	ND (1.61)	ND (1.35)
2910	T1030-EB002-001	NA	ND (0.90)	ND (0.84)	ND (1.24)	ND (1.55)	ND (1.38)	ND (2.48)	ND (1.61)	ND (1.35)
2912	T1030-EB003-001	NA	ND (0.90)	ND (0.84)	ND (1.24)	ND (1.55)	ND (1.38)	ND (2.48)	ND (1.61)	ND (1.35)
2916	T1030-EB004-001	NA	ND (1.12)	ND (1.30)	ND (1.41)	ND (0.6446)	ND (2.89)	ND (6.76)	ND (1.93)	ND (1.32)
2988	T1030-EB005-001	NA	ND (1.12)	ND (1.30)	ND (1.41)	ND (0.6446)	ND (2.89)	ND (6.76)	ND (1.93)	ND (1.32)
2990	T1030-EB006-001	NA	ND (1.12)	ND (1.30)	ND (1.41)	ND (0.6446)	ND (2.89)	ND (6.76)	ND (1.93)	ND (1.32)
2992	T1030-EB007-001	NA	ND (1.12)	ND (1.30)	ND (1.41)	ND (0.6446)	ND (2.89)	ND (6.76)	ND (1.93)	ND (1.32)
2994	T1030-EB008-001	NA	ND (1.12)	ND (1.30)	ND (1.41)	ND (0.6446)	ND (2.89)	ND (6.76)	ND (1.93)	ND (1.32)
2995	T1030-EB009-001	NA	ND (1.12)	ND (1.30)	ND (1.41)	ND (0.6446)	ND (2.89)	ND (6.76)	ND (1.93)	ND (1.32)
3393	T1030-EB010-001	NA	ND (1.12)	ND (1.30)	ND (1.41)	ND (0.6446)	ND (2.89)	ND (6.76)	ND (1.93)	ND (1.32)

Note: Values in **bold** represent detected analytes.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.

BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
SS = Discrete soil sample.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.
X = There is presumptive evidence that the analyte is not present based upon documented method detection limit studies performed by the laboratory for the applicable dates.

Table 2.4.8-10
Summary of SWMU 30 Subsurface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 2 of 2)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)								
Record Number[b]	ER Sample ID	Sample Depth (ft)	Chrysene	Di-n-butyl phthalate	Di-n-octyl phthalate	Dibenz[a,h] anthracene	Fluoranthene	Indeno (1,2,3-c,d) pyrene	Phenol	Pyrene	bis(2-Ethylhexyl) phthalate
02906	T1030-BH004-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	**200 JX (330)**
02906	T1030-BH009-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02907	T1030-BH013-005-C	4–5	ND (21)	**150 J (330)**	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02907	T1030-BH017-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02907	T1030-BH021-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02907	T1030-BH026-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02908	T1030-BH031-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02908	T1030-BH036-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02908	T1030-BH041-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02915	T1030-BH046-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	**39 JX (330)**
02915	T1030-BH051-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02915	T1030-BH056-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02915	T1030-BH061-005-C	4–5	ND (21)	ND (61)	**37 JX (330)**	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	**1,100**
02909	T1030-BH066-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02909	T1030-BH070-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02910	T1030-BH075-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02910	T1030-BH079-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02910	T1030-BH083-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	**40 J (330)**	ND (67)	ND (60)	ND (62)	ND (233)
02910	T1030-BH088-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02911	T1030-BH093-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02911	T1030-BH098-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02911	T1030-BH102-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02911	T1030-BH107-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02912	T1030-BH112-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02912	T1030-BH117-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02912	T1030-BH122-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02912	T1030-BH127-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02913	T1030-BH132-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02913	T1030-BH137-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	**66 J (330)**	**50 JX (330)**	ND (233)
02913	T1030-BH142-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02913	T1030-BH147-005-C	4–5	ND (21)	ND (61)	ND (44)	ND (37)	ND (40)	ND (67)	ND (60)	ND (62)	ND (233)
02914	T1030-BH152-005-C	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02914	T1030-BH157-005-C	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02916	T1030-BH162-005-C	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)

Refer to footnotes at end of table.

Table 2.4.8-10 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 2 of 2)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)								
Record Number[b]	ER Sample ID	Sample Depth (ft)	Chrysene	Di-n-butyl phthalate	Di-n-octyl phthalate	Dibenz[a,h] anthracene	Fluoranthene	Indeno (1,2,3-c,d) pyrene	Phenol	Pyrene	bis(2-Ethylhexyl) phthalate
02916	T1030-BH167-005-C	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02916	T1030-BH172-005-C	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02917	T1030-BH177-005-C	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02917	T1030-BH182-005-C	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02917	T1030-BH187-005-C	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02917	T1030-BH192-005-C	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02988	T1030-BH197-005-C	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02988	T1030-BH202-005-C	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02989	T1030-BH300-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02989	T1030-BH301-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02989	T1030-BH302-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02989	T1030-BH303-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02989	T1030-BH304-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02989	T1030-BH305-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02990	T1030-BH306-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02990	T1030-BH307-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02990	T1030-BH308-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02990	T1030-BH309-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02991	T1030-BH310-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02991	T1030-BH312-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02991	T1030-BH313-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02991	T1030-BH314-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02991	T1030-BH315-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02992	T1030-BH316-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02992	T1030-BH317-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02992	T1030-BH318-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02992	T1030-BH319-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02992	T1030-BH320-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02992	T1030-BH320-006-SS (duplicate)	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02992	T1030-BH321-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02993	T1030-BH322-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02993	T1030-BH323-005-SS	4–5	ND (19)	**650**	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02993	T1030-BH324-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02993	T1030-BH325-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)

Refer to footnotes at end of table.

Table 2.4.8-10 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 2 of 2)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)								
Record Number[b]	ER Sample ID	Sample Depth (ft)	Chrysene	Di-n-butyl phthalate	Di-n-octyl phthalate	Dibenz[a,h] anthracene	Fluoran thene	Indeno (1,2,3-c,d) pyrene	Phenol	Pyrene	bis(2-Ethylhexyl) phthalate
02993	T1030-BH326-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02993	T1030-BH327-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02994	T1030-BH328-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02994	T1030-BH329-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02994	T1030-BH329-006-SS (duplicate)	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02994	T1030-BH330-005-SS	4–5	**37 J (330)**	ND (28)	**44 JX (330)**	**40 J (330)**	ND (26)	**46 J (330)**	ND (37)	ND (25)	**250 J (330)**
02994	T1030-BH331-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02994	T1030-BH332-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02994	T1030-BH333-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02994	T1030-BH334-005-SS	4–5	**53 J (330)**	ND (28)	ND (51)	ND (24)	**41 J (330)**	ND (22)	ND (37)	**46 J (330)**	**51 JX (330)**
02995	T1030-BH335-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02995	T1030-BH336-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02995	T1030-BH337-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
02995	T1030-BH337-006-SS (duplicate)	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03392	T1030-BH338-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03392	T1030-BH339-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03392	T1030-BH340-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03392	T1030-BH341-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03392	T1030-BH342-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03392	T1030-BH343-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03392	T1030-BH344-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03392	T1030-BH345-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03393	T1030-BH346-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03393	T1030-BH347-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03393	T1030-BH348-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03393	T1030-BH349-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03393	T1030-BH350-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03393	T1030-BH351-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03393	T1030-BH352-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03393	T1030-BH353-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)
03393	T1030-BH354-005-SS	4–5	ND (19)	ND (28)	ND (51)	ND (24)	ND (26)	ND (22)	ND (37)	ND (25)	ND (80)

Refer to footnotes at end of table.

Table 2.4.8-10 (Concluded)
Summary of SWMU 30 Subsurface Soil Sampling SVOC Analytical Results
March–April 1995 (Table 2 of 2)
(Off-Site Laboratory)

Sample Attributes			SVOCs (EPA Method 8270[a]) (µg/kg)								
Record Number[b]	ER Sample ID	Sample Depth (ft)	Chrysene	Di-n-butyl phthalate	Di-n-octyl phthalate	Dibenz[a,h] anthracene	Fluoran thene	Indeno (1,2,3-c,d) pyrene	Phenol	Pyrene	bis(2-Ethylhexyl) phthalate
Quality Assurance/Quality Control Samples (µg/L)											
02915	T1030-EB001-001	NA	ND (0.64)	ND (1.83)	ND (1.32)	ND (1.11)	ND (1.19)	ND (2.02)	ND (1.79)	ND (1.87)	ND (7.00)
02910	T1030-EB002-001	NA	ND (0.64)	ND (1.83)	ND (1.32)	ND (1.11)	ND (1.19)	ND (2.02)	ND (1.79)	ND (1.87)	ND (7.00)
02912	T1030-EB003-001	NA	ND (0.64)	ND (1.83)	ND (1.32)	ND (1.11)	ND (1.19)	ND (2.02)	ND (1.79)	ND (1.87)	ND (7.00)
02916	T1030-EB004-001	NA	ND (0.56)	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.78)	ND (0.66)	ND (1.12)	ND (0.75)	ND (2.41)
02988	T1030-EB005-001	NA	ND (0.56)	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.78)	ND (0.66)	ND (1.12)	ND (0.75)	ND (2.41)
02990	T1030-EB006-001	NA	ND (0.56)	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.78)	ND (0.66)	ND (1.12)	ND (0.75)	**2.4 JX (10)**
02992	T1030-EB007-001	NA	ND (0.56)	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.78)	ND (0.66)	ND (1.12)	ND (0.75)	ND (2.41)
02994	T1030-EB008-001	NA	ND (0.56)	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.78)	ND (0.66)	ND (1.12)	ND (0.75)	ND (2.41)
02995	T1030-EB009-001	NA	ND (0.56)	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.78)	ND (0.66)	ND (1.12)	ND (0.75)	ND (2.41)
03393	T1030-EB010-001	NA	ND (0.56)	ND (0.84)	ND (1.52)	ND (0.73)	ND (0.78)	ND (0.66)	ND (1.12)	ND (0.75)	ND (2.41)

Note: Values in **bold** represent detected analytes.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
SS = Discrete soil sample.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.
X = There is presumptive evidence that the analyte is not present based upon documented method detection limit studies performed by the laboratory for the applicable dates.

Table 2.4.8-11
SVOC Analytical Method Detection Limits Used for SWMU 30 Soil Sampling
March–April 1995
(Off-Site Laboratory)

Analyte	Method Detection Limit(s) (µg/kg)
1,2,4-Trichlorobenzene	30–37
1,2-Dichlorobenzene	46–51
1,3-Dichlorobenzene	41–48
1,4-Dichlorobenzene	32–59
2,4,5-Trichlorophenol	39–49
2,4,6-Trichlorophenol	32–35
2,4-Dichlorophenol	27–37
2,4-Dimethylphenol	46–62
2,4-Dinitrophenol	216–419
2,4-Dinitrotoluene	28–29
2,6-Dinitrotoluene	29–38
2-Chloronaphthalene	46–49
2-Chlorophenol	28–43
2-Methylnaphthalene	40–44
2-Nitroaniline	32–39
2-Nitrophenol	31–53
3,3'-Dichlorobenzidine	32–103
3-Nitroaniline	23–112
4-Bromophenyl phenyl ether	26–61
4-Chloro-3-methylphenol	41–45
4-Chlorobenzenamine	20–139
4-Chlorophenyl phenyl ether	28–42
4-Methylphenol	33–58
4-Nitroaniline	31–39
4-Nitrophenol	68–305
Acenaphthene	41–47
Acenaphthylene	32
Anthracene	26–44
Benzo(a)anthracene	21–52
Benzo(a)pyrene	21–48
Benzo(b)fluoranthene	46–96
Benzo(ghi)perylene	83–225
Benzo(k)fluoranthene	54–64
Benzoic acid	813
Benzyl alcohol	36–40
Butylbenzyl phthalate	44–45
Carbazole	22–122
Chrysene	19–21
Di-n-butyl phthalate	28–61
Di-n-octyl phthalate	44–51
Dibenz[a,h]anthracene	24–37
Dibenzofuran	21–25
Diethylphthalate	14–60

Refer to footnotes at end of table.

Table 2.4.8-11 (Concluded)
SVOC analytical Method Detection Limits for SWMU 30 Soil Sampling
March–April 1995
(Off-Site Laboratory)

Analyte	Method Detection Limit(s) (µg/kg)
Dimethylphthalate	37–40
Dinitro-o-cresol	28–393
Fluoranthene	26–40
Fluorene	26–29
Hexachlorobenzene	25–87
Hexachlorobutadiene	40–56
Hexachlorocyclopentadiene	108
Hexachloroethane	49–62
Indeno(1,2,3-c,d)pyrene	22–67
Isophorone	39–52
Naphthalene	30–41
Nitrobenzene	36–39
Pentachlorophenol	43–271
Phenanthrene	23–28
Phenol	37–60
Pyrene	25–62
bis(2-Chloroethoxy)methane	36–45
bis(2-Chloroethyl)ether	26–61
bis(2-Ethylhexyl)phthalate	80–233
bis-Chloroisopropyl ether	37–39
n-Nitrosodiphenylamine	39–40
n-Nitrosodipropylamine	37–48
o-Cresol	29–49

µg/kg = Microgram(s) per kilogram.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.

sample pairs analyzed for SVOCs were either nondetect or estimated, and thus no RPDs could be calculated.

It is apparent from the majority of J-value concentrations and the widely dispersed locations of detected SVOCs that there is only random, low-level contamination throughout the site. There is no apparent center of SVOC contamination. It is interesting to note that the judgmental borehole locations in the southwestern corner of the site (BH310 and BH311; Figure 2.4.8-1) had only a few SVOC compounds detected at low levels. These samples contained a black, tar-like substance similar to that found in the subsurface around a utility conduit, as discussed in Sections 2.4.5 and 2.4.7.

PCB Analysis

Based upon laboratory analytical results, PCBs were found in a total of 79 1-foot composite and discrete soil sample locations and in eight 5-foot composite and discrete soil sample locations (Tables 2.4.8-12 and 2.4.8-13). Aroclors 1254 and 1260 were detected in 85 of the 87 soil samples (approximately 35 percent were Aroclor 1254 and 65 percent were Aroclor 1260). There was one occurrence of Aroclor 1248 and one occurrence of Aroclor 1242. Generally, the PCB concentrations were very low, with the majority of the concentrations less than 1,000 µg/kg. Six samples at the 1-foot depth exceeded the 1,000 µg/kg level, with four samples in Grid 1 at 3,500; 4,100; 16,000; and 18,000 µg/kg. One sample in Grid 10 had 14,000 µg/kg; and one sample in Grid 11 had 1,600 µg/kg.

The MDLs for analyzed PCBs are provided in Table 2.4.8-14. As discussed below in Section 2.4.8.5, the relative percent difference (RPD) was calculated for the PCB duplicate soil samples collected during the 1995 RFI (Table 2.4.8-15).

Of the six samples collected in the western portion of the site as part of the SWMU 96 investigation, the Storm Drain System (SNL/NM 1996), all had detectable concentrations (greater than 40 µg/kg) ranging up to 233 µg/kg of total PCBs (SD-006 through SD-011; Figure 2.4.8-1). None of the results exceeded 1,000 µg/kg (Table 2.4.8-16). The PCB detected at six of the sample locations was Aroclor 1262. Aroclor 1254 was also detected in one of the six sampling locations where 1262 was detected. PCBs were detected in four of the geoprobe sample locations (GP-065, GP-067, GP-068, and GP-069; Figure 2.4.8-1) in the storm-water channel, ranging up to 252 µg/kg of total PCBs. As seen in other samples, the most frequently detected PCB was Aroclor 1260. All the samples with detectable concentrations of PCBs were from the shallowest sample depth at each location. There were no PCBs detected below the 3- to 5-foot sample depth.

Of the five samples collected south of the site, all had detectable concentrations (greater than 40 µg/kg) ranging up to 95.3 µg/kg of total PCBs (Table 2.4.8-16). None of the results exceeded 1,000 µg/kg. Aroclor 1260 was detected in five sample locations and Aroclor 1254 was detected in one of the five sample locations (SNL/NM 1996). No PCBs were detected in any of the geoprobe samples collected at this location (GP-060 through GP-064).

Table 2.4.8-12
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8080[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[c]
Composite Samples						
2906	T1030-BH004-001-C	0–1	ND (702.9)[d]	ND (597.3)[d]	**16,000**	**16,000**
2906	T1030-BH009-001-C	0–1	ND (36.17)[d]	ND (23.89)[d]	240	240
2907	T1030-BH013-001-C	0–1	ND (36.17)[d]	ND (23.89)[d]	300	300
2907	T1030-BH017-001-C	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2907	T1030-BH021-001-C	0–1	ND (70.29)[d]	ND (59.73)[d]	910	910
2907	T1030-BH026-001-C	0–1	ND (7.029)	ND (5.973)	77	77
2908	T1030-BH031-001-C	0–1	ND (14.06)[d]	ND (11.95)[d]	140	140
2908	T1030-BH036-001-C	0–1	ND (34.08)[d]	ND (28.96)[d]	480	480
2908	T1030-BH041-001-C	0–1	ND (7.029)	ND (5.973)	57	57
2915	T1030-BH046-001-C	0–1	ND (7.029)	ND (5.973)	46	46
2915	T1030-BH051-001-C	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2915	T1030-BH056-001-C	0–1	ND (7.029)	ND (5.973)	19 J (33)	19
2915	T1030-BH056-002-C (duplicate)	0–1	ND (7.029)	ND (5.973)	17 J (33)	17
2915	T1030-BH061-001-C	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2909	T1030-BH066-001-C	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2909	T1030-BH070-001-C	0–1	ND (7.029)	52	ND (2.739)	52
2910	T1030-BH075-001-C	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2910	T1030-BH079-001-C	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2910	T1030-BH083-001-C	0–1	ND (7.029)	120	ND (2.739)	120
2910	T1030-BH088-001-C	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2910	T1030-BH088-002-C (duplicate)	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
02911	T1030-BH093-001-C	0–1	ND (7.029)	ND (5.973)	34	34
02911	T1030-BH098-001-C	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
02911	T1030-BH102-001-C	0–1	ND (7.029)	ND (5.973)	23 J (33)	23
02911	T1030-BH107-001-C	0–1	ND (7.029)	ND (5.973)	71	71
2912	T1030-BH112-001-C	0–1	ND (7.029)	ND (5.973)	60	60
2912	T1030-BH117-001-C	0–1	ND (7.029)	ND (5.973)	79	79
2912	T1030-BH122-001-C	0–1	ND (7.029)	ND (5.973)	48	48
2912	T1030-BH122-002-C (duplicate)	0–1	ND (7.029)	ND (5.973)	47	47
2912	T1030-BH127-001-C	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2913	T1030-BH132-001-C	0–1	ND (7.029)	96	ND (2.739)	96
2913	T1030-BH137-001-C	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2913	T1030-BH142-001-C	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2913	T1030-BH147-001-C	0–1	ND (7.029)	40	ND (2.739)	40
2914	T1030-BH152-001-C	0–1	ND (7.029)	ND (5.973)	91	91
2914	T1030-BH157-001-C	0–1	ND (7.029)	ND (5.973)	31 J (33)	31
2916	T1030-BH162-001-C	0–1	ND (7.029)	ND (5.973)	26 J (33)	26

Refer to footnotes at end of table.

Table 2.4.8-12 (Continued)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8080[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[c]
2916	T1030-BH162-002-C (duplicate)	0–1	ND (7.029)	ND (5.973)	23 J (33)	23
2916	T1030-BH167-001-C	0–1	ND (7.029)	51	ND (2.739)	51
2916	T1030-BH172-001-C	0–1	ND (7.029)	52	ND (2.739)	52
2917	T1030-BH177-001-C	0–1	ND (28.12)[d]	290	ND (10.96)[d]	290
2917	T1030-BH182-001-C	0–1	ND (70.29)[d]	560	ND (27.39)[d]	560
2917	T1030-BH187-001-C	0–1	ND (7.029 J)	70 J*	ND (2.739 J)	70
2917	T1030-BH192-001-C	0–1	ND (28.12)[d]	240	ND (10.96)[d]	240
2988	T1030-BH197-001-C	0–1	ND (7.029)	70	ND (2.739)	70
2988	T1030-BH202-001-C	0–1	ND (7.029)	100	ND (2.739)	100
2988	T1030-BH202-002-C (duplicate)	0–1	ND (7.029)	110	ND (2.739)	110
Discrete Samples						
2989	T1030-BH300-001-SS	0–1	ND (28.12)[d]	ND (23.89)[d]	**3,500 J***	**3,500**
2989	T1030-BH301-001-SS	0–1	ND (1405.8)[d]	ND (1194.6)[d]	**18,000 J***	**18,000**
2989	T1030-BH302-001-SS	0–1	ND (28.12)[d]	ND (23.89)[d]	**4,100 J***	**4,100**
2989	T1030-BH303-001-SS	0–1	ND (7.029)	ND (5.973)	150 J*	150
2989	T1030-BH304-001-SS	0–1	ND (7.029)	22 J (33)	ND (2.739)	22
2989	T1030-BH305-001-SS	0–1	ND (7.029)	17 J (33)	ND (2.739)	17
2990	T1030-BH306-001-SS	0–1	ND (70.29 J)[d]	ND (59.73 J)[d]	550 J*	550
2990	T1030-BH307-001-SS	0–1	ND (28.12)[d]	ND (23.89)[d]	250	250
2990	T1030-BH308-001-SS	0–1	ND (7.029)	ND (5.973)	78	78
2990	T1030-BH309-001-SS	0–1	ND (70.29 J)[d]	ND (59.73 J)[d]	780 J*	780
2990	T1030-BH309-002-SS (duplicate)	0–1	ND (70.29 J)[d]	ND (59.73 J)[d]	750 J*	750
2991	T1030-BH310-001-SS	0–1	ND (28.12 J)[d]	ND (23.89 J)[d]	280 J*	280
2991	T1030-BH311-001-SS	0–1	ND (7.029)	ND (5.973)	72	72
2991	T1030-BH312-001-SS	0–1	ND (7.029)	ND (5.973)	40	40
2991	T1030-BH313-001-SS	0–1	ND (70.29 J)[d]	ND (59.73 J)[d]	380 J*	380
2991	T1030-BH314-001-SS	0–1	ND (14.06 J)[d]	840 J*	ND (5.48 J)[d]	840
2991	T1030-BH315-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2992	T1030-BH316-001-SS	0–1	ND (7.029)	ND (5.973)	110	110
2992	T1030-BH317-001-SS	0–1	ND (7.029)	ND (5.973)	46	46
2992	T1030-BH318-001-SS	0–1	ND (7.029)	ND (5.973)	54	54
2992	T1030-BH319-001-SS	0–1	ND (7.029)	ND (5.973)	31 J (33)	31
2992	T1030-BH320-001-SS	0–1	ND (7.029)	ND (5.973)	27 J (33)	27
2992	T1030-BH321-001-SS	0–1	ND (7.029)	ND (5.973)	17 J (33)	17
2993	T1030-BH322-001-SS	0–1	ND (7.029)	18 J (33)	ND (2.739)	18
2993	T1030-BH323-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2993	T1030-BH324-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2993	T1030-BH325-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND

Refer to footnotes at end of table.

Table 2.4.8-12 (Continued)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8080[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[c]
2993	T1030-BH326-001-SS	0–1	ND (7.029)	130	ND (2.739)	130
2993	T1030-BH327-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2994	T1030-BH328-001-SS	0–1	ND (7.029)	ND (5.973)	52	52
2994	T1030-BH329-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2994	T1030-BH330-001-SS	0–1	ND (7.029)	ND (5.973)	23 J (33)	23
2994	T1030-BH331-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2994	T1030-BH332-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2994	T1030-BH333-001-SS	0–1	ND (7.029)	ND (5.973)	92	92
2994	T1030-BH334-001-SS	0–1	ND (7.029)	ND (5.973)	32 J (33)	32
2995	T1030-BH335-001-SS	0–1	ND (7.029)	ND (5.973)	36	36
2995	T1030-BH336-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
2995	T1030-BH337-001-SS	0–1	ND (7.029)	150 J*	ND (2.739 J)	150
3392	T1030-BH338-001-SS	0–1	ND (7.029)	69	ND (2.739)	69
3392	T1030-BH339-001-SS	0–1	ND (7.029)	ND (5.973)	170	170
3392	T1030-BH340-001-SS	0–1	ND (7.029)	ND (5.973)	54	54
3392	T1030-BH341-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
3392	T1030-BH342-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
3392	T1030-BH343-001-SS	0–1	ND (7.029)	120 J*	ND (2.739)	120
3392	T1030-BH344-001-SS	0–1	57	ND (5.973)	ND (2.739)	57
3392	T1030-BH345-001-SS	0–1	ND (7.029)	150 J*	ND (2.739 J)	150
3393	T1030-BH346-001-SS	0–1	ND (702.9 J)[d]	340 J*	ND (273.9 J)[d]	340
3393	T1030-BH347-001-SS	0–1	ND (702.9 J)[d]	**14,000 J***	ND (273.9 J)[d]	**14,000**
3393	T1030-BH348-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
3393	T1030-BH349-001-SS	0–1	ND (14.06 J)[d]	**1,600 J***	ND (5.48 J)[d]	**1,600**
3393	T1030-BH350-001-SS	0–1	ND (7.029)	ND (5.973)	75	75
3393	T1030-BH350-002-SS (duplicate)	0–1	ND (7.029)	ND (5.973)	88	88
3393	T1030-BH351-001-SS	0–1	ND (7.029)	ND (5.973)	ND (2.739)	ND
3393	T1030-BH352-001-SS	0–1	ND (7.029)	ND (5.973)	46	46
3393	T1030-BH353-001-SS	0–1	ND (7.029)	130	ND (2.739)	130
3393	T1030-BH354-001-SS	0–1	ND (7.029)	140	ND (2.739)	140
Quality Assurance/Quality Control Samples (µg/L)						
2915	T1030-EB001-001	NA	ND (0.213)	ND (0.181)	ND (0.083)	ND
2910	T1030-EB002-001	NA	ND (0.213)	ND (0.181)	ND (0.083)	ND
2912	T1030-EB003-001	NA	ND (0.213)	ND (0.181)	ND (0.083)	ND
2916	T1030-EB004-001	NA	ND (0.213)	ND (0.181)	ND (0.083)	ND
2988	T1030-EB005-001	NA	ND (0.213)	ND (0.181)	ND (0.083)	ND
2990	T1030-EB006-001	NA	ND (0.213)	ND (0.181)	ND (0.083)	ND
2992	T1030-EB007-001	NA	ND (0.213)	ND (0.181)	ND (0.083)	ND
2994	T1030-EB008-001	NA	ND (0.213)	ND (0.181)	ND (0.083)	ND
2995	T1030-EB009-001	NA	ND (0.213)	ND (0.181)	ND (0.083)	ND

Refer to footnotes at end of table.

Table 2.4.8-12 (Concluded)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8080[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[c]
3393	T1030-EB010-001	NA	ND (0.213)	ND (0.181)	ND (0.083)	ND

Note: Values in **bold** represent detected PCB concentrations exceeding 1,000 µg/kg.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]Sum of all detected Aroclor values; qualifiers omitted.
[d]The method detection limit reported is a result of dilution of the sample. Method detection limits reported in the Environmental Restoration Data Management System are method-specific and not sample-specific method detection limits.

BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
(J) = An estimated quantity. See Data Validation Report.
J* = An estimated quantity. See Data Validation Report.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
PCB = Polychlorinated biphenyls.
SS = Discrete soil sample.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.

Table 2.4.8-13
Summary of SWMU 30 Subsurface Soil Sampling PCB Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8080[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1242	Aroclor 1254	Aroclor 1260	Total PCBs[c]
2906	T1030-BH004-005-C	4–5	ND (36.17)[d]	ND (23.89)[d]	290	290
2906	T1030-BH009-005-C	4–5	ND (9.042)	ND (5.973)	110	110
2907	T1030-BH013-005-C	4–5	ND (9.042)	ND (5.973)	22 J (33)	22
2907	T1030-BH017-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2907	T1030-BH021-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2907	T1030-BH026-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2908	T1030-BH031-005-C	4–5	ND (9.042)	ND (5.973)	20 J (33)	20
2908	T1030-BH036-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2908	T1030-BH041-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2915	T1030-BH046-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2915	T1030-BH051-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2915	T1030-BH056-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2915	T1030-BH061-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2909	T1030-BH066-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2909	T1030-BH070-005-C	4–5	ND (9.042)	18 J (33)	ND (2.739)	18
2910	T1030-BH075-005-C	4–5	17 J (33)	ND (5.973)	ND (2.739)	17
2910	T1030-BH079-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2910	T1030-BH083-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2910	T1030-BH088-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2911	T1030-BH093-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2911	T1030-BH098-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2911	T1030-BH102-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2911	T1030-BH107-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2912	T1030-BH112-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2912	T1030-BH117-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2912	T1030-BH122-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2912	T1030-BH127-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2913	T1030-BH132-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2913	T1030-BH137-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2913	T1030-BH142-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2913	T1030-BH147-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2914	T1030-BH152-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2914	T1030-BH157-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2916	T1030-BH162-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2916	T1030-BH167-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2916	T1030-BH172-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2917	T1030-BH177-005-C	4–5	ND (9.042 J)	ND (5.973 J)	ND (2.739 J)	ND
2917	T1030-BH182-005-C	4–5	ND (9.042 J)	ND (5.973 J)	ND (2.739 J)	ND

Refer to footnotes at end of table.

Table 2.4.8-13 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling PCB Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8080[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1242	Aroclor 1254	Aroclor 1260	Total PCBs[c]
Composite Samples						
2917	T1030-BH187-005-C	4–5	ND (9.042 J)	ND (5.973 J)	ND (2.739 J)	ND
2917	T1030-BH192-005-C	4–5	ND (9.042 J)	ND (5.973 J)	ND (2.739 J)	ND
2988	T1030-BH197-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2988	T1030-BH202-005-C	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
Discrete Samples						
2989	T1030-BH300-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2989	T1030-BH301-005-SS	4–5	ND (9.042)	ND (5.973)	140	140
2989	T1030-BH302-005-SS	4–5	ND (9.042)	ND (5.973)	30 J (33)	30
2989	T1030-BH303-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2989	T1030-BH304-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2989	T1030-BH305-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2990	T1030-BH306-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2990	T1030-BH307-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2990	T1030-BH308-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2990	T1030-BH309-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2991	T1030-BH310-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2991	T1030-BH312-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2991	T1030-BH313-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2991	T1030-BH314-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2991	T1030-BH315-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2992	T1030-BH316-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2992	T1030-BH317-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2992	T1030-BH318-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2992	T1030-BH319-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2992	T1030-BH320-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2992	T1030-BH320-006-SS (duplicate)	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2992	T1030-BH321-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2993	T1030-BH322-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2993	T1030-BH323-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2993	T1030-BH324-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2993	T1030-BH325-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2993	T1030-BH326-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2993	T1030-BH327-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2994	T1030-BH328-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2994	T1030-BH329-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2994	T1030-BH329-006-SS (duplicate)	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2994	T1030-BH330-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND

Refer to footnotes at end of table.

Table 2.4.8-13 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling PCB Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8080[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1242	Aroclor 1254	Aroclor 1260	Total PCBs[c]
2994	T1030-BH331-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2994	T1030-BH332-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2994	T1030-BH333-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2994	T1030-BH334-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2995	T1030-BH335-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2995	T1030-BH336-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2995	T1030-BH337-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
2995	T1030-BH337-006-SS (duplicate)	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3392	T1030-BH338-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3392	T1030-BH339-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3392	T1030-BH340-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3392	T1030-BH341-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3392	T1030-BH342-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3392	T1030-BH343-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3392	T1030-BH344-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3392	T1030-BH345-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3393	T1030-BH346-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3393	T1030-BH347-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3393	T1030-BH348-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3393	T1030-BH349-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3393	T1030-BH350-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3393	T1030-BH351-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3393	T1030-BH352-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3393	T1030-BH353-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
3393	T1030-BH354-005-SS	4–5	ND (9.042)	ND (5.973)	ND (2.739)	ND
Quality Assurance/Quality Control Samples (µg/L)						
2915	T1030-EB001-001	NA	ND (0.274)	ND (0.181)	ND (0.083)	ND
2910	T1030-EB002-001	NA	ND (0.274)	ND (0.181)	ND (0.083)	ND
2912	T1030-EB003-001	NA	ND (0.274)	ND (0.181)	ND (0.083)	ND
2916	T1030-EB004-001	NA	ND (0.274)	ND (0.181)	ND (0.083)	ND
2988	T1030-EB005-001	NA	ND (0.274)	ND (0.181)	ND (0.083)	ND
2990	T1030-EB006-001	NA	ND (0.274)	ND (0.181)	ND (0.083)	ND
2992	T1030-EB007-001	NA	ND (0.274)	ND (0.181)	ND (0.083)	ND
2994	T1030-EB008-001	NA	ND (0.274)	ND (0.181)	ND (0.083)	ND
2995	T1030-EB009-001	NA	ND (0.274)	ND (0.181)	ND (0.083)	ND

Refer to footnotes at end of table.

Table 2.4.8-13 (Concluded)
Summary of SWMU 30 Subsurface Soil Sampling PCB Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8080[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1242	Aroclor 1254	Aroclor 1260	Total PCBs[c]
3393	T1030-EB010-001	NA	ND (0.274)	ND (0.181)	ND (0.083)	ND

[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]Sum of all detected Aroclor values; qualifiers omitted.
[d]The method detection limit reported is a result of dilution of the sample. Method detection limits reported in the Environmental Restoration Data Management System are method-specific and not sample-specific method detection limits.

BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
ND (J) = Not detected at or above the method detection limit, shown in parentheses; estimated value.
PCB = Polychlorinated biphenyls.
SS = Discrete soil sample.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.

Table 2.4.8-14
PCB Method Detection Limits Used for SWMU 30 Soil Sampling
March–April 1995
(Off-Site Laboratory)

Analyte	Method Detection Limit (µg/kg)
Aroclor 1016	1.815
Aroclor 1221	20.625
Aroclor 1232	12.045
Aroclor 1242	9.042
Aroclor 1248	7.029
Aroclor 1254	5.973
Aroclor 1260	2.739

µg/kg = Microgram(s) per kilogram.
PCB = Polychlorinated biphenyl.
SWMU = Solid Waste Management Unit.

Table 2.4.8-15
Summary of SWMU 30 PCB Relative Percent Differences
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Relative Percent Difference		
Record Number[a]	ER Sample ID	Sample Depth (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260
2915	T1030-BH056-001-C T1030-BH056-002-C (duplicate)	0–1	NC	NC	NC
2910	T1030-BH088-001-C T1030-BH088-002-C (duplicate)	0–1	NC	NC	NC
2912	T1030-BH122-001-C T1030-BH122-002-C (duplicate)	0–1	NC	NC	2.11
2916	T1030-BH162-001-C T1030-BH162-002-C (duplicate)	0–1	NC	NC	NC
2988	T1030-BH202-001-C T1030-BH202-002-C (duplicate)	0–1	NC	9.52	NC
2990	T1030-BH309-001-C T1030-BH309-002-C (duplicate)	0–1	NC	NC	3.92
2992	T1030-BH320-001-C T1030-BH320-002-C (duplicate)	4–5	NC	NC	NC
2994	T1030-BH329-001-C T1030-BH329-002-C (duplicate)	4–5	NC	NC	NC
2995	T1030-BH337-001-C T1030-BH337-002-C (duplicate)	4–5	NC	NC	NC
3993	T1030-BH350-001-C T1030-BH350-002-C (duplicate)	0–1	NC	NC	15.95

[a]Analysis request/chain-of-custody record.
BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
NC = Not calculated for estimated values or nondetected results.
PCB = Polychlorinated biphenyl.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I SWMU 30.

Table 2.4.8-16
Summary of SWMU 30 Soil Sampling in the Stormwater Channel PCB Analytical Results
1995 and 1998
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8080/-SW846-[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth[c] (ft)	Aroclor 1254	Aroclor 1260	Aroclor 1262	Total PCBs[d]
600829[e]	T1096-GP-060-005-S	3	ND (1.5)	ND (1.5)	NR	--
600829[e]	T1096-GP-060-010-S	8	ND (1.5)	ND (1.5)	NR	--
600829[e]	T1096-GP-061-005-S	3	ND (1.5)	ND (1.5)	NR	--
600829[e]	T1096-GP-061-010-S	8	ND (1.5)	ND (1.5)	NR	--
600829[e]	T1096-GP-061-015-S	13	ND (1.5)	ND (1.5)	NR	--
600829[e]	T1096-GP-061-020-S	18	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-062-005-S	3	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-062-010-S	8	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-062-015-S	13	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-062-020-S	18	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-063-001-S	0.5	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-063-005-S	3	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-063-010-S	8	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-063-015-S	16	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-063-020-S	23	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-064-001-S	0.5	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-064-005-S	3	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-064-010-S	13	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-064-015-S	19	ND (1.5)	ND (1.5)	NR	--
600830[e]	T1096-GP-064-020-S	22	ND (1.5)	ND (1.5)	NR	--
600831[e]	T1096-GP-065-005-S	3	ND (1.5)	4.4	NR	4.4
600831[e]	T1096-GP-065-010-S	8	ND (1.5)	ND (1.5)	NR	--
600831[e]	T1096-GP-065-015-S	16.5	ND (1.5)	ND (1.5)	NR	--
600831[e]	T1096-GP-065-020-S	22	ND (1.5)	ND (1.5)	NR	--
600831[e]	T1096-GP-066-005-S	3	ND (1.5)	ND (1.5)	NR	--
600831[e]	T1096-GP-066-010-S	9	ND (1.5)	ND (1.5)	NR	--
600831[e]	T1096-GP-066-015-S	16	ND (1.5)	ND (1.5)	NR	--
600831[e]	T1096-GP-066-020-S	21	ND (1.5)	ND (1.5)	NR	--
600831[e]	T1096-GP-067-005-S	3	ND (1.5)	2.1 J (3.62)	NR	2.1
600831[e]	T1096-GP-067-010-S	9	ND (1.5)	ND (1.5)	NR	--
600831[e]	T1096-GP-067-015-S	16	ND (1.5)	ND (1.5)	NR	--
600831[e]	T1096-GP-067-020-S	22	ND (1.5)	ND (1.5)	NR	--
600832[e]	T1096-GP-068-001-S	0.5	92	160	NR	252
600832[e]	T1096-GP-068-005-S	3	ND (1.5)	ND (1.5)	NR	--
600832[e]	T1096-GP-068-010-S	8	ND (1.5)	ND (1.5)	NR	--
600832[e]	T1096-GP-068-015-S	15	ND (1.5)	ND (1.5)	NR	--
600832[e]	T1096-GP-068-020-S	22	ND (1.5)	ND (1.5)	NR	--
600832[e]	T1096-GP-069-001-S	0.5	74	110	NR	184
600832[e]	T1096-GP-069-005-S	3	ND (1.5)	ND (1.5)	NR	--

Refer to footnotes at end of table.

Table 2.4.8-16 (Concluded)
Summary of SWMU 30 Soil Sampling in the Stormwater Channel PCB Analytical Results
1995 and 1998
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8080/-SW846-[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth[c] (ft)	Aroclor 1254	Aroclor 1260	Aroclor 1262	Total PCBs[d]
600832[e]	T1096-GP-069-010-S	9	ND (1.5)	ND (1.5)	NR	--
600832[e]	T1096-GP-069-015-S	15	ND (1.5)	ND (1.5)	NR	--
600832[e]	T1096-GP-069-020-S	23	ND (1.5)	ND (1.5)	NR	--
3729[f]	T1096-SD-006-001-SS	1	ND (33.3)	ND (33.3)	95.5	95.5
3729[f]	T1096-SD-007-001-SS	1	ND (33.3)	ND (33.3)	75.7	75.7
3729[f]	T1096-SD-008-001-SS (duplicate)	1	ND (33)	ND (33)	146	146
3729[f]	T1096-SD-009-001-SS	1	ND (32.8)	ND (32.8)	64.7	64.7
3729[f]	T1096-SD-010-001-SS	1	ND (33.2)	ND (33.2)	122	122
3729[f]	T1096-SD-011-001-SS	1	36.3 J (41.4)	ND (33.1)	197	233.3
3729[f]	T1096-SD-012-001-SS	1	ND (33.1)	ND (33.1)	ND (33.1)	ND
3729[f]	T1096-SD-013-001-SS	1	ND (33.3)	ND (33.3)	70	70
3729[f]	T1096-SD-014-001-SS	1	ND (32.5)	ND (32.5)	62.8	62.8
3729[f]	T1096-SD-015-001-SS	1	ND (33.3)	ND (33.3)	ND (33.3)	ND
3729[f]	T1096-SD-016-001-SS	1	ND (32.9)	66.3	ND (32.9)	66.3
3730[f]	T1096-SD-017-001-SS	1	ND (32.4)	58.4	NR	58.4
3730[f]	T1096-SD-018-001-SS	1	ND (32.6)	55.2	NR	55.2
3730[f]	T1096-SD-019-001-SS	1	45.8	49.5	NR	95.3
3730[f]	T1096-SD-020-001-SS	1	ND (32.9)	47.4	NR	47.4
3730[f]	T1096-SD-021-001-SS	1	ND (32.3)	163	NR	163

[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]Beginning sample depth.
[d]Sum of all detected Aroclor values; qualifiers omitted.
[e]The minimum detection limit for Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260 is 1.5 µg/kg for these samples.
[f]The minimum detection limit for Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260 is 32.3 to 33.3 µg/kg; the minimum detection limit for Aroclor 1262 is 32.5 to 33.3 µg/kg for these samples.

EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
GP = Geoprobe; conveys location identifiers shown on related figures.
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
µg/kg = Microgram(s) per kilogram.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
NR = Not reported.
PCB = Polychlorinated biphenyl.
S = Discrete soil sample.
SD = Sediment sample; conveys location identifiers shown on related figures.
SS = Discrete soil sample.
SWMU = Solid Waste Management Unit.
TAL = Target Analyte List.
T1096 = Technical Area-I, SWMU 96.
-- = Total PCBs are the sum of "not detected" and "not reported" values.

Metals Analysis

The results of the metals analysis for samples collected at the 1-foot depth are summarized in Table 2.4.8-17 and include comparison to the approved site-wide background values for surface soils (Dinwiddie September 1997). Eleven metals exceeded approved background concentrations, ranging from rarely exceeding (e.g., at three different locations each for antimony and silver) to commonly exceeding (e.g., 60 locations for lead). At several locations the MDL for antimony and thallium exceeded site-wide background concentrations, and although the analytical results are nondetects they are bolded and right-justified in Tables 2.4.8-17 and 2.4.8-18. There were no detections of cyanide, selenium, cobalt, nickel, vanadium, and all beryllium concentrations were below background.

The results of the metals analysis for samples collected at the 5-foot depth are summarized in Table 2.4.8-18, which also includes comparison to the approved site-wide background values for subsurface soils (Dinwiddie September 1997). Six metals exceeded approved background concentrations and ranged from rarely exceeding (e.g., at one location for mercury) to commonly exceeding (e.g., 63 locations for vanadium). There were no detections of cadmium, cobalt, copper, nickel, or silver; and no concentrations of beryllium, lead, or selenium were above background. Cyanide was detected at two locations, but there is no approved site-wide background value for comparison.

The MDLs for metals analyzed are provided in Table 2.4.8-19. RPDs were calculated for the metals duplicate soil samples collected during the 1995 RFI (Table 2.4.8-20).

2.4.8.5 Data Quality

QA/QC Results

Tables 2.4.8-2, 2.4.8-3, and 2.4.8-5 through 2.4.8-10, 2.4.8-12, 2.4.8-13, 2.4.8-16 through 2.4.8-18 include analytical results of QA/QC samples collected for VOC, SVOC, metals and PCB analyses. Ten equipment rinsate samples and 33 trip blanks were collected. The equipment rinsate samples were analyzed for VOCs, SVOCs, PCBs, and metals. There were estimated concentrations of methylene chloride detected in Samples EB001, EB002, EB004, and EB005. There was an estimated concentration of acetone detected in Sample EB002 and a detected concentration of 21 µg/L in Sample EB007. No other VOCs were detected. There was an estimated concentration of bis(2-ethylhexyl)phthalate of 2.41 µg/L very near the MDL of 2.4 µg/L in Sample EB007. No other SVOCs were detected. No PCBs were detected in the equipment rinsates, and most of the metal concentrations were nondetect except for arsenic, beryllium, chromium, copper, lead, and zinc. The metals concentrations of all but two samples were below the practical quantitation limit and were qualified J (estimated value); a lead concentration of 0.0051 mg/L was reported in Sample EB010, and a zinc concentration of 0.021 mg/L was reported in Sample EB005. Thirty-three trip blanks were analyzed for VOCs with detections of 2-butanone, acetone, methylene chloride, and toluene (Table 2.4.8-3).

To assess the precision of soil sampling procedures, 10 soil samples were collected and analyzed off site in replicate for VOCs, SVOC, PCBs, and metals. Where possible, RPDs were calculated from the data. All the values for the sample pairs analyzed for VOCs and SVOCs

Table 2.4.8-17
Summary of SWMU 30 Surface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium[c]	Cadmium	Chromium
Composite Samples								
2906	T1030-BH004-001-C	0–1	ND (2.1)	3.3	**229**	0.13 J (0.2)	**1.2**	5.7
2906	T1030-BH009-001-C	0–1	ND (2.1)	3.6	190	0.24	0.65	7.8
2907	T1030-BH013-001-C	0–1	ND (2.1)	3.1	182	0.17 J (0.2)	**1.7**	6.3
2907	T1030-BH017-001-C	0–1	ND (2.1)	2.8	112	0.17 J (0.2)	ND (0.1)	6.6
2907	T1030-BH021-001-C	0–1	ND (2.1)	3.7	**232**	0.16 J (0.2)	**2**	6.6
2907	T1030-BH026-001-C	0–1	ND (2.1)	2.3	109	0.22	0.67	5.6
2908	T1030-BH031-001-C	0–1	ND (2.1)	3.4	**236**	0.43	ND (0.1)	7.2
2908	T1030-BH036-001-C	0–1	ND (2.1)	3.1	**226**	0.3	ND (0.1)	7.8
2908	T1030-BH041-001-C	0–1	ND (2.1)	3	172	0.18 J (0.2)	**1.2**	5.2
2915	T1030-BH046-001-C	0–1	ND (2.1)	4.1	**218**	0.21	0.64	6.8
2915	T1030-BH051-001-C	0–1	ND (2.1)	3.3	120	0.17 J (0.2)	ND (0.1)	6.6
2915	T1030-BH056-001-C	0–1	ND (2.1)	3.6	153	0.13 J (0.2)	0.94	6.8
2915	T1030-BH056-002-C (duplicate)	0–1	ND (2.1)	3.2	131	0.33	**1.1**	8.2
2915	T1030-BH061-001-C	0–1	ND (2.1)	3.5	127	0.34	0.59	6.9
2909	T1030-BH066-001-C	0–1	ND (2.1)	2.5	115	0.45	ND (0.1)	8.2
2909	T1030-BH070-001-C	0–1	ND (2.1)	2.9	199	0.49	ND (0.1)	9.1
2910	T1030-BH075-001-C	0–1	ND (2.1)	4.3	152	0.24	ND (0.1)	5.9
2910	T1030-BH079-001-C	0–1	ND (2.1)	3.4	109	0.26	ND (0.1)	5.5
2910	T1030-BH083-001-C	0–1	ND (2.1)	**4.6**	195	0.2	ND (0.1)	6.2
2910	T1030-BH088-001-C	0–1	ND (2.1)	4.2	125	0.35	ND (0.1)	7.2
2910	T1030-BH088-002-C (duplicate)	0–1	ND (2.1)	4.1	116	0.3	ND (0.1)	8.1
2911	T1030-BH093-001-C	0–1	ND (2.1)	**5.2**	179	0.5	0.94	11.1
2911	T1030-BH098-001-C	0–1	ND (2.1)	**5.3**	173	0.48	0.43 J (0.5)	5.4
2911	T1030-BH102-001-C	0–1	ND (2.1)	4.4	145	0.45	ND (0.1)	6.7

Refer to footnotes at end of table.

Table 2.4.8-17 (Continued)
Summary of SWMU 30 Surface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium[c]	Cadmium	Chromium
2911	T1030-BH107-001-C	0–1	ND (2.1)	4.1	**224**	0.47	**1.3**	6.2
2912	T1030-BH112-001-C	0–1	ND (2.1)	**4.5**	170	0.52	**2.5**	**35.3**
2912	T1030-BH117-001-C	0–1	**5.3 J (6)**	3.9	174	0.46	**1.3**	8.1
2912	T1030-BH122-001-C	0–1	ND (2.1)	4.4	**217**	0.45	0.45 J (0.5)	7
2912	T1030-BH122-002-C (duplicate)	0–1	ND (2.1)	4.3	190	0.45	0.58	6.6
2912	T1030-BH127-001-C	0–1	ND (2.1)	**4.7**	132	0.47	0.47 J (0.5)	8.3
2913	T1030-BH132-001-C	0–1	ND (2.1)	**4.9**	**227**	0.58	**11.6**	11.9
2913	T1030-BH137-001-C	0–1	ND (2.1)	**4.8**	132	0.48	ND (0.1)	7.1
2913	T1030-BH142-001-C	0–1	ND (2.1)	4	101	0.48	0.78	8.1
2913	T1030-BH147-001-C	0–1	ND (2.1)	**5.3**	**201**	0.47	**1.6**	8.5
2914	T1030-BH152-001-C	0–1	ND (2.1)	2.9	122	0.31	ND (0.1)	5.3
2914	T1030-BH157-001-C	0–1	ND (2.1)	2.8	116	0.31	ND (0.1)	5.8
2916	T1030-BH162-001-C	0–1	ND (2.1)	3.1	123	0.4	ND (0.1)	6.4
2916	T1030-BH162-002-C (duplicate)	0–1	3.6 J (6)	3.1	144	0.36	ND (0.1)	5.5
2916	T1030-BH167-001-C	0–1	3.4 J (6)	3.9	166	0.35	ND (0.1)	6.5
2916	T1030-BH172-001-C	0–1	ND (2.1)	3.9	134	0.34	ND (0.1)	6.7
2917	T1030-BH177-001-C	0–1	ND (2.1)	4.1	197	0.58	**1.3**	12.1
2917	T1030-BH182-001-C	0–1	ND (2.1)	3.1	146	0.35	ND (0.1)	**18.6**
2917	T1030-BH187-001-C	0–1	ND (2.1)	2.9	125	0.39	**5.9**	9.8
2917	T1030-BH192-001-C	0–1	**4.7 J (6)**	3.9	154	0.58	ND (0.1)	**13.4**
2988	T1030-BH197-001-C	0–1	ND (2.1)	3.6	161	0.41	ND (0.1)	10.7
2988	T1030-BH202-001-C	0–1	ND (2.1)	3.4	182	0.41	**1.1**	10.1
2988	T1030-BH202-002-C (duplicate)	0–1	ND (2.1)	3.6	189	0.44	0.88	12.8

Refer to footnotes at end of table.

Table 2.4.8-17 (Continued)
Summary of SWMU 30 Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium[c]	Cadmium	Chromium
Discrete Samples								
2989	T1030-BH300-001-SS	0–1	ND (2.1)	3.4	188	0.3	ND (0.1)	3.5
2989	T1030-BH301-001-SS	0–1	ND (2.1)	4.2	**205**	0.38	0.9	5.9
2989	T1030-BH302-001-SS	0–1	ND (2.1)	4.2	**253**	0.3	ND (0.1)	3.9
2989	T1030-BH303-001-SS	0–1	ND (2.1)	2.4	102	0.4	**1.2**	4.7
2989	T1030-BH304-001-SS	0–1	ND (2.1)	2.7	89.2	0.31	ND (0.1)	4.6
2989	T1030-BH305-001-SS	0–1	ND (2.1)	**4.6**	143	0.4	ND (0.1)	3.9
2990	T1030-BH306-001-SS	0–1	ND (2.1)	4.1	**248**	0.37	ND (0.1)	6.8
2990	T1030-BH307-001-SS	0–1	ND (2.1)	4.4	**204**	0.38	ND (0.1)	6.2
2990	T1030-BH308-001-SS	0–1	ND (2.1)	2.7	100	0.4	ND (0.1)	7
2990	T1030-BH309-001-SS	0–1	ND (2.1)	3.2	164	0.38	ND (0.1)	5.5
2990	T1030-BH309-002-SS (duplicate)	0–1	ND (2.1)	3.3	185	0.38	ND (0.1)	7
2991	T1030-BH310-001-SS	0–1	ND (2.1)	3.4	**223**	0.37	ND (0.1)	3
2991	T1030-BH311-001-SS	0–1	ND (2.1)	2.5	123	0.22	ND (0.1)	6.5
2991	T1030-BH312-001-SS	0–1	ND (2.1)	4	198	0.36	ND (0.1)	3.9
2991	T1030-BH313-001-SS	0–1	ND (2.1)	3	114	0.22	**5.7**	9.3
2991	T1030-BH314-001-SS	0–1	ND (2.1)	4.4	153	0.38	**1.5**	3.7
2991	T1030-BH315-001-SS	0–1	ND (2.1)	3.3	114	0.39	ND (0.1)	2.9
2992	T1030-BH316-001-SS	0–1	ND (2.1)	3.7	133	0.3	0.87	6.7
2992	T1030-BH317-001-SS	0–1	ND (2.1)	3.6	128	0.39	0.96	7.1
2992	T1030-BH318-001-SS	0–1	ND (2.1)	2.7	141	0.47	**1.8**	6.8
2992	T1030-BH319-001-SS	0–1	**ND (4.2)**[d]	3.3	91.1	0.21 J (0.4)	ND (0.2)[d]	9.9
2992	T1030-BH320-001-SS	0–1	ND (2.1)	3.9	140	0.5	0.63	9.4
2992	T1030-BH321-001-SS	0–1	ND (2.1)	3.3	125	0.38	ND (0.1)	7.5

Refer to footnotes at end of table.

Table 2.4.8-17 (Continued)
Summary of SWMU 30 Surface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium[c]	Cadmium	Chromium
2993	T1030-BH322-001-SS	0–1	ND (2.1)	3.3	144	0.59	ND (0.1)	10
2993	T1030-BH323-001-SS	0–1	ND (2.1)	2.2	85.8	0.32	0.51	7.4
2993	T1030-BH324-001-SS	0–1	ND (2.1)	1.3	81.6	0.28	ND (0.1)	4.4
2993	T1030-BH325-001-SS	0–1	**ND (4.2)[d]**	4.1	191	0.26 J (0.4)[d]	ND (0.98)[d]	4.5
2993	T1030-BH326-001-SS	0–1	ND (2.1)	2.8	148	0.36	0.61	5.5
2993	T1030-BH327-001-SS	0–1	ND (2.1)	2.9	122	0.4	ND (0.1)	8.8
2994	T1030-BH328-001-SS	0–1	ND (2.1)	3.5	153	0.38	**1.7**	9.2
2994	T1030-BH329-001-SS	0–1	ND (2.1)	**4.9**	145	0.33	ND (0.1)	7.5
2994	T1030-BH330-001-SS	0–1	ND (2.1)	**5.5**	179	0.37	**1.4**	9.5
2994	T1030-BH331-001-SS	0–1	ND (2.1)	2.9	123	0.46	ND (0.1)	8.9
2994	T1030-BH332-001-SS	0–1	ND (2.1)	4.2	150	0.46	ND (0.1)	8.1
2994	T1030-BH333-001-SS	0–1	ND (2.1)	2.8	131	0.43	**1.3**	7.6
2994	T1030-BH334-001-SS	0–1	ND (2.1)	3.9	**264**	0.33	ND (0.1)	6.8
2995	T1030-BH335-001-SS	0–1	**ND (4.2)[d]**	**5.6**	155	0.41	ND (0.98)[d]	4.9
2995	T1030-BH336-001-SS	0–1	ND (2.1)	4.2	120	0.38	ND (0.1)	4.5
2995	T1030-BH337-001-SS	0–1	ND (2.1)	3.3	108	0.33	**2**	12
3392	T1030-BH338-001-SS	0–1	ND (2.1)	3	125	0.47	**1.1**	**13.8**
3392	T1030-BH339-001-SS	0–1	**5.4 J (6)**	2.1	101	0.56	**26**	**15.6**
3392	T1030-BH340-001-SS	0–1	ND (2.1)	3.1	102	0.52	ND (0.1)	5.5
3392	T1030-BH341-001-SS	0–1	ND (2.1)	3.4	132	0.38	ND (0.1)	5.2
3392	T1030-BH342-001-SS	0–1	ND (2.1)	3.5	124	0.38	ND (0.1)	5.6
3392	T1030-BH343-001-SS	0–1	ND (2.1)	2.9	105	0.38	ND (0.1)	**16.4**
3392	T1030-BH344-001-SS	0–1	ND (2.1)	3.7	116	0.29	ND (0.1)	4.3
3392	T1030-BH345-001-SS	0–1	ND (2.1)	3.7	196	0.37	ND (0.1)	8.4
3393	T1030-BH346-001-SS	0–1	ND (2.1)	2.3	154	0.21	ND (0.1)	3
3393	T1030-BH347-001-SS	0–1	ND (2.1)	2.1	105	0.21	**1.2**	8

Refer to footnotes at end of table.

Table 2.4.8-17 (Continued)
Summary of SWMU 30 Surface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium[c]	Cadmium	Chromium
3393	T1030-BH348-001-SS	0–1	ND (2.1)	1.5	80.2	0.32	ND (0.1)	3.4
3393	T1030-BH349-001-SS	0–1	ND (2.1)	3.4	**224**	0.3	**7.8**	**14.6**
3393	T1030-BH350-001-SS	0–1	ND (2.1)	3.4	**318**	0.44	ND (0.1)	3.9
3393	T1030-BH350-002-SS (duplicate)	0–1	ND (2.1)	1.9	**300**	0.48	ND (0.1)	3.7
3393	T1030-BH351-001-SS	0–1	ND (2.1)	2.5	146	0.44	ND (0.1)	4.9
3393	T1030-BH352-001-SS	0–1	ND (2.1)	2.9	132	0.28	ND (0.1)	2.9
3393	T1030-BH353-001-SS	0–1	ND (2.1)	2.5	169	0.34	0.61	3.6
3393	T1030-BH354-001-SS	0–1	ND (2.1)	3.8	**264**	0.3	**1.3**	3
Quality Assurance/Quality Control Samples (mg/L)								
2915	T1030-EB001-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.003)
2910	T1030-EB002-001	NA	ND (0.021)	0.0059 J (0.01)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.003)
2912	T1030-EB003-001	NA	ND (0.021)	0.0058 J (0.01)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.003)
2916	T1030-EB004-001	NA	ND (0.021)	0.0063 J (0.01)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.003)
2988	T1030-EB005-001	NA	ND (0.021)	0.0054 J (0.01)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.003)
2990	T1030-EB006-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.003)
2992	T1030-EB007-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.003)
2994	T1030-EB008-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	0.0016 J (0.002)	ND (0.001)	ND (0.003)
2995	T1030-EB009-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.003)
3393	T1030-EB010-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.001)	0.006 J (0.01)
Background Soil Concentrations—North Area[c]			3.9	4.4	200	0.80	<1	12.8

Refer to footnotes at end of table.

Table 2.4.8-17 (Continued)
Summary of SWMU 30 Surface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Copper	Lead	Mercury	Silver	Thallium[c]	Zinc
2906	T1030-BH004-001-C	0–1	15.2	**21**	ND (0.02)	0.69 J (1)	**1.1**	44.3
2906	T1030-BH009-001-C	0–1	9.8	**20.1**	ND (0.02)	0.44 J (1)	ND (1)	35.5
2907	T1030-BH013-001-C	0–1	**24.7**	**17.5**	0.064 J (0.1)	0.46 J (1)	ND (1)	40.4
2907	T1030-BH017-001-C	0–1	**21.8**	7.7	ND (0.02)	ND (0.3)	ND (1)	29
2907	T1030-BH021-001-C	0–1	**108**	**42.3**	ND (0.02)	0.7 J (1)	ND (1)	39.2
2907	T1030-BH026-001-C	0–1	**23.3**	**69.4**	ND (0.02)	0.64 J (1)	ND (1)	37.2
2908	T1030-BH031-001-C	0–1	13.7	9.4	ND (0.02)	ND (0.3)	0.75 J (1)	32.9
2908	T1030-BH036-001-C	0–1	**105**	**42.1**	ND (0.02)	0.65 J (1)	ND (1)	54.2
2908	T1030-BH041-001-C	0–1	12.9	**11.5**	ND (0.02)	ND (0.3)	ND (1)	23.1
2915	T1030-BH046-001-C	0–1	**30.7**	**27.9**	ND (0.02)	0.4 J (1)	ND (1)	37.9
2915	T1030-BH051-001-C	0–1	11.8	**12.2**	ND (0.02)	ND (0.3)	ND (1)	27.3
2915	T1030-BH056-001-C	0–1	**19.8**	**30**	ND (0.02)	0.52 J (1)	ND (1)	35.3
2915	T1030-BH056-002-C (duplicate)	0–1	**26.8**	**21**	ND (0.02)	ND (0.3)	ND (1)	36.5
2915	T1030-BH061-001-C	0–1	16.2	**24.3**	ND (0.02)	ND (0.3)	ND (1)	30
2909	T1030-BH066-001-C	0–1	**40.6**	**30**	ND (0.02)	ND (0.3)	ND (1)	49.8
2909	T1030-BH070-001-C	0–1	10.1	9.3	ND (0.02)	ND (0.3)	0.75 J (1)	34.3
2910	T1030-BH075-001-C	0–1	17	8.1	ND (0.02)	ND (0.3)	0.95 J (1)	34.1
2910	T1030-BH079-001-C	0–1	8.7	10.7	ND (0.02)	ND (0.3)	0.78 J (1)	22.8
2910	T1030-BH083-001-C	0–1	10.2	**15.7**	ND (0.02)	0.63 J (1)	**1.3**	30.2
2910	T1030-BH088-001-C	0–1	10.4	7.3	ND (0.02)	ND (0.3)	0.85 J (1)	25.9
2910	T1030-BH088-002-C (duplicate)	0–1	11.3	8.4	ND (0.02)	ND (0.3)	0.91 J (1)	25
2911	T1030-BH093-001-C	0–1	**17.2**	**19.8**	ND (0.02)	ND (0.3)	ND (1)	63.3
2911	T1030-BH098-001-C	0–1	**18.2**	**19.3**	ND (0.02)	ND (0.3)	ND (1)	36.2
2911	T1030-BH102-001-C	0–1	13.2	10.8	ND (0.02)	ND (0.3)	**1.3**	36.5

Refer to footnotes at end of table.

Table 2.4.8-17 (Continued)
Summary of SWMU 30 Surface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Copper	Lead	Mercury	Silver	Thallium[c]	Zinc
Composite Samples								
2911	T1030-BH107-001-C	0–1	14.9	**21.9**	0.086 J (0.1)	ND (0.3)	0.97 J (1)	42.8
2912	T1030-BH112-001-C	0–1	**35**	**144**	**1.8**	ND (0.3)	**1.2**	**91.1**
2912	T1030-BH117-001-C	0–1	**29.9**	**36**	0.057 J (0.1)	ND (0.3)	ND (1)	67.3
2912	T1030-BH122-001-C	0–1	12.2	**26.3**	ND (0.02)	ND (0.3)	ND (1)	49.1
2912	T1030-BH122-002-C (duplicate)	0–1	**19.5**	**24.2**	ND (0.02)	ND (0.3)	ND (1)	53.6
2912	T1030-BH127-001-C	0–1	15.9	8.3	ND (0.02)	ND (0.3)	ND (1)	27.7
2913	T1030-BH132-001-C	0–1	**66.2**	**27**	**0.13**	ND (0.3)	ND (1)	57.5
2913	T1030-BH137-001-C	0–1	**1080**	**85.7**	0.084 J (0.1)	ND (0.3)	ND (1)	**79.1**
2913	T1030-BH142-001-C	0–1	11	10.1	ND (0.02)	ND (0.3)	ND (1)	33.2
2913	T1030-BH147-001-C	0–1	**541**	**52.8**	**0.12**	ND (0.3)	ND (1)	**106**
2914	T1030-BH152-001-C	0–1	9.5	8.3	ND (0.02)	ND (0.3)	ND (1)	32.8
2914	T1030-BH157-001-C	0–1	15.6	**11.6**	ND (0.02)	ND (0.3)	0.67 J (1)	56.8
2916	T1030-BH162-001-C	0–1	9.6	7.7	ND (0.02)	ND (0.3)	0.76 J (1)	34.4
2916	T1030-BH162-002-C (duplicate)	0–1	11	10.3	ND (0.02)	ND (0.3)	0.86 J (1)	36.5
2916	T1030-BH167-001-C	0–1	11.2	**11.8**	ND (0.02)	ND (0.3)	0.74 J (1)	32.4
2916	T1030-BH172-001-C	0–1	8.1	6.8	ND (0.02)	ND (0.3)	ND (1)	27.9
2917	T1030-BH177-001-C	0–1	**22.6**	**22.2**	ND (0.02)	ND (0.3)	**1.3**	63.8
2917	T1030-BH182-001-C	0–1	**25.8**	8.5	ND (0.02)	ND (0.3)	0.82 J (1)	46.6
2917	T1030-BH187-001-C	0–1	14.5	**136**	**0.14**	ND (0.3)	ND (1)	59.6
2917	T1030-BH192-001-C	0–1	15.5	**14.5**	ND (0.02)	ND (0.3)	ND (1)	**113**
2988	T1030-BH197-001-C	0–1	16.3	**19.5**	**0.15**	ND (0.3)	0.83 J (1)	70.9
2988	T1030-BH202-001-C	0–1	**20.7**	**13.8**	ND (0.02)	0.53 J (1)	0.95 J (1)	**98.2**
2988	T1030-BH202-002-C (duplicate)	0–1	15.6	**14.9**	0.052 J (0.1)	ND (0.3)	**1.8**	**88.3**

Refer to footnotes at end of table.

Table 2.4.8-17 (Continued)
Summary of SWMU 30 Surface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Copper	Lead	Mercury	Silver	Thallium[c]	Zinc
Discrete Samples								
2989	T1030-BH300-001-SS	0–1	14.4	6.7	ND (0.02)	ND (0.3)	**1.1**	23.2
2989	T1030-BH301-001-SS	0–1	15.4	**48.2**	ND (0.02)	ND (0.3)	0.91 J (1)	39.4
2989	T1030-BH302-001-SS	0–1	8.3	9.6	ND (0.02)	ND (0.3)	**1.2**	28.4
2989	T1030-BH303-001-SS	0–1	**21.6**	**14.8**	0.078 J (0.1)	ND (0.3)	0.77 J (1)	28.5
2989	T1030-BH304-001-SS	0–1	**24.3**	7.3	ND (0.02)	ND (0.3)	0.79 J (1)	23.1
2989	T1030-BH305-001-SS	0–1	5.5	4.2 J (5)	ND (0.02)	ND (0.3)	1 J (1)	14.8
2990	T1030-BH306-001-SS	0–1	8	10	ND (0.02)	ND (0.3)	ND (1)	24.6
2990	T1030-BH307-001-SS	0–1	**18.7**	**20.5**	ND (0.02)	ND (0.3)	ND (1)	65.5
2990	T1030-BH308-001-SS	0–1	15.8	**26**	ND (0.02)	ND (0.3)	0.89 J (1)	39.4
2990	T1030-BH309-001-SS	0–1	6.7	6.4	ND (0.02)	ND (0.3)	0.87 J (1)	24
2990	T1030-BH309-002-SS (duplicate)	0–1	7	9.2	ND (0.02)	ND (0.3)	1	25.9
2991	T1030-BH310-001-SS	0–1	5.8	6.5	ND (0.02)	ND (0.3)	**1.5**	19.7
2991	T1030-BH311-001-SS	0–1	7.3	6.5	ND (0.02)	ND (0.3)	**1.2**	17
2991	T1030-BH312-001-SS	0–1	6.4	7.5	ND (0.02)	ND (0.3)	**1.3**	22.2
2991	T1030-BH313-001-SS	0–1	**167**	**103**	0.074 J (0.1)	**1.7**	ND (1)	**166**
2991	T1030-BH314-001-SS	0–1	12.7	8.8	**0.24**	**1.9**	0.67 J (1)	**367**
2991	T1030-BH315-001-SS	0–1	5.9	4.8 J (5)	ND (0.02)	ND (0.3)	0.68 J (1)	14.4
2992	T1030-BH316-001-SS	0–1	**34.7**	**47.7**	**0.11**	ND (0.3)	ND (1)	33.7
2992	T1030-BH317-001-SS	0–1	**23.5**	**36.5**	**0.7**	ND (0.3)	ND (1)	37.5
2992	T1030-BH318-001-SS	0–1	**26.8**	**51.9**	ND (0.02)	ND (0.3)	ND (1)	56
2992	T1030-BH319-001-SS	0–1	**25**	**13**	ND (0.02)	ND (0.6)	**ND (2)**[d]	32.3
2992	T1030-BH320-001-SS	0–1	**18.4**	**17.6**	ND (0.02)	ND (0.3)	ND (1)	38.5
2992	T1030-BH321-001-SS	0–1	10.9	**13.5**	ND (0.02)	ND (0.3)	ND (1)	26.5

Refer to footnotes at end of table.

Table 2.4.8-17 (Continued)
Summary of SWMU 30 Surface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Copper	Lead	Mercury	Silver	Thallium[c]	Zinc
2993	T1030-BH322-001-SS	0–1	12.6	8.6	ND (0.02)	ND (0.3)	**1.1**	35.7
2993	T1030-BH323-001-SS	0–1	8.7	6.7	ND (0.02)	ND (0.3)	ND (1)	27.1
2993	T1030-BH324-001-SS	0–1	6.5	6.3	ND (0.02)	ND (0.3)	ND (1)	28.7
2993	T1030-BH325-001-SS	0–1	2.9 J (4)[d]	ND (6.2)[d]	ND (0.02)	ND (0.6)	**ND (2)[d]**	13.6
2993	T1030-BH326-001-SS	0–1	12.7	**13.9**	ND (0.02)	ND (0.3)	ND (1)	35.2
2993	T1030-BH327-001-SS	0–1	9.3	6	ND (0.02)	ND (0.3)	ND (1)	28.6
2994	T1030-BH328-001-SS	0–1	**92.8**	**25.7**	0.058 J (0.1)	ND (0.3)	ND (1)	**119**
2994	T1030-BH329-001-SS	0–1	10.8	**14.7**	ND (0.02)	ND (0.3)	ND (1)	25.5
2994	T1030-BH330-001-SS	0–1	**24**	**20**	ND (0.02)	ND (0.3)	ND (1)	46.2
2994	T1030-BH331-001-SS	0–1	**17.9**	**14**	0.058 J (0.1)	ND (0.3)	ND (1)	36.2
2994	T1030-BH332-001-SS	0–1	8.6	6	ND (0.02)	ND (0.3)	ND (1)	24.2
2994	T1030-BH333-001-SS	0–1	**23**	**35.3**	ND (0.02)	**2.2**	ND (1)	59.6
2994	T1030-BH334-001-SS	0–1	9.2	**16.6**	ND (0.02)	ND (0.3)	ND (1)	29.2
2995	T1030-BH335-001-SS	0–1	4.7	ND (6.2)[d]	ND (0.02)	ND (0.6)	**ND (2)[d]**	15.9
2995	T1030-BH336-001-SS	0–1	10.4	8.3	ND (0.02)	ND (0.3)	ND (1)	28.5
2995	T1030-BH337-001-SS	0–1	**48.1**	**245**	ND (0.02)	ND (0.3)	ND (1)	**118**
3392	T1030-BH338-001-SS	0–1	**47.1**	**48.3**	ND (0.02)	ND (0.3)	**1.1**	**167**
3392	T1030-BH339-001-SS	0–1	**844**	**74.6**	ND (0.02)	ND (0.3)	ND (1)	**594**
3392	T1030-BH340-001-SS	0–1	7.3	8	ND (0.02)	ND (0.3)	**1.2**	21
3392	T1030-BH341-001-SS	0–1	6.4	6	**0.66**	ND (0.3)	ND (1)	20.5
3392	T1030-BH342-001-SS	0–1	8.3	6.1	ND (0.02)	ND (0.3)	ND (1)	23
3392	T1030-BH343-001-SS	0–1	10.3	**13.4**	ND (0.02)	ND (0.3)	ND (1)	31.2
3392	T1030-BH344-001-SS	0–1	5.4	5.4	ND (0.02)	ND (0.3)	**1.1**	15.9
3392	T1030-BH345-001-SS	0–1	**21.3**	**13.4**	ND (0.02)	ND (0.3)	ND (1)	38.9
3393	T1030-BH346-001-SS	0–1	8.2	5.5	ND (0.02)	ND (0.3)	ND (1)	23.7
3393	T1030-BH347-001-SS	0–1	**41.8**	**27.3**	ND (0.02)	ND (0.3)	ND (1)	65.3

Refer to footnotes at end of table.

Table 2.4.8-17 (Continued)
Summary of SWMU 30 Surface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Copper	Lead	Mercury	Silver	Thallium[c]	Zinc
3393	T1030-BH348-001-SS	0–1	7.2	3.7 J (5)	ND (0.02)	ND (0.3)	ND (1)	17.7
3393	T1030-BH349-001-SS	0–1	**28.5**	**15.1**	ND (0.02)	ND (0.3)	ND (1)	**121**
3393	T1030-BH350-001-SS	0–1	12.2	**21.8**	ND (0.02)	ND (0.3)	ND (1)	**117**
3393	T1030-BH350-002-SS (duplicate)	0–1	14.4	**20.4**	ND (0.02)	ND (0.3)	ND (1)	**114**
3393	T1030-BH351-001-SS	0–1	8.2	5.6	ND (0.02)	ND (0.3)	ND (1)	22.5
3393	T1030-BH352-001-SS	0–1	6.8	7.1	ND (0.02)	ND (0.3)	ND (1)	23.8
3393	T1030-BH353-001-SS	0–1	10.4	**12.3**	ND (0.02)	ND (0.3)	ND (1)	**78.6**
3393	T1030-BH354-001-SS	0–1	10	10.9	ND (0.02)	ND (0.3)	ND (1)	67.8
Quality Assurance/Quality Control Samples (mg/L)								
2915	T1030-EB001-001	NA	ND (0.003)	ND (0.031)	ND (0.0004)	ND (0.003)	ND (0.01)	0.019 J (0.02)
2910	T1030-EB002-001	NA	0.004 J (0.02)	ND (0.031)	ND (0.0004)	ND (0.003)	ND (0.01)	0.0071 J (0.02)
2912	T1030-EB003-001	NA	ND (0.003)	ND (0.031)	ND (0.0004)	ND (0.003)	ND (0.01)	0.0044 J (0.02)
2916	T1030-EB004-001	NA	ND (0.003)	ND (0.031)	ND (0.0004)	ND (0.003)	ND (0.01)	0.0048 J (0.02)
2988	T1030-EB005-001	NA	0.0061 J (0.02)	ND (0.031)	ND (0.0004)	ND (0.003)	ND (0.01)	0.021
2990	T1030-EB006-001	NA	ND (0.003)	ND (0.031)	ND (0.0004)	ND (0.003)	ND (0.01)	ND (0.016)
2992	T1030-EB007-001	NA	ND (0.003)	ND (0.031)	ND (0.0004)	ND (0.003)	ND (0.01)	ND (0.016)
2994	T1030-EB008-001	NA	ND (0.003)	ND (0.031)	ND (0.0004)	ND (0.003)	ND (0.01)	ND (0.016)
2995	T1030-EB009-001	NA	ND (0.003)	ND (0.031)	ND (0.0004)	ND (0.003)	ND (0.01)	ND (0.016)
3393	T1030-EB010-001	NA	ND (0.003)	0.0051 X	ND (0.0004)	ND (0.003)	ND (0.01)	ND (0.016)
Background Soil Concentrations—North Area[e]			17	11.2	<0.1	<1	<1.1	76

Note: Values in **bold** exceed background soil concentrations.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]The reporting limit reflects the use of the Trace ICP (axial view) instrument and the method detection limit reflects the use of a non-Trace ICP instrument.
[d]The method detection limit is a result of dilution of the sample. Method detection limits reported in the Environmental Restoration Data Management System are method-specific and not sample-specific method detection limits.
[e]From Dinwiddie September 1997.

Table 2.4.8-17 (Concluded)
Summary of SWMU 30 Surface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ICP = Inductively Coupled Plasma.
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
mg/kg = Milligram(s) per kilogram.
mg/L = Milligram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
SS = Discrete soil sample.
SWMU = Solid Waste Management Unit.
TAL = Target Analyte List.
T1030 = Technical Area-I, SWMU 30.
X = There is presumptive evidence that the analyte is not present based upon documented method detection limit studies performed by the laboratory for the applicable dates.

Table 2.4.8-18
Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/9010/9012/9012/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium[c]	Chromium	Cyanide
Composite Samples								
2906	T1030-BH004-005-C	4–5	ND (2.1)	4.4	197	0.29	7.1	ND (0.168)
2906	T1030-BH009-005-C	4–5	ND (2.1)	4.1	196	0.15 J (0.2)	6.2	**6.6**
2907	T1030-BH013-005-C	4–5	ND (2.1)	4.2	196	0.34	6.9	ND (0.168)
2907	T1030-BH017-005-C	4–5	ND (2.1)	4	143	0.38	7.1	ND (0.168)
2907	T1030-BH021-005-C	4–5	ND (2.1)	4.2	179	ND (0.2)	5.4	ND (0.168)
2907	T1030-BH026-005-C	4–5	ND (2.1)	**6.4**	135	0.37	6.9	ND (0.168)
2908	T1030-BH031-005-C	4–5	ND (2.1)	**4.5**	**287**	0.28	7.3	ND (0.168)
2908	T1030-BH036-005-C	4–5	ND (2.1)	4.1	**248**	0.24	5.8	ND (0.168)
2908	T1030-BH041-005-C	4–5	ND (2.1)	3.4	187	0.45	7.5	ND (0.168)
2915	T1030-BH046-005-C	4–5	ND (2.1)	2.8	108	0.19 J (0.2)	5.6	ND (0.168)
2915	T1030-BH051-005-C	4–5	ND (2.1)	3.8	197	0.39	7.1	ND (0.168)
2915	T1030-BH056-005-C	4–5	ND (2.1)	3.8	191	0.31	6.2	NR
2915	T1030-BH061-005-C	4–5	ND (2.1)	4.2	151	0.21	6.7	ND (0.168)
2909	T1030-BH066-005-C	4–5	ND (2.1)	3.4	**234**	0.28	6.8	ND (0.168)
2909	T1030-BH070-005-C	4–5	ND (2.1)	3.3	142	0.19 J (0.2)	6.6	ND (0.168)
2910	T1030-BH075-005-C	4–5	ND (2.1)	**5.4**	**257**	0.22	6.8	ND (0.168)
2910	T1030-BH079-005-C	4–5	ND (2.1)	3.8	136	0.27	6.2	ND (0.168)
2910	T1030-BH083-005-C	4–5	ND (2.1)	**6.8**	**242**	0.29	7.4	ND (0.168)
2910	T1030-BH088-005-C	4–5	ND (2.1)	**6.6**	**259**	0.26	6.6	ND (0.168)
2911	T1030-BH093-005-C	4–5	ND (2.1)	**4.9**	**236**	0.43	5.3	ND (0.168)
2911	T1030-BH098-005-C	4–5	ND (2.1)	**5.9**	**285**	0.48	6.1	ND (0.168)
2911	T1030-BH102-005-C	4–5	ND (2.1)	**5.3**	**212**	0.41	5	ND (0.168)
2911	T1030-BH107-005-C	4–5	ND (2.1)	**6.4**	**286**	0.44	5.7	ND (0.168)
2912	T1030-BH112-005-C	4–5	**5.8 J (6)**	**5.7**	**547**	0.45	6	ND (0.168)
2912	T1030-BH117-005-C	4–5	ND (2.1)	**6**	**410**	0.45	7.2	ND (0.168)

Refer to footnotes at end of table.

Table 2.4.8-18 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/9010/9012/9012/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium[c]	Chromium	Cyanide
2912	T1030-BH122-005-C	4–5	ND (2.1)	**6.2**	**355**	0.4	6.3	1.5
2912	T1030-BH127-005-C	4–5	ND (2.1)	4.2	192	0.38	5.7	ND (0.168)
2913	T1030-BH132-005-C	4–5	ND (2.1)	4.2	**306**	0.54	8.5	ND (0.168)
2913	T1030-BH137-005-C	4–5	ND (2.1)	**4.9**	**306**	0.44	6.5	ND (0.168)
2913	T1030-BH142-005-C	4–5	ND (2.1)	**5.2**	**522**	0.4	8.1	ND (0.168)
2913	T1030-BH147-005-C	4–5	ND (2.1)	**5.3**	**251**	0.45	5.9	ND (0.168)
2914	T1030-BH152-005-C	4–5	ND (2.1)	3	160	0.16 J (0.2)	2.4	ND (0.168)
2914	T1030-BH157-005-C	4–5	ND (2.1)	3	179	0.39	4	ND (0.168)
2916	T1030-BH162-005-C	4–5	ND (2.1)	**6.5**	**382**	0.32	5.2	ND (0.168)
2916	T1030-BH167-005-C	4–5	ND (2.1)	**4.5**	**240**	0.36	6.8	ND (0.168)
2916	T1030-BH172-005-C	4–5	ND (2.1)	3.5	**349**	0.29	4.7	ND (0.168)
2917	T1030-BH177-005-C	4–5	ND (2.1)	**4.7**	**392**	0.32	7.8	ND (0.168)
2917	T1030-BH182-005-C	4–5	ND (2.1)	**4.8**	**259**	0.36	8	ND (0.168)
2917	T1030-BH187-005-C	4–5	ND (2.1)	3.7	**294**	0.24	5	ND (0.168)
2917	T1030-BH192-005-C	4–5	3.3 J (6)	**6.4**	**325**	0.49	8.4	ND (0.168)
2988	T1030-BH197-005-C	4–5	ND (2.1)	**4.7**	**233**	0.34	6.6	ND (0.168)
2988	T1030-BH202-005-C	4–5	ND (2.1)	**7.2**	**396**	0.56	7.7	ND (0.168)
Discrete Samples								
2989	T1030-BH300-005-SS	4–5	ND (2.1)	**4.9**	**260**	0.36	3.7	ND (0.168)
2989	T1030-BH301-005-SS	4–5	ND (2.1)	4.4	164	0.34	5.4	ND (0.168)
2989	T1030-BH302-005-SS	4–5	ND (2.1)	**6**	**1,020**	0.32	2.8	ND (0.168)
2989	T1030-BH303-005-SS	4–5	ND (2.1)	3.7	116	0.35	6	ND (0.168)
2989	T1030-BH304-005-SS	4–5	ND (2.1)	3.3	159	0.38	4.4	ND (0.168)
2989	T1030-BH305-005-SS	4–5	ND (2.1)	3.2	151	0.37	6	ND (0.168)
2990	T1030-BH306-005-SS	4–5	ND (2.1)	3.7	120	0.35	4.2	ND (0.168)

Refer to footnotes at end of table.

Table 2.4.8-18 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/9010/9012/9012/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium[c]	Chromium	Cyanide
2990	T1030-BH307-005-SS	4–5	ND (2.1)	3.8	160	0.35	6	ND (0.168)
2990	T1030-BH308-005-SS	4–5	ND (2.1)	3.2	120	0.36	5.2	ND (0.168)
2990	T1030-BH309-005-SS	4–5	ND (2.1)	**8.4**	**229**	0.39	7.4	ND (0.168)
2991	T1030-BH310-005-SS	4–5	ND (2.1)	**8.4**	**233**	0.34	2.6	ND (0.168)
2991	T1030-BH312-005-SS	4–5	ND (2.1)	4.1	172	0.34	3.8	ND (0.168)
2991	T1030-BH313-005-SS	4–5	ND (2.1)	3.5	108	0.35	3.7	ND (0.168)
2991	T1030-BH314-005-SS	4–5	ND (2.1)	2.1	79.2	0.36	3.3	ND (0.168)
2991	T1030-BH315-005-SS	4–5	ND (2.1)	2.6	131	0.36	3.5	ND (0.168)
2992	T1030-BH316-005-SS	4–5	ND (2.1)	3.9	141	0.38	7.7	ND (0.168)
2992	T1030-BH317-005-SS	4–5	ND (2.1)	4	**274**	0.34	7.3	ND (0.168)
2992	T1030-BH318-005-SS	4–5	ND (2.1)	3.3	129	0.37	5.6	ND (0.168)
2992	T1030-BH319-005-SS	4–5	ND (2.1)	3.7	195	0.26	7.4	ND (0.168)
2992	T1030-BH320-005-SS	4–5	ND (2.1)	4.1	184	0.37	6.5	ND (0.168)
2992	T1030-BH320-006-SS (duplicate)	4–5	ND (2.1)	4.2	**223**	0.4	8.3	ND (0.168)
2992	T1030-BH321-005-SS	4–5	**ND (4.2)[d]**	2.9	199	0.26 J (0.4)[d]	7.8	ND (0.168)
2993	T1030-BH322-005-SS	4–5	ND (2.1)	3.3	**261**	0.45	9.6	ND (0.168)
2993	T1030-BH323-005-SS	4–5	**ND (4.2)[d]**	3.2	**402**	0.27 J (0.4)[d]	4.1	ND (0.168)
2993	T1030-BH324-005-SS	4–5	ND (2.1)	2.5	112	0.32	5.6	ND (0.168)
2993	T1030-BH325-005-SS	4–5	ND (2.1)	3.6	**280**	0.31	6.1	ND (0.168)
2993	T1030-BH326-005-SS	4–5	ND (2.1)	3.3	178	0.38	6.2	ND (0.168)
2993	T1030-BH327-005-SS	4–5	ND (2.1)	4	173	0.27	5.7	ND (0.168)
2994	T1030-BH328-005-SS	4–5	ND (2.1)	3.5	120	0.32	6.3	ND (0.168)
2994	T1030-BH329-005-SS	4–5	ND (2.1)	4	196	0.41	7.6	ND (0.168)
2994	T1030-BH329-006-SS (duplicate)	4–5	ND (2.1)	4.1	**209**	0.3	7	ND (0.168)
2994	T1030-BH330-005-SS	4–5	ND (2.1)	2.5	192	0.35	7.5	ND (0.168)

Refer to footnotes at end of table.

Table 2.4.8-18 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/9010/9012/9012/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium[c]	Chromium	Cyanide
2994	T1030-BH331-005-SS	4–5	ND (2.1)	**4.6**	172	0.3	6.5	ND (0.168)
2994	T1030-BH332-005-SS	4–5	ND (2.1)	3.8	177	0.25	7.7	ND (0.168)
2994	T1030-BH333-005-SS	4–5	ND (2.1)	2.3	78	0.37	5.2	ND (0.168)
2994	T1030-BH334-005-SS	4–5	ND (2.1)	4	**210**	0.34	7.5	ND (0.168)
2995	T1030-BH335-005-SS	4–5	ND (2.1)	4.4	125	0.43	6.2	ND (0.168)
2995	T1030-BH336-005-SS	4–5	ND (2.1)	3.9	**204**	0.3	5.2	ND (0.168)
2995	T1030-BH337-005-SS	4–5	ND (2.1)	3.6	149	0.35	5.3	ND (0.168)
2995	T1030-BH337-006-SS (duplicate)	4–5	ND (2.1)	**4.5**	191	0.35	5.6	ND (0.168)
3392	T1030-BH338-005-SS	4–5	ND (2.1)	**5.1**	**208**	0.31	3.8	ND (0.168)
3392	T1030-BH339-005-SS	4–5	ND (2.1)	**4.7**	**259**	0.33	3.3	ND (0.168)
3392	T1030-BH340-005-SS	4–5	ND (2.1)	1.3	77.9	0.28	2.5	ND (0.168)
3392	T1030-BH341-005-SS	4–5	ND (2.1)	**6.4**	125	0.35	4.5	ND (0.168)
3392	T1030-BH342-005-SS	4–5	ND (2.1)	**4.9**	159	0.34	4.8	ND (0.168)
3392	T1030-BH343-005-SS	4–5	ND (2.1)	2.8	128	0.33	3.3	ND (0.168)
3392	T1030-BH344-005-SS	4–5	ND (2.1)	3.3	**204**	0.41	5	ND (0.168)
3392	T1030-BH345-005-SS	4–5	ND (2.1)	3.9	**207**	0.46	5.3	ND (0.168)
3393	T1030-BH346-005-SS	4–5	**ND (4.2)[d]**	**7.7**	**402**	0.35 J (0.4)[d]	1.9 J (2)[d]	ND (0.168)
3393	T1030-BH347-005-SS	4–5	ND (2.1)	**5.7**	**582**	0.29	2.3	ND (0.168)
3393	T1030-BH348-005-SS	4–5	ND (2.1)	**6.3**	**327**	0.38	2.9	ND (0.168)
3393	T1030-BH349-005-SS	4–5	ND (2.1)	**7.3**	**365**	0.3	2.8	ND (0.168)
3393	T1030-BH350-005-SS	4–5	ND (2.1)	**7**	**333**	0.36	3.3	ND (0.168)
3393	T1030-BH351-005-SS	4–5	ND (2.1)	**6.5**	**406**	0.36	4.8	ND (0.168)
3393	T1030-BH352-005-SS	4–5	ND (2.1)	2.9	152	0.4	3.6	ND (0.168)

Refer to footnotes at end of table.

Table 2.4.8-18 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/9010/9012/9012/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium[c]	Chromium	Cyanide
3393	T1030-BH353-005-SS	4–5	ND (2.1)	4.3	**210**	0.41	5.3	ND (0.168)
3393	T1030-BH354-005-SS	4–5	ND (2.1)	**4.9**	125	0.36	4.1	ND (0.168)
Quality Assurance/Quality Control Samples (mg/L)								
2915	T1030-EB001-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.003)	NR
2910	T1030-EB002-001	NA	ND (0.021)	0.0059 J (0.01)	ND (0.002)	ND (0.002)	ND (0.003)	NR
2912	T1030-EB003-001	NA	ND (0.021)	0.0058 J (0.01)	ND (0.002)	ND (0.002)	ND (0.003)	NR
2916	T1030-EB004-001	NA	ND (0.021)	0.0063 J (0.01)	ND (0.002)	ND (0.002)	ND (0.003)	NR
2988	T1030-EB005-001	NA	ND (0.021)	0.0054 J (0.01)	ND (0.002)	ND (0.002)	ND (0.003)	NR
2990	T1030-EB006-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.003)	ND (0.0033)
2992	T1030-EB007-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.003)	ND (0.0033)
2994	T1030-EB008-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	0.0016 J (0.002)	ND (0.003)	ND (0.0033)
2995	T1030-EB009-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.003)	ND (0.0033)
3393	T1030-EB010-001	NA	ND (0.021)	ND (0.003)	ND (0.002)	ND (0.002)	0.006 J (0.01)	ND (0.0033)
Background Soil Concentrations—North Area[c]			3.9	4.4	200	0.80	12.8	--

Refer to footnotes at end of table.

Table 2.4.8-18 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/9010/9012/9012/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Lead	Mercury	Selenium	Thallium[c]	Vanadium	Zinc
Composite Samples								
2906	T1030-BH004-005-C	4–5	6.3	ND (0.02)	ND (0.5)	ND (1)	**43.9**	27
2906	T1030-BH009-005-C	4–5	6.5	ND (0.02)	ND (0.5)	ND (1)	30.5	26.1
2907	T1030-BH013-005-C	4–5	5.9	ND (0.02)	ND (0.5)	ND (1)	**37.9**	25.7
2907	T1030-BH017-005-C	4–5	5.4	ND (0.02)	ND (0.5)	ND (1)	**42.1**	30.6
2907	T1030-BH021-005-C	4–5	4.8 J (5)	ND (0.02)	ND (0.5)	ND (1)	**44.8**	24.4
2907	T1030-BH026-005-C	4–5	6	ND (0.02)	ND (0.5)	0.71 J (1)	**47.4**	31.4
2908	T1030-BH031-005-C	4–5	6.8	ND (0.02)	ND (0.5)	ND (1)	**39.1**	28.3
2908	T1030-BH036-005-C	4–5	7.9	ND (0.02)	ND (0.5)	ND (1)	**40.4**	23.2
2908	T1030-BH041-005-C	4–5	5.7	ND (0.02)	ND (0.5)	0.8 J (1)	**44.3**	29.9
2915	T1030-BH046-005-C	4–5	5.5	ND (0.02)	ND (0.5)	ND (1)	32.4	27.1
2915	T1030-BH051-005-C	4–5	5.9	ND (0.02)	ND (0.5)	ND (1)	**37.9**	30.1
2915	T1030-BH056-005-C	4–5	6.2	ND (0.02)	ND (0.5)	0.68 J (1)	32.3	24.3
2915	T1030-BH061-005-C	4–5	7	ND (0.02)	ND (0.5)	ND (1)	**43**	26.1
2909	T1030-BH066-005-C	4–5	5.5	ND (0.02)	ND (0.5)	0.7 J (1)	**39.2**	24.8
2909	T1030-BH070-005-C	4–5	4.5 J (5)	ND (0.02)	ND (0.5)	0.7 J (1)	**40.4**	27.1
2910	T1030-BH075-005-C	4–5	ND (3.1)	ND (0.02)	ND (0.5)	**1.1**	**36.1**	24.8
2910	T1030-BH079-005-C	4–5	4 J (5)	ND (0.02)	ND (0.5)	ND (1)	**34.1**	25.2
2910	T1030-BH083-005-C	4–5	4.4 J (5)	ND (0.02)	ND (0.5)	ND (1)	**47.9**	28.9
2910	T1030-BH088-005-C	4–5	3.8 J (5)	ND (0.02)	ND (0.5)	**1.2**	**39.8**	26.6
2911	T1030-BH093-005-C	4–5	5.2	ND (0.02)	ND (0.5)	ND (1)	**36.3**	30.6
2911	T1030-BH098-005-C	4–5	6.8	ND (0.02)	ND (0.5)	ND (1)	**44.7**	36.7
2911	T1030-BH102-005-C	4–5	5.1	ND (0.02)	ND (0.5)	ND (1)	**36.2**	29.5
2911	T1030-BH107-005-C	4–5	ND (3.1)	ND (0.02)	0.49 J (0.5)	0.77 J (1)	**48.3**	30.8
2912	T1030-BH112-005-C	4–5	5.6	ND (0.02)	ND (0.5)	ND (1)	**47.2**	31
2912	T1030-BH117-005-C	4–5	6.1	ND (0.02)	ND (0.5)	ND (1)	**50**	31.9

Refer to footnotes at end of table.

Table 2.4.8-18 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/9010/9012/9012/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Lead	Mercury	Selenium	Thallium[c]	Vanadium	Zinc
2912	T1030-BH122-005-C	4–5	5	ND (0.02)	ND (0.5)	ND (1)	**47.9**	26.8
2912	T1030-BH127-005-C	4–5	8.5	ND (0.02)	ND (0.5)	ND (1)	**33.5**	28
2913	T1030-BH132-005-C	4–5	5.2	ND (0.02)	ND (0.5)	ND (1)	**41.4**	35.1
2913	T1030-BH137-005-C	4–5	6.3	ND (0.02)	ND (0.5)	ND (1)	**40.9**	28.1
2913	T1030-BH142-005-C	4–5	7.1	ND (0.02)	ND (0.5)	ND (1)	**42.8**	25.3
2913	T1030-BH147-005-C	4–5	5.4	ND (0.02)	ND (0.5)	ND (1)	**41.3**	25.5
2914	T1030-BH152-005-C	4–5	ND (5)	ND (0.02)	ND (0.5)	ND (1)	18.5	16
2914	T1030-BH157-005-C	4–5	ND (5)	ND (0.02)	ND (0.5)	**1.5**	23	23.5
2916	T1030-BH162-005-C	4–5	4.8 J (5)	ND (0.02)	ND (0.5)	0.88 J (1)	**36.1**	26.5
2916	T1030-BH167-005-C	4–5	8.2	ND (0.02)	ND (0.5)	ND (1)	**41.7**	55.6
2916	T1030-BH172-005-C	4–5	4.2 J (5)	ND (0.02)	ND (0.5)	ND (1)	26.9	23.5
2917	T1030-BH177-005-C	4–5	4.2 J (5)	ND (0.02)	ND (0.5)	ND (1)	**34.3**	26.6
2917	T1030-BH182-005-C	4–5	5.1	ND (0.02)	ND (0.5)	ND (1)	**42.4**	28.1
2917	T1030-BH187-005-C	4–5	ND (3.1)	ND (0.02)	ND (0.5)	0.82 J (1)	26.8	20.6
2917	T1030-BH192-005-C	4–5	6.9	ND (0.02)	ND (0.5)	0.85 J (1)	**50.5**	29.9
2988	T1030-BH197-005-C	4–5	3.8 J (5)	ND (0.02)	ND (0.5)	**1.1**	**35.4**	22.9
2988	T1030-BH202-005-C	4–5	6.3	ND (0.02)	ND (0.5)	**1.3**	**54.2**	32.7
Discrete Samples								
2989	T1030-BH300-005-SS	4–5	4.4 J (5)	ND (0.02)	ND (0.5)	**1.2**	32.3	20.3
2989	T1030-BH301-005-SS	4–5	4.7 J (5)	ND (0.02)	ND (0.5)	1	**46.5**	28.7
2989	T1030-BH302-005-SS	4–5	3.6 J (5)	ND (0.02)	ND (0.5)	1	**54.8**	17.6
2989	T1030-BH303-005-SS	4–5	7.4	ND (0.02)	ND (0.5)	**1.1**	**37.3**	28.6
2989	T1030-BH304-005-SS	4–5	ND (3.1)	ND (0.02)	ND (0.5)	**1.4**	20.9	17.5
2989	T1030-BH305-005-SS	4–5	5.8	ND (0.02)	ND (0.5)	**1.1**	28.2	28
2990	T1030-BH306-005-SS	4–5	ND (3.1)	ND (0.02)	ND (0.5)	0.69 J (1)	**39.6**	26.8

Refer to footnotes at end of table.

Table 2.4.8-18 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/9010/9012/9012/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Lead	Mercury	Selenium	Thallium[c]	Vanadium	Zinc
2990	T1030-BH307-005-SS	4–5	4 J (5)	ND (0.02)	ND (0.5)	ND (1)	**39**	30.4
2990	T1030-BH308-005-SS	4–5	6.7	ND (0.02)	ND (0.5)	0.9 J (1)	**33.5**	24.7
2990	T1030-BH309-005-SS	4–5	5.7	ND (0.02)	ND (0.5)	ND (1)	**60.7**	25.6
2991	T1030-BH310-005-SS	4–5	3.1 J (5)	ND (0.02)	ND (0.5)	0.84 J (1)	**34.5**	14.7
2991	T1030-BH312-005-SS	4–5	4.3 J (5)	ND (0.02)	ND (0.5)	**1.2**	**35.3**	20.9
2991	T1030-BH313-005-SS	4–5	3.7 J (5)	ND (0.02)	ND (0.5)	**1.2**	31.5	25.1
2991	T1030-BH314-005-SS	4–5	4.1 J (5)	ND (0.02)	ND (0.5)	**1.4**	24.7	20.6
2991	T1030-BH315-005-SS	4–5	4.5 J (5)	ND (0.02)	ND (0.5)	ND (1)	23.8	22.2
2992	T1030-BH316-005-SS	4–5	7.9	ND (0.02)	ND (0.5)	ND (1)	**40.3**	35.4
2992	T1030-BH317-005-SS	4–5	4.8 J (5)	ND (0.02)	ND (0.5)	ND (1)	**41.6**	33.7
2992	T1030-BH318-005-SS	4–5	3.1 J (5)	ND (0.02)	ND (0.5)	ND (1)	24.8	19.6
2992	T1030-BH319-005-SS	4–5	5.1	ND (0.02)	ND (0.5)	0.78 J (1)	**36.9**	25.3
2992	T1030-BH320-005-SS	4–5	3.7 J (5)	ND (0.02)	ND (0.5)	0.68 J (1)	25.4	21.2
2992	T1030-BH320-006-SS (duplicate)	4–5	4.5 J (5)	ND (0.02)	ND (0.5)	ND (1)	30	24.4
2992	T1030-BH321-005-SS	4–5	8.1 J (10)	ND (0.02)	ND (0.5)	0.67 J (1)	**38.5**	32.7
2993	T1030-BH322-005-SS	4–5	4.4 J (5)	ND (0.02)	ND (0.5)	ND (1)	**35.2**	34.6
2993	T1030-BH323-005-SS	4–5	ND (6.2)	ND (0.02)	ND (0.5)	ND (1)	23.8	16.7
2993	T1030-BH324-005-SS	4–5	3.8 J (5)	ND (0.02)	ND (0.5)	ND (1)	16.6	20.1
2993	T1030-BH325-005-SS	4–5	5.7	ND (0.02)	ND (0.5)	ND (1)	**46.5**	33.7
2993	T1030-BH326-005-SS	4–5	ND (3.1)	ND (0.02)	ND (0.5)	ND (1)	26.5	20.7
2993	T1030-BH327-005-SS	4–5	3.7 J (5)	ND (0.02)	ND (0.5)	ND (1)	24.7	23.2
2994	T1030-BH328-005-SS	4–5	5.2	ND (0.02)	ND (0.5)	ND (1)	31.7	20.9
2994	T1030-BH329-005-SS	4–5	5.4	ND (0.02)	ND (0.5)	ND (1)	**45.9**	36.4
2994	T1030-BH329-006-SS (duplicate)	4–5	6.5	ND (0.02)	ND (0.5)	ND (1)	**41.4**	29
2994	T1030-BH330-005-SS	4–5	7.6	ND (0.02)	ND (0.5)	ND (1)	**34.2**	34

Refer to footnotes at end of table.

Table 2.4.8-18 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/9010/9012/9012/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Lead	Mercury	Selenium	Thallium[c]	Vanadium	Zinc
2994	T1030-BH331-005-SS	4–5	5.2	ND (0.02)	ND (0.5)	ND (1)	**39.4**	27.4
2994	T1030-BH332-005-SS	4–5	5.4	ND (0.02)	ND (0.5)	ND (1)	**43.9**	30
2994	T1030-BH333-005-SS	4–5	4 J (5)	ND (0.02)	ND (0.5)	0.77 J (1)	22.7	16.4
2994	T1030-BH334-005-SS	4–5	6.4	ND (0.02)	ND (0.5)	ND (1)	**39.7**	31.3
2995	T1030-BH335-005-SS	4–5	6.2	ND (0.02)	ND (0.5)	ND (1)	**38.4**	30
2995	T1030-BH336-005-SS	4–5	4.4 J (5)	ND (0.02)	ND (0.5)	ND (1)	31.8	21.3
2995	T1030-BH337-005-SS	4–5	6.3	**0.28**	ND (0.5)	ND (1)	29.6	19.1
2995	T1030-BH337-006-SS (duplicate)	4–5	6.9	ND (0.02)	ND (0.5)	ND (1)	31.7	21.1
3392	T1030-BH338-005-SS	4–5	4.9 J (5)	ND (0.02)	0.67	ND (1)	29.9	12
3392	T1030-BH339-005-SS	4–5	4.6 J (5)	ND (0.02)	ND (0.5)	0.86 J (1)	19.6	14.3
3392	T1030-BH340-005-SS	4–5	3 J (5)	ND (0.02)	ND (0.5)	ND (1)	20.4	22.6
3392	T1030-BH341-005-SS	4–5	4.6 J (5)	ND (0.02)	ND (0.5)	ND (1)	28.4	22.6
3392	T1030-BH342-005-SS	4–5	4.4 J (5)	ND (0.02)	ND (0.5)	ND (1)	**35**	26
3392	T1030-BH343-005-SS	4–5	5.5	ND (0.02)	ND (0.5)	ND (1)	18.9	14.4
3392	T1030-BH344-005-SS	4–5	5.6	ND (0.02)	ND (0.5)	ND (1)	22.9	20.7
3392	T1030-BH345-005-SS	4–5	6.5	ND (0.02)	ND (0.5)	ND (1)	22	22.2
3393	T1030-BH346-005-SS	4–5	ND (6.2)[d]	ND (0.02)	ND (1)	**ND (2)**[d]	29.3	17.9
3393	T1030-BH347-005-SS	4–5	ND (3.1)	ND (0.02)	0.7	ND (1)	26.1	16.4
3393	T1030-BH348-005-SS	4–5	3.7 J (5)	ND (0.02)	ND (0.5)	ND (1)	**33.8**	21.1
3393	T1030-BH349-005-SS	4–5	3.9 J (5)	ND (0.02)	ND (0.5)	ND (1)	**39.4**	22.3
3393	T1030-BH350-005-SS	4–5	4.2 J (5)	ND (0.02)	ND (0.5)	ND (1)	**41.9**	19.2
3393	T1030-BH351-005-SS	4–5	4.3 J (5)	ND (0.02)	ND (0.5)	ND (1)	**43.7**	27.2
3393	T1030-BH352-005-SS	4–5	3.5 J (5)	ND (0.02)	ND (0.5)	ND (1)	21.1	18.6

Refer to footnotes at end of table.

Table 2.4.8-18 (Continued)
Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method 7470/9010/9012/9012/T-6010/T-7471[a]) (mg/kg)					
Record Number[b]	ER Sample ID	Sample Depth (ft)	Lead	Mercury	Selenium	Thallium[c]	Vanadium	Zinc
3393	T1030-BH353-005-SS	4–5	5.8	ND (0.02)	ND (0.5)	ND (1)	**51.7**	38.1
3393	T1030-BH354-005-SS	4–5	4.5 J (5)	ND (0.02)	ND (0.5)	ND (1)	**43.8**	26.2
Quality Assurance/Quality Control Samples (mg/L)								
2915	T1030-EB001-001	NA	ND (0.031)	ND (0.0004)	ND (0.005)	ND (0.01)	ND (0.004)	0.019 J (0.02)
2910	T1030-EB002-001	NA	ND (0.031)	ND (0.0004)	ND (0.005)	ND (0.01)	ND (0.004)	0.0071 J (0.02)
2912	T1030-EB003-001	NA	ND (0.031)	ND (0.0004)	ND (0.005)	ND (0.01)	ND (0.004)	0.0044 J (0.02)
2916	T1030-EB004-001	NA	ND (0.031)	ND (0.0004)	ND (0.005)	ND (0.01)	ND (0.004)	0.0048 J (0.02)
2988	T1030-EB005-001	NA	ND (0.031)	ND (0.0004)	ND (0.005)	ND (0.01)	ND (0.004)	0.021
2990	T1030-EB006-001	NA	ND (0.031)	ND (0.0004)	ND (0.005)	ND (0.01)	ND (0.004)	ND (0.016)
2992	T1030-EB007-001	NA	ND (0.031)	ND (0.0004)	ND (0.005)	ND (0.01)	ND (0.004)	ND (0.016)
2994	T1030-EB008-001	NA	ND (0.031)	ND (0.0004)	ND (0.005)	ND (0.01)	ND (0.004)	ND (0.016)
2995	T1030-EB009-001	NA	ND (0.031)	ND (0.0004)	ND (0.005)	ND (0.01)	ND (0.004)	ND (0.016)
3393	T1030-EB010-001	NA	0.0051 X	ND (0.0004)	ND (0.005)	ND (0.01)	ND (0.004)	ND (0.016)
Background Soil Concentrations—North Area[e]			11.2	<0.1	<1	<1.1	33.0	76

Note: Values in **bold** exceed background soil concentrations.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]The reporting limit reflects the use of the Trace ICP (axial view) instrument and the method detection limit reflects the use of a non-Trace ICP instrument.
[d]The method detection limit is a result of dilution of the sample. Method detection limits reported in the Environmental Restoration Data Management System are method-specific and not sample-specific method detection limits.
[e]From Dinwiddie September 1997.
BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).

Table 2.4.8-18 (Concluded)
Summary of SWMU 30 Subsurface Soil Sampling TAL Inorganics Analytical Results
March–April 1995
(Off-Site Laboratory)

ICP	= Inductively Coupled Plasma.
ID	= Identification.
J ( )	= The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
mg/kg	= Milligram(s) per kilogram.
mg/L	= Milligram(s) per liter.
NA	= Not applicable.
ND ( )	= Not detected at or above the method detection limit, shown in parentheses.
NR	= Not reported.
SS	= Discrete soil sample.
SWMU	= Solid Waste Management Unit.
TAL	= Target Analyte List.
T1030	= Technical Area-I, SWMU 30.
X	= There is presumptive evidence that the analyte is not present based upon documented method detection limit studies performed by the laboratory for the applicable dates.
--	= Background concentration not determined.

Table 2.4.8-19
TAL Inorganics Method Detection Limits Used for SWMU 30 Soil Sampling
March–April 1995
(Off-Site Laboratory)

Analyte	Method Detection Limit(s) (mg/kg)
Antimony	2.1–4.2
Arsenic	0.3–0.6
Barium	0.2–0.4
Beryllium	0.2–0.4
Cadmium	0.1–0.2
Chromium	0.3–0.6
Cobalt	0.4–0.8
Copper	0.3–0.6
Cyanide	0.168
Lead	3.1–6.2
Mercury	0.02
Nickel	0.6–1.2
Selenium	0.5–1.0
Silver	0.3–0.6
Thallium	1–2
Vanadium	0.4–0.8
Zinc	1.6–3.2

mg/kg = Milligram(s) per kilogram.
SWMU = Solid Waste Management Unit.
TAL = Target Analyte List.

Table 2.4.8-20
Summary of SWMU 30 TAL Inorganics Relative Percent Differences
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Relative Percent Difference							
Record Number[a]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper	Cyanide
2915	T1030-BH056-001-C T1030-BH056-002-C (duplicate)	0–1	NC	11.76	15.49	NC	15.69	18.67	30.04	NC
2910	T1030-BH088-001-C T1030-BH088-002-C (duplicate)	0–1	NC	2.41	7.47	NC	NC	11.76	8.29	NC
2910	T1030-BH122-001-C T1030-BH122-002-C (duplicate)	0–1	NC	2.30	13.27	NC	NC	5.88	46.06	NC
2916	T1030-BH162-001-C T1030-BH162-002-C (duplicate)	0–1	NC	0.00	15.73	NC	NC	15.13	13.59	NC
2988	T1030-BH202-001-C T1030-BH202-002-C (duplicate)	0–1	NC	5.71	3.77	NC	22.22	23.58	28.10	NC
2990	T1030-BH309-001-C T1030-BH309-002-C (duplicate)	0–1	NC	3.08	12.03	NC	NC	24.00	4.38	NC
3393	T1030-BH350-001-C T1030-BH350-002-C (duplicate)	0–1	NC	56.60	5.83	NC	NC	5.26	16.54	NC
2992	T1030-BH320-005-C T1030-BH320-006-C (duplicate)	4–5	NC	2.41	19.16	7.79	NC	24.32	NC	NC
2994	T1030-BH329-005-C T1030-BH329-006-C (duplicate)	4–5	NC	2.47	6.42	30.99	NC	8.22	NC	NC
2995	T1030-BH337-005-C T1030-BH337-006-C (duplicate)	4–5	NC	22.22	24.71	0.00	NC	5.50	NC	NC

Refer to footnotes at end of table.

Table 2.4.8-20 (Concluded)
Summary of SWMU 30 TAL Inorganics Relative Percent Differences
March–April 1995
(Off-Site Laboratory)

Sample Attributes			Relative Percent Difference						
Record Number[a]	ER Sample ID	Sample Depth (ft)	Lead	Mercury	Selenium	Silver	Thallium	Vanadium	Zinc
2915	T1030-BH056-001-C T1030-BH056-002-C (duplicate)	0–1	35.29	NC	NC	NC	NC	NC	3.34
2910	T1030-BH088-001-C T1030-BH088-002-C (duplicate)	0–1	14.01	NC	NC	NC	NC	NC	3.54
2910	T1030-BH122-001-C T1030-BH122-002-C (duplicate)	0–1	8.32	NC	NC	NC	NC	NC	8.76
2916	T1030-BH162-001-C T1030-BH162-002-C (duplicate)	0–1	28.89	NC	NC	NC	NC	NC	5.92
2988	T1030-BH202-001-C T1030-BH202-002-C (duplicate)	0–1	7.67	NC	NC	NC	NC	NC	10.62
2990	T1030-BH309-001-C T1030-BH309-002-C (duplicate)	0–1	35.90	NC	NC	NC	NC	NC	7.62
3393	T1030-BH350-001-C T1030-BH350-002-C (duplicate)	0–1	6.64	NC	NC	NC	NC	NC	2.60
2992	T1030-BH320-005-C T1030-BH320-006-C (duplicate)	4–5	NC	NC	NC	NC	NC	16.61	14.04
2994	T1030-BH329-005-C T1030-BH329-006-C (duplicate)	4–5	18.49	NC	NC	NC	NC	10.31	22.63
2995	T1030-BH337-005-C T1030-BH337-006-C (duplicate)	4–5	9.09	NC	NC	NC	NC	6.85	9.95

[a]Analysis request/chain-of-custody record.
BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
NC = Not calculated for estimated values or nondetected results.
SWMU = Solid Waste Management Unit.
TAL = Target Analyte List.
T1030 = Technical Area-I, SWMU 30.

were either nondetect or estimated, and thus no RPDs could be calculated. The RPD values for PCBs and metals are shown in Tables 2.4.8-15 and 2.4.8-20, respectively. The RPDs for three sample pairs could be calculated for Aroclor 1260; the RPDs were 2.11, 3.92, and 15.95 percent. One RPD of 9.52 percent was calculated for a sample pair for Aroclor 1254. Because some of the results for one or both of the sample pairs was nondetect or estimated, RPDs could not be calculated for the TAL inorganics antimony, cyanide, mercury, selenium, silver, and thallium. The remainder of the metals had the following RPD ranges:

- 0.0 to 56.60 percent for arsenic in 10 sample pairs
- 3.77 to 24.71 percent for barium in 10 sample pairs
- 0.0 to 30.99 percent for beryllium in 3 sample pairs
- 15.69 to 22.22 percent for cadmium in 2 sample pairs
- 5.26 to 24.32 percent for chromium in 10 sample pairs
- 4.38 to 46.06 percent for copper in 7 sample pairs
- 6.64 to 35.90 percent for lead in 9 sample pairs
- 6.85 to 16.61 percent for vanadium in 3 sample pairs
- 2.60 to 22.63 percent for zinc in 10 sample pairs.

Data Validation

The data summary (Certificate of Analysis) reports were reviewed for completeness and accuracy as required by the SNL/NM Technical Operating Procedure (TOP) 94-03 (SNL/NM October 1994). Data validation (DV) was performed using the SNL/NM DV Level 1 and Level 2 checklists. A "completeness" check (DV1) and "data quality indicator" evaluation (DV2) was performed and focused on data package completeness, holding times, accuracy, precision, and method-blank contamination. This resulted in some of the data being qualified, with the main qualifications identified as poor surrogate recovery for several PCB analyses.

The SVOC and metal analyses for analysis request/chain-of-custody records (AR/COCs) 2912, 2913, 2917, 2991, 2995, 3392, and 3393 were further evaluated in winter 2000 with additional information retrieved from the off-site laboratory archives (Annex 2-A). The focus of this evaluation was examination of instrument calibration (SVOCs and metals), internal standards (SVOCs), and interference check samples (metals) using SNL/NM DV procedure Administrative Operating Procedure (AOP) 00-03 (SNL/NM January 2000). The information obtained for the metals was raw data; thus, this evaluation could only be done on a qualitative basis. No qualifiers were added to the metals data. However, some SVOC data were qualified based upon initial and continuing calibration data. The SVOC sample results for benzoic acid for AR/COC 3393 were qualified as unusable because the relative standard deviation of the initial calibration was greater than 60 percent. Benzoic acid was not detected in any of these samples. With the exception of two estimated values, benzoic acid was not detected in any other samples for other AR/COCs. Thus, it is not likely that any information was missed in the rejected sample results.

2.4.9 Investigation #8—February and June 1997 RFI Field Investigation Supplemental Sampling

Supplemental sampling activities were conducted at the site during February and June of 1997. Details of the sampling strategy, site history, and data quality objectives for the site were

presented in the Supplemental Sampling and Analysis Plan (SAP) (SNL/NM May 1997) as well as in the Supplemental Data Evaluation Report (SNL/NM July 1997). The data collected during the March/April 1995 sampling (Section 2.4.8) indicated that characterization of the horizontal extent of PCB contamination was not complete, especially along the northwestern boundary of the site. The area of interest for the supplemental sampling included the area immediately east and west of 14th Street and within the storm-water channel that is the western boundary of the site, as well as an isolated location on the east side of the site.

Supplemental sampling for 1997 field investigation was conducted during two phases: February 13, 1997, and from June 6 through June 11, 1997. At the time, it was thought that the 10 locations sampled in February would suffice to delimit the horizontal extent of contamination. However, the results of the February sampling prompted the development of the more comprehensive investigation that took place in June (SNL/NM May 1997, July 1997).

2.4.9.1 Nonsampling Data Collection

In support of the development of the supplemental SAP, a cursory air-photo review was completed (Skelly May 1997). The photos reviewed were nine stereo pairs over a 30-year span, specifically 1954, 1959, 1964, 1968, 1974, 1978, 1982, 1984, and 1989. The air-photo review showed that the original Reclamation Yard boundaries were west of the 1995 boundary and extended into what is now 14th Street. The Reclamation Yard boundaries have had at least five changes over the last 35 (plus) years, especially with respect to the western and southern boundaries. In fact, the only corner that has remained "fixed" since 1954 is the northeastern corner. In addition to determining the Reclamation Yard boundaries, the air photos were reviewed to determine organization of materials stored in the yard. No obvious system of materials storage could be discerned, and no barrel storage areas could be identified. However, the air-photo review did show that the extreme northwest corner of the site (an area of approximately 50 by 75 feet) was fenced off from the rest of the yard from 1954 to 1982. The purpose of the fenced subarea is unknown but it appeared to be empty in about half of the air photos reviewed (Skelly May 1997). This is approximately the same area in which elevated PCB concentrations were detected during the March–April 1995 investigation.

2.4.9.2 Sampling Data Collection

The February and June 1997 events consisted of sampling discrete locations based upon PCB analytical results from the 1995 sampling. The February sampling event included hand-augering 10 boreholes (BH400 through BH409) to a depth of 1 foot. Two of these locations (BH408 and BH409) were in the eastern part of the site to help define the boundary of an isolated area of elevated PCB concentrations found during the spring 1995 sampling. The June sampling event included hand-augering 38 boreholes (BH410 through BH447) to a depth of 1 foot or 1 inch, as discussed below. For both events combined, 48 samples were analyzed for PCBs.

All soil samples collected at the site were analyzed using EPA-approved methods for PCBs (EPA Methods 8080 and 8081). All of the samples were analyzed by the ER Chemical Laboratory (ERCL); in addition, 20 percent of the samples were sent to an off-site laboratory for verification.

During the February sampling event, BH400 through BH407 were placed between locations of known high-level contamination, as determined by the spring 1995 sampling, and the asphalt of 14th Street (Figure 2.4.8-1). For the June sampling event, the sample points were located based upon the following rationale:

- Continuing the previously sampled hexagonal grid pattern from the RFI sampling program (SNL/NM February 1995, February 1997) to determine the horizontal extent of contamination (Figure 2.4.8-1)

- Collecting samples along the storm-water channel (Figure 2.4.8-1) to determine the amount of off-site transport of PCBs.

For the grid strategy, 27 locations were sampled, including BH410 through BH434, BH446, and BH447. Additional samples were collected at five discrete sample locations (BH435 through BH439) from sediment accumulation areas within the storm-water channel that runs parallel to 14th Street. Some sampling locations overlapped in strategy—BH422, BH425, BH429, and BH433 were grid samples that happened to fall in the storm drain system.

Samples were also collected to help determine the variability of the vertical distribution of PCBs in the soils. Collocated samples from depths of 1 inch and 1 foot were collected to help determine if PCB concentrations varied with depth. For this study, locations BH440 through BH445 were sampled immediately adjacent to (within 1 foot) the February sample locations having the highest PCB concentrations. The soil samples were sent to the ERCL or to an off-site analytical laboratory for PCB analyses (EPA Methods 8080 and 8081), but no other chemical analyses were performed.

2.4.9.3 Data Gaps

No data gaps were identified by this investigation.

2.4.9.4 Results and Conclusions

All soil samples collected at the site were analyzed using EPA-approved methods for PCBs (EPA Methods 8080 and 8081) (Lewis February 1997; Chavez July 1997; and ERCL July 1997). PCBs were found at all soil sample locations (Table 2.4.9-1). All of the PCBs detected were Aroclors 1254 and 1260, with Aroclor 1260 detected in all of the soil samples and Aroclor 1254 detected in six soil samples. Generally, the PCB detections were at low-level concentrations, with the majority of the concentrations below 1,000 µg/kg. Eighteen samples, including three duplicate samples, exceeded the 1,000 µg/kg level.

During the February sampling event, the sample from BH402 had the greatest concentration of Aroclor 1260, being detected at 87,000 µg/kg. During the June sampling event, the samples had PCB concentrations ranging up to 14,000 µg/kg (Table 2.4.9-1). These values are the greatest grouping (in aerial extent) of high concentrations found at the site and show that the highest concentrations of PCBs were in the northwestern corner of the site.

Table 2.4.9-1
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
February and June 1997
(Off- and On-Site Laboratories)

Sample Attributes			PCBs (EPA Method 8080 and 8081[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1016	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[c]
04979	T1030-BH400-001-SS	0–1	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	290	290
04979	T1030-BH401-001-SS	0–1	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	**4,400**	**4,400**
04979	T1030-BH402-001-SS	0–1	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	**87,000**	**87,000**
04979	T1030-BH403-001-SS	0–1	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	220	220
04979	T1030-BH404-001-SS	0–1	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	**1,800**	**1,800**
04979	T1030-BH405-001-SS	0–1	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	**5,300**	**5,300**
04979	T1030-BH406-001-SS	0–1	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	**2,100 J (4,000)**	**2,100**
04979	T1030-BH407-001-SS	0–1	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	**2,400**	**2,400**
04979	T1030-BH408-001-SS	0–1	ND (10)	ND (10)	ND (10)	ND (10)	65	52	117
04979	T1030-BH409-001-SS	0–1	ND (10)	ND (10)	ND (10)	ND (10)	400	150	550
06720	T1030-BH410-001-SS	0–1	NR	NR	NR	NR	ND (3.6)	36	36
06720	T1030-BH411-001-SS	0–1	NR	NR	NR	NR	25	24	49
06720	T1030-BH412-001-SS	0–1	NR	NR	NR	NR	ND (3.7)	23	23
06720	T1030-BH413-001-SS	0–1	NR	NR	NR	NR	ND (35)	160	160
06720	T1030-BH414-001-SS	0–1	NR	NR	NR	NR	ND (36)	85 J (140)	85
06721	T1030-BH414-SD (duplicate)	0–1	ND (15)[d]	ND (15)[d]	ND (15)[d]	ND (15)[d]	ND (15)[d]	39.9 J (41.5)	39.9
06720	T1030-BH415-001-SS	0–1	NR	NR	NR	NR	ND (3.6)	88	88
06720	T1030-BH416-001-SS	0–1	NR	NR	NR	NR	ND (36)	120 J (140)	120
06720	T1030-BH417-001-SS	0–1	NR	NR	NR	NR	ND (35)	180	180
06720	T1030-BH418-001-SS	0–1	NR	NR	NR	NR	ND (180)	**2,200**	**2,200**
06720	T1030-BH419-001-SS	0–1	NR	NR	NR	NR	ND (180)	350 J (700)	350
06721	T1030-BH419-SD (duplicate)	0–1	ND (15)[d]	ND (15)[d]	ND (15)[d]	ND (15)[d]	ND (15)[d]	436	436
06720	T1030-BH420-001-SS	0–1	NR	NR	NR	NR	ND (36)	210	210
06720	T1030-BH421-001-SS	0–1	NR	NR	NR	NR	ND (35)	610	610
06720	T1030-BH422-001-SS	0–1	NR	NR	NR	NR	ND (18)	60 J (69)	60
06720	T1030-BH423-001-SS	0–1	NR	NR	NR	NR	ND (18)	160	160
06720	T1030-BH424-001-SS	0–1	NR	NR	NR	NR	ND (35)	490	490
06721	T1030-BH424-SD (duplicate)	0–1	ND (15)[d]	ND (15)[d]	ND (15)[d]	ND (15)[d]	ND (15)[d]	383	383
06720	T1030-BH425-001-SS	0–1	NR	NR	NR	NR	ND (37)	78 J (140)	78

Refer to footnotes at end of table.

Table 2.4.9-1 (Continued)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
February and June 1997
(Off- and On-Site Laboratories)

Sample Attributes			PCBs (EPA Method 8080 and 8081[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1016	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[c]
06720	T1030-BH426-001-SS	0–1	NR	NR	NR	NR	ND (37)	200	200
06720	T1030-BH427-001-SS	0–1	NR	NR	NR	NR	ND (37)	100 J (140)	100
06720	T1030-BH428-001-SS	0–1	NR	NR	NR	NR	ND (36)	260	260
06720	T1030-BH429-001-SS	0–1	NR	NR	NR	NR	ND (3.8)	29	29
06721	T1030-BH429-SD	0–1	ND (15)[d]	ND (15)[d]	ND (15)[d]	ND (15)[d]	ND (15)[d]	39.7 J (41.4)	39.7
06720	T1030-BH430-001-SS	0–1	NR	NR	NR	NR	ND (36)	600	600
06720	T1030-BH431-001-SS	0–1	NR	NR	NR	NR	ND (36)	170	170
06720	T1030-BH432-001-SS	0–1	NR	NR	NR	NR	ND (180)	**1,700**	**1,700**
06720	T1030-BH433-001-SS	0–1	NR	NR	NR	NR	15 J (16)	34	49
06721	T1030-BH433-SD (duplicate)	0–1	ND (15)[d]	ND (15)[d]	ND (15)[d]	ND (15)[d]	ND (15)[d]	251	251
06720	T1030-BH434-001-SS	0–1	NR	NR	NR	NR	ND (35)	280	280
06720	T1030-BH435-001-SS	0–1	NR	NR	NR	NR	ND (36)	250	250
06720	T1030-BH436-001-SS	0–1	NR	NR	NR	NR	ND (190)	**1,700**	**1,700**
06720	T1030-BH437-001-SS	0–1	NR	NR	NR	NR	220 J (300)	770	990
06721	T1030-BH437-SD (duplicate)	0–1	ND (60)[d]	ND (60)[d]	ND (60)[d]	ND (60)[d]	ND (60)[d]	**1,250**	**1,250**
06720	T1030-BH438-001-SS	0–1	NR	NR	NR	NR	78 J (150)	290	368
06720	T1030-BH439-001-SS	0–1	NR	NR	NR	NR	ND (35)	450	450
06720	T1030-BH440-000.1-SS	0–0.1	NR	NR	NR	NR	ND (670)	**9,200**	**9,200**
06720	T1030-BH441-001-SS	0–1	NR	NR	NR	NR	ND (360)	**4,600**	**4,600**
06720	T1030-BH442-000.1-SS	0–0.1	NR	NR	NR	NR	ND (680)	**11,000**	**11,000**
06720	T1030-BH443-001-SS	0–1	NR	NR	NR	NR	ND (720)	**9,300**	**9,300**
06721	T1030-BH443-SD (duplicate)	0–1	ND (600)[d]	ND (600)[d]	ND (600)[d]	ND (600)[d]	ND (600)[d]	**14,000**	**14,000**
06720	T1030-BH444-000.1-SS	0–0.1	NR	NR	NR	NR	ND (180)	**3,200**	**3,200**
06720	T1030-BH445-001-SS	0–1	NR	NR	NR	NR	ND (720)	**8,400**	**8,400**
06721	T1030-BH445-SD (duplicate)	0–1	ND (600)[d]	ND (600)[d]	ND (600)[d]	ND (600)[d]	ND (600)[d]	**11,700**	**11,700**

Refer to footnotes at end of table.

Table 2.4.9-1 (Concluded)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
February and June 1997
(Off- and On-Site Laboratories)

Sample Attributes			PCBs (EPA Method 8080 and 8081[a]) (µg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1016	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[c]
06720	T1030-BH446-001-SS	0–1	NR	NR	NR	NR	ND (36)	690	690
06720	T1030-BH447-001-SS	0–1	NR	NR	NR	NR	ND (36)	340	340
Quality Assurance/Quality Control Samples (µg/L)									
06720	T1030-EB100-W	NA	NR	NR	NR	NR	ND (3.3)	ND (3.3)	ND (3.3)
06720	T1030-EB101-W	NA	NR	NR	NR	NR	ND (3.3)	ND (3.3)	ND (3.3)

Note: Values in **bold** represent detected PCB concentrations exceeding 1,000 µg/kg.
[a]EPA November 1986.
[b]Analysis request/chain-of-custody record. AR/COC 04979 submitted in February 1997 and AR/COCs 06720 & 06721 submitted in June 1997.
[c]Sum of all detected Aroclor values; qualifiers omitted.
[d]The method detection limit reported is a result of dilution of the sample. Method detection limits reported in the Environmental Restoration Data Management System for off-site samples are method-specific and not sample-specific method detection limits.

AR/COC = Analysis request/chain-of-custody record.
BH = Borehole; conveys location identifiers shown on related figures.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
NR = Not reported.
PCB = Polychlorinated biphenyl.
SD = Discrete soil sample duplicate.
SS = Discrete soil sample.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.
W = Water.

The MDLs for analyzed PCB Aroclors are provided in Table 2.4.9-2.

Table 2.4.9-2
PCB Analytical Method Detection Limits Used for SWMU 30 Soil Sampling
February and June 1997
(On-Site and Off-Site Laboratories)

Analyte	Method Detection Limit(s) (µg/kg)
Aroclor 1016	10–600
Aroclor 1232	10–600
Aroclor 1242	10–600
Aroclor 1248	10–600
Aroclor 1254	10–720
Aroclor 1260	10–10,000

µg/kg = Microgram(s) per kilogram.
PCB = Polychlorinated biphenyls.
SWMU = Solid Waste Management Unit.

There were no indisputable relationships determined with the limited number of samples collected for the multiple depth study, in fact the results were ambiguous. One sample set (BH442 at one inch and BH443 at one foot) essentially showed no difference between the 1-inch and 1-foot samples with a relative percent difference of 17 percent. The other sample sets had relative percent differences of 66 percent (BH440 at one inch and BH441at one foot) and 90 percent (BH444 at one inch and BH445 at one foot). Although this may suggest that the different sampling methods deliver drastically different results, the preferred method is not distinguishable with the 1-inch sample in one case having a higher concentration yet in the other case having a lower concentration than the 1-foot sample. The ambiguous results of the multiple depth samples may be a result of the samples being overpowered by the nugget affect. The samples collected for this study were purposefully located adjacent to the February 1997 samples that showed the highest concentrations (BH401, 402, and 405; Table 5). It was hoped that the 87,000 µg/kg concentration could be verified. Although all three samples per sample group (southwest, central, and northeast) were collected within 1 foot of each other, the results (as seen on Table 2.4.9-1) were not necessarily comparable. The wide range of analytical results on samples that are co-located (e.g., 9,300 versus 87,000 µg/kg at the central sample group) shows the isolated nature of PCB contamination.

2.4.9.5 Data Quality

QA/QC Results

Table 2.4.9-1 includes the analytical results of the PCB QA/QC samples that were collected during the soil sampling at SWMU 30 during the February and June 1997. Two equipment rinsate samples were collected with the confirmatory soil samples. The equipment rinsate samples yielded no detections of PCBs.

To assess the variability in analytical results within the sampled matrix, eight field duplicate samples were collected and analyzed for PCBs. One sample of each set was analyzed on site

and the other sample was analyzed off site. RPDs could be calculated for 7 of the 10 samples with detections of Aroclor 1260. The results are included in Table 2.4.9-3. The RPDs for Aroclor 1260 ranged from 24.51 to 152.28 percent. The RPDs could not be calculated for any of the other Aroclors because the values were either estimated or not detected.

Table 2.4.9-3
Summary of SWMU 30 PCB Relative Percent Differences
February and June 1997
(On-Site vs Off-Site Laboratory)

Sample Attributes			Relative Percent Difference
Record Number[a]	ER Sample ID	Sample Depth (ft)	Aroclor 1260
6720 6721	T1030-BH414-001-SS T1030-BH414-SD (duplicate)	0–1	NC
6720 6721	T1030-BH419-001-SS T1030-BH419-SD (duplicate)	0–1	NC
6720 6721	T1030-BH424-001-SS T1030-BH424-SD (duplicate)	0–1	24.51
6720 6721	T1030-BH424-001-SS T1030-BH424-SD (duplicate)	0–1	NC
6720 6721	T1030-BH433-001-SS T1030-BH433-SD (duplicate)	0–1	152.28
6720 6721	T1030-BH437-001-SS T1030-BH437-SD (duplicate)	0–1	47.52
6720 6721	T1030-BH443-001-SS T1030-BH443-SD (duplicate)	0–1	40.34
6720 6721	T1030-BH445-001-SS T1030-BH445-SD (duplicate)	0–1	32.84

[a]Analysis request/chain-of-custody record.
BH = Borehole; conveys location identifiers shown on related figures.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
NC = Not calculated for estimated values or nondetected results.
PCB = Polychlorinated biphenyl.
SD = Discrete soil sample duplicate.
SS = Discrete soil sample.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.

Data Validation

The data summary (Certificate of Analysis) reports were reviewed for completeness and accuracy as required by the SNL/NM TOP 94-03 (SNL/NM October 1994). DV was performed using the SNL/NM DV Level 1 and Level 2 checklists. None of the data were validated to Level 3.

2.4.10 Investigation #9—February 1999 RFI Field Investigation Supplemental Sampling of Mercury Hot Spots

Initial sampling in 1995 revealed an area of elevated mercury concentrations. A composite sample (TI030-BH112-001-C) from an area approximately 75 by 75 feet in the northeast corner of Grid 7 (Table 2.4.8-17; Figure 2.4.8-1) showed a concentration of 1.8 mg/kg. Based upon comments received from the NMED Hazardous Waste Bureau (HWB) in September 1998 as the Request for Supplemental Information for the SWMU 30 EC/VCM Plan (NMED September 1998), it was apparent that further sampling was required. According to NMED HWB's Comment 39 (NMED September 1998), the "DOE/SNL should collect discrete samples from the locations that contributed to the TI030-BH112-001-C sample and analyze for mercury. DOE/SNL should determine what the highest mercury concentration is and the complete extent of contamination." The RCRA Subpart S action level for mercury in soils is 20 mg/kg. Although the DOE and SNL/NM maintained that the individual aliquots from the composite sample would not have exceeded this concentration, the DOE and SNL/NM substantiated this assumption for the NMED HWB (SNL/NM February 1999).

2.4.10.1 Nonsampling Data Collection

No nonsampling data collection activities were conducted as part of Investigation #9.

2.4.10.2 Sampling Data Collection

The field work for this study was completed on February 12, 1999. To maintain consistency, all procedures used for this field effort were the same as those used during the initial 1995 investigation. The locations that made up the composite sample were relocated using ER Project Global Positioning System (GPS) equipment based upon the original location coordinates determined during the 1995 field work. The following boreholes were relocated in the northeastern corner of Grid 7 (Figure 2.4.8-1):

- BH108
- BH109
- BH110
- BH111
- BH112.

At all five locations, the wire portion of the original pin flags from the 1995 sampling event were found to still be in place. Therefore, the locations sampled for this program were at the exact locations of the original five aliquots that comprised Sample TI030-BH112-001-C collected from BH108 through BH112.

After the locations were reestablished, one shallow (<1 foot) soil sample was collected at each of the five locations. Samples were collected with a small shovel, mixed thoroughly in a bowl, and placed in appropriate containers. The samples were analyzed for mercury by ERCL using EPA Method 7471 with an MDL less than, or equal to, 0.04 mg/kg.

2.4.10.3 Data Gaps

No data gaps were identified by this investigation.

2.4.10.4 Results and Conclusions

The mercury concentrations for these five samples are presented in Table 2.4.10-1. The mercury concentrations ranged from 0.051 J mg/kg (BH110) to 1.1 mg/kg (BH109) with none of the results exceeding the initial 1995 sampling result of 1.8 mg/kg in the composite sample that represented these five locations. Although four of the five analytical results exceeded approved background concentrations (Dinwiddie September 1997), the highest mercury concentration is below the RCRA Subpart S action level of 20 mg/kg mercury in soils. Therefore, it was determined that there was no need to remove any of the soil in this area due to mercury concentrations (SNL/NM February 1999).

Table 2.4.10-1
Summary of SWMU 30 Surface Soil Sampling Mercury Analytical Results
February 1999
(On-Site Laboratory)

Sample Attributes			Mercury Results	
Record Number[a]	ER Sample ID	Sample Depth (ft)	Method Detection Limit (mg/kg)	Mercury Analytical Result (mg/kg)
601612	TI030-BH108-001-Hg	<1	0.038	**0.35**
601612	TI030-BH109-001-Hg	<1	0.039	**1.1**
601612	TI030-BH110-001-Hg	<1	0.037	0.051 J
601612	TI030-BH111-001-Hg	<1	0.04	**0.33**
601612	TI030-BH112-001-Hg	<1	0.04	**0.14 J**
Background Soil Concentration—North Area[b]				<0.1

Notes: Values in **bold** exceed background soil concentrations.
[a]Analysis request/chain-of-custody record.
[b]From Dinwiddie September 1997.
BH = Borehole; conveys location identifiers shown on related figures.
Hg = Mercury soil sample.
J = The result is greater than or equal to the method detection limit but less than the practical quantitation limit.
mg/kg = Milligram(s) per kilogram.
SWMU = Solid Waste Management Unit.
TI030 = Technical Area-I, SWMU 30.

2.4.11 Investigation #10—January 2000 RFI Field Investigation Supplemental Sampling

When the Reclamation Yard was established as a SWMU in the early 1990s, the north-central portion was excluded because four MOs occupied the site, including the L&M Technologies Trailer, MO-220, MO-221, and MO-222. The MOs were removed in 1999. Supplemental sampling was completed in January 2000 to characterize the omitted portion of the site based upon the original site boundaries determined by the 1997 air-photo review (Section 2.4.9.1).

The area of interest for the January 1999 sampling only included the rectangular area in the north-central portion of the site formerly occupied by the MOs. This 100- by 130-foot area (approximately 0.3 acres) required 154 sample points based upon the EPA-mandated (3-meter) characterization grid and using the composite strategy as described in 40 CFR Part 761.289.

2.4.11.1 Nonsampling Data Collection

The air photo review discussed in Section 2.4.9.1 showed that the original Reclamation Yard boundaries included the north-central portion of the site formerly occupied by the MOs.

2.4.11.2 Sampling Data Collection

In accordance with the PCB Megarule provisions (40 CFR Part 761), the area of interest was divided into a 3-meter grid for collecting systematic samples (Figure 2.4.11-1) for a total of 154 locations on this grid. Soil samples were collected from the surface (0 to 3 inches) at each location using a core sampler consistent with 40 CFR Part 761.286. The soil from as many as nine aliquots were then mixed in a stainless-steel bowl and transferred to a sample jar and analyzed for PCBs (EPA Method 8082). The aliquots were combined to form 20 PCB samples, plus one duplicate sample as shown on Figure 2.4.11-1 and as listed in Table 2.4.11-1. The MDLs for PCBs analyzed are provided in Table 2.4.11-2.

Metals samples were collected from 12 discrete locations plus one duplicate sample as shown on Figure 2.4.11-2 and as listed in Table 2.4.11-3. The soil was collected from 0- to 1-foot depth and was analyzed for TAL metals (EPA Methods 6000 and 7000 series). The MDLs for the metals analyzed are provided in Table 2.4.11-4.

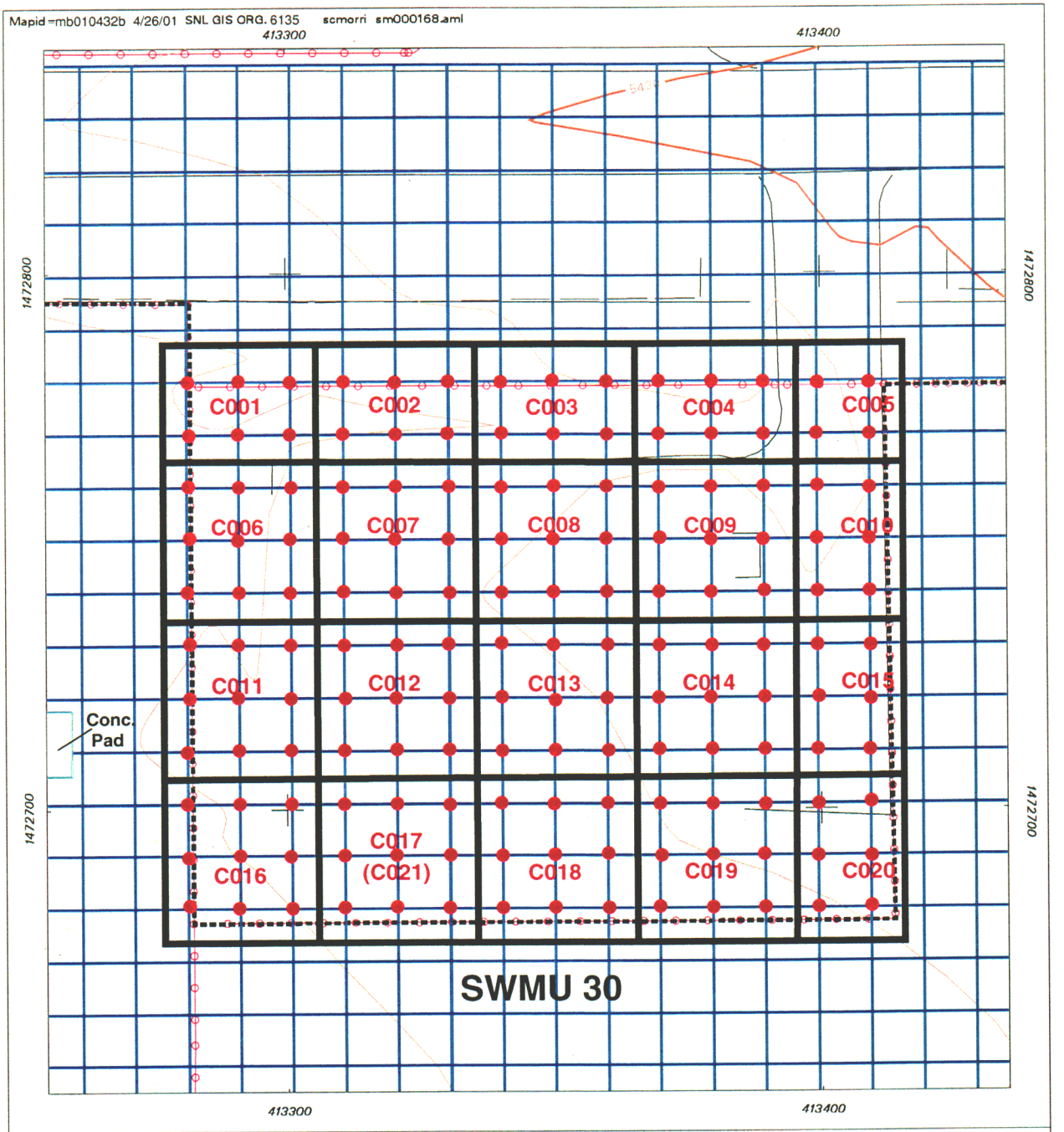
2.4.11.3 Data Gaps

No data gaps were identified by this investigation.

2.4.11.4 Results and Conclusions

PCBs were detected above MDLs in 18 of the 21 samples. Total PCB concentrations detected ranged from 8.4 J to 489 µg/kg, well below the PCB Megarule cleanup level of 1,000 µg/kg. The most frequently detected Aroclor was 1260 which was found in 18 of the 21 samples, and detectable concentrations of Aroclors 1254 and 1248 were found in approximately 50 percent of the samples. Aroclor 1248 had the greatest concentration of any Aroclor with 343 µg/kg found in Sample T1030-BH-C018-SS.

This page intentionally left blank.



Legend

- Composite Sample location
- Roads
- Fences
- Index Contour (5 foot)
- Intermediate Contour (1 Foot)
- 3 Meter Grid
- SWMU 30 Boundary
- Concrete Pad/Building
- C001 PCB Sample Identifier

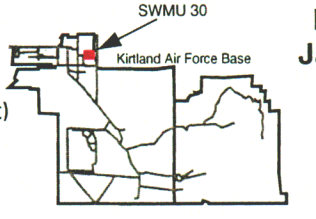


Figure 2.4.11-1
SWMU 30 Surface Soil Sampling Composite Group Locations for PCBs from January 2000 Investigation

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Table 2.4.11-1
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
January 2000
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method SW846 8082[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[c]
603024	T1030-BH-C001-SS	<1	ND (0.898)	ND (1.36)	35.5 J*	35.5
603024	T1030-BH-C002-SS	<1	ND (0.898)	ND (1.36)	40.2 J*	40.2
603024	T1030-BH-C003-SS	<1	ND (0.898)	ND (1.36)	53.5 J*	53.5
603024	T1030-BH-C004-SS	<1	ND (0.898)	ND (1.36)	33.5 J*	33.5
603024	T1030-BH-C005-SS	<1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603024	T1030-BH-C006-SS	<1	ND (0.898)	ND (1.36)	85.3 J*	85.3
603024	T1030-BH-C007-SS	<1	ND (0.898)	ND (1.36)	32.7 J*	32.7
603024	T1030-BH-C008-SS	<1	ND (0.898)	ND (1.36)	61.7 J*	61.7
603024	T1030-BH-C009-SS	<1	ND (0.898)	ND (1.36)	8.4 J* (16.7)	8.4
603024	T1030-BH-C010-SS	<1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603024	T1030-BH-C011-SS	<1	ND (0.898)	ND (1.36)	20.3 J*	20.3
603024	T1030-BH-C012-SS	<1	159 J*	52.7 J*	67.7 J*	279.4
603024	T1030-BH-C013-SS	<1	66 J*	61 J*	75.7 J*	202.7
603024	T1030-BH-C014-SS	<1	ND (0.898)	ND (1.36)	16.5 J* (16.7)	16.5
603024	T1030-BH-C015-SS	<1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603024	T1030-BH-C016-SS	<1	ND (0.898)	ND (1.36)	16.8 J*	16.8
603024	T1030-BH-C017-SS	<1	82.8 J*	ND (1.36)	24.2 J*	107.0
603024	T1030-BH-C018-SS	<1	343 J*	81 J*	65 J*	489.0
603024	T1030-BH-C019-SS	<1	61.5 J*	29.7 J*	21.7 J*	112.9
603024	T1030-BH-C020-SS	<1	ND (0.898 J)	4.5 J* (16.7)	10.7 J* (16.7)	15.2
603024	T1030-BH-C021-SS[d] (duplicate)	<1	84.3 J*	ND (1.36)	24.8 J*	109.1
Quality Assurance/Quality Control Sample (µg/L)						
603025	T1030-BH-M-EB	NA	ND (0.027) R*	ND (0.0251) R*	ND (0.0134) R*	ND R*

[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]Sum of all detected Aroclor values; qualifiers omitted.
[d]C021 is a duplicate of C017.

BH = Borehole; conveys location identifier shown on related figures.
EB = Equipment rinsate blank.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J* = See Data Validation Report.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
ND (J) = Not detected at or above the method detection limit, shown in parentheses. See Data Validation Report.
PCB = Polychlorinated biphenyls.
R* = Data unusable.
SS = Discrete soil sample.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.

Table 2.4.11-2
PCB Analytical Method Detection Limits Used for SWMU 30 Soil Sampling
January 2000
(Off-Site Laboratory)

Analyte	Method Detection Limit (µg/kg)
Aroclor 1016	0.782
Aroclor 1221	2.79
Aroclor 1232	0.719
Aroclor 1242	1.65
Aroclor 1248	0.898
Aroclor 1254	1.36
Aroclor 1260	1.42

µg/kg = Microgram(s) per kilogram.
PCB = Polychlorinated biphenyls.
SWMU = Solid Waste Management Unit.

The distribution of PCBs in the study area is widespread but the maximum concentrations are clustered in the south-central portion. The west, north, and east boundaries contain the lowest concentrations of PCBs. The maximum concentration of 489 µg/kg total PCBs is from C018 (Sample T1030-BH-C018-SS) (Figure 2.4.11-1). Although there is no data south of this location from this supplemental sampling, earlier investigations show the soils south of C018 contain less than 1,000 µg/kg of PCBs.

The following metals exceeded NMED-approved maximum background concentrations (Dinwiddie September 1997), with the number of samples exceeding background provided parenthetically: arsenic (1), barium (10), cadmium (5), copper (4), lead (4), silver (1), and zinc (3). As seen with the PCB samples, the maximum metals concentrations are clustered in the south-central portion of the study area.

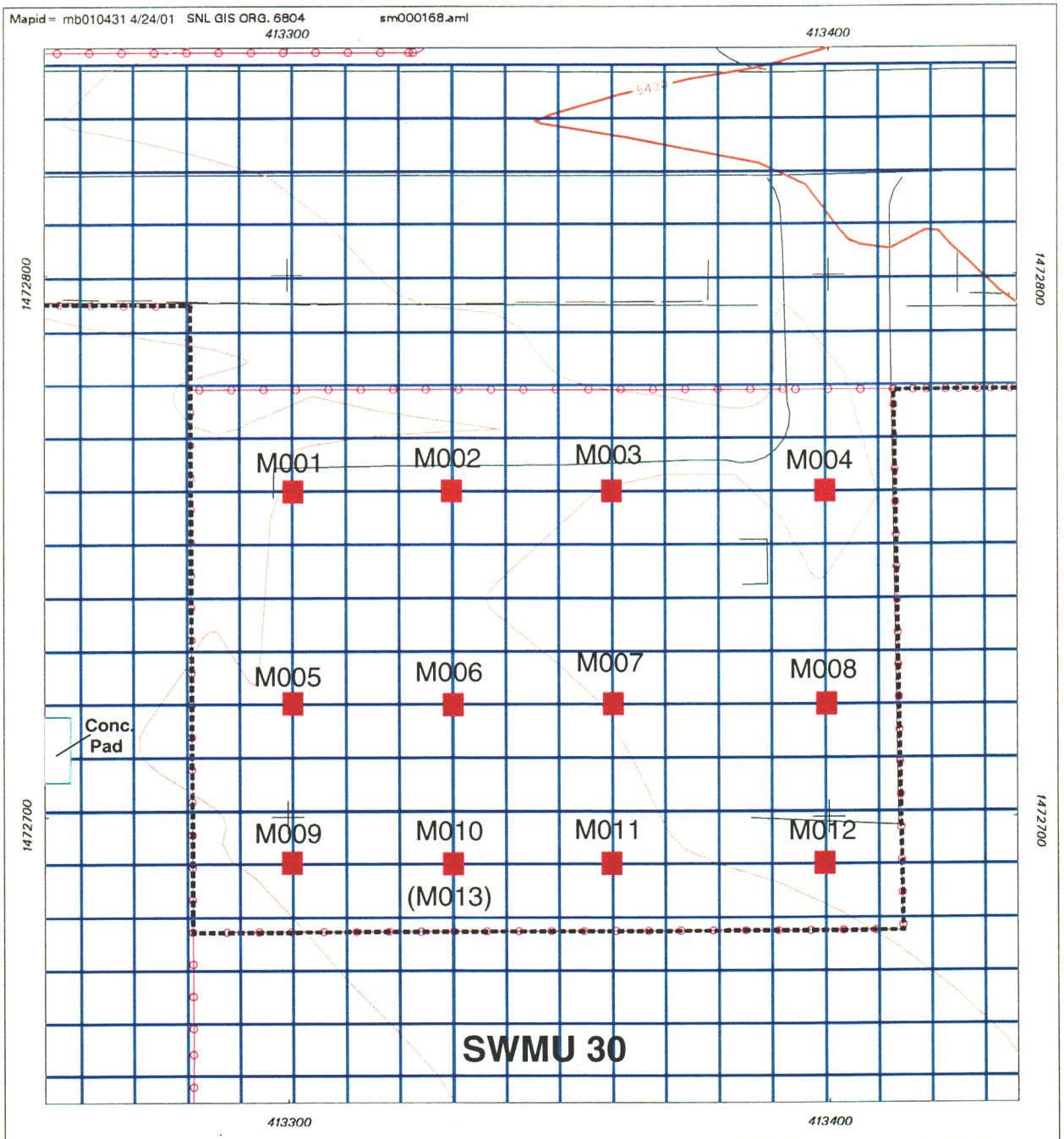
The concentrations of PCBs and metals in the soils are below a level of concern when compared to risk standards or promulgated cleanup criteria. The data from this investigation did not require any changes to the EC/VCM Plan (discussed in Section 2.4.13) regarding removal of PCB-contaminated soils and verification sampling of the remaining soils.

2.4.11.5 Data Quality

QA/QC Results

Tables 2.4.11-1 and 2.4.11-3 include the analytical results of the PCB and metals QA/QC samples that were collected during the characterization of the north-central portion of SWMU 30. One equipment rinsate sample was collected and analyzed for PCBs and metals by an off-site laboratory. No detections of PCBs were reported for the equipment rinsate sample and the metals analytical results were qualified as unusable during DV, as discussed below.

To assess the variability in analytical results within the sampled matrix, one field duplicate sample was collected and analyzed for metals and PCBs. RPDs calculated for the metals data



Legend

- Roads
- Fences
- Index Contour (5 foot)
- Intermediate Contour (1 Foot)
- 3-Meter Grid
- SWMU 30 Boundary
- Concrete Pad/Building
- Metals Sample

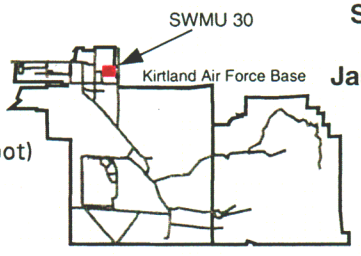


Figure 2.4.11-2
SWMU 30 Surface Soil Sampling locations for Metals from the January 2000 Investigation

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Table 2.4.11-3
Summary of SWMU 30 Surface Soil Sampling Metals Analytical Results
January 2000
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method SW846 6010/SW846 7470/SW846 7471[a]) (mg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper
603025	T1030-BH-M001-SS	0–1	0.592 J (1)	4.32	**281**	0.283 J (0.5)	**1.96**	5.91	**108**
603025	T1030-BH-M002-SS	0–1	ND (0.163)[d]	4.43	**304**	0.377 J (0.5)	0.612	7.29	12.5
603025	T1030-BH-M003-SS	0–1	ND (0.163)[d]	3.9	**220**	0.314 J (0.495)	0.831	6.41	13.4
603025	T1030-BH-M004-SS	0–1	ND (0.163)[d]	2.84	**235**	0.231 J (0.49)	ND (0.0764)[d]	5.7	5.38
603025	T1030-BH-M005-SS	0–1	ND (0.163)[d]	5.1	192	0.399 J (0.49)	**2.32**	11.6	**560**
603025	T1030-BH-M006-SS	0–1	ND (0.163)[d]	5.04	**279**	0.38 J (0.5)	**1.81**	8.15	16.4
603025	T1030-BH-M007-SS	0–1	ND (0.163)[d]	4.39	**205**	0.372 J (0.476)	**1.06**	11.2	**22.6**
603025	T1030-BH-M008-SS	0–1	ND (0.163)[d]	2.27	94.9	0.221 J (0.485)	ND (0.0764)[d]	4.62	4.93
603025	T1030-BH-M009-SS	0–1	ND (0.163)[d]	4.78	**389**	0.33 J (0.5)	0.0896 J (0.5)	5.15	7.05
603025	T1030-BH-M010-SS	0–1	ND (0.163)[d]	5.34	**428**	0.353 J (0.495)	0.106 J (0.495)	6.1	10.7
603025	T1030-BH-M011-SS	0–1	ND (0.163)[d]	3.57	167	0.47 J (0.5)	**5.61**	7.85	11.4
603025	T1030-BH-M012-SS	0–1	ND (0.163)[d]	4.62	**260**	0.369 J (0.495)	0.0845 J (0.495)	5.88	8.19
603025	T1030-BH-M013-SS[c] (duplicate)	0–1	ND (0.163)[d]	**6.16**	**531**	0.369 J (0.49)	0.162 J (0.49)	6.23	**75.1**
Quality Assurance/Quality Control Sample (mg/L)									
603025	T1030-BH-M-EB	NA	0.00344 J (0.01)	ND (0.00257)	0.00098 J (0.005)	ND (0.00047)	ND (0.00063)	0.00116 J (0.005)	ND (0.00184)
Background Soil Concentrations—North Area[d]			3.9	5.6	200	0.80	<1	17.3	17

Refer to footnotes at end of table.

Table 2.4.11-3 (Concluded)
Summary of SWMU 30 Surface Soil Sampling Metals Analytical Results
January 2000
(Off-Site Laboratory)

Sample Attributes			Metals (EPA Method SW846 6010/SW846 7470/SW846 7471[a]) (mg/kg)						
Record Number[b]	ER Sample ID	Sample Depth (ft)	Lead	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc
603025	T1030-BH-M001-SS	0–1	**45.5**	0.0235 J* (0.0302)	6.24	0.297 J* (0.5)	**1.07**	17.5	52.4
603025	T1030-BH-M002-SS	0–1	21.5	0.0506	7.44	0.38 J* (0.5)	0.604	31.9	**310**
603025	T1030-BH-M003-SS	0–1	28.7	0.0491	6.47	0.392 J* (0.495)	0.317 J (0.495)	19.5	**1,050**
603025	T1030-BH-M004-SS	0–1	3.69	ND (0.0152)	4.51	0.499 J*	ND (0.202)[d]	15.3	16.7
603025	T1030-BH-M005-SS	0–1	**42.5**	0.03 J* (0.0304)	7.6	0.53 J*	0.944	22	**82.3**
603025	T1030-BH-M006-SS	0–1	**36.6**	0.0274 J* (0.0294)	7.88	0.643 J*	0.517	25.9	73.9
603025	T1030-BH-M007-SS	0–1	**44.8**	0.041	7.86	0.888 J*	0.907	19.8	54.4
603025	T1030-BH-M008-SS	0–1	3.7	ND (0.0152)	4.75	0.36 J* (0.485)	ND (0.202)[d]	13.8	20.9
603025	T1030-BH-M009-SS	0–1	7.01	ND (0.0152)	5.52	0.603 J*	ND (0.202)[d]	23.4	29.6
603025	T1030-BH-M010-SS	0–1	9.25	ND (0.0152)	6.27	0.52 J*	ND (0.202)[d]	28.9	28.5
603025	T1030-BH-M011-SS	0–1	9.33	0.0387	8.14	0.488 J* (0.5)	ND (0.202)[d]	17.1	43.2
603025	T1030-BH-M012-SS	0–1	8.03	0.0171 J* (0.0298)	6.34	ND (0.292)[d]	ND (0.202)[d]	22.6	26.7
603025	T1030-BH-M013-SS[c] (duplicate)	0–1	10.8	ND (0.0152)	6.47	0.553 J*	ND (0.202)[d]	31.1	33.9
Quality Assurance/Quality Control Sample (mg/L)									
603025	T1030-BH-M-EB	NA	ND (0.00183)	ND (0.00006 J)	ND (0.00309)	ND (0.00236)	ND (0.00053)	ND (0.00089)	0.0157
Background Soil Concentrations—North Area[e]			39	<0.25	25.4	<1	<1	33.0	76

Note: Values in **bold** exceed background soil concentrations.

[a]EPA November 1986.

[b]Analysis request/chain-of-custody record.

[c]M013 is a duplicate of M010.

[d]The method detection limit as a result of dilution of the sample. Method detection limits reported in the Environmental Restoration Data Management System are method-specific and not sample-specific method detection limits.

[e]From Dinwiddie September 1997.

BH = Borehole; conveys location identifiers shown on related figures.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
J* = See Data Validation Report.
M = Metals soil sample.
mg/kg = Milligram(s) per kilogram.
mg/L = Milligram(s) per liter.
NA = Not applicable.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
ND (J) = Not detected at or above the method detection limit, shown in parentheses. See Data Validation Report.
SS = Discrete soil sample.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.

Table 2.4.11-4
Metals Analytical Method Detection Limits Used for SWMU 30 Soil Sampling
January 2000
(Off-Site Laboratory)

Analyte	Method Detection Limit (mg/kg)
Antimony	0.0815–0.163
Arsenic	0.131–0.262
Barium	0.0465–0.093
Beryllium	0.0311–0.062
Cadmium	0.0382–0.076
Chromium	0.0645–0.129
Copper	0.1–0.2
Lead	0.099–0.198
Mercury	0.0152
Nickel	0.072–0.144
Selenium	0.146–0.292
Silver	0.101–0.202
Thallium	0.205–0.410
Vanadium	0.074–0.148
Zinc	0.138–0.276

mg/kg = Milligram(s) per kilogram.
SWMU = Solid Waste Management Unit.

are included in Table 2.4.11-5; RPDs could not be calculated for the PCBs because all of the Aroclors were either estimated values or not detected. RPDs were calculated for arsenic, barium, chromium, copper, lead, nickel, vanadium, and zinc. With the exception of the RPD values for barium and copper, the RPDs ranged from 2.03 to 31.66 percent. The RPD for barium was 68.52 percent and that for copper 160.67 percent. The high RPD value for barium is likely to be a result of heterogeneous uncontaminated soil. The high RPD for copper may result from a piece of copper scrap left on the surface of the salvage yard; there were many small pieces of hardware visible on the ground.

Data Validation

All off-site laboratory results were reviewed and verified/validated according to SNL/NM DV procedure AOP 00-03 (SNL/NM January 2000). Annex 2-A contains summaries of the DV results.

All the detections of PCB Aroclors reported in Table 2.4.11-1 were qualified because the matrix spike duplicate percent recovery and matrix-spike RPD were greater than QC limits. Both the detections and nondetections of PCB Aroclors were qualified for C021 (Sample T1030-BH-C021-SS) because the confirmation RPDs of Aroclors were greater than 25 percent but less than 75 percent.

Of the metals results reported in Table 2.4.11-3, all of the estimated detections of mercury and selenium were qualified. The results for mercury were qualified because mercury was detected in the method blank, and the selenium results were qualified because selenium was detected in

Table 2.4.11-5
Summary of SWMU 30 Metals Relative Percent Differences
January 2000
(Off-Site Laboratory)

Sample Attributes			Relative Percent Difference						
Record Number[a]	ER Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper
603025	T1030-BH-M012-SS T1030-BH-M013-SS (duplicate)	0–1	NC	28.57	68.52	NC	NC	5.78	160.67

Sample Attributes			Relative Percent Difference						
Record Number[a]	ER Sample ID	Sample Depth (ft)	Lead	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc
603025	T1030-BH-M012-SS T1030-BH-M013-SS (duplicate)	0–1	29.42	NC	2.03	NC	NC	31.66	23.76

[a]Analysis request/chain-of-custody record.
BH = Borehole; conveys location identifiers shown on related figures.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
M = Metals soil sample.
NC = Not calculated for estimated values or nondetected results.
SS = Discrete soil sample.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.

the initial calibration blank and the continuing calibration blank. The presence of laboratory blank contamination casts further doubt on the actual detection status of these metals.

The PCB analysis for the equipment rinsate was qualified as unusable during DV. The laboratory control spike/laboratory control spike duplicate and matrix spike/matrix spike duplicate spiking solution was prepared at a concentration 10 times lower than normal. The resulting percent recoveries were well below QC limits.

The verification/validation process confirmed that with the qualifications above and the exclusion of the PCB equipment rinsate sample results, the soil sample data are acceptable for use in this NFA proposal for SWMU 30.

2.4.12 Investigation #11—Winter 2000 RCRA Metals Waste Characterization Sampling

Investigation #11 consisted of a soil sampling program to determine waste characteristics for off-site disposal of soils containing metals above approved background concentrations.

2.4.12.1 Nonsampling Data Collection

As discussed in Section 2.4.8, SWMU 30 was thoroughly characterized for RCRA metals by collecting numerous soil samples during the 1995 RFI characterization work. Discrete and composite soil samples were collected from all parts of the site at depths of 0 to 1.0 foot and 4.0 to 5.0 feet bgs and were analyzed for the 22 TAL metals, which includes the eight RCRA-listed metals.

A commonly used estimation method, as described in the RCRA Superfund Hotline question number 309, in the "RCRA Regulations and Keyword Index, 2000 edition" (Aspen 2000), relates total metals concentrations in soil to amounts that could potentially leach from the soil. This is a straightforward method that may be used to determine if metals-contaminated soils could be regulated as RCRA hazardous waste due to the toxicity characteristic. The estimation method specifies that soil containing total RCRA metals concentrations greater than 20 times the RCRA regulatory limit for those metals in TCLP-derived leachate could potentially fail the TCLP test for those metals and would therefore be classified as RCRA hazardous waste.

Of the eight RCRA-regulated metals, none were found at concentrations greater than 20 times their respective RCRA-regulated TCLP leachate limits in the deep (4.0 to 5.0 feet bgs) 1995 RFI samples. For the shallow (0 to 1.0 feet bgs) 1995 samples, only two of the eight RCRA metals (cadmium and lead) were found at concentrations greater than 20 times their respective TCLP regulatory limits, as shown in Table 2.4.12-1. Cadmium and lead were detected at concentrations greater than 20 times the TCLP limit in one (sample from location BH339) and three (samples from location BH313, BH337, and the composite comprised of BH183 through BH187) shallow soil sampling locations at the site, respectively.

Table 2.4.12-1
Summary of SWMU 30 Soil Sampling, Metals Exceeding 20 Times the TCLP Regulatory Limits
March–April 1995
(Off-Site Laboratory)

Metal	TCLP Leachate Regulatory Limit (mg/L)	TCLP Limit x 20 (mg/L)	Maximum Metal Concentration in Soil at Site (mg/kg)
Cadmium	1.0	20.0	26
Lead	5.0	100.0	245

mg/kg = Milligram(s) per kilogram.
mg/L = Milligram(s) per liter.
SWMU = Solid Waste Management Unit.
TCLP = Toxicity characteristic leaching procedure.

2.4.12.2 Sampling Data Collection

In order to determine if the maximum residual metals concentrations in soils at the site would result in the soil being regulated and managed as RCRA hazardous waste, it was decided to recollect soil samples from a representative subset of the previous 1995 metals sampling locations at the site and analyze the samples by the TCLP method. All of the 1995 RFI metals analytical data were reviewed and a total of seven composite sampling locations (consisting of a total of 35 individual sample aliquots) and three discrete sampling locations were selected for TCLP resampling (locations listed in Table 2.4.12-2). These composite and discrete samples contained the highest lead and/or cadmium concentrations at the site.

Soil samples were collected on February 25 and 29, 2000 from the same 35 composite sample aliquot locations and the three discrete sample locations as the 1995 RFI samples. These sampling locations are shown on Figure 2.4.8-1 and listed on Table 2.4.12-2. These samples were collected from 0 to 1 foot depths with a soil auger, in the same manner as the 1995 metals samples. The February 2000 samples collected from the 35 composite aliquot locations were maintained as discrete samples and were analyzed individually, rather than being composited into seven samples as in 1995. ERCL used TCLP to analyze all 38 of these samples for RCRA metals.

2.4.12.3 Data Gaps

There were no data gaps associated with this RCRA metals waste-characterization resampling.

2.4.12.4 Results and Conclusions

For comparison purposes, the total cadmium and lead concentrations that were detected in the 1995 RFI samples and the corresponding cadmium and lead concentrations detected in the TCLP-derived leachate from the February 2000 samples are summarized in the Table 2.4.12-2. Also, for comparison purposes, the ranges of total RCRA metals concentrations that were detected in the 38 composite and discrete 1995 RFI samples, and the corresponding ranges of

Table 2.4.12-2
Summary of SWMU 30 Soil Sampling, Comparison of 1995 Total Lead and Cadmium Concentrations Versus 2000 TCLP Lead and Cadmium Concentrations
(Off-Site Laboratory)

1995 and 2000 Sample Locations (Figure 2.4.8-1)	1995 Sample Type	1995 Total Metals Concentrations (mg/kg)		2000 TCLP Metals Concentrations (mg/L)		RCRA TCLP Regulatory Limit (mg/L)	
		Lead	Cadmium	Lead	Cadmium	Lead	Cadmium
BH022	Composite (5 aliquots from BH022-BH026)	69.4	0.67	0.018	0.022	5.0	1.0
BH023				0.013	0.0038	5.0	1.0
BH024				0.01	0.007	5.0	1.0
BH025				0.0052 J	0.0053	5.0	1.0
BH026				0.0086	0.007	5.0	1.0
BH032	Composite (5 aliquots from BH032-BH036)	42.1	ND(0.1)	0.098	0.021 J	5.0	1.0
BH033				0.0081	0.0032 J	5.0	1.0
BH034				0.0024 J	0.0024 J	5.0	1.0
BH035				0.002 J	0.0024 J	5.0	1.0
BH036				ND(0.0017)	0.0014 J	5.0	1.0
BH108	Composite (5 aliquots from BH108-BH112)	144	2.5	ND(0.0017)	0.0031 J	5.0	1.0
BH109				0.0042 J	0.01	5.0	1.0
BH110				ND(0.0017)	0.0045	5.0	1.0
BH111				ND(0.0017)	0.0052	5.0	1.0
BH112				0.0058 J	0.0066	5.0	1.0
BH128	Composite (5 aliquots from BH128-BH132)	27	11.6	ND (0.0017)	ND (0.00085)	5.0	1.0
BH129				ND (0.0017)	0.0025 J	5.0	1.0
BH130				ND (0.0017)	0.0011 J	5.0	1.0
BH131				ND (0.0017)	ND (0.00085)	5.0	1.0
BH132				ND (0.0017)	0.0037	5.0	1.0
BH133	Composite (5 aliquots from BH133-BH137)	85.7	ND (0.1)	0.013	0.0065	5.0	1.0
BH134				ND (0.0017)	0.0021 J	5.0	1.0
BH135				ND (0.0017)	0.0018 J	5.0	1.0
BH136				0.0029 J	0.0045	5.0	1.0
BH137				0.022	0.011	5.0	1.0
BH143	Composite (5 aliquots from BH143-BH147)	52.8	1.6	ND (0.0017)	0.003 J	5.0	1.0
BH144				0.0076	0.0039	5.0	1.0
BH145				0.0036 J	0.0042 J	5.0	1.0
BH146				ND (0.0017)	0.018 J	5.0	1.0
BH147				0.0098	0.0093	5.0	1.0
BH183	Composite (5 aliquots from BH183-BH187)	136	5.9	0.0047	0.012	5.0	1.0
BH184				0.16	0.015	5.0	1.0
BH185				0.01	0.009	5.0	1.0
BH186				0.5	0.012	5.0	1.0
BH187				0.0079	0.022	5.0	1.0
BH313	Discrete	103	5.7	0.011	0.019	5.0	1.0
BH337	Discrete	245	2	0.17	0.032	5.0	1.0
BH339	Discrete	74.6	26	0.0026	0.032	5.0	1.0

BH = Borehole; conveys location identifiers shown on related figures.
J = Estimated value.
mg/kg = Milligram(s) per kilogram.
mg/L = Milligram(s) per liter.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
RCRA = Resource Conservation and Recovery Act.
SWMU = Solid Waste Management Unit.
TCLP = Toxicity characteristic leaching procedure.

concentrations for those same metals in the TCLP-derived leachate in the February 2000 samples, are summarized in the Table 2.4.12-3.

The data indicate that the concentrations of cadmium and lead, and those for the other six RCRA metals in the TCLP-derived leachate, all were well below their respective RCRA regulatory limits. This TCLP sampling effort clearly demonstrated that there would be no regulated RCRA hazardous waste due to metals contamination at SWMU 30.

Table 2.4.12-3
Summary of SWMU 30 Soil Sampling, Comparison of Range of Concentrations of 1995 Total Metals Results Versus 2000 TCLP Metals Results

Metal	Total Metals Concentration Range in 1995 RFI Soil Samples (mg/kg)	Metals Concentration Range in TCLP Leachate, February 2000 Samples (mg/L)	RCRA TCLP Regulatory Limit (mg/L)
Arsenic	2.1–5.3	ND (0.0034)–0.022	5
Barium	101–227	0.69–2.6	100
Cadmium	ND (0.1)–26	ND (0.00085)–0.032	1
Chromium	5.6–35.3	0.015 J–0.026 J	5
Lead	27–245	ND (0.0017)–0.5	5
Mercury	ND (0.02)–1.2	ND (0.00023)–0.00045 J	0.2
Selenium	All ND (0.5)	ND (0.0034)–0.013 J	1
Silver	ND (0.3)–1.7	ND (0.00023)–0.00061 J	5

J = Estimated value.
mg/kg = Milligram(s) per kilogram.
mg/L = Milligram(s) per liter.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
RCRA = Resource Conservation and Recovery Act.
RFI = RCRA Facility Investigation.
SWMU = Solid Waste Management Unit.
TCLP = Toxicity characteristic leaching procedure.

In addition, a preliminary human health risk evaluation was performed prior to the EC/VCM using the highest concentrations of RCRA metals detected at the site. This demonstrated that the residual metals concentrations would not pose a significant risk if left in place. It was therefore concluded that remediation of metals-contaminated soils at the site was unnecessary from both a RCRA hazardous waste and a risk standpoint. Residual metals concentrations remaining at the site are evaluated and discussed in detail in the Risk Screening Assessment (Section 2.6 and Annex 2-B) of this report.

2.4.13 Investigation #12—Spring 2000 EC/VCM—Phase 1

Investigation #12 was a remedial action that was conducted to remove all soil with total PCB concentrations greater than or equal to 1,000 µg/kg from SWMU 30 in order to render the site suitable for future unrestricted use. In the terminology of the PCB Megarule, this EC/VCM fulfilled the provisions of a "Self-implementing on-site cleanup and disposal of PCB remediation waste" (also know as a self-implementing cleanup) as described in 40 CFR Part 761.61(a).

2.4.13.1 *Nonsampling Data Collection*

Before beginning the EC/VCM, SNL/NM submitted the *Notification of Self-Implementing Clean-up and Disposal of PCBs at SWMU 30* (hereafter referred to as the Notification) to the EPA in April of 1999 (SNL/NM April 1999). As required in 40 CFR Part 761.61(a), this document summarized existing site and sampling information at SWMU 30 and described the proposed plan for conducting a self-implementing cleanup and disposal of PCBs at SWMU 30. The objective of the Notification was to document the strategy and proposed methodology that would be used for the removal and disposal of PCB-contaminated soils. The strategy was to clean up soil-contaminated areas that had PCB concentrations greater than or equal to 10,000 µg/kg to make SWMU 30 suitable for low-occupancy land use. The cleanup standards that were proposed are more stringent than the 25,000 µg/kg required by 40 CFR 761. The Notification included a series of figures showing (1) the locations of, and total PCB concentrations detected in, numerous characterization samples collected at the site, and (2) the areas of the site with soils containing greater than or equal to 10,000 µg/kg of total PCBs that would be remediated. The EPA reviewed the Notification and issued a letter dated May 18, 1999 containing deficiency comments on the Notification (EPA May 1999).

In August 1999, the site was selected as the future location of the MESA Facility, a multiple-facility integrated complex (SNL/NM August 1999). Thus, the land-use designation for SWMU 30 changed from a low-occupancy land use to a high-occupancy land use, and the cleanup standard was revised to 1,000 µg/kg. This revision in cleanup standard and possible alternative remediation strategies were communicated to the EPA in a letter (DOE December 1999).

EPA, SNL/NM, and DOE personnel met in Albuquerque on January 20, 2000 to discuss and resolve the EPA deficiency comments and determine any additional requirements that would need to be addressed in order to conduct the EC/VCM at SWMU 30. Following this meeting, SNL/NM responded to the deficiency comments and issued a revised Notification to the EPA on March 1, 2000 (SNL/NM March 2000). The EPA reviewed the revised Notification (included as Annex 2-C of this document) and notified SNL/NM, via a letter dated April 3, 2000, that the deficiency comments had been adequately addressed (EPA April 2000). At this point, SNL/NM proceeded with plans and logistics to conduct the EC/VCM at the site.

Prior to start of the EC/VCM excavation and remediation activities, the following permits and clearances for the site were obtained:

- A Surface Disturbance/Demolition permit was obtained from the City of Albuquerque on March 27, 2000 because more than 0.75 acres would be disturbed as a result of this EC/VCM.

- Proposed EC/VCM project activities were reviewed on March 20, 2000, and it was determined that these activities were in accordance with the types of activities approved in the SNL/NM ER Project Environmental Assessment, which was completed in March 1996. It was determined in 1996 that no cultural resources or threatened or endangered species were present at the site (DOE March 1996).

- A burrowing owl assessment survey was conducted by SNL/NM Department 7131 on April 18, 2000, and confirmed that no evidence of owl activity was present at the site.

- A Dig/Penetration permit and buried utilities maps were obtained from SNL/NM Facilities Engineering personnel, so that locations of buried utilities (gas, electrical, communication, water, and sanitary sewer lines) could be identified prior to excavation activities.

Definition of PCB Contamination Areas

The 1,000 µg/kg (1 ppm) isopleth for PCBs in soils was estimated by using Surfer® for Windows, a commercially available, contouring and three-dimensional surface-mapping program commonly used for environmental applications. This program is typically used to contour data and map contaminant isopleths by employing standard geostatistical methods such as kriging, the inverse distance method, and triangulation with linear interpretation.

The PCB data set used in Surfer® included the 1995-1997 RFI data, the 1992 data, and the 1989 data. The composite data from the RFI and the 1992 investigations were included very conservatively. Each composite sample location was assigned the result of the maximum PCB composite result multiplied by the number of aliquots comprising the composite. The isopleths that resulted from contouring the characterization data using Surfer® were modified as follows:

- The isopleths were arbitrarily limited by physical features, such as the toe of the storm-water channel at the western site boundary and historical fence boundaries. The air photo review discussed in Section 2.4.9.1 showed that the current site boundary on all but the western boundary is the largest extent of the Reclamation Yard.

- Isopleth smoothing was performed by hand to eliminate the sometimes highly erratic boundary generated by Surfer®. This smoothing was always performed conservatively, such that within a specific isopleth, there may be sample points with PCB concentrations less than the value of a particular isopleth (SNL/NM March 2000).

The sampling results and subsequent geostatistical analysis of the PCB data indicated that there were a total of 11 separate PCB soil contamination areas ("hot spots") at SWMU 30, including those in the storm-water channel on the west side of the site. For convenience and to avoid confusion, each of the 11 hot spots was assigned a unique letter, starting with A and ending with K (Figure 2.4.13-1). Both the field-screening and off-site laboratory data indicated that the highest concentrations of PCBs were detected in the upper 1 foot of soil at SWMU 30. The samples collected at the 5-foot depth showed extremely low (or nonexistent) levels of PCBs.

2.4.13.2 *Sampling Data Collection*

Locating PCB Contamination Areas at the Site

Surveying-grade GPS equipment capable of sub-centimeter accuracy was utilized to delineate the PCB contamination areas (hot spots) at the site. This was accomplished by first using Geographic Information System equipment to determine New Mexico State Plane northing and easting coordinates for enough discrete points to define the 1,000 µg/kg PCB isopleth for each of the 11 irregular-shaped hot spots at the site. The northing and easting survey coordinates for each of the discrete contamination boundary points were downloaded into the GPS survey equipment, which was then used to locate each of the discrete boundary points on the ground at the site. These points were located and marked on the ground with spray paint, and the outer perimeter of each hot spot was then identified on the ground by "connecting the dots" with spray paint.

The surveying-grade GPS equipment was also used to locate approximately 40 verification sampling grid reference points across the site. These reference points were used to establish the grid for verification sampling following removal of contaminated soil from each hot spot.

Phase 1 Remediation Activities

Initial excavation activities at SWMU 30 commenced on May 1, 2000. Removal of the first 12-inch lift of soil started on the east side of the site at Hot Spot A (Figure 2.4.13-1) and proceeded in a westerly direction across the site to the other hot spots. Soil removed from each of the hot spots was loaded into end-dump trucks for transport to the appropriate disposal facility as soon as the trucks arrived at the site (Figure 2.4.13-2).

For the storm-water channel on the west side of the site, the original plan was to remove only the soil in a continuous stretch in the central part of the channel that contained greater than 1,000 µg/kg PCBs. However, as the excavation of the channel proceeded, it was decided by ER project management, as a precautionary and conservative measure, to remove at least one 12-inch lift of soil from the entire length of the channel, from the M and 14th Street culvert on the north to the north side of the Hardin Boulevard culvert on the south (Figure 2.4.13-3).

After excavation of the first 12-inch lift was completed in a particular hot spot, the following procedure was followed to determine if all of the PCB-contaminated soil had been successfully removed from that location. Both screening and potential off-site laboratory verification samples were collected from remediated areas on a 1.5-meter grid interval, in accordance with procedures specified in 40 CFR Part 761.283 and 40 CFR Part 761.286. A grid of 4.5-meter-on-center sampling quadrants was established within the excavated hot spot area using the verification sampling grid reference points established for this purpose. Following this, a sufficient volume of soil for both field-screening samples, and potential off-site laboratory verification samples was collected from each quadrant within the hot spot. Samples would be sent to the off-site laboratory if the screening sample results were nondetect in the particular quadrant.

This page intentionally left blank.

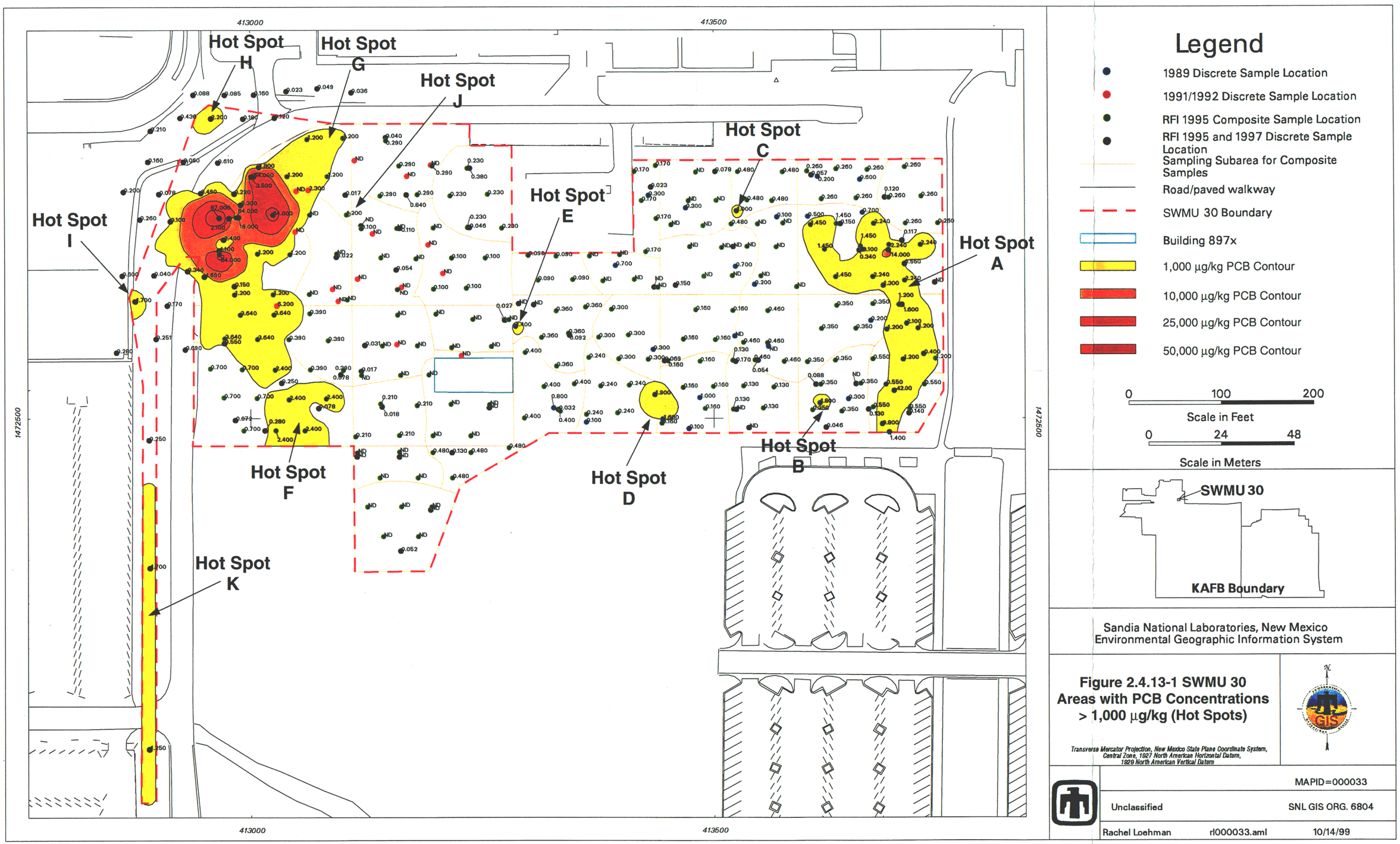

Hot Spot H
Hot Spot G
Hot Spot J
Hot Spot C
Hot Spot E
Hot Spot I
Hot Spot A
Hot Spot B
Hot Spot D
Hot Spot F
Hot Spot K
413000
413500
1472500
Legend
1989 Discrete Sample Location
1991/1992 Discrete Sample Location
RFI 1995 Composite Sample Location
RFI 1995 and 1997 Discrete Sample Location
Sampling Subarea for Composite Samples
Road/paved walkway
SWMU 30 Boundary
Building 897x
1,000 µg/kg PCB Contour
10,000 µg/kg PCB Contour
25,000 µg/kg PCB Contour
50,000 µg/kg PCB Contour
0 100 200
Scale in Feet
0 24 48
Scale in Meters
SWMU 30
KAFB Boundary
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
Figure 2.4.13-1 SWMU 30
Areas with PCB Concentrations
> 1,000 µg/kg (Hot Spots)
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum
MAPID=000033
Unclassified
SNL GIS ORG. 6804
Rachel Loehman
rl000033.aml
10/14/99

Figure 2.4.13-2
Photograph (View to the East) from Hot Spot A Showing PCB-Contaminated Soil Being Loaded into Dump Trucks for Off-site Disposal

Figure 2.4.13-3
SWMU 30 Photograph (View to the Northeast) from Hot Spot K Showing PCB-Contaminated Soil Being Excavated from the Storm-Water Channel

Figure 2.4.13-4
SWMU 30 Photograph (View to the North) from Hot Spot G Showing Verification Sampling Method

As specified in 40 CFR Part 761.286, soil aliquots were collected with a 1-inch-diameter cylindrical core sampler from a 0-inch to 3-inch depth at each aliquot location (Figure 2.4.13-4). Composite samples consisted of soil from up to nine individual sample aliquot locations, spaced 1.5 meters apart in each sampling quadrant, as specified in 40 CFR Part 761.289 (b)(1)(i). For partial sampling quadrants located at, and truncated by, the irregular shape of the perimeter of a hot spot, soil for screening and verification samples was collected only from the aliquot locations that were contained within the boundaries of the hot spot. Therefore, individual composite screening and laboratory verification samples consisted of soil from one to nine aliquots each. For each sample, the individual aliquots were thoroughly mixed together, and the mixed soil was then split into a field-screening sample and a potential off-site laboratory verification sample.

Field-screening samples were analyzed at an on-site field laboratory using an immunoassay technique to determine if PCB concentrations were less than 1,000 µg/kg in each hot spot sampling quadrant. Ensys™ PCB soil test kits (EPA Method 4020) by Strategic Diagnostic Inc. were used to analyze these samples. If the field-screening result for a particular sample contained greater than 1,000 µg/kg total PCBs, the potential off-site laboratory verification soil sample was discarded and an additional 6-inch lift of soil was excavated from the particular 4.5-meter-square quadrant. Following the second excavation, another round of screening and potential verification soil samples was collected. This excavation and field-screening iteration was repeated until the PCB field-screening results indicated that the PCB concentrations were less than 1,000 µg/kg in each of the sampling quadrants. Once this was achieved, the potential verification sample was shipped to an off-site commercial laboratory for analysis to confirm that the total PCB concentration was less than 1,000 µg/kg in that quadrant.

The Phase 1 excavation and verification sampling of all 11 hot spots (A-K) was completed on June 6, 2000. The deepest excavation (to 3.5 feet bgs) was in Hot Spot G (Figure 2.4.13-5), confirming the results of the site characterization sampling that had indicated that Hot Spot G was the most contaminated part of the site.

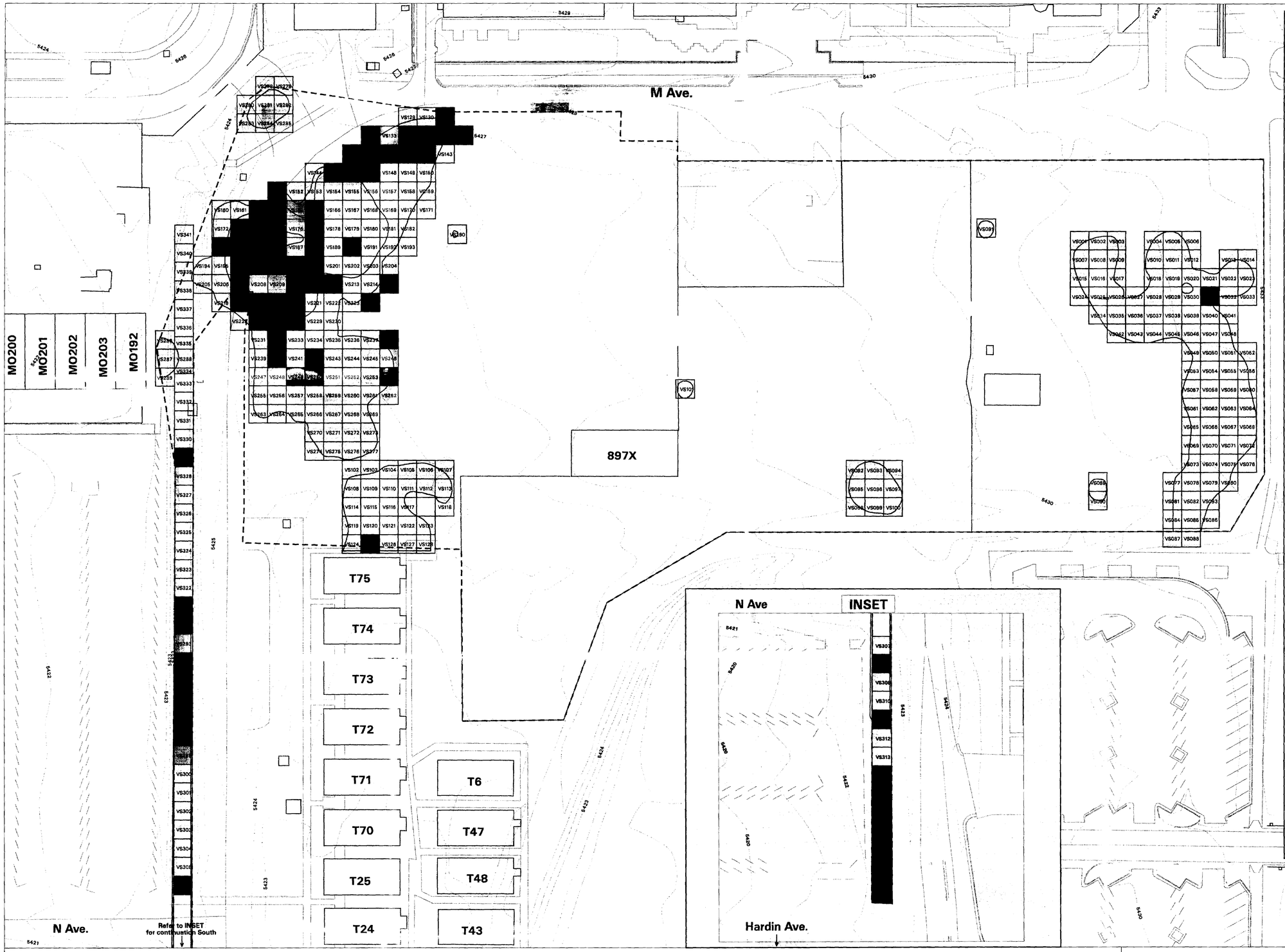
2.4.13.3 Data Gaps

No data gaps were known to exist following completion of EC/VCM Phase 1 activities.

2.4.13.4 Result and Conclusions

Off-site laboratory verification samples were submitted to a commercial laboratory (GEL) for total PCB analyses by EPA SW-846 Method 8082. A total of 341 composite verification samples were collected from SWMU 30 after completion of the first phase of excavation at the site (Table 2.4.13-1). Of the 341 verification samples submitted to the laboratory, only four (from quadrants VS198, VS209, VS211, and VS226 in hot spot area G; Figure 2.4.13-5) were found to contain total PCB concentrations slightly over 1,000 µg/kg total PCBs (Table 2.4.13-1 does not reflect these original concentrations). This occurred even though screening samples from those quadrants had indicated that the total PCB concentrations were less than 1,000 µg/kg. The analytical results shown in Table 2.4.13-1 contain final results from both Phase 1

This page intentionally left blank.



Summary of Off-site Laboratory Confirmatory Soil Sampling Analytical Results, May-July 2000 (µg/kg):

VS001-001	ND	VS176-003	794
VS002-001	ND	VS177-001, S	39.5
VS003-001	4.9	VS178-001	232
VS004-001	ND	VS179-001	152
VS005-001	ND	VS180-001	186
VS006-001	ND	VS181-001	36.1
VS007-001	ND	VS182-001	4.4
VS008-001	ND	VS183-001, S	466
VS009-001	ND	VS184-001, S	40.4 H
VS010-001	ND	VS185-001, S	ND (1.42)
VS011-001	3.8	VS186-001, S	287
VS012-001	ND	VS187-003	953
VS013-001	2.7 J	VS188-001, S	13.55
VS014-001	3.1 J	VS189-001	449
VS015-001	12.2	VS190-001, S	ND
VS016-001	ND	VS191-001	5.1
VS017-001	5.J	VS192-001	1.4
VS018-001	5	VS193-001	ND
VS019-001	17.4	VS194-001	ND
VS020-001	3.9	VS195-001	188
VS021-001	41.7	VS196-002	81.3
VS022-001	4.1	VS197-001, S	94.4
VS023-001	26.8	VS198-001, S	232.4
VS024-001	18.4 J	VS199-002	182
VS025-001	2.8 J	VS200-001, S	532
VS026-001	8.8	VS201-001	545.0
VS027-001	11.3	VS202-001	120
VS028-001	9.3	VS203-001	43.2
VS029-001	23.8	VS204-001	38.3
VS030-001	18.8	VS204-001-DUP	3.1
VS030-001-DUP	23.1	VS205-001	217.8
VS031-001, S	252	VS206-001, S	230
VS032-001	54	VS207-001, S	3.3 J
VS033-001	ND	VS208-002, S	813
VS034-001	5.4	VS209-003	605.0
VS035-001	20.9	VS210-002	180
VS036-001	11.0	VS211-002	2.8 J
VS037-001	18.5	VS212-001, S	81.2
VS038-001	55.3	VS213-001	43.8
VS039-001	ND	VS214-001	118.0 J
VS040-001	289	VS215-001, S	ND
VS041-001	21.1	VS216-001	328
VS042-001	6.8	VS217-001, S	18.8
VS043-001	ND	VS218-001, S	248
VS044-001	17.9	VS219-001, S	35.5
VS045-001	20.9	VS220-002	285.2
VS046-001	38.9	VS221-001	337
VS047-001	77.7	VS222-001	187.8 J
VS048-001	5.3	VS223-001	284.8
VS049-001	9.8	VS224-001, S	123.4 H
VS050-001	52.7	VS225-001	18 H
VS050-001-DUP	64.7	VS226-001, S	225.3
VS051-001	ND	VS226-001, S-DUP	292.8
VS052-001	ND	VS227-001, S	2.3
VS053-001	8.2	VS228-002	307
VS054-001	25.8	VS228-002-DUP	189.1
VS055-001	2.3	VS229-001	368.8
VS056-001	ND	VS230-001	320.2
VS057-001	144	VS231-001	444.3
VS058-001	27.3	VS232-001, S	ND
VS059-001	3.8	VS233-001	784
VS060-001	ND	VS234-001	375.2
VS061-001	18.8	VS235-001	261.3
VS062-001	87.3	VS236-001	308
VS063-001	ND	VS237-001	254.7 H
VS064-001	ND	VS238-001, S	ND
VS065-001	22.5	VS239-001	188.2
VS066-001	178	VS240-001, S	11.8
VS067-001	5.7	VS241-001	297.3
VS068-001	ND	VS242-001, S	5.75 HJ
VS069-001	4.37	VS243-001	183.1
VS070-001	46.3	VS244-001	105.1
VS071-001	ND	VS245-001	7.25
VS072-001	ND	VS246-001	9
VS073-001	8.7	VS247-001	282
VS074-001	11.3	VS248-001	188
VS075-001	ND	VS249-002, S	105.2
VS076-001	2.48 J	VS250-001, S	9.28 H
VS077-001	20	VS250-001, S-DUP	ND
VS078-001	5.2	VS251-001	60.5
VS079-001	ND	VS252-001	37.8 J
VS080-001	ND	VS253-001	9.9
VS081-001	ND	VS254-001, S	2.8 J
VS082-001	2.3 J	VS255-001	317.8
VS083-001	2.8 J	VS256-001	72.3 J
VS084-001	5.3	VS257-001	133.8
VS085-001	2.8 J	VS257-001-DUP	137.8
VS086-001	6.6	VS258-001	48.4
VS087-001	ND	VS259-001	68
VS088-001	27.6	VS260-001	41.8
VS088-001-DUP	27.8	VS261-001	308.8
VS089-001	ND	VS262-001	81.8
VS090-001	ND	VS263-001	125.2
VS091-001	ND	VS264-001	301.4
VS092-001	ND	VS265-001	47
VS093-001	ND	VS266-001	39.23
VS094-001	ND	VS267-001	51.8
VS095-001	ND	VS268-001	187.6
VS096-001	ND	VS268-001-DUP	31.3
VS097-001	ND	VS269-001	88.6
VS098-001	ND	VS270-001	50.2
VS099-001	ND	VS271-001	48.4
VS100-001	ND	VS272-001	22.8
VS101-001	ND	VS273-001	120.5 H
VS102-001	38.4	VS274-001	171.8
VS103-001	28.3 J	VS275-001	53.5
VS104-001	24.7	VS276-001	18.17
VS105-001	82	VS277-001	42.7
VS106-001	7.5 J	VS278-001	146
VS107-001	18 J	VS279-001	84.7 J
VS108-001	22	VS280-001	156
VS109-001	70.5	VS280-001-DUP	198
VS110-001	39.7	VS281-001	389
VS111-001	18.2	VS282-001	168
VS112-001	4.13	VS283-001	72.7
VS113-001	5.62	VS284-001	173
VS113-001-DUP	5	VS285-001	283
VS114-001	40.3	VS286-001	108
VS115-001	58.2	VS287-001	47
VS116-001	46.3	VS288-001	53
VS117-001	10.8 J	VS289-001	35.7
VS118-001	4.2	VS289-001-DUP	43.6
VS119-001	107	VS290-001	14.1
VS119-001-DUP	78.5	VS290-001-DUP	9.66
VS120-001	83.3	VS291-002	62.1
VS121-001	21.2	VS292-002	39.7
VS122-001	13.8 J	VS293-002, S	ND
VS123-001	8.1 J	VS294-001, S	37.2
VS124-001	158	VS295-001, S	49.4
VS125-001, S	17.1 J	VS296-001, S	80.7
VS126-001	44.5	VS297-001, S	15.8
VS127-001	34.8	VS298-001, S	158
VS128-001	78	VS299-002, S	13
VS129-001	183	VS300-001	168
VS130-001	157	VS300-001-DUP	247
VS131-001, S	152 H	VS301-001	184
VS132-002	435	VS302-002	37.8
VS133-002, S	437	VS303-002	58.5
VS134-001, S	124 H	VS304-001	44.7
VS135-001, S	90.2 H	VS305-001	212
VS136-001, S	34.6 H	VS306-002	81.4
VS137-001, S	60.6 H	VS307-001	318
VS138-001, S	9.28 H	VS308-001, S	9.28
VS139-001, S	83.3	VS309-001	920
VS140-002	54	VS310-001	267
VS141-001, S	21.2 H	VS310-001-DUP	180
VS142-001, S	3.4 HJ	VS311-001, S	28.8
VS143-001	101	VS312-001, S	18
VS144-001	31.1	VS313-001	208
VS145-001, S	34.3 H	VS314-001, S	34.7
VS146-002	7.4	VS315-001, S	76
VS147-001, S	131.3	VS316-001, S	38.2
VS148A-001	12.9	VS317-001, S	18.8
VS149A-001	53.7	VS318-001, S	8.7
VS150A-001	87.3	VS319-001, S	33.6
VS151-002	81.6	VS320-001, S	10.7 J
VS152-001	137.8	VS321-001, S	18.8
VS153A-001	78.7	VS322-001	12
VS154A-001	44	VS323-001	9.7
VS154A-001-DUP	938	VS324-001	23.3
VS155-001	81.7	VS325-001	211
VS156-001-DUP	80.3	VS326-001	13.18 J
VS158A-001	140	VS327-001	12.8
VS157A-001	46.3	VS328-001	10.7
VS159A-001	31.08	VS329-001-DUP	13.1
VS160A-001	53.8	VS329-001, S	18.8
VS180-001	127 H	VS330-001	227
VS180-001-DUP	264	VS331-001	126
VS181-001	192	VS332-001	153
VS182-001, S	151	VS333-001	63.8
VS183-002	237	VS334-001	14.4
VS184-003	81.6	VS335-001	13.05 J
VS185-001, S	451	VS336-001	ND
VS168A-001	206	VS337-001	1.57 J
VS167-001	40.1	VS338-001	ND
VS169-001	99.3	VS339-001	8.8
VS189-001	7.3	VS340-001	24
VS170-001	48.1	VS341-001	ND
VS171-001	10.9	VS342-000	122.1
VS172-001	372	VS343-000	82.8
VS173-001, S	293	VS344-000	30.3
VS174-001, S	149	VS345-000	108.3
VS175-002	78.8	VS346-000	39.3

Legend

Excavation Depth in Feet

- 1.0
- 1.5
- 2.0
- 2.5
- 3.0
- 3.5

- 1000 µg/kg isopleth
- 1-Foot Contour
- ER Site 30 Boundary
- Road
- Fence
- Building/structure

0 30 60 Scale in Feet

0 8 16 Scale in Meters

0 0.008 0.015 Scale in Kilometers

0 0.006 0.011 Scale in Miles

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 2.4.13-5
SWMU 30
VCM Final Excavation Depths and Residual PCB Concentrations

Compiled by photogrammetric methods from aerial photography dated March 1989, March 1996, September 1997 and July 1982
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone
1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=010208

Unclassified

SNL GIS ORG. 6135

D Rizor | dr010208c.aml | 08/23/01

April 25, 2000

PAGE DELIBERATELY

NOT SCANNED

Must be viewed at the

Integrated Safety & Security (IS&S)
Records Center

For Assistance Call

844-4688

Table 2.4.13-1
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
May–July 2000
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8082/SW846 8082[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth[c] (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[d]
603276	T1030-VS001-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603276	T1030-VS002-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603276	T1030-VS003-001-C	1	ND (0.898)	4.3	ND (1.42)	4.3
603276	T1030-VS004-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603276	T1030-VS005-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603277	T1030-VS006-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603277	T1030-VS007-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603277	T1030-VS008-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603277	T1030-VS009-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603277	T1030-VS010-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603277	T1030-VS011-001-C	1	ND (0.898)	3.6 J*	ND (1.42)	3.6
603277	T1030-VS012-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603277	T1030-VS013-001-C	1	ND (0.898)	2.7 J (3.33)	ND (1.42)	2.7
603277	T1030-VS014-001-C	1	ND (0.898)	4.3 J* (3.33)	ND (1.42)	4.3
603277	T1030-VS015-001-C	1	ND (0.898)	ND (1.36)	12.2	12.2
603277	T1030-VS016-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603277	T1030-VS017-001-C	1	ND (0.898)	1.6 J (3.33)	ND (1.42)	1.6
603277	T1030-VS018-001-C	1	ND (0.898)	5	ND (1.42)	5
603277	T1030-VS019-001-C	1	ND (0.898)	17.4	ND (1.42)	17.4
603277	T1030-VS020-001-C	1	ND (0.898)	5.8	ND (1.42)	5.8
603277	T1030-VS021-001-C	1	ND (0.898)	41.7	ND (1.42)	41.7
603277	T1030-VS022-001-C	1	ND (0.898)	4.1	ND (1.42)	4.1
603277	T1030-VS023-001-C	1	ND (0.898)	26.9	ND (1.42)	26.9
603277	T1030-VS024-001-C	1	ND (0.898)	16.4 J (16.7)	ND (1.42)	16.4
603277	T1030-VS025-001-C	1	ND (0.898)	2.8 J (3.33)	ND (1.42)	2.8
603277	T1030-VS026-001-C	1	ND (0.898)	8.8	ND (1.42)	8.8
603277	T1030-VS027-001-C	1	ND (0.898)	11.3	ND (1.42)	11.3
603277	T1030-VS028-001-C	1	ND (0.898)	8.3	ND (1.42)	8.3
603277	T1030-VS029-001-C	1	ND (0.898)	23.6	ND (1.42)	23.6
603277	T1030-VS030-001-C	1	ND (0.898)	18.9	ND (1.42)	18.9
603277	T1030-VS030-001-DUP (duplicate)	1	ND (0.898)	23.1	ND (1.42)	23.1
603294	T1030-VS031-001.5-C	1.5	ND (0.898)	198	106 J*	304
603277	T1030-VS032-001-C	1	182	54	ND (1.42)	236
603277	T1030-VS033-001-C	1	16.9	ND (1.36)	ND (1.42)	16.9
603277	T1030-VS034-001-C	1	ND (0.898)	5.4	ND (1.42)	5.4
603277	T1030-VS035-001-C	1	ND (0.898)	20.9	ND (1.42)	20.9
603277	T1030-VS036-001-C	1	ND (0.898)	11.6	ND (1.42)	11.6
603277	T1030-VS037-001-C	1	ND (0.898)	16.5	ND (1.42)	16.5
603277	T1030-VS038-001-C	1	ND (0.898)	55.3	ND (1.42)	55.3
603277	T1030-VS039-001-C	1	ND (0.898)	105	ND (1.42)	ND
603277	T1030-VS040-001-C	1	ND (0.898)	265	ND (1.42)	265
603277	T1030-VS041-001-C	1	ND (0.898)	21.1	ND (1.42)	21.1
603277	T1030-VS042-001-C	1	ND (0.898)	5.8	ND (1.42)	5.8
603277	T1030-VS043-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603277	T1030-VS044-001-C	1	11.4 J*	17.9	ND (1.42)	29.3
603277	T1030-VS045-001-C	1	ND (0.898)	20.9	ND (1.42)	20.9
603277	T1030-VS046-001-C	1	ND (0.898)	28.9	ND (1.42)	28.9
603277	T1030-VS047-001-C	1	ND (0.898)	77.7	ND (1.42)	77.7
603278	T1030-VS048-001-C	1	ND (0.898)	5.3	ND (1.42)	5.3
603278	T1030-VS049-001-C	1	ND (0.898)	9.6	ND (1.42)	9.6
603278	T1030-VS050-001-C	1	ND (0.898)	52.7	ND (1.42)	52.7

Refer to footnotes at end of table.

Table 2.4.13-1 (Continued)
Summary of SWMU 30 Soil Sampling PCB Analytical Results
May–July 2000
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8082/SW846 8082[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth[c] (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[d]
603278	T1030-VS050-001-DUP (duplicate)	1	ND (0.898)	54.7	ND (1.42)	54.7
603278	T1030-VS051-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603278	T1030-VS052-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603278	T1030-VS053-001-C	1	ND (0.898)	8.2	ND (1.42)	8.2
603278	T1030-VS054-001-C	1	ND (0.898)	25.9	ND (1.42)	25.9
603278	T1030-VS055-001-C	1	ND (0.898 J H)	2.3 H J (3.33)	ND (1.42 J H)	2.3
603278	T1030-VS056-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603278	T1030-VS057-001-C	1	ND (0.898)	144	ND (1.42)	144
603278	T1030-VS058-001-C	1	ND (0.898)	27.3	ND (1.42)	27.3
603278	T1030-VS059-001-C	1	ND (0.898)	3.6	ND (1.42)	3.6
603278	T1030-VS060-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603278	T1030-VS061-001-C	1	ND (0.898)	16.6	ND (1.42)	16.6
603278	T1030-VS062-001-C	1	ND (0.898)	87.3	ND (1.42)	87.3
603278	T1030-VS063-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603278	T1030-VS064-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603278	T1030-VS065-001-C	1	ND (0.898)	22.5	ND (1.42)	22.5
603278	T1030-VS066-001-C	1	ND (0.898)	178	ND (1.42)	178
603278	T1030-VS067-001-C	1	ND (0.898)	5.7 J*	ND (1.42)	5.7
603278	T1030-VS068-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603279	T1030-VS069-001-C	1	ND (0.898)	ND (1.36)	4.37	4.37
603279	T1030-VS070-001-C	1	ND (0.898)	45.3	ND (1.42)	45.3
603279	T1030-VS071-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603279	T1030-VS072-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603279	T1030-VS073-001-C	1	ND (0.898)	ND (1.36)	8.70	8.7
603279	T1030-VS074-001-C	1	ND (0.898)	6.70	6.8 J*	13.5
603279	T1030-VS075-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603279	T1030-VS076-001-C	1	ND (0.898)	3.3 J* (3.33)	ND (1.42)	2.48
603279	T1030-VS077-001-C	1	ND (0.898 J)	ND (1.36 J)	20.0 J*	20.0
603279	T1030-VS078-001-C	1	ND (0.898)	ND (1.36)	5.20 J*	5.20
603279	T1030-VS079-001-C	1	ND (0.898 J)	ND (1.36 J)	ND (1.42 J)	ND
603279	T1030-VS080-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603279	T1030-VS081-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603279	T1030-VS082-001-C	1	ND (0.898 J)	ND (1.36 J)	2.3 J* (3.33)	2.3
603279	T1030-VS083-001-C	1	ND (0.898 J)	ND (1.36 J)	2.8 J* (3.33)	2.8
603279	T1030-VS084-001-C	1	ND (0.898)	ND (1.36)	5.30 J*	5.30
603279	T1030-VS085-001-C	1	ND (0.898 J)	ND (1.36 J)	2.8 J* (3.33)	2.8
603279	T1030-VS086-001-C	1	ND (0.898)	ND (1.36)	6.5	6.5
603280	T1030-VS087-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS088-001-C	1	ND (4.49 J)[e]	ND (6.8 J)[e]	27.6 J*	27.6
603280	T1030-VS088-001-DUP (duplicate)	1	ND (4.49 J)[e]	ND (6.8 J)[e]	27.8 J*	27.8
603280	T1030-VS089-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS090-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS091-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS092-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS093-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS094-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS095-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS096-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS097-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS098-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS099-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND

Refer to footnotes at end of table.

Table 2.4.13-1 (Continued)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
May–July 2000
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8082/SW846 8082[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth[c] (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[d]
603280	T1030-VS100-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS101-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603280	T1030-VS102-001-C	1	ND (8.98 J)[e]	ND (13.6 J)[e]	36.4 J*	36.4
603280	T1030-VS103-001-C	1	ND (8.98 J)[e]	ND (13.6 J)[e]	26.3 J* (33.3)	26.3
603280	T1030-VS104-001-C	1	ND (8.98 J)[e]	20.1 J* (33.3)	34.7 J*	34.7
603281	T1030-VS105-001-C	1	ND (0.898)	ND (1.36)	62	62
603281	T1030-VS106-001-C	1	ND (0.898)	ND (1.36)	7.5 J (16.7)	7.5
603281	T1030-VS107-001-C	1	ND (0.898)	ND (1.36)	16 J (16.7)	16
603281	T1030-VS108-001-C	1	ND (0.898)	ND (1.36)	22	22
603281	T1030-VS109-001-C	1	ND (0.898)	ND (1.36)	70.5	70.5
603281	T1030-VS110-001-C	1	ND (0.898)	ND (1.36)	39.7	39.7
603281	T1030-VS111-001-C	1	ND (0.898)	ND (1.36)	19.2	19.2
603281	T1030-VS112-001-C	1	ND (0.898)	ND (1.36)	4.13	4.13
603281	T1030-VS113-001-C	1	ND (0.898)	ND (1.36)	5.52	5.52
603281	T1030-VS113-001-DUP (duplicate)	1	ND (0.898)	ND (1.36)	5	5
603281	T1030-VS114-001-C	1	ND (0.898)	ND (1.36)	40.3	40.3
603281	T1030-VS115-001-C	1	ND (0.898)	ND (1.36)	56.2	56.2
603281	T1030-VS116-001-C	1	ND (0.898)	ND (1.36)	46.3	46.3
603281	T1030-VS117-001-C	1	ND (0.898)	ND (1.36)	10.6 J (16.7)	10.6
603281	T1030-VS118-001-C	1	ND (0.898)	ND (1.36)	4.2	4.2
603281	T1030-VS119-001-C	1	ND (0.898)	ND (1.36)	107	107
603281	T1030-VS119-001-DUP (duplicate)	1	ND (0.898)	ND (1.36)	79.5	79.5
603281	T1030-VS120-001-C	1	ND (0.898)	ND (1.36)	93.3	93.3
603281	T1030-VS121-001-C	1	ND (0.898)	ND (1.36)	30.4 J*	30.4
603281	T1030-VS122-001-C	1	ND (0.898)	ND (1.36)	13.9 J (16.7)	13.9
603283	T1030-VS123-001-C	1	ND (0.898 J)	ND (1.36 J)	9.1 J* (16.7)	9.1
603283	T1030-VS124-001-C	1	ND (0.898)	ND (1.36)	158	158
603294	T1030-VS125-001.5-C	1.5	ND (8.98 J)[e]	ND (13.6 J)[e]	17.1 J* (33.3)	17.1
603283	T1030-VS126-001-C	1	ND (0.898)	ND (1.36)	44.5	44.5
603283	T1030-VS127-001-C	1	ND (0.898)	ND (1.36)	34.8	34.8
603283	T1030-VS128-001-C	1	ND (0.898)	37.8	38.2	76.0
603283	T1030-VS129-001-C	1	ND (0.898)	ND (1.36)	183	183
603283	T1030-VS130-001-C	1	ND (0.898)	ND (1.36)	157	157
603297	T1030-VS131-001.5-C	1.5	ND (0.898)	ND (1.36)	152 H	152
603302	T1030-VS132-002-C	2	ND (0.898)	ND (1.36)	435	435
603305	T1030-VS133-002.5-C	2.5	ND (0.898)	ND (1.36)	437	437
603297	T1030-VS134-001.5-C	1.5	ND (0.898)	ND (1.36)	124 H	124
603297	T1030-VS135-001.5-C	1.5	ND (8.98 J)[e]	ND (13.6 J)[e]	90.2 H J*	90.2
603297	T1030-VS136-001.5-C	1.5	ND (8.98 J)[e]	ND (13.6 J)[e]	34.6 H J*	34.6
603297	T1030-VS137-001.5-C	1.5	ND (8.98 J)[e]	ND (13.6 J)[e]	60.5 H J*	60.5
603297	T1030-VS138-001.5-C	1.5	ND (0.898)	ND (1.36)	9.28 H	9.28
603298	T1030-VS139-001.5-C	1.5	ND (0.898 J)	ND (1.36 J)	63.3 J*	63.3
603302	T1030-VS140-002-C	2	ND (0.898)	ND (1.36)	54	54
603297	T1030-VS141-001.5-C	1.5	ND (0.898)	ND (1.36)	21.2 H	21.2
603297	T1030-VS142-001.5-C	1.5	ND (0.898 J H)	ND (1.36 J H)	2.4 H J* (3.33)	2.4
603371	T1030-VS143-001-C	1	ND (0.898)	ND (1.36)	101	101
603283	T1030-VS144-001-C	1	ND (0.898)	20.1	11.1	31.1
603297	T1030-VS145-001.5-C	1.5	ND (0.898)	ND (1.36)	34.3 H	34.3

Refer to footnotes at end of table.

Table 2.4.13-1 (Continued)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
May–July 2000
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8082/SW846 8082[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth[c] (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[d]
603302	T1030-VS146-002-C	2	ND (0.898)	ND (1.36)	9.7 J*	9.7
603298	T1030-VS147-001.5-C	1.5	ND (0.898)	17.9 J*	121	138.9
603287	T1030-VS148A-001-C	1	ND (0.898 J H)	ND (1.36 J H)	12.9 J*H	12.9
603287	T1030-VS149A-001-C	1	ND (0.898)	ND (1.36)	53.7	53.7
603287	T1030-VS150A-001-C	1	ND (0.898)	ND (1.36)	67.3	67.3
603302	T1030-VS151-002-C	2	ND (0.898)	ND (1.36)	61.5	61.5
603288	T1030-VS152-001-C	1	ND (0.898)	18.8 J* (33.3)	119	137.8
603287	T1030-VS153A-001-C	1	ND (0.898)	ND (1.36)	76.7	76.7
603287	T1030-VS154A-001-C	1	ND (0.898)	ND (1.36)	144	144
603287	T1030-VS154A-001-DUP (duplicate)	1	ND (0.898)	ND (1.36)	339	339
603371	T1030-VS155-001-C	1	ND (0.898)	ND (1.36)	81.7	81.7
603371	T1030-VS155-001-DUP (duplicate)	1	ND (0.898)	ND (1.36)	80.3	80.3
603287	T1030-VS156A-001-C	1	ND (0.898)	ND (1.36)	140	140
603287	T1030-VS157A-001-C	1	ND (0.898)	ND (1.36)	46.3	46.3
603287	T1030-VS158A-001-C	1	ND (0.898)	4.08	27	31.08
603287	T1030-VS159A-001-C	1	ND (0.898)	ND (1.36)	53.8	53.8
603286	T1030-VS160-001-C	1	ND (0.898)	ND (1.36)	127 H	127
603371	T1030-VS160-001-DUP (duplicate)	1	ND (0.898)	ND (1.36)	254	254
603288	T1030-VS161-001-C	1	ND (0.898)	ND (1.36)	192	192
603299	T1030-VS162-001.5-C	1.5	ND (0.898)	ND (1.36)	151	151
603302	T1030-VS163-002-C	2	ND (0.898)	ND (1.36)	237	237
603305	T1030-VS164-003-C	3	ND (0.898 J)	ND (1.36 J)	81.6 J*	81.6
603299	T1030-VS165-001.5-C	1.5	ND (0.898)	ND (1.36)	451	451
603287	T1030-VS166A-001-C	1	ND (0.898)	ND (1.36)	206	206
603285	T1030-VS167-001-C	1	ND (0.898)	ND (1.36)	40.1	40.1
603285	T1030-VS168-001-C	1	ND (0.898)	ND (1.36)	89.3	89.3
603285	T1030-VS169-001-C	1	ND (0.898)	ND (1.36)	7.3	7.3
603285	T1030-VS170-001-C	1	ND (0.898)	ND (1.36)	48.1	48.1
603285	T1030-VS171-001-C	1	ND (0.898)	ND (1.36)	10.9	10.9
603288	T1030-VS172-001-C	1	ND (0.898)	ND (1.36)	372	372
603299	T1030-VS173-001.5-C	1.5	ND (0.898)	ND (1.36)	293	293
603299	T1030-VS174-001.5-C	1.5	ND (0.898)	ND (1.36)	149	149
603302	T1030-VS175-002-C	2	ND (0.898)	ND (1.36)	79.8	79.8
603305	T1030-VS176-003-C	3	ND (0.898)	ND (1.36)	784	784
603299	T1030-VS177-001.5-C	1.5	ND (0.898)	ND (1.36)	99.5	99.5
603288	T1030-VS178-001-C	1	ND (0.898)	ND (1.36)	230	230
603288	T1030-VS179-001-C	1	ND (0.898)	ND (1.36)	362	362
603288	T1030-VS180-001-C	1	ND (0.898)	ND (1.36)	190	190
603288	T1030-VS181-001-C	1	ND (0.898)	7.8 J (13.3)	28.3	36.1
603288	T1030-VS182-001-C	1	ND (0.898)	ND (1.36)	4.4	4.4
603299	T1030-VS183-001.5-C	1.5	ND (0.898)	ND (1.36)	460	460
603299	T1030-VS184-001.5-C	1.5	ND (0.898)	ND (1.36)	40.4 H	40.4
603299	T1030-VS185-001.5-C	1.5	ND (0.898 J)	ND (1.36 J)	ND (1.42 J)	ND
603299	T1030-VS186-001.5-C	1.5	ND (0.898)	ND (1.36)	287	287
603305	T1030-VS187-003-C	3	ND (0.898)	ND (1.36)	662	662
603299	T1030-VS188-001.5-C	1.5	ND (0.898)	5.0 J*	9.95	14.95
603288	T1030-VS189-001-C	1	ND (0.898)	ND (1.36)	440	440
603295	T1030-VS190-001.5-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603289	T1030-VS191-001-C	1	ND (0.898)	ND (1.36)	61.3	61.3
603289	T1030-VS192-001-C	1	ND (0.898)	ND (1.36)	4.4	4.4

Refer to footnotes at end of table.

Table 2.4.13-1 (Continued)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
May–July 2000
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8082/SW846 8082[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth[c] (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[d]
603289	T1030-VS193-001-C	1	ND (0.898 J)	ND (1.36 J)	ND (1.42 J)	ND
603292	T1030-VS194-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603292	T1030-VS195-001-C	1	ND (0.898)	ND (1.36)	188	188
603302	T1030-VS196-002-C	2	ND (0.898)	ND (1.36)	81.3	81.3
603299	T1030-VS197-001.5-C	1.5	ND (0.898)	ND (1.36)	64.4	64.4
603308	T1030-VS198-003.5-C	3.5	ND (0.898)	142 J*	627	769
603302	T1030-VS199-002-C	2	ND (0.898)	ND (1.36)	192	192
603300	T1030-VS200-001.5-C	1.5	ND (0.898)	ND (1.36)	539	539
603289	T1030-VS201-001-C	1	ND (0.898)	51.6 R	494	545.6
603289	T1030-VS202-001-C	1	ND (0.898)	ND (1.36)	120	120
603289	T1030-VS203-001-C	1	ND (0.898)	ND (1.36)	43.2	43.2
603289	T1030-VS204-001-C	1	ND (0.898)	ND (1.36)	38.3	38.3
603289	T1030-VS204-001-DUP (duplicate)	1	ND (0.898 J)	ND (1.36 J)	8.1 J*	8.1
603292	T1030-VS205-001-C	1	ND (0.898)	47.6	170	217.6
603292	T1030-VS206-001-C	1	ND (0.898)	ND (1.36)	230	230
603300	T1030-VS207-001.5-C	1.5	ND (0.898)	ND (1.36)	3.3 J (3.33)	3.3
603305	T1030-VS208-002.5-C	2.5	ND (0.898)	ND (1.36)	813	813
603308	T1030-VS209-003-C	3	ND (0.898)	80.4 J*	453	533.4
603302	T1030-VS210-002-C	2	ND (0.898)	ND (1.36)	180	180
603308	T1030-VS211-002-C	2	ND (0.898)	ND (1.36)	2.8 J (3.33)	2.8
603300	T1030-VS212-001.5-C	1.5	ND (0.898)	ND (1.36)	61.2	61.2
603290	T1030-VS213-001-C	1	ND (0.898)	ND (1.36)	43.9 J*	43.9
603290	T1030-VS214-001-C	1	ND (0.898)	26.3 J (33.3)	89.7	116.0
603295	T1030-VS215-001.5-C	1.5	ND (0.898)	ND (1.36)	ND (1.42)	ND
603292	T1030-VS216-001-C	1	ND (0.898)	ND (1.36)	326	326
603300	T1030-VS217-001.5-C	1.5	ND (0.898)	ND (1.36)	18.8	18.8
603300	T1030-VS218-001.5-C	1.5	ND (0.898)	ND (1.36)	245	245
603300	T1030-VS219-001.5-C	1.5	ND (0.898)	ND (1.36)	33.5	33.5
603302	T1030-VS220-002-C	2	ND (0.898)	95.2 J*	292	387.2
603290	T1030-VS221-001-C	1	ND (0.898)	ND (1.36)	332	332
603290	T1030-VS222-001-C	1	ND (0.898)	25.9 J* (33.3)	172	197.9
603290	T1030-VS223-001-C	1	ND (0.898)	53.6	241	294.6
603295	T1030-VS224-001.5-C	1.5	ND (0.898)	42.3 H	81.1 H	123.4
603292	T1030-VS225-001-C	1	ND (0.898)	ND (1.36)	18 H	18
603308	T1030-VS226-001.5-C	1.5	ND (0.898)	48.4 J*	191	239.4
603308	T1030-VS226-001.5-DUP (duplicate)	1.5	ND (0.898)	61.8 J*	250	311.8
603300	T1030-VS227-001.5-C	1.5	ND (0.898)	9.5 J*	7.3	16.8
603302	T1030-VS228-002-C	2	ND (0.898)	78	229	307
603302	T1030-VS228-002-DUP (duplicate)	2	ND (0.898)	75.1	215	290.1
603290	T1030-VS229-001-C	1	ND (0.898)	46.5 J*	322	368.5
603290	T1030-VS230-001-C	1	ND (0.898)	58.2	262	320.2
603290	T1030-VS231-001-C	1	ND (0.898)	54.3 J*	390	444.3
603300	T1030-VS232-001.5-C	1.5	ND (0.898)	ND (1.36)	ND (1.42)	ND
603290	T1030-VS233-001-C	1	ND (0.898)	173	621	794
603291	T1030-VS234-001-C	1	ND (0.898)	72.2	303	375.2
603291	T1030-VS235-001-C	1	ND (0.898)	69.3	182	251.3
603291	T1030-VS236-001-C	1	ND (0.898)	123	185	308
603295	T1030-VS237-001-C	1	ND (0.898)	60.7 H	194 H	254.7
603295	T1030-VS238-001.5-C	1.5	ND (0.898)	ND (1.36)	ND (1.42)	ND
603285	T1030-VS239-001-C	1	ND (0.898)	42.2	126	168.2

Refer to footnotes at end of table.

Table 2.4.13-1 (Continued)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
May–July 2000
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8082/SW846 8082[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth[c] (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[d]
603300	T1030-VS240-001.5-C	1.5	ND (0.898)	ND (1.36)	11.9	11.9
603285	T1030-VS241-001-C	1	ND (0.898)	82.3	215	297.3
603295	T1030-VS242-001.5-C	1.5	ND (0.898 J)	2.65 H J* (3.33)	4.3 H J* (3.33)	6.95
603285	T1030-VS243-001-C	1	ND (0.898)	77	85.1	162.1
603285	T1030-VS244-001-C	1	ND (0.898)	35.1	70	105.1
603285	T1030-VS245-001-C	1	ND (0.898)	3.6	3.65	7.25
603285	T1030-VS246-001-C	1	ND (0.898)	ND (1.36)	9	9
603285	T1030-VS247-001-C	1	ND (0.898)	ND (1.36)	282	282
603285	T1030-VS248-001-C	1	ND (0.898)	ND (1.36)	168	168
603300	T1030-VS249-002.0-C	2	ND (0.898)	34.8	70.5	105.3
603295	T1030-VS250-001.5-C	1.5	ND (0.898)	3.38 H	4.9 H	8.28
603295	T1030-VS250-001.5-DUP (duplicate)	1.5	ND (0.898 J)	ND (1.36 J)	ND (1.42 J)	ND
603285	T1030-VS251-001-C	1	ND (0.898)	17.8	32.5	50.3
603285	T1030-VS252-001-C	1	ND (0.898)	15.6 J (16.7)	22.3	37.9
603285	T1030-VS253-001-C	1	ND (0.898)	6.1	3.7 J*	9.8
603300	T1030-VS254-001.5-C	1.5	ND (0.898)	4.7 J* (3.33)	ND (1.42)	4.7
603285	T1030-VS255-001-C	1	ND (0.898)	60.6	257	317.6
603285	T1030-VS256-001-C	1	ND (0.898)	ND (1.36)	72.3 J (167)	72.3
603285	T1030-VS257-001-C	1	ND (0.898)	39.5	94.4	133.9
603285	T1030-VS257-001-DUP (duplicate)	1	ND (0.898)	40.1	97.5	137.6
603286	T1030-VS258-001-C	1	ND (0.898)	18	27.4	45.4
603286	T1030-VS259-001-C	1	ND (0.898)	38.7	17.3	56.0
603286	T1030-VS260-001-C	1	ND (0.898)	31.7	9.9	41.6
603295	T1030-VS261-001-C	1	ND (0.898)	263 H	98.9 H J*	361.9
603295	T1030-VS262-001-C	1	ND (8.98)[e]	19.2 H J (33.3)	42.6 H J*	61.8
603286	T1030-VS263-001-C	1	ND (0.898)	27.5 J*	105	132.5
603286	T1030-VS264-001-C	1	ND (0.898)	90.4	211	301.4
603286	T1030-VS265-001-C	1	ND (0.898)	20.8	26.2	47.0
603286	T1030-VS266-001-C	1	ND (0.898)	8.23	21	29.23
603286	T1030-VS267-001-C	1	ND (0.898)	17.9	33.7	51.6
603286	T1030-VS268-001-C	1	ND (0.898)	152	35.6	187.6
603286	T1030-VS268-001-DUP (duplicate)	1	ND (0.898)	21.6	9.7	31.3
603286	T1030-VS269-001-C	1	ND (0.898 J)	23 J*	45.5 J*	68.5
603286	T1030-VS270-001-C	1	ND (0.898)	24.2	36	60.2
603286	T1030-VS271-001-C	1	ND (0.898 J)	16.3 J*	32.1 J*	48.4
603286	T1030-VS272-001-C	1	ND (0.898)	ND (1.36)	22.5	22.5
603286	T1030-VS273-001-C	1	ND (0.898)	46.7 H	73.8 H	120.5
603286	T1030-VS274-001-C	1	ND (0.898)	68.9	103	171.9
603286	T1030-VS275-001-C	1	ND (0.898)	23.3	30.2	53.5
603286	T1030-VS276-001-C	1	ND (0.898)	10.4	5.77	16.17
603286	T1030-VS277-001-C	1	ND (0.898)	ND (1.36)	42.7	42.7
603294	T1030-VS278-001-C	1	ND (0.898)	ND (1.36)	145	145
603294	T1030-VS279-001-C	1	ND (17.96 J)[e]	ND (27.2 J)[e]	64.7 J* (66.7)	64.7
603294	T1030-VS280-001-C	1	ND (0.898)	ND (1.36)	155	155
603294	T1030-VS280-001-DUP (duplicate)	1	ND (0.898)	ND (1.36)	186	186
603294	T1030-VS281-001-C	1	ND (0.898)	ND (1.36)	369	369
603294	T1030-VS282-001-C	1	ND (0.898)	ND (1.36)	166	166
603294	T1030-VS283-001-C	1	ND (0.898)	ND (1.36)	72.7	72.7

Refer to footnotes at end of table.

Table 2.4.13-1 (Continued)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
May–July 2000
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8082/SW846 8082[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth[c] (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[d]
603294	T1030-VS284-001-C	1	ND (0.898)	ND (1.36)	173	173
603294	T1030-VS285-001-C	1	ND (0.898)	ND (1.36)	263	263
603294	T1030-VS286-001-C	1	ND (0.898 J)	ND (1.36 J)	100 J*	100
603294	T1030-VS287-001-C	1	ND (0.898)	ND (1.36)	47	47
603294	T1030-VS288-001-C	1	ND (0.898)	ND (1.36)	53	53
603294	T1030-VS289-001-C	1	ND (0.898)	ND (1.36)	35.7	35.7
603294	T1030-VS289-001-DUP (duplicate)	1	ND (0.898)	ND (1.36)	43.5	43.5
603292	T1030-VS290-001-C	1	ND (0.898)	ND (1.36)	14.1	14.1
603292	T1030-VS290-001-DUP (duplicate)	1	ND (0.898)	5.43 J*	4.13	9.56
603303	T1030-VS291-002-C	2	ND (0.898)	ND (1.36)	52.1	52.1
603303	T1030-VS292-002-C	2	ND (0.898)	ND (1.36)	29.7	29.7
603305	T1030-VS293-002.5-C	2.5	ND (0.898)	ND (1.36)	ND (1.42)	ND
603298	T1030-VS294-001.5-C	1.5	ND (0.898)	ND (1.36)	37.2	37.2
603298	T1030-VS295-001.5-C	1.5	ND (0.898)	ND (1.36)	49.4	49.4
603298	T1030-VS296-001.5-C	1.5	ND (0.898)	ND (1.36)	60.7	60.7
603298	T1030-VS297-001.5-C	1.5	ND (0.898)	ND (1.36)	15.9	15.9
603298	T1030-VS298-001.5-C	1.5	ND (0.898)	ND (1.36)	156	156
603305	T1030-VS299-002.5-C	2.5	ND (0.898)	ND (1.36)	13	13
603292	T1030-VS300-001-C	1	ND (0.898)	ND (1.36)	156	156
603292	T1030-VS300-001-DUP (duplicate)	1	ND (0.898)	ND (1.36)	247	247
603291	T1030-VS301-001-C	1	ND (0.898)	ND (1.36)	184	184
603291	T1030-VS302-001-C	1	ND (0.898)	ND (1.36)	37.8	37.8
603291	T1030-VS303-001-C	1	ND (0.898)	ND (1.36)	59.6	59.6
603291	T1030-VS304-001-C	1	ND (0.898)	ND (1.36)	58.6 J*	58.6
603291	T1030-VS305-001-C	1	ND (0.898)	ND (1.36)	212	212
603303	T1030-VS306-002-C	2	ND (0.898)	ND (1.36)	91.4	91.4
603292	T1030-VS307-001-C	1	ND (0.898)	ND (1.36)	318	318
603298	T1030-VS308-001.5-C	1.5	ND (0.898)	ND (1.36)	8.28	8.28
603292	T1030-VS309-001-C	1	ND (0.898)	ND (1.36)	920	920
603292	T1030-VS310-001-C	1	ND (0.898)	ND (1.36)	267	267
603292	T1030-VS310-001-DUP (duplicate)	1	ND (0.898)	ND (1.36)	190	190
603298	T1030-VS311-001.5-C	1.5	ND (0.898)	ND (1.36)	29.9	29.9
603298	T1030-VS312-001.0-C	1	ND (0.898 J)	ND (1.36 J)	19 J*	19
603298	T1030-VS313-001-C	1	ND (0.898)	ND (1.36)	208	208
603303	T1030-VS314-001.5-C	1.5	ND (0.898)	ND (1.36)	34.7	34.7
603303	T1030-VS315-001.5-C	1.5	ND (0.898)	ND (1.36)	70	70
603303	T1030-VS316-001.5-C	1.5	ND (0.898)	ND (1.36)	36.2	36.2
603303	T1030-VS317-001.5-C	1.5	ND (0.898)	ND (1.36)	19.5	19.5
603303	T1030-VS318-001.5-C	1.5	ND (0.898)	ND (1.36)	8.7	8.7
603303	T1030-VS319-001.5-C	1.5	ND (0.898)	ND (1.36)	33.5	33.5
603308	T1030-VS320-001.5-C	1.5	ND (0.898)	2.6 J* (3.33)	9	11.6
603303	T1030-VS321-001.5-C	1.5	ND (0.898)	ND (1.36)	18.8	18.8
603296	T1030-VS322-001-C	1	ND (0.898)	ND (1.36)	12	12
603296	T1030-VS323-001-C	1	ND (0.898)	ND (1.36)	9.7	9.7

Refer to footnotes at end of table.

Table 2.4.13-1 (Continued)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
May–July 2000
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method 8082/SW846 8082[a]) (µg/kg)			
Record Number[b]	ER Sample ID	Sample Depth[c] (ft)	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[d]
603296	T1030-VS324-001-C	1	ND (0.898)	ND (1.36)	23.3	23.3
603296	T1030-VS325-001-C	1	ND (0.898)	ND (1.36)	211	211
603296	T1030-VS326-001-C	1	ND (0.898)	ND (1.36)	3.18 J (3.33)	3.18
603296	T1030-VS327-001-C	1	ND (0.898)	ND (1.36)	12.9	12.9
603296	T1030-VS328-001-C	1	ND (0.898)	ND (1.36)	10.7	10.7
603296	T1030-VS328-001-DUP (duplicate)	1	ND (0.898)	ND (1.36)	13.1	13.1
603298	T1030-VS329-001.5-C	1.5	ND (0.898)	ND (1.36)	18.8	18.8
603296	T1030-VS330-001-C	1	ND (0.898)	ND (1.36)	227	227
603296	T1030-VS331-001-C	1	ND (0.898)	ND (1.36)	126	126
603296	T1030-VS332-001-C	1	ND (0.898)	ND (1.36)	153	153
603296	T1030-VS333-001-C	1	ND (0.898)	ND (1.36)	53.8	53.8
603296	T1030-VS334-001-C	1	ND (0.898)	ND (1.36)	14.4	14.4
603296	T1030-VS335-001-C	1	ND (0.898)	2.7 J* (3.33)	10.1	12.8
603296	T1030-VS336-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603296	T1030-VS337-001-C	1	ND (0.898)	ND (1.36)	1.67 J (3.33)	1.67
603296	T1030-VS338-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603303	T1030-VS339-001-C	1	ND (0.898)	ND (1.36)	9.6	9.6
603303	T1030-VS340-001-C	1	ND (0.898)	ND (1.36)	24 J*	24
603303	T1030-VS341-001-C	1	ND (0.898)	ND (1.36)	ND (1.42)	ND
603306	T1030-VS342-000-C	0	ND (0.898)	29.7 J*	92.4	122.1
603306	T1030-VS343-000-C	0	ND (0.898)	17	65.9	82.9
603306	T1030-VS344-000-C	0	ND (0.898)	6.3	24	30.3
603306	T1030-VS345-000-C	0	ND (0.898)	21.2	85.1	106.3
603306	T1030-VS346-000-C	0	ND (0.898)	8.1	31.2	39.3
Quality Assurance/Quality Control Samples (µg/L)						
603279	T1030-EB100-000-EB	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603280	T1030-EB101-000-EB	NA	ND (0.027) R	ND (0.0251) R	ND (0.0134) R	ND
603283	T1030-EB102-000-EB	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603288	T1030-EB103-000-EB	NA	ND (0.027)	ND (0.0251)	ND (0.0134)	ND
603288	T1030-EB104-000-EB	NA	ND (0.027 J H)	ND (0.0251 J H)	ND (0.0134 J H)	ND
603289	T1030-EB105-000-EB	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603290	T1030-EB106-000-EB	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603290	T1030-EB107-000-EB	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603290	T1030-EB108-000-EB	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603290	T1030-EB109-000-EB	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603291	T1030-EB110-000-EB	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603291	T1030-EB111-000-EB	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603295	T1030-EB112-000-EB	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603295	T1030-EB113-000-EB	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603297	T1030-EB114-000-C	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603297	T1030-EB115-000-C	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603301	T1030-EB116-000-C	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603301	T1030-EB117-000-C	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603301	T1030-EB118-000-C	NA	ND (0.027 J)	ND (0.0251 J)	ND (0.0134 J)	ND
603308	T1030-EB119-000-C	NA	ND (0.027)	ND (0.0251)	ND (0.0134)	ND

Refer to footnotes at end of table.

Table 2.4.13-1 (Concluded)
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
May–July 2000
(Off-Site Laboratory)

[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]Beginning sample depth, refers to pre-excavation depth. All samples collected within 3 inches of the excavated surface.
[d]Sum of all detected Aroclor values; qualifiers omitted.
[e]The method detection limit report is a result of dilution of the sample. Method detection limits reported in the Environmental Restoration Data Management System are method-specific and not sample-specific method detection limits.

C = Composite soil sample.
DUP = Duplicate.
EB = Equipment rinsate blank.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
H = Hold time exceeded.
ID = Identification.
J = Estimated value.
J* = See Data Validation Report.
µg/kg = Microgram(s) per kilogram.
µg/L = Microgram(s) per liter.
ND ( ) = Not detected, at or above the method detection limit, shown in parentheses.
ND (J) = Not detected, at or above the method detection limit, shown in parentheses. See Data Validation Report.
PCB = Polychlorinated biphenyl.
R = Data rejected; see Data Validation Report.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.
VS = Verification sample; conveys location identifiers shown on related figures.

and Phase 2 Sampling. The PCB concentrations for VS198, VS209, VS211, and VS226 reflect the sampling completed after Phase 2 excavation.

The field-screening technique was very successful in documenting the effectiveness of the remediation, with only 4 of the 341 analytical laboratory samples containing greater than 1,000 µg/kg. This very low failure rate of approximately 1 percent indicated that the analytical results obtained with the Ensys™ PCB soil test kits compared very well with the EPA Method 8082 results generated by an off-site laboratory in spite of the inherent heterogeneity of separate soil sample aliquots. Based upon the verification sample results, a limited Phase 2 excavation and resampling effort was initiated to address the four remaining nonremediated quadrants.

The MDLs for PCB Aroclors analyzed for are provided in Table 2.4.13-2. RPDs were calculated for the duplicate soil samples collected during the SWMU 30 EC/VCM (Table 2.4.13-3); the results are discussed below in Section 2.4.13.5.

2.4.13.5 QA/QC Results

Table 2.4.13-1 includes the analytical results of the PCB QA/QC sample collected during the verification sampling. Twenty equipment rinsate samples were collected and analyzed for PCBs. There were no PCBs detected in any of the samples. The results of EB101 were qualified as unusable during DV, as discussed below.

To assess the variability within the sampled matrix, 20 field duplicate samples were collected and analyzed for PCBs. The RPDs that were calculated are included in Table 2.4.13-3. Only five of the duplicate soil samples had detections of Aroclor 1254 that could be used to calculate RPDs. The RPDs for three of these samples ranged from 1.51 percent to 3.79 percent, and the remaining two had values of 20 and 150.23 percent. Fifteen of the duplicate soil samples with detections of Aroclor 1260 could be used to calculate RPDs.

- Four of the samples had RPDs less than 10 percent, with values ranging from 1.73 to 9.89 percent,
- Five had RPDs exceeding 10 percent but less than 30 percent, with values ranging from 19.7 to 29.49 percent,
- Two had RPDs exceeding 30 percent but less than 60 percent, with values of 33.7 and 45.16 percent, and
- Four had RPDs exceeding 60 percent, with values ranging from 66.67 to 114.35 percent.

The large variation in RPDs is likely a result of the inhomogeneous distribution of the PCBs in the soil.

Table 2.4.13-2
PCB Analytical Method Detection Limits Used for SWMU 30 Soil Sampling
May–July 2000
(Off-Site Laboratory)

Analyte	Method Detection Limit (µg/kg)
Aroclor 1016	0.782
Aroclor 1221	2.79
Aroclor 1232	0.719
Aroclor 1242	1.65
Aroclor 1248	0.898–17.96
Aroclor 1254	1.36–33.3
Aroclor 1260	1.42–66.7

µg/kg = Microgram(s) per kilogram.
PCB = Polychlorinated biphenyl.
SWMU = Solid Waste Management Unit.

Table 2.4.13-3
Summary of SWMU 30 PCB Relative Percent Differences
May–July 2000
(Off-Site Laboratory)

Sample Attributes			Relative Percent Difference	
Record Number[a]	ER Sample ID	Sample Depth[b] (ft)	Aroclor 1254	Aroclor 1260
603277	T1030-VS030-001-C T1030-VS030-001-DUP (duplicate)	1	20.00	NC
603278	T1030-VS050-001-C T1030-VS050-001-DUP (duplicate)	1	3.72	NC
603280	T1030-VS088-001-C T1030-VS088-001-DUP (duplicate)	1	NC	NC
603281	T1030-VS113-001-C T1030-VS113-001-DUP (duplicate)	1	NC	9.89
603281	T1030-VS119-001-C T1030-VS119-001-DUP (duplicate)	1	NC	29.49
603287	T1030-VS154A-001-C T1030-VS154A-001-DUP (duplicate)	1	NC	80.75
603371	T1030-VS155-001-C T1030-VS155-001-DUP (duplicate)	1	NC	1.73
603286	T1030-VS160-001-C T1030-VS160-001-DUP (duplicate)	1	NC	66.67
603289	T1030-VS204-001-C T1030-VS204-001-DUP (duplicate)	1	NC	NC
603308	T1030-VS226-001.5-C T1030-VS226-001.5-DUP (duplicate)	1.5	NC	26.76
603302	T1030-VS228-002-C T1030-VS228-002-DU (duplicate)	2	3.79	6.31
603295	T1030-VS250-001.5-C T1030-VS250-001.5-DUP (duplicate)	1.5	NC	NC
603285	T1030-VS257-001-C T1030-VS257-001-DUP (duplicate)	1	1.51	3.23
603286	T1030-VS268-001-C T1030-VS268-001-DUP (duplicate)	1	150.23	114.35

Refer to footnotes at end of table.

Table 2.4.13-3 (Concluded)
Summary of SWMU 30 PCB Relative Percent Differences
May–July 2000
(Off-Site Laboratory)

Sample Attributes			Relative Percent Difference	
Record Number[a]	ER Sample ID	Sample Depth[b] (ft)	Aroclor 1254	Aroclor 1260
603294	T1030-VS280-001-C T1030-VS280-001-DUP (duplicate)	1	NC	18.18
603294	T1030-VS289-001-C T1030-VS289-001-DUP (duplicate)	1	NC	19.70
603292	T1030-VS290-001-C T1030-VS290-001-DUP (duplicate)	1	NC	109.38
603292	T1030-VS300-001-C T1030-VS300-001-DUP (duplicate)	1	NC	45.16
603292	T1030-VS310-001-C T1030-VS310-001-DUP (duplicate)	1	NC	33.70
603296	T1030-VS328-001-C T1030-VS328-001-DUP (duplicate)	1	NC	20.17

[a]Analysis request/chain-of-custody record.
[b]Beginning sample depth, refers to pre-excavation depth. All samples collected within 3 inches of the excavated surface.
C = Composite soil sample.
DUP = Composite soil sample duplicate.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
NC = Not calculated for estimated values or nondetected results.
PCB = Polychlorinated biphenyl.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.
VS = Verification sample; conveys location identifier shown on related figures.

Data Validation

All off-site laboratory results were reviewed and verified/validated according to SNL/NM DV procedure AOP 00-03 (SNL/NM January 2000). Annex 2-A contains summaries of the off-site DV results.

Several of the analytical results were qualified during DV. The most common reasons for qualification include the following:

- Surrogate percent recoveries were less than the lower QC acceptance limits but greater than 10 percent,
- Confirmation RPDs were greater than 25 but less than 75 percent,
- The higher detected PCB result was obtained from the confirmation column, and
- The higher detected PCB result was obtained from the first column.

In the case of the latter two qualifications, the higher value was included (along with a "J" qualifier) instead of the value reported by the laboratory. In a very few cases, a validation qualifier was added because the sample was diluted and the dilution factors were less than the lowest calibration standard.

Three samples were rejected during validation as a result of poor surrogate recovery. Two of these samples were soil samples (from locations VS148A and VS194) and one was an equipment rinsate blank (EB101). The samples from locations VS148A and VS194 were initially rejected and then reanalyzed using a higher spiked concentration for the surrogate. The resulting values did not require qualifications because of poor surrogate recovery, but they were both analyzed beyond the method-specified hold time.

2.4.14 Investigation #13—Summer 2000 EC/VCM—Phase 2

Investigation #13 consisted of a limited Phase 2 remedial action to address remaining residual PCB-contaminated soil at four locations that had not been removed during Phase 1.

2.4.14.1 Nonsampling Data Collection

There were no nonsampling data collection activities associated with Investigation #13.

2.4.14.2 Sampling Data Collection

Phase 2 Remediation Activities

Excavation equipment (a backhoe) was remobilized to SWMU 30 on July 19, 2000 to remove an additional 6-inch lift of soil from quadrants VS198, VS209, VS211, and VS226. Approximately 20 cubic yards of soil was removed from the four quadrants and was loaded into trucks for off-

site disposal. Composite PCB screening and potential verification soil samples were again collected from each of the four quadrants following excavation using the same sampling procedures described in Section 2.4.13.

2.4.14.3 Data Gaps

No data gaps were known to exist at the time of completion of Investigation #13. However, based upon analytical results received after completion of Investigation #13 field work several data gaps were noted and discussed further in Section 2.4.15.

2.4.14.4 Results and Conclusions

The screening samples were analyzed by an SNL/NM on-site laboratory at the Chemical Waste Landfill for total PCBs by a modified EPA Method 8082, and all samples were found to contain less than 1,000 µg/kg total PCBs. As a result, the four potential verification samples were submitted to GEL for total PCB analyses by EPA Method 8082. As shown on Figure 2.4.13-5, total PCB concentrations in the four verification samples ranged from to 2.8 to 769 µg/kg (Table 2.4.13-1), and indicated that the goal of removing soil with 1,000 µg/kg or greater total PCBs from all areas of SWMU 30 had been achieved. Figure 2.4.13-5 also shows that soils were excavated to a maximum depth of 3.5 feet at the site during EC/VCM Phases 1 and 2.

2.4.14.5 Data Quality

The QA/QC and DV results for all the soil samples collected as part of the May–July 2000 EC/VCM are discussed in Section 2.4.13.5.

2.4.14.6 Phase 1 and Phase 2 EC/VCM Waste Management and Disposal

<u>Phase 1 and Phase 2 EC/VCM Waste Management and Disposal</u>

As specified in 40 CFR Part 761.61, PCB-contaminated soil is regulated and is managed and disposed of based upon the "concentration at which the PCBs are found," or the "as-found" concentration as discussed on pages 16, 17, 24, and 46 of the "Interpretative Guidance, 1999 PCB Questions and Answers [Q&A] Manual, Part 2" (EPA 1999). This means that the PCB tenor of the waste is based solely on the site characterization data and that additional post-excavation waste characterization sampling is not necessary or required.

SNL/NM ER Project and Waste Management personnel worked closely together to plan and coordinate the waste management and disposal activities for the project and to ensure that PCB-contaminated wastes generated as a result of this remedial action were disposed at facilities authorized and permitted to accept the wastes. As specified in 40 CFR Part 761.61(a)(5)(v)(A), and the Q&A Manual (EPA 1999), soil with less than 50,000 µg/kg PCBs can be disposed at "...a facility permitted, licensed, or registered by a state to manage municipal solid waste... or nonmunicipal, nonhazardous waste...." Therefore, in accordance with these regulations, the solid waste landfill at Rio Rancho, New Mexico, operated by Waste

Management, Inc. was selected for disposal of the soil containing less than 50,000 µg/kg total PCBs. The less-than-50,000 µg/kg soil that was excavated from the hot spots was loaded into end-dump trucks as they arrived at the site. To reduce dust emissions, the soil was sprayed with water as it was being transferred from the front-end loader to the trucks (Figure 2.4.13-2). Each loaded trailer was covered with a heavy fabric cover and the soil was then transported to, and disposed at, the landfill. A total of 5,066 cubic yards of soil with less than 50,000 µg/kg total PCBs was transported and disposed at the Rio Rancho landfill in Phase 1 and Phase 2.

Soil containing 50,000 µg/kg or more total PCBs was loaded into roll-off bins at the site, and was transported to a Toxic Substance Control Act regulated disposal facility in these containers. A total of 35 cubic yards of soils with PCB concentrations of 50,000 µg/kg or greater were removed from hot spot G and disposed at the PCB disposal landfill at Aragonite, Utah, operated by the Safety-Kleen Corporation.

2.4.15 Investigation #14—Summer 2000 Characterization Sampling in the Storm-Water Channel South of Hardin Boulevard

Due to the occurrences of PCB-contaminated soils in the storm-water channel north of Hardin Boulevard, it was considered prudent to determine (1) if PCBs were present in channel sediments on the south side of Hardin Boulevard, and (2) if PCBs were present in concentrations that could necessitate additional remediation.

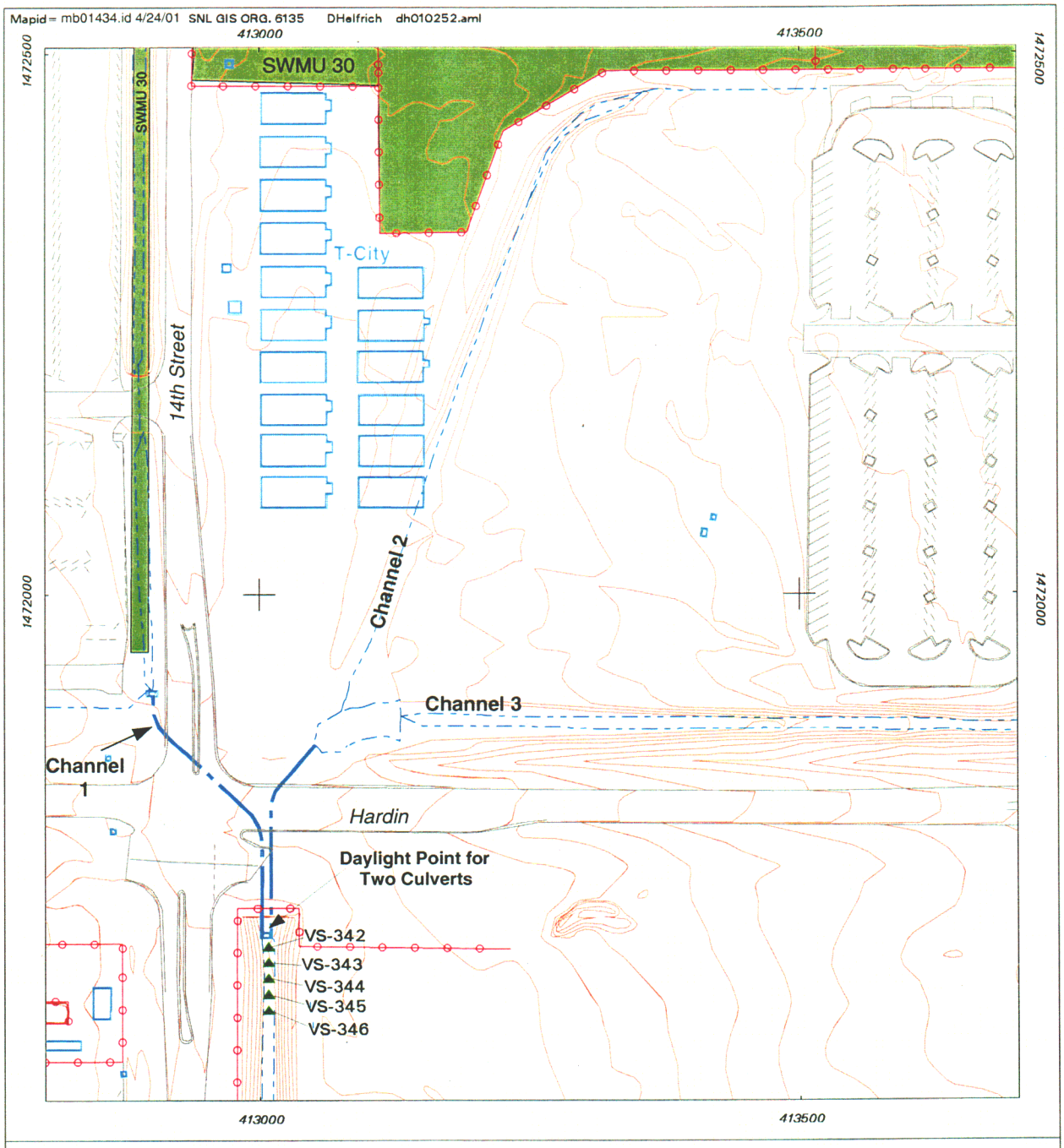
2.4.15.1 Nonsampling Data Collection

There were no nonsampling data collection activities associated with Investigation #14.

2.4.15.2 Sampling Data Collection

As shown on Figure 2.4.15-1, the storm-water channel on the west side of SWMU 30 (referred to as Channel 1 in this section) flows south and passes under Hardin Boulevard via a culvert. This culvert carries water to the southeast and daylights southeast of the Hardin-14th Street intersection. At this location, Channel 1 continues southward toward Tijeras Arroyo.

As shown on Figure 2.4.15-1, a second drainage channel (Channel 2) collects sheet-flow runoff water from a small portion of SWMU 30 and then runs in a southwesterly direction toward the Hardin Boulevard–14th Street intersection. Channel 2 was sampled as part of the SWMU 96 investigation as discussed in Section 2.4.8.4 and shown in Figure 2.4.8-1. A third drainage channel (Channel 3) runs parallel to, and along the north side of, Hardin Boulevard and flows in a westerly direction, also toward the intersection. Channels 2 and 3 come together northeast of the intersection and then enter a second culvert that runs in a southerly direction under Hardin Boulevard. This second culvert connects with, and daylights on, the south side of Hardin Boulevard at the same location as the Channel 1 culvert. The stretch of storm-water channel south of the culvert confluence (on the south side of Hardin Boulevard) collects and drains water from all three channels. It was therefore considered a possibility that PCBs could have been released from SWMU 30 and could have been carried downstream into the section of channel south of Hardin Boulevard.



Legend

- Composite Sample Centerpoint Location
- Edge of Pavement / Parking
- Fence
- 1 Foot Contour
- Surface Drainage
- Underground Culvert
- Building / Structure
- SWMU 30

Figure 2.4.15-1
SWMU 30
Storm-Water Channel
Sample Locations
South of the Site

0 75 150
Scale in Feet

0 18 36
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

In order to determine if significant PCB contamination was present south of Hardin Boulevard, five composite samples were collected on July 19, 2000. The same sampling methodology used for the SWMU 30 verification sampling was employed for these five characterization samples (at locations VS-342 through VS-346). The composite sample quadrants started at the edge of a concrete apron on the south side of the culvert confluence in the bottom of the drainage channel. The center-points for each of the five quadrants were established on 4.5-meter centers, in the middle of the channel using a measuring tape (Figure 2.4.15-1). Soil was then collected from nine aliquots in each of the five quadrants. Each aliquot consisted of soil collected from a depth of 0 to 3 inches with a cylindrical core sampling tool. Individual soil aliquots for each composite sample were thoroughly mixed together, and a sufficient volume of soil was then transferred to the sample container. Unlike the SWMU 30 verification samples, these samples were not field-screened. They were submitted directly to an off-site commercial laboratory for PCB analyses by EPA Method 8082.

2.4.15.3 Data Gaps

Investigation #14 determined that no significant concentrations of PCBs were present in channel sediments south of Hardin Boulevard. No data gaps remain after this investigation.

2.4.15.4 Results and Conclusions

As shown on Table 2.4.13-1, total PCB concentrations in the five samples (at locations VS-342 through VS-346) were determined to range from 30.3 to 122.1 µg/kg. The analytical results for these five samples indicated that significant concentrations of PCBs had not been transported into the drainage channel immediately south of Hardin Boulevard and that no remediation or additional characterization in the drainages downstream from SWMU 30 was required.

2.4.15.5 Data Quality

The QA/QC and DV results for all the soil samples collected in the storm-water channel south of Hardin Boulevard are included with results of the soil samples collected as part of May–July 2000 EC/VCM. They are discussed in Section 2.4.13.5.

2.4.16 Investigation #15—Summer 2000 Building 897X Demolition and Soil Characterization

Investigation #15 was conducted to determine if significant PCB concentrations were present in soils beneath the former Building 897X concrete slab.

2.4.16.1 Nonsampling Data Collection

Building 897X was an 85-foot-long by 35-foot-wide single-story metal building attached to a concrete slab. It was constructed in 1952 and was located in the south central part of SWMU 30 (Figure 2.2.1-1). The building was originally used to store scrap aluminum to be reduced into ingots as part of a SNL/NM disposal process. From the 1960s to 1990, the

building was used for storage of excess equipment to be sold at auction. Building 897X was used in its final years (early 1990s to 2000) by the SNL/NM ER Project for storage of drilling core and cuttings samples generated as a result of groundwater monitoring well installation (IT June 2000). All of the core and cuttings were removed from the building prior to its scheduled demolition in 2000.

Information generated by a Building 897X audit in 1994 indicated that PCB contamination may have been present, as evidenced by oil staining on several areas of the concrete slab (IT June 2000). Therefore, prior to demolition, both surface swipe and concrete core samples were collected from oil-stained areas of the slab in March and April 2000. The concrete core samples were collected in accordance with procedures specified in 40 CFR Part 761.283 and 761.286. They were analyzed for PCBs using EPA Method 8082 by an off-site commercial laboratory, and all were found to contain less then 1,000 µg/kg total PCBs, demonstrating that the concrete could be disposed as nonhazardous waste. Details of the 897X concrete sampling project are described in detail in a report titled "Summary Report, Cement Core Sampling at Building 897X, Sandia National Laboratories/New Mexico" (IT June 2000). Building 897X and the concrete slab were demolished and removed from SWMU 30 on August 14, 2000 (Figure 2.4.16-1).

2.4.16.2 Sampling Data Collection

Following removal of the building and slab, the soil under the building footprint was characterized for PCBs using a 3-meter characterization grid interval as specified in 40 CFR Part 761.265. Sample collection and compositing procedures followed guidance in 40 CFR Parts 761.283 and 761.289 were utilized. As shown on Figure 2.4.16-2, a total of six composite samples plus one field duplicate sample were collected on August 25, 2000 to characterize the footprint area of the former building. Each composite sample consisted of six individual aliquots that were collected and combined in the same manner as the other SWMU 30 composite verification samples. The seven samples were submitted to an off-site laboratory for PCB analyses by EPA Method 8082.

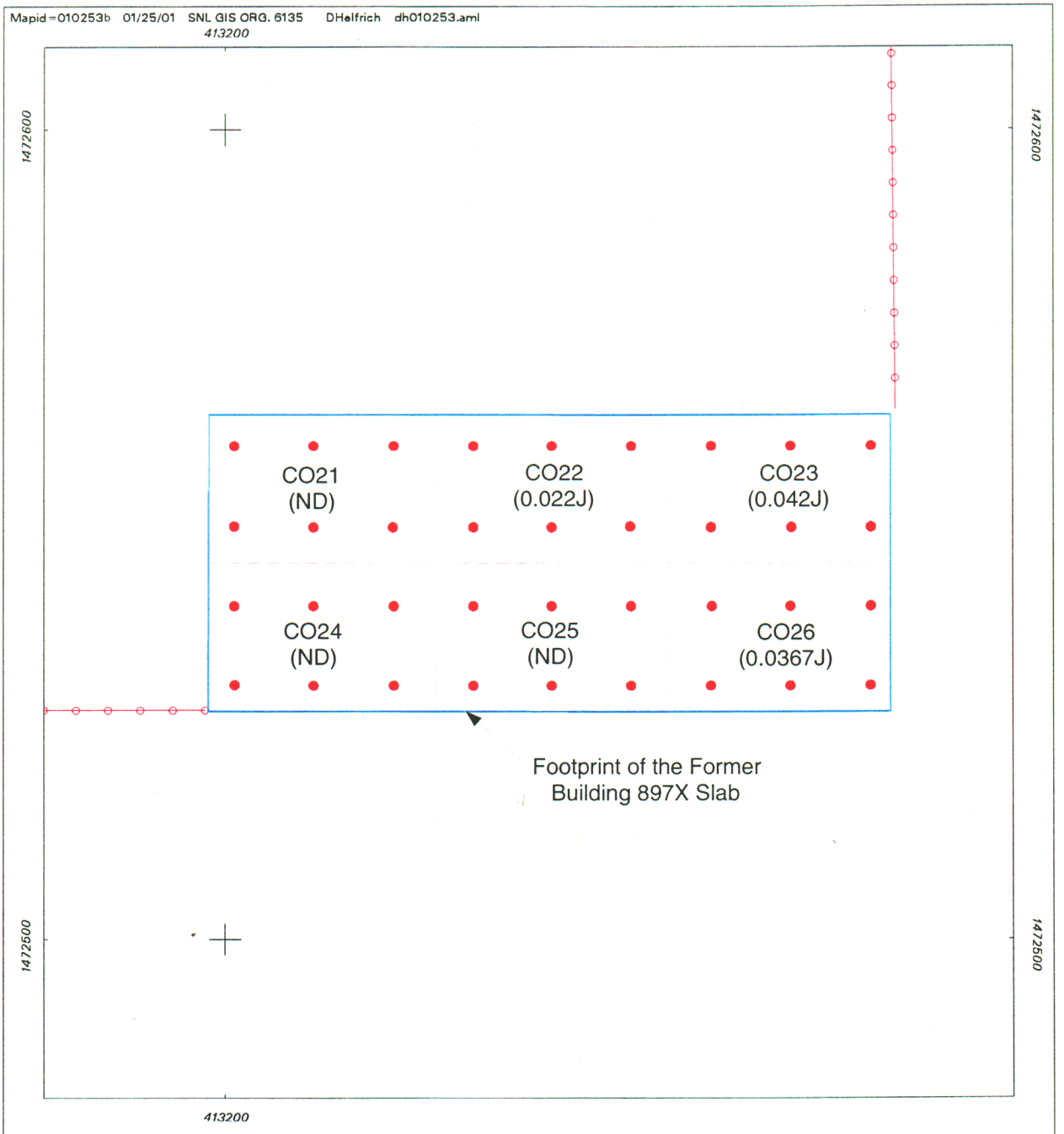
2.4.16.3 Data Gaps

There were no data gaps associated with the Building 897X footprint characterization.

2.4.16.4 Results and Conclusions

Total PCB concentrations detected in the seven Building 897X characterization samples ranged from not detected (0.719 µg/kg MDL) to 42 J µg/kg; all were well below the 1,000 µg/kg total PCB cleanup level (Table 2.4.16-1). The MDLs for PCB Aroclors analyzed for are provided in Table 2.4.16-2. These analytical results demonstrate that there is no significant PCB contamination beneath former Building 897X and that no remediation of soils was required in this area. This was the final site assessment task required at SWMU 30 and demonstrated that the entire site was free of significant PCB contamination and could be released for unrestricted use.

Figure 2.4.16-1
SWMU 30 Photograph (View to the Southwest) of the Building 897X Demolition



Legend

Composite Sample Aliquot Location
CO21 - Composite Sample I.D. Number
(0.022J) Total PCB Concentration
in Composite Sample (parts per million)
ND - Not Detected

Fence

Former Building 897X Footprint

Figure 2.4.16-2 SWMU 30
Location and Analytical Results of Composite Characterization Samples Collected beneath the Concrete Slab of Former Building 897X

0 10 20
Scale in Feet

0 2.4 4.8
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Table 2.4.16-1
Summary of SWMU 30 Surface Soil Sampling PCB Analytical Results
August 2000
Building 897X Demolition
(Off-Site Laboratory)

Sample Attributes			PCBs (EPA Method SW846 8082[a]) (µg/kg)		
Record Number[b]	ER Sample ID	Sample Depth[c] (ft)	Aroclor 1254	Aroclor 1260	Total PCBs[d]
603309	T1030-BH-C021-000-C	0	ND (1.36)	ND (1.42)	ND
603309	T1030-BH-C022-000-C	0	ND (1.36)	22 J* (33.3)	22 J
603309	T1030-BH-C023-000-C	0	17.9 J (33.3)	24.1 J (33.3)	42 J
603309	T1030-BH-C024-000-C	0	ND (1.36)	ND (1.42)	ND
603309	T1030-BH-C025-000-C	0	ND (1.36)	ND (1.42)	ND
603309	T1030-BH-C026-000-C	0	17 J (33.3)	19.7 J (33.3)	36.7 J
603309	T1030-BH-C026-000-DUP (duplicate)	0	ND (1.36)	18.9 J (33.3)	18.9 J

[a]EPA November 1986.
[b]Analysis request/chain-of-custody record.
[c]Beginning sample depth, refers to surface immediately below the former concrete slab.
[d]Sum of all detected Aroclor values.
BH = Borehole; conveys location identifiers shown on related figures.
C = Composite soil sample.
DUP = Duplicate sample.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification.
J ( ) = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit, shown in parentheses.
J* = See Data Validation Report.
µg/kg = Microgram(s) per kilogram.
ND ( ) = Not detected at or above the method detection limit, shown in parentheses.
PCB = Polychlorinated biphenyl.
SWMU = Solid Waste Management Unit.
T1030 = Technical Area-I, SWMU 30.

Table 2.4.16-2
PCB Analytical Method Detection Limits Used for SWMU 30 Soil Sampling
August 2000
Building 897X Demolition
(Off-Site Laboratory)

Analyte	Method Detection Limit (µg/kg)
Aroclor 1016	0.782
Aroclor 1221	2.79
Aroclor 1232	0.719
Aroclor 1242	1.65
Aroclor 1248	0.898
Aroclor 1254	1.36
Aroclor 1260	1.42

µg/kg = Microgram(s) per kilogram.
PCB = Polychlorinated biphenyl.
SWMU = Solid Waste Management Unit.

2.4.16.5 Data Quality

QA/QC Results

Tables 2.4.16-1 shows the analytical results of the PCB QA/QC sample that was collected during the confirmatory sampling of the soil beneath the slab at Building 897X. To assess the variability in analytical results within the sampled matrix, one field duplicate sample was collected and analyzed for PCBs. The RPD could not be calculated for the PCBs because all of the Aroclors were either estimated or not detected.

Data Validation

All off-site laboratory results were reviewed and verified/validated according to SNL/NM DV procedure AOP 00-03 (SNL/NM January 2000). Annex 2-A contains summaries of the off-site DV results. The verification/validation process confirmed that the data are acceptable for use in this NFA proposal for SWMU 30.

2.5 Site Conceptual Model

The site conceptual model for SWMU 30 is based upon the residual COCs identified in surface soil samples during the RFI and the residual COCs identified in samples collected following the EC/VCM activities. This section summarizes the nature and extent of contamination and the environmental fate of COCs.

2.5.1 Nature and Extent of Contamination

The COCs at SWMU 30 are PCBs, metals, and SVOCs associated with the Reclamation Yard activities over an approximately 40-year history.

Table 2.5.1-1 summarizes the COCs for SWMU 30. Inorganic COCs exceeded background concentrations in the surface soil samples collected in areas sporadically throughout the site. Inorganic COCs were determined by comparing sample results to background concentrations that had been established in the North Super Group (Dinwiddie September 1997). Any inorganic analyte found to exceed background in any sample was considered a potential COC for the site. Consequently, inorganic COCs included antimony, arsenic, barium, cadmium, chromium (total), copper, cyanide (total), lead, mercury, selenium, silver, thallium, vanadium, and zinc.

SVOCs were considered COCs when the concentrations exceeded the MDLs. Consequently, the SVOC COCs included 1,2,4-trichlorobenzene; acenaphthene; 2-chlorophenol; 2-methylnaphthalene; 4-chloro-3-methylphenol; anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; butyl benzyl phthalate; carbazole; chrysene; dibenzo(a,h) anthracene; dibenzofuran; dimethylphthalate; di-n-butyl phthalate; di-n-octyl phthalate; fluoranthene; fluorene; indeno(1,2,3-c,d)pyrene; napthalene; phenanthrene; phenol; and pyrene.

The SWMU 30 EC/VCM was implemented to remove soils contaminated with total PCBs at concentrations greater than or equal to 1,000 µg/kg. The soils in the area excavated during the PCB remediation also may have contained inorganics and SVOCs above background. As a conservative measure, the pre-excavation concentrations of inorganics and SVOCs are assumed to still be present in site soils. As discussed above in Section 2.4.13, the verification samples collected at the base of the excavation all had concentrations less than 1,000 µg/kg. With an MDL of 1.42 µg/kg, 14 percent of the samples at the excavated surface were nondetects. Assuming that the nondetects contained concentrations of PCBs equal to the MDL, the average concentration of PCBs in the soil samples is 95 µg/kg. The maximum concentration of residual PCBs on the excavated surface was 920 µg/kg, although 98 percent of the samples had PCB concentrations less than half of the 1,000 µg/kg cleanup level.

The confirmatory surface soil samples are considered to be representative of the *in situ* soil potentially contaminated with PCBs and sufficient to determine the vertical extent of PCBs, due to the following:

- The past practices released PCBs to the surface soils,
- With the exception of the black tarry substance in the southwest portion of SWMU 30, there was no information suggesting that materials had been buried at the site, and
- The vertical rate of contamination migration was expected to be extremely low for SWMU 30 because of the low precipitation, high evapotranspiration, impermeable vadose zone soils, and the relatively low solubility of PCBs.

Table 2.5.1-1
Summary of Residual COCs for SWMU 30

COC Type	Number of Samples	COCs Greater Than Background	Maximum Background Limit/ North Area[a] (mg/kg)	Maximum Concentration (mg/kg)	Average Concentration[b] (mg/kg)	Number of Background Concentrations where Background Concentration Exceeded[c]
Inorganics	198	Antimony	3.9	6	NC	4
	198	Arsenic	4.4	8.4	5.19	59
	198	Barium	200	1,020	NC	79
	198	Cadmium	<1	26	NC	31
	198	Chromium, total	12.8	35.3	NC	7
	198	Copper	17	1,080	NC	44
	198	Cyanide, total	NC	6.6	NC	7
	198	Lead	11.2	245	NC	66
	198	Mercury	<0.1	1.8	NC	10
	198	Silver	<1	2.2	NC	3
	198	Thallium	<1.1	1.8	NC	27
	198	Vanadium	33	60.7	NC	64
	198	Zinc	76	1,050	NC	19
SVOCs	186	1,2,4-Trichlorobenzene	NA	0.036 J	NC	NA
	186	Acenaphthylene	NA	0.42	NC	NA
	186	2-Chlorophenol	NA	0.051 J	NC	NA
	186	2-Methylnaphthalene	NA	0.170 J	NC	NA
	186	4-Chloro-3-methylphenol	NA	0.039 J	NC	NA
	186	Anthracene	NA	0.43	NC	NA
	186	Benzo(a)anthracene	NA	1.8	0.053	NA
	186	Benzo(a)pyrene	NA	1.4	0.049	NA
	186	Benzo(b)fluoranthene	NA	2.2	0.12	NA
	186	Benzo(g,h,i)perylene	NA	0.88	0.25	NA
	186	Benzo(k)fluoranthene	NA	0.19 J	NC	NA
	186	Benzoic acid	NA	0.061 J	NC	NA
	186	Bis (2-ethylhexyl) phthalate	NA	1.7 J	NC	NA
	186	Butyl benzyl phthalate	NA	0.68	NC	NA
	186	Carbazole	NA	0.18 J	NC	NA
	186	Chrysene	NA	1.6	NC	NA
	186	Dibenzo(a,h) anthracene	NA	0.31 J	0.33	NA
	186	Dibenzofuran	NA	0.31 J	NC	NA
	186	Dimethylphthalate	NA	0.15 J	NC	NA
	186	Di-n-butyl phthalate	NA	4.1	NC	NA
	186	Di-n-octyl phthalate	NA	0.12 J	NC	NA
	186	Fluoranthene	NA	2.5	NC	NA
	186	Fluorene	NA	0.57	NC	NA
	186	Indeno(1,2,3-c,d) pyrene	NA	0.77	NC	NA
	186	Napthalene	NA	0.25 J	NC	NA
	186	Phenanthrene	NA	2.6	NC	NA
	186	Phenol	NA	0.066 J	NC	NA
	186	Pyrene	NA	2.5	NC	NA
PCBs[d]	346	Total PCBs	NA	0.92	NC	NA

Refer to footnotes at end of table.

Table 2.5.1-1 (Concluded)
Summary of Residual COCs for SWMU 30

[a]From Dinwiddie (September 1997).
[b]Average concentration includes all samples. For nondetected results, the detection limit is used to calculate the average.
[c]Provided only for COCs for which established background concentrations exist (i.e., metals).
[d]Only post-EC/VCM PCB concentrations are included.

COC = Constituent of concern.
EC/VCM = Expedited Cleanup/Voluntary Corrective Measures.
J = The reported value is greater than or equal to the method detection limit, but is less than the practical quantitation limit.
mg/kg = Milligram(s) per kilogram.
NA = Not applicable.
NC = Not calculated; average concentrations were only calculated for COCs that contributed significantly to risk.
PCB = Polychlorinated biphenyls.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.
VOC = Volatile organic compound.

2.5.2 Environmental Fate

The primary releases of COCs at SWMU 30 were to the surface soil as a result of the past practices of using waste oil for dust control and uncontrolled handling of surplus materials. The primary release mechanism of COCs occurred during these past practices. The direct application of PCB-containing waste oil and the storage of reclaimable materials released COCs to the underlying surface soil over time. Under the current conditions, wind, water, and biota are potential natural mechanisms of COC transport from the site.

The mobility and persistence of the COC at this site (PCBs) is well known (Erickson 1986; EPA December 1979). Because PCBs are relatively inert compounds, dispersion and accumulation in the environment are important factors in the fate of PCB contamination. Generally, PCBs can be transported in three phases at the surface: a dissolved phase, a pure PCB oil phase, and an adsorbed phase (on sediments). With low water solubility and a high viscosity in the oil state, the adsorbed phase of PCBs is the most important mechanism for migration, and consequently PCBs have a low mobility at the site. PCBs are strongly adsorbed to organic matter, but much less readily to minerals (Schwartz et al. March 1982). The combination of low water solubility (0.0027 to 15 mg/L) and high octanol-water partition coefficient (2.8 to 7.4, unitless) indicates that PCBs will have a high affinity for suspended solids, especially those rich in organic carbon (EPA December 1979).

SWMU 30 lies immediately east of a storm-water surface drainage, with the current recent site boundary extending down this surface-water feature. During the EC/VCM, the site was recontoured and flow channels barricaded with hay bales to minimize erosion into a nearby surface drainage. To further prevent surface-water transport, contaminated soil was removed during the SWMU 30 EC/VCM. Prior to the EC/VCM, intense rainfall events produced surface run-off that actively eroded the site; thus, the predominant release mechanism is surface-water flow.

Possible secondary release mechanisms include suspension and/or dissolution of trace levels of residual COCs in surface-water runoff and in percolation to the vadose zone, direct contact of receptors with soil, wind erosion/dust emissions, and uptake of COCs in the soil by biota. The depth to groundwater at the site (approximately 300 feet bgs) precludes migration of residual

COCs to the shallow groundwater system. The pathways to receptors are soil ingestion, inhalation, and direct exposure. Plant uptake was also considered as a pathway for the residential scenario only. Annex 2-B provides additional discussion of the fate and transport of COCs at SWMU 30.

The current and future land use for SWMU 30 is industrial (DOE and USAF September 1995). However, because long-term stewardship issues have not been addressed, a residential land use is also considered. For all applicable pathways, the exposure route for the receptor is dermal contact and ingestion/inhalation. Potential biota receptors include flora and fauna at the site. Similar to the human receptor, ingesting COCs through food chain transfers or indirect uptakes are the major pathways. Annex 2-B provides additional discussion of the exposure routes and receptors at SWMU 30.

2.6 Site Assessments

Site assessments at SWMU 30 include a risk screening assessment followed by a risk baseline assessment (as required) for both human health and ecological risk. The following sections summarize the site assessment results. Annex 2-B provides details of the site assessment.

2.6.1 Summary

The site assessments conclude that SWMU 30 has no significant potential to affect human health under an industrial land-use scenario. After considering the uncertainties associated with the available data and modeling assumptions, ecological risks associated with SWMU 30 were found to be acceptable. Section 2.6.2 briefly describes and Annex 2-B provides details of the site screening assessments.

2.6.2 Screening Assessments

Risk screening assessments were performed for both human health risk and ecological risk for SWMU 30. This section briefly summarizes the risk screening assessments.

2.6.2.1 Human Health

SWMU 30 has been recommended for industrial land use (DOE and USAF September 1995). Annex 2-B provides a complete discussion of the risk assessment process, results, and uncertainties. Because COCs are present in concentrations greater than background levels, it was necessary to perform a human health risk assessment analysis for the site. Generally, COCs that were evaluated in this risk assessment included all detected organic and inorganic COCs for which samples were analyzed. The risk assessment process provides a quantitative evaluation of the potential adverse human health effects caused by constituents in the site's soil by calculating the hazard index (HI) and excess cancer risk for an industrial land-use setting.

In summary, the HI for an industrial land-use setting calculated for SWMU 30 for all COCs is 0.2, which is less than the numerical standard of 1.0 suggested by risk assessment guidance (EPA 1989). Incremental HI risk, determined by subtracting risk associated with background from potential COC risk, is 0.17 for the industrial land-use setting. The excess cancer risk for

SWMU 30 COCs is 1E-5 for an industrial land-use setting and 3E-4 for a residential land-use setting. NMED Guidance states that cumulative excess lifetime cancer risk must be less than 1E-05 (NMED March 2000), thus the excess cancer risk for this site is at the suggested acceptable risk value for an industrial land-use setting and above the suggested acceptable risk value for a residential land-use setting. The incremental excess cancer risk is 1.02E-5 for an industrial land-use setting and 2.02E-4 for a residential land-use setting. Since the site has been adequately characterized, average concentrations are more representative of actual site conditions. Using the 95th upper confidence limit of the mean concentration for the risk drivers reduced the total excess cancer risk to 4.37E-6 and the incremental excess cancer risk was reduced to 2.37E-6.

2.6.2.2 Ecological

An ecological screening assessment that corresponds with the screening procedures (NMED March 1998) in the EPA's Ecological Risk Assessment Guidance for Superfund (EPA 1997) was performed as set forth by the NMED Risk-Based Decision Tree. An early step in the evaluation compared COC concentrations and identified potentially bioaccumulative constituents (see Annex 2-B, Sections IV, VI, VII.2, and VII.3). This methodology also required developing a site conceptual model and a food web model as well as selecting ecological receptors. Each of these items was presented in the "Predictive Ecological Risk Assessment Methodology for SNL/NM ER Program, Sandia National Laboratories/New Mexico" (IT July 1998) and will not be duplicated here. The screening also includes the estimation of exposure and ecological risk.

Tables 14 and 15 of Annex 2-B present the results of the ecological risk assessment screen. Site-specific information was incorporated into the screening assessment when such data were available. Several hazard quotients greater than 1 were originally predicted; however, closer examination of the exposure assumptions revealed an overestimation of risk primarily attributed to exposure concentration (maximum COC concentration was used in estimating risk), the wildlife toxicity benchmark, diet extremes for deer mouse, the area use factor for wildlife receptors, and background risk. Based upon an evaluation of these uncertainties, ecological risks associated with this site are expected to be very low.

2.6.3 Baseline Risk Assessments

This section discusses the baseline risk assessments for human health and ecological risk.

2.6.3.1 Human Health

Because human health results of the screening assessment summarized in Section 2.6.2.1 indicate that SWMU 30 does not have potential to affect human health under an industrial land-use setting, a baseline human health risk assessment is not required for SWMU 30.

2.6.3.2 Ecological

Based upon the fact that ecological results of the screening assessment summarized in Section 2.6.2.2 indicate that SWMU 30 has very low ecological risk, a baseline ecological risk assessment is not required for SWMU 30.

2.6.4 Other Applicable Assessments

A surface-water site assessment was conducted at SWMU 30 in August 1998 (SNL/NM August 1998). The surface-water assessment guidance was developed jointly by Los Alamos National Laboratory and the NMED Surface-Water Quality Bureau. The assessment evaluated the potential for erosion from SWMU 30. SWMU 30 received a score of 65.8, indicating that it has high erosion potential. The high erosion potential is primarily due to relatively well-developed gullies and its proximity to a storm-water channel. The site was regraded and the storm-water channel protected with silt-control systems, which will reduce any future erosion potential at the site. The remediation of the site prevents surface-water runoff from causing contaminant migration at SWMU 30. Additionally, as discussed under the Results and Conclusions section of the individual investigations (2.4.X.4; where X is 2 through 16) and Screening Assessments section (Section 2.6.2), residual COCs detected are not at levels that pose a threat to human health or the environment or that could adversely affect surface-water quality.

2.7 No Further Action Proposal

2.7.1 Rationale

Based upon field investigation data and the human health risk assessment analysis, an NFA is recommended for SWMU 30 because no COCs (particularly PCBs) were present in concentrations considered hazardous to human health for a industrial land-use scenario.

2.7.2 Criterion

Based upon the evidence provided above, SWMU 30 is proposed for an NFA decision in conformance with Criterion 5 (NMED March 1998), which states, "The SWMU/AOC has been characterized or remediated in accordance with current applicable state or federal regulations, and that available data indicate that contaminants pose an acceptable level of risk under current and projected future land use."

REFERENCES

40 CFR Part 103, Interim Method for the Determination of Asbestos in Bulk Insulation Samples. May 27, 1982.

40 CFR Part 264.24, EPA Recommended Guidelines for the Determination of Toxicity Characteristics. July 1, 1997.

40 CFR Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions. August 28, 1998.

Aspen (Aspen Law & Business), 2000. "RCRA Regulations & Keyword Index–2000 Edition" Aspen Publishers, Inc., Frederick, Maryland. 2000.

BCM Engineers (BCM), October 1989. Asbestos, Metal, and Polychlorinated Biphenyls Containing Materials Survey for Building 897, 2nd and 3rd Yards. Prepared for Sandia National Laboratories, Albuquerque New Mexico (Industrial Hygiene, Department 3211 [as of 1989]) by BCM Engineers of Dallas, Texas. October, 1989.

Chavez, A., July 1997. SNL/NM Memo to D. Miller (Dept. 6682) from Angela Chavez (Dept. 7578). Subject: Preliminary Results for COC 06721, July 15, 1997.

Cox, W., September 1991. Informal Transfer of Analytical Results for Sample SNLA005417, September 22, 1991.

Cox, W., and T. Steinborn, November 1991. Discussion of TA-I Reclamation Yard as an Environmental Restoration Site. Sandia National Laboratories memorandum to P. Montoya, November 13, 1991.

Dinwiddie, R. S. (New Mexico Environmental Department), September 1997. Letter to M. J. Zamorski (U.S. Department of Energy), "Request for Supplemental Information: Background Concentrations Report, Sandia National Laboratories/Kirtland Air Force Base," September 24, 1997.

DOE, see U.S. Department of Energy.

E&E, see Ecology and Environment.

Ecology and Environment (E&E), January 1990. Report of Follow-up PCB and Asbestos Sampling at the Sandia Salvage Yard ER Program Site #30 Task AL-SA-9. Prepared for Sandia National Laboratories, Albuquerque, Environmental Restoration Program, Project Group. Albuquerque, New Mexico by Ecology and Environment, Inc. Albuquerque, New Mexico, January, 1990.

Environmental Restoration Chemistry Laboratory (ERCL), July 1997. Informal transmittal of Preliminary Data (COC 06720) to Michael Skelly (Dept. 6682) from SNL ER Chemistry Laboratory (Dept. 6684), July 15, 1997.

EPA, see U.S. Environmental Protection Agency.

Erickson, M.D., 1986. Analytical Chemistry of PCBs. Boston: Butterworth Publishers, 1986.

Evans, M. A., July 1997. Personal Communication between Marc Evans (SNL/NM Dept. 7919) and David R. Miller (SNL/NM Dept. 6682). Subject: Asbestos in Soil [also included a forwarded E-mail communication between Carol LaDelfe (Los Alamos National Laboratory ER Project) and Brian Britain (SNL/NM Dept. 7919) that described cleanup criteria for a EC/VCM at site MDA-M], July 11, 1997.

Hacker, L., 1977. Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico. U. S. Department of Agriculture, Washington, D.C.

Hahn, G., February 1990a. Ecology and Environment, Inc. Internal memorandum from Gary Hahn to Jim Buchanan. Subject: Interim Remedial Action of Sandia Salvage Yard. Job Reference: 9000.207, February 2, 1990.

Hahn, G., February 1990b. Ecology and Environment, Inc. Internal memorandum from Gary Hahn to Jim Buchanan. Subject: Interim Remedial Action of Sandia Salvage Yard. Job Reference: 9000.214, February 2, 1990.

Hahn, G., February 1990c. Ecology and Environment, Inc. Internal memorandum from Gary Hahn to Jim Buchanan. Subject: Sandia Salvage Yard—Interim Remedial Action. Job Reference: 9000.213, February 12, 1990.

IT Corporation (IT), February 1992. Site Specific Sampling and Analysis Plan, Technical Area I Reclamation Yard. Prepared for Sandia National Laboratories, New Mexico, Environmental Restoration Program, February 1992.

IT Corporation (IT), July 1992. Technical Area I, Reclamation Yard Surface Soil Sampling Report. Prepared for Sandia National Laboratories, New Mexico, Department 7723, July 1992.

IT Corporation (IT), July 1998. "Predictive Ecological Risk Assessment Methodology, Environmental Restoration Program, Sandia National Laboratories, New Mexico," IT Corporation, Albuquerque, New Mexico.

IT Corporation (IT), June 2000. "Summary Report, Cement Core Sampling at Building 897X, Sandia National Laboratories/New Mexico," IT Corporation, Albuquerque, New Mexico.

IT, see IT Corporation.

Jacobs, J., October 1991. Old Reclamation Yard Cleanup. Sandia National Laboratories memorandum to R.W. Lynch, October 7, 1991.

Kottenstette, R.J., April 1995. SNL/NM Memo to D. Miller (Dept. 7582) from Richard Kottenstette (Dept. 7584). Subject: PCB Testing at Site 30, April 21, 1995.

Lewis, P., February 1997. SNL/NM Memo to D. Miller (Dept. 6682) from Patrick Lewis (Dept. 6684). Subject: Results for ARCOC#4979, February 24, 1997.

Miller, D., March 1993. Construction Activities Adjacent to ER Program Site #30, Reclamation Yard. Sandia National Laboratories memorandum to W.B. Cox, March 17, 1993.

Miller, D., March 1995. Environmental Restoration Site #30, Old Reclamation Yard. Sandia National Laboratories memorandum to Nancy Morlock (U.S. EPA Region VI), March 31, 1995.

National Oceanographic and Atmospheric Administration (NOAA), 1990. Local Climatological Data, Annual Summary with Comparative Data, Albuquerque, New Mexico.

New Mexico Environment Department (NMED), March 1998. "RPMP Document Requirement Guide," New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico.

New Mexico Environment Department (NMED), July 1998. Department of Energy Oversight Bureau's Review of "Expedited Cleanup/Voluntary Corrective Measure Plan for the Environmental Restoration Site 30 (Reclamation Yard)," July 27, 1998.

New Mexico Environment Department (NMED), September 1998. Hazardous & Radioactive Materials Bureau's Request for Supplemental Information: Technical Area I RCRA Facilities Investigation, Expedited Cleanup/Voluntary Corrective Measure Plan, ER Project Site 30, Reclamation Yard, Sandia National Laboratories, September 18, 1998.

New Mexico Environment Department (NMED), March 2000. "Position Paper, Assessing Human Health Risks Posed by Chemicals: Screening-level Risk Assessment," Hazardous and Radioactive Materials Bureau, New Mexico Environment Department, Santa Fe New Mexico.

NOAA, see National Oceanographic and Atmospheric Administration.

Pei, P., April 1986. Reclamation Yard PCB Soil Survey. Sandia National Laboratories memorandum to W.D. Burnett, April 24, 1986.

Sandia National Laboratories/New Mexico (SNL/NM), 1993. Site-Wide Hydrogeologic Characterization Project (SWHCP) Calendar Year 1992 Annual Report. Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office.

Sandia National Laboratories/New Mexico (SNL/NM), 1994. Site-Wide Hydrogeologic Characterization Project Calendar Year 1993 Annual Report. Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office.

Sandia National Laboratories/New Mexico (SNL/NM), October 1994. "Verification and Validation of Chemical and Radiochemical Data," Rev. 0, Technical Operating Procedure 94-03, Sandia National Laboratories, Albuquerque, New Mexico, October 1994.

Sandia National Laboratories/New Mexico (SNL/NM), February 1995. Technical Area I (ADS 1302) RCRA Facility Investigation Work Plan. Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, February 1995.

Sandia National Laboratories/New Mexico (SNL/NM), 1996. Technical Area I RCRA Facility Investigation Data Evaluation Report, Environmental Restoration Site 96, Storm Drain System. Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office.

Sandia National Laboratories/New Mexico (SNL/NM), February 1997. Technical Area I RCRA Facility Investigation Data Evaluation Report, Environmental Restoration Site 30, Reclamation Yard. Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, February 1997.

Sandia National Laboratories/New Mexico (SNL/NM), May 1997. Technical Area I (ADS 1302) RCRA Facility Investigation Supplemental Sampling and Analysis Plan, Environmental Restoration Site 30, Reclamation Yard. Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, May 1997.

Sandia National Laboratories/New Mexico (SNL/NM), July 1997. Technical Area I RCRA Facility Investigation Supplemental Data Evaluation Report, Environmental Restoration Site 30, Reclamation Yard. Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, July 24, 1997.

Sandia National Laboratories/New Mexico (SNL/NM), April 1998. Technical Area I RCRA Facility Investigation Expedited Cleanup/Voluntary Corrective Measure Plan, Environmental Restoration Site 30, Reclamation Yard. Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, April 1998.

Sandia National Laboratories/New Mexico (SNL/NM), August 1998. "Surface Water Site Assessment for SWMU 30, OU 1302," Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico, August 6, 1998.

Sandia National Laboratories/New Mexico (SNL/NM), November 1998. Response to NMED RSI Comments on the Technical Area I RCRA Facility Investigation Expedited Cleanup/Voluntary Corrective Measure Plan, Environmental Restoration Site 30, Reclamation Yard. Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, November 18, 1998.

Sandia National Laboratories/New Mexico (SNL/NM), February 1999. "Mercury Hot Spot Sampling Project at Environmental Restoration Project Site 30, Reclamation Yard," Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, February 1999.

Sandia National Laboratories/New Mexico (SNL/NM), April 1999. "Technical Area I, RCRA Facilities Investigation, Expedited Clean-Up/Voluntary Corrective Measure Plan, Environmental Restoration Project Site 30, Reclamation Yard," (Notification of Self-Implementing Clean-Up and Disposal of PCBs at SWMU 30) Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, April 1999.

Sandia National Laboratories/New Mexico (SNL/NM), August 1999. "MESA—Sandia's Largest Project Ever—Wins DOE Nod for Conceptual Design," Sandia Lab News, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, August 27, 1999.

Sandia National Laboratories/New Mexico (SNL/NM), January 2000. "Data Validation Procedure for Chemical and Radiochemical Data," Rev. 0, SNL/NM Environmental Restoration Project Administrative Operating Procedure (AOP) 00-03, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), March 2000. "Revised Notification of Self-Implementing Clean-Up and Disposal of Polychlorinated Biphenyls (PCBs) at Environmental Restoration Project Site 30, Reclamation Yard," Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, March 2000.

Sandia National Laboratories/New Mexico (SNL/NM), June 2000. "Summary Report—Cement Core Sampling at Building 897X, Sandia National Laboratories/New Mexico" , Department 7833 Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, June 2001.

Schwartz, F.W., J.A. Cherry, and J.R. Roberts, March 1982. A Case Study of a Chemical Spill: Polychlorinated Biphenyls (PCBs) 2: Hydrogeological Conditions and Contaminant Migration." Water Resources Research, 19(3): 535–545.

Skelly, M.F., May 1997. SNL/NM (Department 6682) Memo to David Miller (SNL/NM Department 6682) and Tim Goering (SNL/NM Department 6685). Subject: Evaluation of Air Photos for Determining Former Boundaries of the Reclamation Yard (ER Site 30), May 9, 1997.

Skelly, M.F., June 1998. SNL/NM (Department 6682) Memo to John Gould (DOE-KAO). Subject: Revised Map and Supplemental Data for the ER Site 30 Voluntary Corrective Measure Plan, June 26, 1998.

Skelly, M.F., March 2000. SNL/NM Memo to Brenda Langkopf (SNL/NM Department 6133) from Mike Skelly, Subject: Submittal of the Supplemental Data Evaluation Report for PCB and Metals Sampling of the North-Central Portion of ER Site 30, March 22, 2000.

SNL/NM, see Sandia National Laboratories/New Mexico.

Stockham, D.J., June 1993. Petroleum Spill at the Old Reclamation Yard (ER Site #30). Sandia National Laboratories memorandum to A. Guss, June 9, 1993.

Stockham, D.J., August 1993. PCB Sample Results. Sandia National Laboratories memorandum to D. Szklarz, August 11, 1993.

Thompson, B.M., and G.J. Smith, 1985. "Investigation of Groundwater Contamination Potential at Sandia National Laboratories." Proceedings of the Fifth DOE Environmental Protection Information Meeting, CONF-841187: 531-540, held in Albuquerque, New Mexico, November 1984.

U.S. Department of Energy (DOE), September 1987. Comprehensive Environmental Assessment and Response Program (CEARP), Phase I: Installation Assessment, Sandia National Laboratories, Albuquerque, New Mexico [DRAFT]. U.S. Department of Energy, September 1987.

U.S. Department of Energy (DOE), March 1996. Environmental Assessment of the Environmental Restoration Project at Sandia National Laboratories/New Mexico. U.S. Department of Energy/Kirtland Area Office, March 1996.

U.S. Department of Energy (DOE), December 1999. Correspondence between Michael J. Zamorski (DOE KAO) and David W. Neleigh (EPA Region 6) regarding the revision in cleanup standard and possible alternative remediation strategies, December 9, 1999.

U.S. Department of Energy (DOE) and U.S. Air Force (USAF), September 1995. Workbook: Future Use Management Area 2, Sectors 2E and 2G, Areas I-V. Prepared by Keystone Environmental and Planning for the Future Use Logistics and Support Working Group in cooperation with Department of Energy Affiliates, the U.S. Air Force and the U.S. Forest Service. September 1995.

U.S. Environmental Protection Agency (EPA), December 1979. Water Related Fate of 129 Priority Pollutants: Volume II. U.S. Environmental Protection Agency Report, EPA-440/4-72-029b, December, 1979.

U.S. Environmental Protection Agency (EPA), August 1985. Verification of PCB Spill Cleanup by Sampling and Analysis, EPA-560/5-85-026. Office of Toxic Substances, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), May 1986. Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup, EPA-560/5-86-017. Office of Toxic Substances, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), November 1986. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, Third Edition. U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1989. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual," EPA/540-1089/022, U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1997. "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risks," Interim Final, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1999. Interactive Guidance, 1999 PCB Questions and Answers Manual, Part 2. U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), May 1999. Correspondence between David W. Neleigh (EPA Region 6) and Michael J. Zamorski (DOE KAO) regarding deficiency comments on the planned remediation at Sandia National Laboratories for Environmental Restoration Site 30, under 40 CFR761.61(a)(3) (A)-(E), EPA I.D. NM5890110518, May 18, 1999.

U.S. Environmental Protection Agency (EPA), April 2000. Correspondence between David W. Neleigh (EPA Region 6) and Michael J. Zamorski (DOE KAO) regarding adequacy of response to EPA's concerns with the self-implementing clean-up and disposal of PCBs at ER Site 30, April 3, 2000.

ANNEX 2-B
Risk Screening Assessment

TABLE OF CONTENTS

I. Site Description and History 2B-1
II. Data Quality Objectives 2B-2
  II.1 RFI—Characterization Sampling 2B-2
  II.2 VCM—Confirmatory Sampling 2B-5
III. Determination of Nature, Rate, and Extent of Contamination 2B-6
  III.1 Introduction 2B-6
  III.2 Nature of Contamination 2B-6
  III.3 Rate of Contaminant Migration 2B-8
  III.4 Extent of Contamination 2B-8
IV. Comparison of COCs to Background Screening Levels 2B-8
V. Fate and Transport 2B-12
VI. Human Health Risk Screening Assessment 2B-14
  VI.1 Introduction 2B-14
  VI.2 Step 1. Site Data 2B-14
  VI.3 Step 2. Pathway Identification 2B-14
  VI.4 Step 3. COC Screening Procedures 2B-15
    VI.4.1 Background Screening Procedure 2B-15
    VI.4.2 Subpart S Screening Procedure 2B-16
  VI.5 Step 4. Identification of Toxicological Parameters 2B-16
  VI.6 Step 5. Exposure Assessment and Risk Characterization 2B-16
    VI.6.1 Exposure Assessment 2B-19
    VI.6.2 Risk Characterization 2B-19
  VI.7 Step 6. Comparison of Risk Values to Numerical Guidelines 2B-19
  VI.8 Step 7. Uncertainty Discussion 2B-22
  VI.9 Summary 2B-23
VII. Ecological Risk Screening Assessment 2B-24
  VII.1 Introduction 2B-24
  VII.2 Scoping Assessment 2B-24
    VII.2.1 Data Assessment 2B-24
    VII.2.2 Bioaccumulation 2B-26
    VII.2.3 Fate and Transport Potential 2B-27
    VII.2.4 Scoping Risk-Management Decision 2B-27
  VII.3 Screening Assessment 2B-27
    VII.3.1 Problem Formulation 2B-28
    VII.3.2 Exposure Estimation 2B-29
    VII.3.3 Ecological Effects Evaluation 2B-35
    VII.3.4 Risk Characterization 2B-35
    VII.3.5 Uncertainty Assessment 2B-35
    VII.3.6 Risk Interpretation 2B-43
    VII.3.7 Screening Assessment Scientific/Management Decision Point 2B-43
VIII. References 2B-43

LIST OF TABLES

Table		Page
1	Number of Characterization Soil Samples Collected during the SWMU 30 RFI	2B-4
2	Summary of Data Quality Requirements	2B-5
3	Number of Confirmatory Soil Samples Collected during the SWMU 30 VCM	2B-7
4	Summary of Data Quality Requirements	2B-7
5	Nonradiological COCs for Human Health and Ecological Risk Assessment at SWMU 30 with Comparison to the Associated SNL/NM Background Screening Value, BCF, and Log K_{ow}	2B-9
6	Summary of Fate and Transport at SWMU 30	2B-13
7	Toxicological Parameter Values for SWMU 30 Nonradiological COCs	2B-17
8	Risk Assessment Values for SWMU 30 Nonradiological COCs	2B-20
9	Risk Assessment Values for SWMU 30 Nonradiological Background Constituents	2B-21
10	Exposure Factors for Ecological Receptors at SWMU 30	2B-30
11	Transfer Factors Used in Exposure Models for Constituents of Potential Ecological Concern at SWMU 30	2B-31
12	Media Concentrations for Constituents of Potential Ecological Concern at SWMU 30	2B-33
13	Toxicity Benchmarks for Ecological Receptors at SWMU 30	2B-36
14	HQs for Ecological Receptors at SWMU 30	2B-39
15	HQs for Ecological Receptors Exposed to Background Concentrations at SWMU 30	2B-42

SWMU 30: RISK SCREENING ASSESSMENT REPORT

I. Site Description and History

Solid Waste Management Unit (SWMU) 30, the Reclamation Yard at Sandia National Laboratories/New Mexico (SNL/NM), covers 6.62 acres and is located in the southeast portion of Technical Area (TA)-I near the intersection of M Street and 14th Street. This land is owned by Kirtland Air Force Base (KAFB) and leased to the U.S. Department of Energy.

Environmental concern about SWMU 30 is based upon uncontrolled storage of potentially hazardous materials over a 40-year span. Beginning in the early 1950s, surplus supplies and scrap materials were sold at the Reclamation Yard every week. Materials stored and sold at this site included cabinets, desks, scrap metal, pallets, wood, machines, general equipment, capacitors, transistors, transformers of various sizes, miscellaneous electronic components, hardware (such as bolts), tools, epoxies, polyester resins, and hobby-type material. During the approximate 40-year history, SNL/NM's Reclamation Yard workers punctured drums of waste oil (possibly contaminated with polychlorinated biphenyls [PCBs]) and spread the oil on the ground to pack down dust in the yard driveways.

Numerous investigations of soil contamination have been conducted at the site since the mid-1980s. Smaller, more localized investigations were conducted before the TA-I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was completed in 1995. In the summer of 2000, a Voluntary Corrective Measure (VCM) was conducted at SWMU 30 to excavate and remove PCB-contaminated soils (containing> 1-part per million [ppm] total PCBs) from the site.

The ground surface at the site is nearly level, with a gradual slope to the west of 1 to 2 percent. Elevations from east to west across the main portion of the site vary from 5,432 to 5,425 feet above mean sea level, for a total relief across the site of 7 feet. A major drainage feature in the vicinity of the site is the Tijeras Arroyo, which is located approximately 0.75 miles south of the site. Surface runoff is collected in a combined aboveground and underground storm drain system that discharges adjacent to TA-II into Tijeras Arroyo. The arroyo originates in Tijeras Canyon, which is bounded by the Sandia Mountains to the north and the Manzano Mountains to the south. The arroyo trends southwest to west and eventually drains into the Rio Grande, approximately 9 miles west of SWMU 30.

SWMU 30 rests on a partially dissected bajada formed by coalescing, multiple, alluvial fan complexes that originate in the mountain ranges to the east. The Holocene and Pleistocene deposits on the surface are comprised of alluvial fan deposits shed from the eastern uplifts that interfinger with valley alluvium west of the site. The thickness of these Holocene and Pleistocene deposits is thought to be less than 10 feet. Surficial deposits derived from the Tijeras Arroyo drainage contain granitic and sedimentary lithologies from the Sandia Mountains and sedimentary and metamorphic lithologies from the Manzanita Mountains. The surficial deposits are underlain by the upper unit of the Tertiary Santa Fe Group, which consists of coarse- to fine-grained alluvial fan/piedmont veneer facies that extend westward from the Sandia and Manzanita Mountains. The upper Santa Fe unit is approximately 1,200 feet thick in the vicinity of the site.

The soil at the site is part of the Embudo-Tijeras complex, which consists of deep, well-drained, moderately alkaline soil (pH of 7.9 to 8.4) that formed in decomposed granitic alluvium on old alluvial fans. Permeability of this soil is moderate (0.6 to 2.0 inches/hour).

Groundwater monitoring for the area surrounding SWMU 30 is conducted as part of the Tijeras Arroyo (formerly Sandia North) Groundwater Investigation. Two water-bearing zones, the shallow groundwater system and the regional aquifer, underlie SWMU 30. Two monitor wells (TAI-W-02 and TAI-W-06, deep and shallow wells, respectively) are located within 800 feet of SWMU 30. The shallow groundwater system is not used for water supply. The depth to the shallow groundwater system is approximately 300 feet below ground surface (bgs) and the depth to the regional aquifer is approximately 527 feet bgs. Both the City of Albuquerque and KAFB use the regional aquifer for water supply, and pumping of city wells has created a cone of depression in the northern portion of SNL/NM that affects groundwater flow in the vicinity of the site. The nearest water-supply wells are KAFB-1 and KAFB-5, which are located approximately 1 mile west and 1 mile north of the site, respectively.

The climatic conditions are those normally associated with the high desert plateau: low precipitation, sunny days, and wide temperature ranges. Precipitation for the SNL/NM–KAFB area averages 10 to 12 inches/year. The weather is typically sunny and clear, with an average of 169 sunny days/year. The average diurnal temperature range is 28 degrees Fahrenheit (°F). Winter daily low temperatures normally fall to 23 to 27°F, and high normal temperatures during the summer months range from 82 to 91°F. Winds are typically out of the east with an average speed of 9 miles per hour. Evapotranspiration has been estimated at 95 percent of the annual rainfall.

The site has been heavily disturbed by human beings for over 50 years. Generally, the diversity and abundance of animal species in areas in and around TA-I varies at given locations, depending on the quantity and quality of necessary habitat. Given the amount of known human intrusion at the site, a great diversity or abundance of animal species is unlikely, although the site-specific species have not been quantified. No suitable habitat remains within the site boundaries to sustain a viable ecological system.

Natural areas outside the site boundaries are dominated by grassland vegetation; black grama, blue grama, and western wheatgrass comprise 30 to 40 percent of the vegetative mass. Indigenous wildlife includes amphibians, reptiles, birds, and small mammals. Thirteen species of concern have been identified at SNL/NM–KAFB locations. Within TA-I, however, no threatened or endangered species and no species of concern have been identified. There are no permanent wetlands identified in TA-I.

II. Data Quality Objectives

II.1 RFI—Characterization Sampling

The Data Quality Objectives (DQOs) presented in the TA-I RFI Plan and subsequent field sampling plans for SWMU 30 identified the site-specific characterization sample locations, sample depths, sampling procedures, and analytical requirements. The DQOs outlined the

Quality Assurance (QA)/Quality Control (QC) requirements necessary for producing defensible analytical data suitable for risk-assessment purposes. The characterization sampling conducted at SWMU 30 was designed to:

- Determine if PCBs occur in surface and shallow subsurface soil at concentrations detectable by a field test kit;
- Characterize the nature and extent of any constituents of concern (COCs) by laboratory analysis of composite and discrete surface and shallow subsurface soil samples; and
- Provide analytical data of sufficient quality to support risk screening assessments.

The characterization samples were collected at 179 locations across SWMU 30, of which 69 were composite samples of up to nine aliquots each. The sample numbers, sample dates, and chain of custody form numbers are identified in the data tables presented in the associated No Further Action (NFA) proposal. Surface soil samples were collected using a hand auger from a depth of 0–0.25 feet, or 0–1.0 feet bgs; and as shallow subsurface samples 4.0–5.0 feet bgs. The soil samples were collected using the sampling procedures detailed in the TA-I Work Plan and subsequent field sampling plans.

The SWMU 30 characterization samples were analyzed for all COCs: PCBs (by immunoassay), PCBs (by U.S. Environmental Protection Agency [EPA] Method 8080), Target Analyte List (TAL) metals, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs) (Table 1). The samples were analyzed by Quanterra analytical laboratories and the on-site SNL/NM Environmental Restoration (ER) Chemistry Laboratory.

Table 2 summarizes the analytical methods and some of the data quality requirements from the TA-I RFI Work Plan.

One hundred and twenty nine QA/QC samples were collected during the characterization sampling effort according to the ER Project Quality Assurance Project Plan (QAPjP). The QA/QC samples consisted of 42 duplicates, 33 trip blanks, 10 field blanks, and 44 equipment blanks. Duplicate soil samples were collected at five percent of the sampling locations. Equipment-wash (aqueous rinsate) blanks were prepared after sampling and decontamination of sampling tools. Field blanks were collected by exposing a jar of clean soil to atmospheric conditions in the work area. Trip blanks accompanied the soil samples requiring VOC analyses. No significant QA/QC problems were identified in the QA/QC samples.

A portion of the characterization sample results were verified/validated by SNL/NM. The off-site laboratory results were reviewed according to "Data Validation Procedure for Chemical and Radiochemical Data, SNL/NM Environmental Restoration Project Analytical Operating Procedure (AOP) 00-03, Rev. 0" (SNL/NM January 2000). The data validation reports are presented in the associated SWMU 30 NFA proposal. The reviews confirmed that the analytical data from the three analytical laboratories are defensible and therefore acceptable for use in the NFA proposal. Therefore, the DQOs have been fulfilled.

Table 1
Number of Characterization Soil Samples Collected during the SWMU 30 RFI

Sample Type	PCB (Immunoassay)	PCB (EPA Method 8080)	PCB (EPA Method 8080)	TAL Metals	VOCs	SVOCs
Surface Soils (0-1 ft)	202	48	119	105	93	93
Subsurface Soils (4-5 ft)	202	NA	93	93	93	93
Duplicates	NA	NA	11	11	10	10
VOC Trip Blanks	NA	NA	NA	NA	33	NA
VOC Field Blanks	NA	NA	NA	NA	10	NA
Equipment Blanks	NA	2	11	11	10	10
Total Samples	404	50	234	220	249	206
Analytical laboratory	ERCL	ERCL	Quanterra/GEL	Quanterra/GEL	Quanterra/GEL	Quanterra/GEL

EPA = U.S. Environmental Protection Agency.
ERCL = Environmental Restoration Chemistry Laboratory.
ft = Foot (feet).
GEL = General Engineering Laboratories, Inc.
NA = Not applicable.
PCB = Polychlorinated biphenyl.
RCRA = Resource Conservation and Recovery Act.
RFI = RCRA Facility Investigation.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.
TAL = Target Analyte List.
VOC = Volatile organic compound.

Table 2
Summary of Data Quality Requirements

Analytical Requirement	Data Quality Level	Quanterra Laboratory/ GEL (Off Site)	ERCL (On Site)
PCB Immunoassay	Screening	not analyzed	404
PCB EPA Method 8080/8082	Defensible	212	48
TAL metals EPA Method 6010/7000	Defensible	198	not analyzed
VOCs EPA Method 8260	Defensible	186	not analyzed
SVOCs EPA Method 8270	Defensible	186	not analyzed

The number of samples does not include QA/QC samples such as duplicates, trip blanks, and equipment blanks.
EPA = U.S. Environmental Protection Agency.
ERCL = Environmental Restoration Chemistry Laboratory.
GEL = General Engineering Laboratories, Inc.
PCB = Polychlorinated biphenyl.
QA = Quality assurance.
QC = Quality control.
SVOC = Semivolatile organic compound.
TAL = Target Analyte List.
VOC = Volatile organic compound.

II.2 VCM—Confirmatory Sampling

The DQOs presented in the SWMU 30 VCM Plan identified the site-specific confirmatory-sample locations, sample depths, sampling procedures, and analytical requirements. The DQOs outlined the QA/QC requirements necessary to produce defensible analytical data suitable for risk-assessment purposes. The confirmatory sampling conducted at SWMU 30 was designed to:

- Confirm that a thorough remediation had been conducted during the VCM and the proposed cleanup concentrations were achieved;
- Characterize the nature and extent of any residual PCBs; and
- Provide analytical data of sufficient quality to support risk screening assessments.

Following the removal of PCB-contaminated soils, confirmatory soil samples were collected. The confirmatory soil samples were collected at 346 locations across SWMU 30; these samples were identified as T1030-VS001-001-C through T1030-VS346-001-C. All of the samples were surface-soil samples (where surface refers to the horizontal excavated face) that were collected from a depth of 0-3 inches bgs using a 1-inch diameter core drive-sampler. The soil samples were collected using the sampling procedures detailed in the SWMU 30 VCM Plan (SNL/NM March 2000) as required by the PCB Megarule [40 CFR 761.61(a)].

Excavation at SWMU 30 was guided by immunoassay analysis of samples collected at the base of the excavation. Once determined clean by the immunoassay results, confirmatory soil samples were collected and analyzed for PCBs by EPA Method 8082 by General Engineering Laboratories Inc. (GEL) (Table 3). Table 4 summarizes the analytical methods and some of the data quality requirements from the SWMU 30 VCM Plan.

Forty QA/QC samples were collected during the confirmatory-sampling effort, according to the ER Project QAPjP. The QA/QC samples consisted of 20 duplicates and 20 equipment blanks. Equipment-wash (aqueous rinsate) blanks were prepared after a sample was collected and the equipment decontaminated. No significant QA/QC problems were identified in the QA/QC samples.

All of the confirmatory soil sample results were verified/validated by SNL/NM. The off-site laboratory results from GEL were reviewed according to "Data Validation Procedure for Chemical and Radiochemical Data, SNL/NM Environmental Restoration Project Analytical Operating Procedure (AOP) 00-03, Rev. 0" (SNL/NM January 2000). The data validation reports are included in the SWMU 30 NFA proposal. The reviews confirmed that the analytical data from the analytical laboratory is defensible and therefore acceptable for use in the NFA proposal. Therefore, the DQOs have been fulfilled.

III. Determination of Nature, Rate, and Extent of Contamination

III.1 Introduction

The determination of the nature, migration rate, and extent of contamination at SWMU 30 was based upon: 1) a conceptual model refined by RFI sampling, and 2) VCM cleanup validated by confirmatory sampling. The initial conceptual model was developed from archival research, interviews with past site workers, aerial photographs, and soil sampling. The DQOs contained in the SWMU 30 VCM Plan identified the sample locations, sample density, sample depth, and analytical requirements. The sample data were subsequently used to develop the final conceptual model for SWMU 30, which is presented in Section 2.5 of the associated NFA proposal. The quality of the data specifically used to determine the nature, migration rate, and extent of contamination are described below.

III.2 Nature of Contamination

Both the nature of contamination and the potential for the degradation of COCs at SWMU 30 were evaluated using laboratory analyses of the soil samples. For the RFI, the analytical requirements included analyses for PCBs, TAL metals, VOCs, and SVOCs. For the VCM, the analyses characterized any residual PCB contamination remaining after removal of soils containing >1 ppm PCBs. The analytes and methods listed in Tables 1 through 4 are appropriate to characterize the COCs and any potential degradation products at SWMU 30.

Table 3
Number of Confirmatory Soil Samples Collected during the SWMU 30 VCM

Sample Type	PCBs (Immunoassay)	PCBs (EPA Method 8082)
Screening	459	NA
Confirmatory	NA	346
Duplicates	NA	20
Equipment Blanks	NA	20
Total Samples	459	386
Analytical laboratory	Field Laboratory	GEL

Sample numbers: T1030-VS001-001-C through T1030-VS346-001-C.
Sampling dates: May through July 2000.
Analysis request/chain-of-custody records: 603276, 603277, 603278, 603279, 603280, 603281, 603283, 603285, 603286, 603287, 603288, 603289, 603290, 603291, 603292, 603293, 603294, 603295, 603296, 603297, 603298, 603299, 603300, 603301, 603302, 603303, 603371, 603305, 603308, and 603306.
EPA = U.S. Environmental Protection Agency.
GEL = General Engineering Laboratories Inc.
NA = Not applicable.
PCB = Polychlorinated biphenyl.
SWMU = Solid Waste Management Unit.
VCM = Voluntary Corrective Measure.

Table 4
Summary of Data Quality Requirements

Analytical Requirement	Data Quality Level	GEL (Off Site)	Field Laboratory (On Site)
PCB Immunoassay	Screening	NA	459
PCB EPA Method 8082	Defensible	346	NA

The number of samples does not include quality assurance/quality control samples such as duplicates, and equipment blanks.
EPA = U.S. Environmental Protection Agency.
GEL = General Engineering Laboratories, Inc.
NA = Not applicable.
PCB = Polychlorinated biphenyl.

III.3 Rate of Contaminant Migration

SWMU 30 is an inactive site that has been recently remediated, and therefore all primary sources of COCs have been eliminated. As a result, only secondary sources of COCs potentially remain in soil in the form of adsorbed COCs (PCBs, metals, VOCs, and SVOCs). The rate of COC migration from surficial soil is therefore dependent predominantly on precipitation and occasional surface-water flow. Excavated areas were backfilled with clean fill. This should further reduce or eliminate the potential for surface-water migration of any remaining adsorbed COCs. Data available from: 1) the Tijeras Arroyo Groundwater Investigation, 2) numerous SNL/NM monitoring programs for air and surface water, 3) various biological surveys, and 4) meteorological monitoring are adequate to characterize the rate of COC migration at SWMU 30.

III.4 Extent of Contamination

Surface and subsurface confirmatory soil samples were collected from the excavated areas of SWMU 30 to assess the effectiveness of the VCM remediation. The confirmatory soil samples were collected using the sampling density required by the PCB Megarule [40 CFR 761.61(a)].

For the VCM, the confirmatory soil samples were collected from the surface of the excavation to a maximum depth of 3 inches. The PCB Megarule did not require sampling at more extensive depths. Furthermore, the vertical rate of contamination migration was expected to be extremely low for SWMU 30 because of the low precipitation, high evapotranspiration, impermeable vadose zone soils, and the relatively low solubility of PCBs. Therefore, the confirmatory soil samples are considered to be representative of the soil potentially contaminated with the COCs and sufficient to determine the vertical extent, if any, of COCs.

In summary, the design of the confirmatory sampling was appropriate and adequate to determine the nature, migration rate, and extent of residual COCs in soils at SWMU 30.

IV. Comparison of COCs to Background Screening Levels

Site history and characterization activities were used to identify potential COCs. The SWMU 30 NFA proposal describes the identification of COCs and the sampling that was conducted to determine the concentration levels of those COCs across the site. Generally, COCs evaluated in this risk assessment included all detected organics and all inorganic COCs for which samples were analyzed. If the detection limit of an organic compound was too high (i.e., could possibly cause an adverse effect to human health or the environment), the compound was retained. Nondetect organics not included in this assessment were determined to have sufficiently low detection limits to ensure protection of human health and the environment. In order to provide conservatism in this risk assessment, the calculation used only the maximum concentration value of each COC found for the entire site. The SNL/NM maximum background concentration (Dinwiddie September 1997) was selected to provide the background screen listed in Table 5. Human health nonradiological COCs were also compared to SNL/NM proposed Subpart S action levels if appropriate (IT July 1994).

Table 5
Nonradiological COCs for Human Health and Ecological Risk Assessment at SWMU 30 with Comparison to the Associated SNL/NM Background Screening Value, BCF, and Log K_{ow}

COC Name	Maximum Concentration (mg/kg)	SNL/NM Background Concentration (mg/kg)[a]	Is Maximum COC Concentration Less Than or Equal to the Applicable SNL/NM Background Screening Value?	BCF (maximum aquatic)	Log K_{ow} (for organic COCs)	Bioaccumulator?[b] (BCF>40, log K_{ow}>4)
Aluminum	13200	69,957[c]	Yes	1,305[d]	NA	**Yes**
Antimony	6	3.9	**No**	16,000[e]	NA	**Yes**
Arsenic	8.4	4.4	**No**	44[f]	NA	**Yes**
Barium	1020	200	**No**	170[g]	NA	**Yes**
Beryllium	0.59	0.80	Yes	19[f]	NA	No
Cadmium	26	<1	**No**	64[f]	NA	**Yes**
Chromium, total	35.3	12.8	**No**	16[f]	NA	No
Cobalt	6.5	7.1	Yes	10,000[h]	NA	**Yes**
Copper	1080	17	**No**	6[f]	NA	No
Cyanide, total	6.6	NC	**Unknown**	0[e]	NA	No
Lead	245	11.2	**No**	49[f]	NA	**Yes**
Manganese	329	831[c]	Yes	100,000[h]	NA	**Yes**
Mercury	1.8	<0.1	**No**	5,500[f]	NA	**Yes**
Nickel	14.9	25.4	Yes	47[f]	NA	**Yes**
Selenium	0.888	<1	**Unknown**	800[e]	NA	**Yes**
Silver	2.2	<1	**No**	0.5[f]	NA	No
Thallium	1.8	<1.1	**No**	119[f]	NA	**Yes**
Vanadium	60.7	33	**No**	3,000[g]	NA	**Yes**
Zinc	1050	76	**No**	47[f]	NA	**Yes**
1,2,4-Trichlorobenzene	0.036 J	NA	**NA**	2,800[i]	4.02[i]	**Yes**
Acenaphthylene	0.42	NA	**NA**	575[j]	4.07[j]	**Yes**
2-Chlorophenol	0.051 J	NA	**NA**	214[i]	2.15[i]	**Yes**
2-Methylnaphthalene	0.170 J	NA	**NA**	2,800[j]	3.86[j]	**Yes**
4-Chloro-3-methylphenol	0.039 J	NA	**NA**	2.13[j]	3.10[j]	No

Refer to footnotes at end of table.

Table 5 (Continued)
Nonradiological COCs for Human Health and Ecological Risk Assessment at SWMU 30 with Comparison to the Associated SNL/NM Background Screening Value, BCF, and Log K_{ow}

COC Name	Maximum Concentration (mg/kg)	SNL/NM Background Concentration (mg/kg)[a]	Is Maximum COC Concentration Less Than or Equal to the Applicable SNL/NM Background Screening Value?	BCF (maximum aquatic)	Log K_{ow} (for organic COCs)	Bioaccumulator?[b] (BCF>40, log K_{ow}>4)
Anthracene	0.43	NA	NA	917[f]	4.45[f]	Yes
Benzo(a)anthracene	1.8	NA	NA	10,000[j]	5.61[j]	Yes
Benzo(a)pyrene	1.4	NA	NA	3,000[f]	6.04[f]	Yes
Benzo(b)fluoranthene	2.2	NA	NA	–	6.124[j]	Yes
Benzo(g,h,i)perylene	0.88	NA	NA	58,884[j]	6.58[j]	Yes
Benzo(k)fluoranthene	0.19 J	NA	NA	93,325[j]	6.84[j]	Yes
Benzoic acid	0.061 J	NA	NA	138[i]	1.87[i]	Yes
Bis (2-ethylhexyl) phthalate	1.7 J	NA	NA	851[l]	7.6[j]	Yes
Butyl benzyl phthalate	0.68	NA	NA	663[k]	4.77[j]	Yes
Carbazole	0.18 J	NA	NA	–	–	–
Chrysene	1.6	NA	NA	18,000[j]	5.91[j]	Yes
Dibenz(a,h)anthracene	0.31 J	NA	NA	51,000[j]	6.50[j]	Yes
Dibenzofuran	0.31 J	NA	NA	2,800[j]	4.12[j]	Yes
Dimethylphthalate	0.15 J	NA	NA	57[i]	2.12[j]	Yes
Di-n-butyl phthalate	4.1	NA	NA	6,761[l]	4.61[j]	Yes
Di-n-octyl phthalate	0.12 J	NA	NA	9,334[j]	5.22[j]	Yes
Fluoranthene	2.5	NA	NA	12,302[j]	4.90[j]	Yes
Fluorene	0.57	NA	NA	2,239[j]	4.18[j]	Yes
Indeno(1,2,3-c,d) pyrene	0.77	NA	NA	59,407[j]	6.58[j]	Yes
Napthalene	0.25 J	NA	NA	1,000[j]	3.30[j]	Yes
Phenanthrene	2.6	NA	NA	23,800[f]	4.63[f]	Yes
Phenol	0.066 J	NA	NA	277[i]	1.46[i]	Yes
Pyrene	2.5	NA	NA	36,300[f]	5.32[j]	Yes
PCBs (Aroclor 1260)	0.92	NA	NA	31,200[f]	6.72[f]	Yes

Refer to footnotes at end of table.

Table 5 (Concluded)
Nonradiological COCs for Human Health and Ecological Risk Assessment at SWMU 30 with Comparison to the Associated SNL/NM Background Screening Value, BCF, and Log K_{ow}

Note: **Bold** indicates the COCs that failed the background screening procedure and/or are bioaccumulators.
[a]From Dinwiddie (September 1997) North Super Group.
[b]NMED (March 1998).
[c]Background concentration from USGS 1994 NURE program (USGS 1994).
[d]Wren and Stephenson (1991).
[e]Callahan et al. (1979).
[f]Yanicak (March 1997).
[g]Neumann (1976).
[h]Vanderploeg et al. (1975).
[i]Howard (1989).
[j]Micromedex (1998).
[k]Howard (1990).

BCF	= Bioconcentration factor.
COC	= Constituent of concern.
J	= Estimated concentration.
K_{ow}	= Octanol-water partition coefficient.
Log	= Logarithm (base 10).
mg/kg	= Milligram(s) per kilogram.
NA	= Not applicable.
NC	= Not calculated.
NMED	= New Mexico Environment Department.
NURE	= National Uranium Resource Evaluation.
PCB	= Polychlorinated biphenyl.
SNL/NM	= Sandia National Laboratories/New Mexico.
SWMU	= Solid Waste Management Unit.
USGS	= U.S. Geological Survey.
–	= Information not available.

Nonradiological inorganics that are essential nutrients, such as iron, magnesium, calcium, potassium, and sodium, were not included in this risk assessment (EPA 1989). The nonradiological COCs evaluated included inorganic and organic compounds.

Table 5 lists the nonradiological COCs for the human health and ecological risk assessments at SWMU 30. No radiological COCs were encountered at this site, so no human health and ecological risk assessment for these COCs was necessary. All tables show the associated SNL/NM maximum background concentration values (Dinwiddie September 1997). Sections VI.4, VII.2 and VII.3 provide discussions of Table 5.

V. Fate and Transport

The primary releases of COCs at SWMU 30 were to the surface soil as a result of past material storage at the site. Under the current conditions, wind, water, and biota are potential natural mechanisms of COC transport from the site. Because the site is located in an area of little topographic relief and in an open, disturbed area, wind erosion is a potential transport mechanism from the site.

Water at SWMU 30 is received as precipitation (approximately 8 inches of rain and [occasionally] snow annually), which will either evaporate at or near the point of contact, infiltrate into the soil, or form runoff. Infiltration at the site is enhanced by the flat topography, low slope, and sandy nature of the soil (the soil in the area of the site is primarily Embudo gravelly fine sandy loam [USDA June 1977]). Runoff may form during intense or extended rainfall events. Runoff from the site is generally collected in the TA-I storm sewer system and carried southward toward Tijeras Arroyo in an open, unlined surface drainage ditch. This runoff may carry surface soil particles with adsorbed COCs. The distance of transport will depend upon the size of the particle and the velocity of the water.

Water that infiltrates into the soil will continue to percolate through the soil until field capacity is reached. COCs desorbed from the soil particles into the soil solution may be leached into the subsurface soil with this percolation. The effective rooting depths of the soil at SWMU 30 is about 60 inches (USDA June 1977). This indicates the depth of the system's transient water cycling zone (the dynamic balance between percolation/infiltration and evapotranspiration). Because groundwater at this site is in excess of 300 feet bgs, the potential for COCs to reach groundwater through the unsaturated zone above the water table is very small. As water from the surface evaporates, the direction of COC movement may be reversed with capillary rise of the soil water.

Plants can take up COCs through their roots or by direct contact of aboveground tissues with dust particles. Volatilized COCs can be taken up by plants directly from the air; however, volatile COCs within the plant tissues may also be lost to the air. COCs in plant tissues may be consumed by herbivores or eventually returned to the soil as litter. Aboveground litter is capable of being transported by wind and water until it decomposes. Constituents in plant tissues that are consumed by herbivores may be absorbed or returned to the soil in feces (possibly transported from the site by the herbivore). COCs that are absorbed may be held in tissues, biotransformed, or excreted. The herbivore may be eaten by a primary carnivore or scavenger and the constituents still held in the tissues will repeat the potential fates of excretion, transformation, or eventual consumption by higher predators, scavengers, and

decomposers. The potential for transport of the constituents within the food chain is dependent upon the mobility of the species that comprise the food chain, the persistence of the chemical in biotic tissues, and the potential for the constituent to be transferred across the links in the food chain. At SWMU 30, the degree of disturbance to the natural habitat will limit the potential for significant uptake of the COCs into the food web.

Degradation of COCs at SWMU 30 can result from biotic or abiotic processes. COCs that are inorganic and elemental in form are not considered degradable; however, other types of transformations of inorganics may include changes in valence (oxidation/reduction reactions) or incorporation into organic forms (e.g., the conversion of selenite or selenate from soil to seleno-amino acids in plants). Degradation processes for organic COCs may include photolysis, hydrolysis, and biotransformation. Photolysis requires light, and therefore takes place in the air, at the ground surface, or in surface water. Hydrolysis includes chemical transformations in water, and may occur in the soil solution. Biotransformation (i.e., transformation due to metabolic processes in plants, animals, and microorganisms) may occur; however, biological activity at this site is limited by the aridity of the environment.

Table 6 summarizes the fate and transport processes that may occur at SWMU 30. COCs at this site include both inorganic and organic constituents in soil. Because of the flat topography and low vegetative cover at this site, the potential for transport of COCs by wind is considered moderate. Because the site has very little slope, transport of COCs by surface water to the storm water drainage system is expected to be low, except during intense or protracted rainfall events, when a moderate degree of transport may occur due to runoff. Significant leaching of COCs into the subsurface soil is unlikely and leaching to the groundwater at this site is highly unlikely. The potential for uptake into the food chain is considered low due to the disturbed nature of the habitat and the arid climate. The potential for degradation or transformation is low for the inorganic COCs and most of the organic COCs at this site; however, degradation and/or biotransformation of some of the organic COCs, or their loss by volatilization, may be of moderate importance.

Table 6
Summary of Fate and Transport at SWMU 30

Transport and Fate Mechanism	Existence at Site	Significance
Wind	Yes	Moderate
Surface runoff	Yes	Low to Moderate
Migration to groundwater	No	None
Food chain uptake	Yes	Low
Transformation/degradation	Yes	Low (inorganics) Low to Moderate (organics)

SWMU = Solid Waste Management Unit.

VI. Human Health Risk Screening Assessment

VI.1 Introduction

Human health risk screening assessment of this site includes a number of steps that culminate in a quantitative evaluation of the potential adverse human health effects caused by constituents located at the site. The steps to be discussed include the following:

Step 1.	Site data are described that provide information on the potential COCs, as well as the relevant physical characteristics and properties of the site.
Step 2.	Potential pathways are identified by which a representative population might be exposed to the COCs.
Step 3.	The potential intake of these COCs by the representative population is calculated using a tiered approach. The first component of the tiered approach includes two screening procedures. One screening procedure compares the maximum concentration of the COC to an SNL/NM maximum background screening value. COCs that are not eliminated during the first screening procedure are subjected to a second screening procedure, if applicable, that compares the maximum concentration of the COC to the SNL/NM proposed Subpart S action level.
Step 4.	Toxicological parameters are identified and referenced for COCs that were not eliminated during the screening steps.
Step 5.	Potential toxicity effects (specified as a hazard index [HI]) and estimated excess cancer risks are calculated for nonradiological COCs and background.
Step 6.	These values are compared with guidelines established by the EPA to determine whether further evaluation and potential site cleanup is required. Nonradiological COC risk values are also compared to background risk so that an incremental risk can be calculated.
Step 7.	Uncertainties of the above steps are also addressed.

VI.2 Step 1. Site Data

Section I provides the description and history for SWMU 30. Section II presents a comparison of results to DQOs. Section III discusses the nature, rate, and extent of contamination.

VI.3 Step 2. Pathway Identification

SWMU 30 has been designated a future land-use scenario of industrial (DOE et al. September 1995) (see Appendix 1 for default exposure pathways and parameters). Because of the location and the characteristics of the potential contaminants, the primary pathway for human exposure is soil ingestion for the nonradiological COCs. The inhalation pathway for nonradiological COCs is included because the potential exists to inhale dust and volatiles. No water pathways to the groundwater are considered. Depth to groundwater at SWMU 30 is in excess of 300 feet bgs. Because of the lack of surface water or other significant mechanisms for dermal contact, the dermal exposure pathway is not considered significant. No intake routes through plant, meat, or milk ingestion are considered appropriate for the industrial land-use scenario. However, plant uptake is considered for the residential land-use scenario.

Pathway Identification

Nonradiological Constituents
Soil ingestion
Inhalation (dust and volatiles)
Plant uptake (residential only)

VI.4 Step 3. COC Screening Procedures

Step 3 is discussed in this section. It includes two screening procedures. The first compares the maximum COC concentration to the background screening level. The second compares maximum COC concentrations to SNL/NM proposed Subpart S action levels. This second procedure was applied only to COCs that were not eliminated during the first screening procedure.

VI.4.1 Background Screening Procedure

VI.4.1.1 Methodology

Maximum concentrations of nonradiological COCs were compared to the approved SNL/NM maximum screening level for this area. The SNL/NM maximum background concentrations were selected to provide the background screening values in Table 5 and were used to calculate risk attributable to background values in Table 9. Only the COCs that were detected above their respective SNL/NM maximum background screening levels or did not have either a quantifiable or a calculated background screening level were considered in further risk assessment analyses.

VI.4.1.2 Results

Table 5 shows SWMU 30 maximum COC concentrations that were compared to the SNL/NM maximum background values (Dinwiddie September 1997) for the human health risk assessment. For the nonradiological COCs, 12 constituents were measured at a concentration greater than their respective background screening value. Two nonradiological COCs had no quantifiable background concentration, so it is not known whether those COCs exceeded background. Twenty-nine nonradiological COCs were organic compounds and did not have corresponding background screening values.

The maximum concentration value for lead is 245 milligrams (mg) per kilogram (kg). The EPA intentionally does not provide any human health toxicological data on lead; therefore, no risk parameter values could be calculated. However, the New Mexico Environment Department (NMED) guidance for lead screening concentrations for construction and industrial land-use scenarios are 750 and 1500 mg/kg, respectively (NMED March 2000). The EPA screening guidance value for a residential land-use scenario is 400 mg/kg (EPA July 1994). The maximum concentration value for lead at this site is less than all the screening values; therefore, lead is eliminated from further consideration in the human health risk assessment.

The maximum concentration value for PCBs (Aroclor 1260) was 0.92 mg/kg. The EPA has set a screening level of 1 mg/kg for this site (40 CFR 761). The maximum concentration for PCBs at this site is less than the screening value; therefore, PCBs are eliminated from further consideration in the human health risk assessment.

There were no radiological COCs encountered at this site.

VI.4.2 Subpart S Screening Procedure

VI.4.2.1 Methodology

The maximum concentrations of nonradiological COCs not eliminated during the background screening process were compared with action levels (IT July 1994) calculated using methods and equations promulgated in the proposed RCRA Subpart S (EPA 1990) and Risk Assessment Guidance for Superfund (RAGS) (EPA 1989) documentation. Accordingly, all calculations were based upon the assumption that receptor doses from both toxic and potentially carcinogenic compounds result most significantly from the ingestion of contaminated soil. Because the samples were all taken from the surface and near surface, this assumption is considered valid. If there were 10 or fewer COCs and each had a maximum concentration of less than 1/10 the action level, then the site was judged to pose no significant health hazard to humans. If there were more than 10 COCs, the Subpart S screening procedure was not performed.

VI.4.2.2 Results

SWMU 30 had more than 10 COCs fail the background screening procedure. Thus, the Subpart S screening procedure was not performed.

VI.5 Step 4. Identification of Toxicological Parameters

Table 7 lists the COCs retained in the risk assessment and the values for the available toxicological information. The toxicological values used for nonradiological COCs in Table 7 were from the Integrated Risk Information System (IRIS) (EPA 1998a), the Health Effects Assessment Summary Tables (HEAST) (EPA 1997b), and the EPA Region 3 (EPA 1997a) and EPA Region 9 (EPA 1996) electronic databases.

VI.6 Step 5. Exposure Assessment and Risk Characterization

Section VI.6.1 describes the exposure assessment for this risk assessment. Section VI.6.2 provides the risk characterization, including the HI and the excess cancer risk for both the potential nonradiological COCs and associated background for industrial and residential land uses.

Table 7
Toxicological Parameter Values for SWMU 30 Nonradiological COCs

COC Name	RfD_o (mg/kg-d)	Confidence[a]	RfD_{inh} (mg/kg-d)	Confidence[a]	SF_o $(mg/kg\text{-}day)^{-1}$	SF_{inh} $(mg/kg\text{-}day)^{-1}$	Cancer Class[b]
Antimony	4.0E-4[c]	L	–	–	–	–	–
Arsenic	3.0E-4[c]	M	–	–	1.5E+0[c]	1.5E+1[c]	A
Barium	7.0E-2[c]	M	1.4E-4[d]	–	–	–	–
Cadmium	5.0E-4[c]	H	5.7E-5[d]	–	–	6.3E+0[c]	B1
Chromium III	1.0E+0[c]	L	5.7E-7[e]	–	–	–	–
Chromium VI	5.0E-3[c]	L	–	–	–	4.2E+1[c]	A
Copper	3.7E-2[d]	–	–	–	–	–	D
Cyanide, total	2.0E-2[c]	M	–	–	–	–	D
Mercury	3.0E-4[f]	–	8.6E-5[c]	M	–	–	D
Selenium	5.0E-3[c]	H	–	–	–	–	D
Silver	5.0E-3[c]	L	–	–	–	–	D
Thallium[g]	8.0E-5[c]	L	–	–	–	–	D
Vanadium	7.0E-3[f]	–	–	–	–	–	–
Zinc	3.0E-1[c]	M	–	–	–	–	D
1,2,4-Trichlorobenzene	1.0E-2[c]	M	5.7E-2[f]	–	–	–	D
Acenaphthylene[h]	4.0E-2[d]	–	4.0E-2[d]	–	–	–	D
2-Chlorophenol	5.0E-3[c]	L	5.0E-3[d]	–	–	–	–
2-Methylnaphthalene	4.0E-2[e]	–	–	–	–	–	–
4-Chloro-3-methylphenol[i]	5.0E-3[c]	L	5.0E-3[d]	–	–	–	–
Anthracene	3.0E-1[c]	L	3.0E-1[d]	–	–	–	D
Benzo(a)anthracene	–	–	–	–	7.3E-1[d]	7.3E-1[d]	–
Benzo(a)pyrene	–	–	–	–	7.3E+0[c]	7.3E+0[d]	B2
Benzo(b)fluoranthene	–	–	–	–	7.3E-1[d]	7.3E-1[d]	B2
Benzo(g,h,i) perylene[j]	–	–	–	–	7.3E+0[d]	7.3E+0[d]	B2
Benzo(k)fluoranthene	–	–	–	–	7.3E-2[d]	7.3E-2[d]	B2
Benzoic acid	4.0E+0[c]	M	4.0E+0[d]	–	–	–	D
Bis (2-ethylhexyl) phthalate	2.0E-2[d]	–	2.2E-2[d]	–	1.4E-2[d]	1.4E-2[d]	–
Butyl benzyl phthalate	2.0E-1[c]	L	2.0E-1[d]	–	–	–	C
Carbazole	–	–	–	–	2.0E-2[f]	2.0E-2[d]	B2
Chrysene	–	–	–	–	7.3E-3[d]	7.3E-3[d]	B2
Dibenz(a,h)anthracene	–	–	–	–	7.3E+0[d]	7.3E+0[d]	B2
Dibenzofuran	4.0E-3[d]	–	4.0E-3[d]	–	–	–	D
Dimethylphthalate	1.0E+1[d]	–	1.0E+1[d]	–	–	–	D
Di-n-butyl phthalate	1.0E-1[c]	L	1.0E-1[d]	–	–	–	D
Di-n-octyl phthalate	2.0E-2[f]	–	2.0E-2[f]	–	–	–	–
Fluoranthene	4.0E-2[c]	L	4.0E-2[d]	–	–	–	D
Fluorene	4.0E-2[c]	L	4.0E-2[d]	–	–	–	D
Indeno(1,2,3-c,d) pyrene	–	–	–	–	7.3E-1[d]	7.3E-1[d]	B2

Refer to footnotes at end of table.

Table 7 (Concluded)
Toxicological Parameter Values for SWMU 30 Nonradiological COCs

COC Name	RfD_o (mg/kg-d)	Confidence[a]	RfD_{inh} (mg/kg-d)	Confidence[a]	SF_o $(mg/kg\text{-}day)^{-1}$	SF_{inh} $(mg/kg\text{-}day)^{-1}$	Cancer Class[b]
Napthalene	4.0E-2[d]	–	4.0E-2[d]	–	–	–	D
Phenanthrene[k]	3.0E-1[c]	L	3.0E-1[d]	–	–	–	D
Phenol	6.0E-1[c]	L	6.0E-1[d]	–	–	–	D
Pyrene	3.0E-2[c]	L	3.0E-2[d]	–	–	–	D

[a]Confidence associated with IRIS (EPA 1998a) database values. Confidence: L = low, M = medium, H = high.

[b]EPA weight-of-evidence classification system for carcinogenicity (EPA 1989) taken from IRIS (EPA 1998a) with the exception of Carbazole (EPA 1997b):

A = Human carcinogen.
B1 = Probable human carcinogen. Limited human data are available.
B2 = Probable human carcinogen. Sufficient evidence in animals and inadequate or no evidence in humans.
C = Possible human carcinogen.
D = Not classifiable as to human carcinogenicity.

[c]Toxicological parameter values from IRIS electronic database (EPA 1998a).

[d]Toxicological parameter values from EPA Region 9 electronic database (EPA 1996).

[e]Toxicological parameter values from EPA Region 3 electronic database (EPA 1997a).

[f]Toxicological parameter values from HEAST database (EPA 1997b).

[g]Thallium does not have toxicological parameter values. Thallium carbonate was used as a surrogate.

[h]Acenaphthylene does not have toxicological parameter values. Naphthalene was used as a surrogate.

[i]4-Chloro-3-methylphenol does not have toxicological parameter values. 2-Chlorophenol was used as a surrogate.

[j]Benzo(g,h,I)perylene does not have toxicological parameter values. Dibenz(a,h)anthracene was used as a surrogate.

[k]Phenanthrene does not have toxicological parameter values. Anthracene was used as a surrogate.

COC = Constituent of concern.
EPA = U.S. Environmental Protection Agency.
HEAST = Health Effects Assessment Summary Tables.
IRIS = Integrated Risk Information System.
mg/kg-d = Milligram(s) per kilogram day.
$(mg/kg\text{-}day)^{-1}$ = Per milligram per kilogram day.
RfD_{inh} = Inhalation chronic reference dose.
RfD_o = Oral chronic reference dose.
SF_{inh} = Inhalation slope factor.
SF_o = Oral slope factor.
SWMU = Solid Waste Management Unit.
– = Information not available.

VI.6.1 Exposure Assessment

Appendix 1 shows the equations and parameter input values used to calculate intake values and subsequent HI and excess cancer risk values for the individual exposure pathways. The appendix shows parameters for both industrial and residential land-use scenarios. The equations for nonradiological COCs are based upon the RAGS (EPA 1989). Parameters are based upon information from the RAGS (EPA 1989) and other EPA guidance documents and reflect the reasonable maximum exposure (RME) approach advocated by the RAGS (EPA 1989).

VI.6.2 Risk Characterization

Table 8 shows an HI of 0.2 for the SWMU 30 nonradiological COCs, and the estimated excess cancer risk was 1E-5 for the designated industrial land-use scenario. The numbers presented include exposure from soil ingestion and dust and volatile inhalation for nonradiological COCs. Table 9 shows an HI of 0.02 and an estimated excess cancer risk of 2E-6 assuming the maximum background concentrations of the SWMU 30 associated background constituents for the designated industrial land-use scenario.

For the residential land-use scenario nonradioactive COCs, the HI is 33 and the estimated excess cancer risk is 3E-4 (Table 8). The numbers in the table include exposure from soil ingestion, dust and volatile inhalation, and plant uptake. Although the EPA (1991) generally recommends that inhalation not be included in a residential land-use scenario, this pathway is included because of the potential for soil in Albuquerque, New Mexico, to be eroded and, subsequently, for dust to be present in predominantly residential areas. Because of the nature of the local soil, other exposure pathways are not considered (see Appendix 1). Table 9 shows that for the SWMU 30 associated background constituents, the HI is 0.7 and the estimated excess cancer risk is 5E-5.

VI.7 Step 6. Comparison of Risk Values to Numerical Guidelines

The human health risk assessment analysis evaluated the potential for adverse health effects for both the industrial land-use scenario (the designated land-use scenario for this site) and the residential land-use scenario.

For the industrial land-use scenario nonradiological COCs, the HI is 0.2 (less than the numerical guideline of 1 suggested in the RAGS [EPA 1989]). Excess cancer risk is estimated at 1E-5. NMED Guidance states that cumulative excess lifetime cancer risk must be less than 1E-5 (NMED March 2000); thus, the excess cancer risk for this site is at the suggested acceptable risk value. This assessment also determined risks considering background screening level concentrations of the potential nonradiological COCs for both the industrial and the residential land-use scenarios. Assuming the industrial land-use scenario, for nonradiological COCs the HI is 0.02 and the estimated excess cancer risk is 2E-6. Incremental risk is determined by subtracting risk associated with background from potential COC risk. These numbers are not rounded before the difference is determined and, therefore, may appear to be inconsistent with numbers presented in tables and within the text. For conservatism, the background constituents that do not have quantified background

Table 8
Risk Assessment Values for SWMU 30 Nonradiological COCs

COC Name	Maximum Concentration (mg/kg)	Industrial Land-Use Scenario[a]		Residential Land-Use Scenario[a]	
		Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Antimony	6	0.01	–	0.28	–
Arsenic	8.4	0.03	4E-6	0.48	9E-5
Barium	1020	0.02	–	0.15	–
Cadmium	26	0.05	9E-9	21.25	2E-8
Chromium, total[b]	35.3	0.01	8E-8	0.03	1E-7
Copper	1080	0.03	–	5.23	–
Cyanide, total	6.6	0.00	–	0.06	–
Mercury	1.8	0.01	–	3.10	–
Selenium	0.888	0.00	–	0.31	–
Silver	2.2	0.00	–	0.09	–
Thallium[c]	1.8	0.02	–	0.08	–
Vanadium	60.7	0.01	–	0.05	–
Zinc	1050	0.00	–	1.90	–
1,2,4-Trichlorobenzene	0.036 J	0.00	–	0.00	–
Acenaphthylene[d]	0.42	0.00	–	0.00	–
2-Chlorophenol	0.051 J	0.00	–	0.01	–
2-Methylnaphthalene	0.170 J	0.00	–	0.00	–
4-Chloro-3-methylphenol[e]	0.039 J	0.00	–	0.01	–
Anthracene	0.43	0.00	–	0.00	–
Benzo(a)anthracene	1.8	0.00	5E-7	0.00	6E-6
Benzo(a)pyrene	1.4	0.00	4E-6	0.00	3E-5
Benzo(b)fluoranthene	2.2	0.00	6E-7	0.00	5E-6
Benzo(g,h,i) perylene[f]	0.88	0.00	2E-6	0.00	3E-5
Benzo(k)fluoranthene	0.19 J	0.00	5E-9	0.00	5E-8
Benzoic acid	0.061 J	0.00	–	0.00	–
Bis (2-ethylhexyl) phthalate	1.7 J	0.00	8E-9	0.00	6E-8
Butyl benzyl phthalate	0.68	0.00	–	0.00	–
Carbazole	0.18 J	0.00	1E-9	0.00	8E-5
Chrysene	1.6	0.00	4E-9	0.00	6E-8
Dibenz(a,h)anthracene	0.31 J	0.00	8E-7	0.00	1E-5
Dibenzofuran	0.31 J	0.00	–	0.02	–
Dimethylphthalate	0.15 J	0.00	–	0.00	–
Di-n-butyl phthalate	4.1	0.00	–	0.00	–
Di-n-octyl phthalate	0.12 J	0.00	–	0.00	–
Fluoranthene	2.5	0.00	–	0.00	–
Fluorene	0.57	0.00	–	0.00	–
Indeno(1,2,3-c,d) pyrene	0.77	0.00	2E-7	0.00	1E-6
Napthalene	0.25 J	0.00	–	0.00	–
Phenanthrene[g]	2.6	0.00	–	0.00	–
Phenol	0.066 J	0.00	–	0.00	–
Pyrene	2.5	0.00	–	0.00	–
Total		**0.2**	**1E-5**	**33**	**3E-4**

Refer to footnotes at end of table.

Table 8 (Concluded)
Risk Assessment Values for SWMU 30 Nonradiological COCs

[a]From EPA (1989).
[b]Chromium, total was assumed to be chromium VI (most conservative).
[c]Thallium does not have toxicological parameter values. Thallium carbonate was used as a surrogate.
[d]Acenaphthylene does not have toxicological parameter values. Naphthalene was used as a surrogate.
[e]4-Chloro-3-methylphenol does not have toxicological parameter values. 2-Chlorophenol was used as a surrogate.
[f]Benzo(g,h,I) perylene does not have toxicological parameter values. Dibenz(a,h)anthracene was used as a surrogate.
[g]Phenanthrene does not have toxicological parameter values. Anthracene was used as a surrogate.
COC = Constituent of concern.
EPA = U.S. Environmental Protection Agency.
J = Estimated concentration.
mg/kg = Milligram(s) per kilogram.
SWMU = Solid Waste Management Unit.
– = Information not available.

Table 9
Risk Assessment Values for SWMU 30 Nonradiological Background Constituents

COC Name	Background Concentration[a] (mg/kg)	Industrial Land-Use Scenario[b]		Residential Land-Use Scenario[b]	
		Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Antimony	3.9	0.01	–	0.18	–
Arsenic	4.4	0.01	2E-6	0.25	5E-5
Barium	200	0.00	–	0.03	–
Cadmium	<1	–	–	–	–
Chromium, total[c]	12.8	0.00	–	0.00	–
Copper	17	0.00	–	0.08	–
Cyanide, total	NC	–	–	–	–
Mercury	<0.1	–	–	–	–
Selenium	<1	–	–	–	–
Silver	<1	–	–	–	–
Thallium	<1.1	–	–	–	–
Vanadium	33	0.00	–	0.03	–
Zinc	76	0.00	–	0.14	–
Total		**0.02**	**2E-6**	**0.7**	**5E-5**

[a]From Dinwiddie (September 1997), North Super Group.
[b]From EPA (1989).
[c]Chromium, total is assumed to be chromium III (most conservative).
COC = Constituent of concern.
EPA = U.S. Environmental Protection Agency.
mg/kg = Milligram(s) per kilogram.
NC = Not calculated.
SWMU = Solid Waste Management Unit.
– = Information not available.

concentrations are assumed to have a hazard quotient (HQ) of 0.00. The incremental HI is 0.17 and the estimated incremental cancer risk is 1.02E-5 for the industrial land-use scenario. The incremental estimated excess cancer risk calculation is slightly above the NMED guidance considering an industrial land-use scenario.

The calculated HI for the residential land-use scenario nonradiological COCs is 33, which is above the numerical guidance. Excess cancer risk was estimated to be 3E-4. NMED Guidance states that cumulative excess lifetime cancer risk must be less than 1E-5 (NMED March 2000), thus the excess cancer risk for this site is above the suggested acceptable risk value. The HI for associated background screening levels for the residential land-use scenario is 0.7; the estimated excess cancer risk was 5E-5. The incremental HI is 32.34 and the estimated incremental cancer risk was 2.02E-4 for the residential land-use scenario. The incremental estimated excess cancer risk calculation indicates risk above NMED guidelines considering a residential land-use scenario.

VI.8 Step 7. Uncertainty Discussion

The determination of the nature, rate, and extent of contamination at SWMU 30 was based upon an initial conceptual model that was validated with confirmatory sampling conducted across the site. The confirmatory sampling was implemented in accordance with the SWMU 30 VCM Plan (SNL/NM March 2000). The DQOs contained in the VCM Plan are appropriate for use in risk-screening assessments. The data collected, based upon sample location, density, and depth, are representative of the site. The analytical requirements and results satisfy the DQOs. Data quality was verified/validated in accordance with SNL/NM procedures (SNL/NM January 2000). Therefore, there is no uncertainty associated with the data quality used to perform the risk screening assessment at SWMU 30.

Because of the location, history of the site, and future land use (DOE et al. September 1995), there is little uncertainty in the land-use scenario and the potentially affected populations that were considered in performing the risk assessment analysis. Because the COCs are found in surface and in near-surface soils and because of the location and physical characteristics of the site, there is little uncertainty in the exposure pathways relevant to the analysis.

An RME approach was used to calculate the risk assessment values. This means that the parameter values in the calculations are conservative and that calculated intakes are probably overestimates. Maximum measured values of COC concentrations are used to provide conservative results.

Table 7 shows the uncertainties (confidence) in nonradiological toxicological parameter values. There is a mixture of estimated values and values from the IRIS (EPA 1998a), HEAST (EPA 1997b), and the EPA Region 9 (EPA 1996) and EPA Region 3 (EPA 1997a) electronic databases. Where values are not provided, information is not available from the HEAST (EPA 1997b), IRIS (EPA 1998b), or the EPA regions (EPA 1996, 1997a). Because of the conservative nature of the RME approach, uncertainties in toxicological values are not expected to change the conclusion of the risk assessment analysis.

Risk assessment HI values for nonradiological COCs are within the human health acceptable range for the industrial land-use scenario compared to established numerical guidance.

Though the rounded estimated excess cancer risk is at, and the incremental estimated excess cancer risk is slightly above, the NMED guideline, maximum concentrations were used in the risk calculation. Since the site has been adequately characterized, average concentrations are more representative of actual site conditions. Using the upper 95% confidence limit of the average concentrations for the main contributors to excess cancer risk, including arsenic (6.00 mg/kg), benzo(a)anthracene (0.073 mg/kg), benzo(a)pyrene (0.066 mg/kg), benzo(b)fluoranthene (0.143 mg/kg), benzo(g,h,i)perylene (0.288 mg/kg), and dibenzo(a,h)anthracene (0.038 mg/kg), the total estimated excess cancer risk is reduced to 4.37E-6 and the incremental excess cancer risk is reduced to 2.37E-6. Thus, using more realistic concentrations in the risk calculations that more accurately depict actual site conditions, the estimated excess cancer risk is below NMED guidelines.

The overall uncertainty in all of the steps in the risk assessment process is not considered significant with respect to the conclusion reached.

VI.9 Summary

SWMU 30 has identified COCs consisting of some inorganic and organic compounds. Because of the location of the site, the designated industrial land-use scenario, and the nature of contamination, potential exposure pathways identified for this site included soil ingestion and dust and volatile inhalation for chemical COCs. Plant uptake was included as an exposure pathway for the residential land-use scenario.

Using conservative assumptions and an RME approach to risk assessment, calculations for nonradiological COCs show that for the industrial land-use scenario, the HI (0.2) is significantly less than the accepted numerical guidance from the EPA. Excess cancer risk was estimated to be 1E-5. Thus, excess cancer risk is at the acceptable risk value provided by the NMED for a industrial land-use scenario (NMED March 1998). The incremental HI is 0.17, and the incremental excess cancer risk was estimated to be 1.02E-5 for the industrial land-use scenario. Though the rounded estimated excess cancer risk is at, and the incremental estimated excess cancer risk is slightly above, the NMED guideline, maximum concentrations were used in the risk calculation. Since the site has been adequately characterized, average concentrations are more representative of actual site conditions. Using the upper 95% confidence limit of the average concentrations for the main contributors to excess cancer risk, including arsenic (6.00 mg/kg), benzo(a)anthracene (0.073 mg/kg), benzo(a)pyrene (0.066 mg/kg), benzo(b)fluoranthene (0.143 mg/kg), benzo(g,h,i)perylene (0.288 mg/kg), and dibenzo(a,h)anthracene (0.038 mg/kg), the total estimated excess cancer risk is reduced to 4.37E-6 and the incremental excess cancer risk is reduced to 2.37E-6. Thus, using more realistic concentrations in the risk calculations that more accurately depict actual site conditions, the estimated excess cancer risk is below NMED guidelines.

Uncertainties associated with the calculations are considered small relative to the conservativeness of risk assessment analysis. It is, therefore, concluded that this site poses insignificant risk to human health under either the industrial or residential land-use scenarios.

VII. Ecological Risk Screening Assessment

VII.1 Introduction

This section addresses the ecological risks associated with exposure to constituents of potential ecological concern (COPECs) in soils at SWMU 30. A component of the NMED Risk-Based Decision Tree is to conduct an ecological screening assessment that corresponds with that presented in EPA's Ecological Risk Assessment Guidance for Superfund (EPA 1997c). The current methodology is tiered and contains an initial scoping assessment followed by a more detailed screening assessment. Initial components of NMED's decision tree (a discussion of DQOs, a data assessment, and evaluations of bioaccumulation and fate-and-transport potential) are addressed in previous sections of this report. Following the completion of the scoping assessment, a determination is made as to whether a more detailed examination of potential ecological risk is necessary. If deemed necessary, the scoping assessment proceeds to a screening assessment, whereby a more quantitative estimate of ecological risk is conducted. Although this assessment incorporates conservatisms in the estimation of ecological risks, ecological relevance and professional judgment are also used as recommended by the EPA (1998b) to ensure that predicted exposures of selected ecological receptors reflect those reasonably expected to occur at the site.

VII.2 Scoping Assessment

The scoping assessment focuses primarily on the likelihood of exposure of biota at/or adjacent to the site to be exposed to constituents associated with site activities. Included in this section are an evaluation of existing data and a comparison of maximum detected concentrations to background concentrations, examination of bioaccumulation potential, and fate and transport potential. A scoping risk management decision (Section VII.2.4) summarizes the scoping results and determines whether further examination of potential ecological impacts is necessary.

VII.2.1 Data Assessment

As indicated in Section IV (Table 5), inorganic constituents in soil within the 0- to 5-foot depth interval that exceeded background concentrations were as follows:

- Antimony
- Arsenic
- Barium
- Cadmium
- Chromium
- Copper
- Lead
- Mercury
- Silver
- Thallium

- Vanadium
- Zinc

Two inorganic constituents either did not have a calculated background screening level or had a nonquantified background screening level:

- Cyanide
- Selenium

Organic analytes detected in soil were as follows:

- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Benzoic acid
- Bis(2-ethylhexyl) phthalate
- Butyl benzyl phthalate
- Carbazole
- 4-Chloro-3-methylphenol
- 2-Chlorophenol
- Chrysene
- Dibenz(a,h)anthracene
- Dibenzofuran
- Dimethylphthalate
- Di-n-butyl phthalate
- Di-n-octyl phthalate
- Fluoranthene
- Fluorene
- Indeno(1,2,3-c,d)pyrene
- 2-Methylnaphthalene
- Naphthalene
- PCBs, Aroclor 1260
- Phenanthrene
- Phenol
- Pyrene
- 1,2,4-Trichlorobenzene

VII.2.2 Bioaccumulation

Among the COPECs listed in Section VII.2.1, the following were considered to have bioaccumulation potential in aquatic environments (Section IV, Table 5):

- Antimony
- Arsenic
- Barium
- Cadmium
- Lead
- Mercury
- Selenium
- Thallium
- Vanadium
- Zinc
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Benzoic acid
- Bis(2-ethylhexyl) phthalate
- Butyl benzyl phthalate
- 2-Chlorophenol
- Chrysene
- Dibenz(a,h)anthracene
- Dibenzofuran
- Dimethylphthalate
- Di-n-butyl phthalate
- Di-n-octyl phthalate
- Fluoranthene
- Fluorene
- Indeno(1,2,3-c,d)pyrene
- 2-Methylnaphthalene
- Naphthalene
- PCBs, Aroclor 1260
- Phenanthrene
- Phenol
- Pyrene
- 1,2,4-Trichlorobenzene

It should be noted, however, that as directed by the NMED (NMED March 1998), bioaccumulation for inorganics is assessed exclusively based upon maximum reported

bioconcentration factors (BCFs) for aquatic species. Because only aquatic BCFs are used to evaluate the bioaccumulation potential for metals, bioaccumulation in terrestrial species is likely to be overpredicted.

VII.2.3 Fate and Transport Potential

The potential for the COPECs to move from the source of contamination to other media or biota is discussed in Section V. As noted in Table 6 (Section V), wind is expected to be of moderate significance as a transport mechanism for COPECs at this site and surface water may be of low to moderate significance. Migration to groundwater is not anticipated. Food chain uptake is expected to be of low significance. Degradation and transformation of the inorganic COPECs and most organic COPECs are expected to be of low significance, but may be of moderate significance for some of the organics. Volatilization may also be a mechanism of loss for some of the organics COPECs.

VII.2.4 Scoping Risk-Management Decision

Based upon information gathered through the scoping assessment, it was concluded that complete ecological pathways may be associated with SWMU 30 and that COPECs also exist at the site. As a result, a screening assessment was deemed necessary to predict the potential level of ecological risk associated with the site.

VII.3 Screening Assessment

As concluded in Section VII.2.4, complete ecological pathways and COPECs are associated with SWMU 30. The screening assessment performed for the site involves a quantitative estimate of current ecological risks using exposure models in association with exposure parameters and toxicity information obtained from the literature. The estimation of potential ecological risks is conservative to ensure that ecological risks are not underpredicted.

Components within the screening assessment include the following:

- Problem Formulation—sets the stage for the evaluation of potential exposure and risk.
- Exposure Estimation—provides a quantitative estimate of potential exposure.
- Ecological Effects Evaluation—presents benchmarks used to gauge the toxicity of COPECs to specific receptors.
- Risk Characterization—characterizes the ecological risk associated with exposure of the receptors to environmental media at the site.
- Uncertainty Assessment—discusses uncertainties associated with the estimation of exposure and risk.

- Risk Interpretation—evaluates ecological risk in terms of HQs and ecological significance.

- Screening Assessment Scientific/Management Decision Point—presents the decision to risk managers based upon the results of the screening assessment.

VII.3.1 Problem Formulation

Problem formulation is the initial stage of the screening assessment that introduces the risk evaluation process. Components that are addressed in this section include a discussion of ecological pathways and the ecological setting, identification of COPECs, and selection of ecological receptors. The conceptual model, ecological food webs, and ecological endpoints (other components commonly addressed in a screening assessment) are presented in the "Predictive Ecological Risk Assessment Methodology for SNL/NM ER Program" (IT July 1998) and are not duplicated here.

VII.3.1.1 Ecological Pathways and Setting

SWMU 30 is approximately 6.62 acres in size. The site is located in the southern part of TA-I, along the margin of the highly-developed area of TA-I. The original habitat in the area was grassland, but this has been highly disturbed by past use and construction activities. The areas of exposed soil are dominated by ruderal vegetation with low coverage. Access to and use of the site by wildlife is inhibited by paved roads, parking lots, buildings surrounding the site in most directions, and fences surrounding much of the site. Because of the extent of the habitat disturbance at this site, a sensitive species survey was not conducted. No threatened, endangered, or other sensitive species are expected to exist within SWMU 30.

Complete ecological pathways may exist at this site through the exposure of plants and wildlife to COPECs in surface soil. It was assumed that direct uptake of COPECs from soil is the major route of exposure for plants and that exposure of plants to wind-blown soil is minor. Exposure modeling for the wildlife receptors was limited to the food and soil ingestion pathways. Because of the lack of surface water at this site, exposure to COPECs through the ingestion of surface water was considered insignificant. Inhalation and dermal contact were also considered insignificant pathways with respect to ingestion (Sample and Suter 1994).

VII.3.1.2 COPECs

Materials stored in and around the area of SWMU 30 were the source of the COPECs associated with the soils at this site. Inorganic and organic COPECs identified for SWMU 30 are listed in Section VII.2.1. The inorganic analytes were screened against background concentrations, and those that exceeded the approved SNL/NM background screening levels (Dinwiddie September 1997) for the area were considered COPECs. As set forth by the EPA (1989), inorganics that are essential nutrients, such as iron, magnesium, calcium, potassium, and sodium, were not included in this risk assessment as COPECs. All organic analytes detected were considered to be COPECs for the site. In order to provide conservatism, this ecological risk assessment was based upon the maximum soil

concentrations of the COPECs measured in the surface soil at this site. Table 5 presents maximum concentrations for the COPECs.

VII.3.1.3 Ecological Receptors

As described in detail in IT (July 1998), a nonspecific perennial plant was selected as the receptor to represent plant species at the site. Vascular plants are the principal primary producers at the site and are key to the diversity and productivity of the wildlife community associated with the site. The deer mouse (*Peromyscus maniculatus*) and the burrowing owl (*Speotyto cunicularia*) were used to represent wildlife use. Because of its opportunistic food habits, the deer mouse was used to represent a mammalian herbivore, omnivore, and insectivore. The burrowing owl was selected to represent a top predator at this site. The burrowing owl is present at SNL/NM and is designated a species of management concern by the U.S. Fish and Wildlife Service in Region 2, which includes the state of New Mexico (USFWS September 1995).

VII.3.2 Exposure Estimation

Direct uptake of COPECs from the soil was considered the only significant route of exposure for terrestrial plants. Exposure modeling for the wildlife receptors was limited to food and soil ingestion pathways. Inhalation and dermal contact were considered insignificant pathways with respect to ingestion (Sample and Suter 1994). Drinking water was also considered an insignificant pathway because of the lack of surface water at this site. The deer mouse was modeled under three dietary regimes: as an herbivore (100 percent of its diet as plant material), as an omnivore (50 percent of its diet as plants and 50 percent as soil invertebrates), and as an insectivore (100 percent of its diet as soil invertebrates). The burrowing owl was modeled as a strict predator on small mammals (100 percent of its diet as deer mice). Because the exposure in the burrowing owl from a diet consisting of equal parts of herbivorous, omnivorous, and insectivorous mice would be equivalent to the exposure consisting of only omnivorous mice, the diet of the burrowing owl was modeled with intake of omnivorous mice only. Both species were modeled with soil ingestion comprising 2 percent of the total dietary intake. Table 10 presents the species-specific factors used in modeling exposures in the wildlife receptors. Justification for use of the factors presented in this table is described in the ecological risk assessment methodology document (IT July 1998).

Although home range is also included in this table, exposures for this risk assessment were modeled using an area use factor of 1.0, implying that all food items and soil ingested are from the site being investigated. The maximum measured COPEC concentrations from surface soil samples were used to conservatively estimate potential exposures and risks to plants and wildlife at this site.

Table 11 presents the transfer factors used in modeling the concentrations of COPECs through the food chain. Table 12 presents maximum concentrations in soil and derived concentrations in tissues of the various food chain elements that are used to model dietary exposures for each of the wildlife receptors.

Table 10
Exposure Factors for Ecological Receptors at SWMU 30

Receptor Species	Class/Order	Trophic Level	Body Weight (kg)[a]	Food Intake Rate (kg/day)[b]	Dietary Composition[c]	Home Range (acres)
Deer Mouse (*Peromyscus maniculatus*)	Mammalia/ Rodentia	Herbivore	2.39E-2[d]	3.72E-3	Plants: 100% (+ Soil at 2% of intake)	2.7E-1[e]
Deer Mouse (*Peromyscus maniculatus*)	Mammalia/ Rodentia	Omnivore	2.39E-2[d]	3.72E-3	Plants: 50% Invertebrates: 50% (+ Soil at 2% of intake)	2.7E-1[e]
Deer Mouse (*Peromyscus maniculatus*)	Mammalia/ Rodentia	Insectivore	2.39E-2[d]	3.72E-3	Invertebrates: 100% (+ Soil at 2% of intake)	2.7E-1[e]
Burrowing owl (*Speotyto cunicularia*)	Aves/ Strigiformes	Carnivore	1.55E-1[f]	1.73E-2	Rodents: 100% (+ Soil at 2% of intake)	3.5E+1[g]

[a]Body weights are in kg wet weight.
[b]Food intake rates are estimated from the allometric equations presented in Nagy (1987). Units are kg dry weight per day.
[c]Dietary compositions are generalized for modeling purposes. Default soil intake value of 2% of food intake.
[d]From Silva and Downing (1995).
[e]EPA (1993), based upon the average home range measured in semiarid shrubland in Idaho.
[f]From Dunning (1993).
[g]From Haug et al. (1993).
EPA = U.S. Environmental Protection Agency.
kg = Kilogram(s).
kg/day = Kilogram(s) per day.
SWMU = Solid Waste Management Unit.

Table 11
Transfer Factors Used in Exposure Models for Constituents of Potential Ecological Concern at SWMU 30

Constituent of Potential Ecological Concern	Soil-to-Plant Transfer Factor	Soil-to-Invertebrate Transfer Factor	Food-to-Muscle Transfer Factor
Inorganic			
Antimony	2.0E-1[a]	1.0E+0[b]	1.0E-3[c]
Arsenic	4.0E-2[a]	1.0E+0[b]	2.0E-3[a]
Barium	1.5E-1[a]	1.0E+0[b]	2.0E-4[c]
Cadmium	5.5E-1[a]	6.0E-1[d]	5.5E-4[a]
Chromium (total)	4.0E-2[c]	1.3E-1[e]	3.0E-2[c]
Copper	8.0E-1[f]	2.5E-1[d]	1.0E-2[a]
Cyanide	–	–	–
Lead	9.0E-2[c]	4.0E-2[d]	8.0E-4[c]
Mercury (Organic)	1.0E+0[c]	1.0E+0[b]	2.5E-1[a]
Mercury (Inorganic)	1.0E+0[c]	1.0E+0[b]	2.5E-1[a]
Selenium	5.0E-1[c]	1.0E+0[b]	1.0E-1[c]
Silver	1.0E+0[c]	2.5E-1[d]	5.0E-3[c]
Thallium	4.0E-3[a]	1.0E+0[b]	4.0E-2[a]
Vanadium	5.5E-3[a]	1.0E+0[b]	2.5E-3[a]
Zinc	1.5E+0[a]	3.0E-1[d]	1.0E-1[a]
Organic [g]			
Acenaphthylene	1.7E-1	2.1E+1	3.0E-4
Anthracene	1.0E-1	2.2E+1	7.3E-4
Benzo(a)anthracene	2.2E-2	2.5E+1	1.2E-2
Benzo(a)pyrene	1.1E-2	2.7E+1	3.8E-2
Benzo(b)fluoranthene	6.2E-3	2.8E+1	1.1E-1
Benzo(g,h,i)perylene	6.1E-3	2.8E+1	1.2E-1
Benzo(k)fluoranthene	4.3E-3	2.9E+1	2.1E-1
Benzoic acid	3.2E+0	1.6E+1	1.6E-6
Bis(2-ethylhexyl) phthalate	1.6E-3	3.2E+1	1.3E+0
Butyl benzyl phthalate	6.8E-2	2.3E+1	1.6E-3
Carbazole	–	–	–
4-Chloro-3-methylphenol	6.3E-1	1.9E+1	2.9E-5
2-Chlorophenol	2.2E+0	1.7E+1	3.1E-6
Chrysene	1.5E-2	2.6E+1	2.3E-2
Dibenzo(a,h)anthracene	6.8E-3	2.8E+1	9.5E-2
Dibenzofuran	1.6E-1	2.1E+1	3.3E-4
Dimethylphthalate	2.3E+0	1.7E+1	2.5E+0
Di-n-butyl phthalate	8.4E-2	2.2E+1	1.1E-3
Di-n-octyl phthalate	3.7E-2	2.4E+1	4.5E-3
Fluoranthene	5.7E-2	2.3E+1	2.1E-3
Fluorene	1.5E-1	2.1E+1	3.8E-4
Indeno(1,2,3-cd)pyrene	6.1E-3	2.8E+1	1.2E-1

Refer to footnotes at end of table.

Table 11 (Concluded)
Transfer Factors Used in Exposure Models for
Constituents of Potential Ecological Concern at SWMU 30

Constituent of Potential Ecological Concern	Soil-to-Plant Transfer Factor	Soil-to-Invertebrate Transfer Factor	Food-to-Muscle Transfer Factor
2-Methylnaphthalene	2.3E-1	2.1E+1	1.8E-4
Naphthalene	4.8E-1	1.9E+1	4.7E-5
PCBs (Aroclor 1260)	1.1E-2	2.7E+1	3.8E-2
Phenanthrene	8.9E-2	2.2E+1	9.6E-4
Phenol	5.6E+0	1.6E+1	5.9E-7
Pyrene	3.3E-2	2.4E+1	5.8E-3
1,2,4-Trichlorobenzene	1.8E-1	2.1E+1	2.6E-4

[a]From Baes et al. (1984).
[b]Default value.
[c]From NCRP (January 1989).
[d]From Stafford et al. (1991).
[e]From Ma (1982).
[f]From IAEA (1994).
[g]Soil-to-plant and food-to-muscle transfer factors from equations developed in Travis and Arms (1988). Soil-to-invertebrate transfer factors from equations developed in Connell and Markwell (1990). All three equations based upon relationship of the transfer factor to the log K_{ow} value of compound.

IAEA = International Atomic Energy Agency.
K_{ow} = Octanol-water partition coefficient.
Log = Logarithm (base 10).
NCRP = National Council on Radiation Protection and Measurements.
PCB = Polychlorinated biphenyl.
SWMU = Solid Waste Management Unit.
– = Insufficient data.

Table 12
Media Concentrations[a] for Constituents of Potential Ecological Concern at SWMU 30

Constituent of Potential Ecological Concern	Soil (maximum)[a]	Plant Foliage[b]	Soil Invertebrate[b]	Deer Mouse Tissues[c]
Inorganic				
Antimony	6.0E+00	1.2E+00	6.0E+00	1.2E-02
Arsenic	8.4E+00	3.4E-01	8.4E+00	2.8E-02
Barium	1.0E+03	1.5E+02	1.0E+03	3.8E-01
Cadmium	2.6E+01	1.4E+01	1.6E+01	2.7E-02
Chromium (total)	3.5E+01	1.4E+00	4.6E+00	3.5E-01
Copper	1.1E+03	8.6E+02	2.7E+02	1.8E+01
Cyanide	6.6E+00	0.0E+00	0.0E+00	0.0E+00
Lead	2.5E+02	2.2E+01	9.8E+00	5.2E-02
Mercury (Organic)	1.8E+00	1.8E+00	1.8E+00	1.4E+00
Mercury (Inorganic)	1.8E+00	1.8E+00	1.8E+00	1.4E+00
Selenium	8.9E-01	4.4E-01	8.9E-01	2.1E-01
Silver	2.2E+00	2.2E+00	5.5E-01	2.2E-02
Thallium	1.8E+00	7.2E-03	1.8E+00	1.2E-01
Vanadium	6.1E+01	3.3E-01	6.1E+01	2.5E-01
Zinc	1.1E+03	1.6E+03	3.2E+02	3.0E+02
Organic				
Acenaphthylene	4.2E-01	7.2E-02	8.8E+00	4.1E-03
Anthracene	4.3E-01	4.5E-02	9.4E+00	1.1E-02
Benzo(a)anthracene	1.8E+00	4.0E-02	4.5E+01	8.1E-01
Benzo(a)pyrene	1.4E+00	1.6E-02	3.7E+01	2.2E+00
Benzo(b)fluoranthene	2.2E+00	1.4E-02	6.2E+01	1.1E+01
Benzo(g,h,i)perylene	8.8E-01	5.4E-03	2.5E+01	4.5E+00
Benzo(k)fluoranthene	1.9E-01[d]	8.2E-04	5.5E+00	1.8E+00
Benzoic acid	6.1E-02[d]	2.0E-01	1.0E+00	2.9E-06
Bis(2-ethylhexyl) phthalate	1.7E+00[d]	2.7E-03	5.4E+01	1.1E+02
Butyl benzyl phthalate	6.8E-01	4.6E-02	1.5E+01	3.8E-02
Carbazole	1.8E-01[d]	7.0E+00	2.4E+00	2.7E-07
4-Chloro-3-methylphenol	3.9E-02[d]	2.4E-02	7.3E-01	3.5E-05
2-Chlorophenol	5.1E-02[d]	1.1E-01	8.6E-01	4.7E-06
Chrysene	1.6E+00	2.4E-02	4.2E+01	1.5E+00
Dibenz(a,h)anthracene	3.1E-01[d]	2.1E-03	8.6E+00	1.3E+00
Dibenzofuran	3.1E-01[d]	5.0E-02	6.6E+00	3.4E-03
Dimethylphthalate	1.5E-01[d]	3.5E-01	2.5E+00	1.3E-05
Di-n-butyl phthalate	4.1E+00	3.4E-01	9.2E+01	1.5E-01
Di-n-octyl phthalate	1.2E-01[d]	4.5E-03	2.9E+00	2.0E-02
Fluoranthene	2.5E+00	1.4E-01	5.8E+01	1.9E-01
Fluorene	5.7E-01	8.5E-02	1.2E+01	7.3E-03

Refer to footnotes at end of table.

Table 12 (Concluded)
Media Concentrations[a] for Constituents of Potential Ecological Concern at SWMU 30

Constituent of Potential Ecological Concern	Soil (maximum)[a]	Plant Foliage[b]	Soil Invertebrate[b]	Deer Mouse Tissues[c]
Indeno(1,2,3-cd)pyrene	7.7E-01	4.7E-03	2.2E+01	3.9E+00
2-Methylnaphthalene	1.7E-01[d]	3.9E-02	3.5E+00	9.9E-04
Naphthalene	2.5E-01[d]	1.2E-01	4.8E+00	3.6E-04
PCBs (Aroclor 1260)	9.2E-01	1.0E-02	2.4E+01	1.4E+00
Phenanthrene	2.6E+00	2.3E-01	5.8E+01	8.8E-02
Phenol	6.6E-02[d]	3.7E-01	1.0E+00	1.3E-06
Pyrene	2.5E+00	8.1E-02	6.1E+01	5.5E-01
1,2,4-Trichlorobenzene	3.6E-02[d]	6.6E-03	7.5E-01	3.1E-04

[a]In milligrams per kilogram. All biotic media are based upon dry weight of the media. Soil concentration measurements are assumed to have been based upon dry weight. Values have been rounded to two significant digits after calculation.
[b]Product of the soil concentration and the corresponding transfer factor.
[c]Based upon the deer mouse with an omnivorous diet. Product of the average concentration ingested in food and soil times the food-to-muscle transfer factor times a wet weight-dry weight conversion factor of 3.125 (EPA 1993).
[d]Based upon an estimated concentration.
PCB = Polychlorinated biphenyl.
SWMU = Solid Waste Management Unit.

VII.3.3 Ecological Effects Evaluation

Table 13 shows benchmark toxicity values for the plant and wildlife receptors. For plants, the benchmark soil concentrations are based upon the lowest-observed-adverse-effect level (LOAEL). For wildlife, the toxicity benchmarks are based upon the no-observed-adverse-effect level (NOAEL) for chronic oral exposure in a taxonomically similar test species. Insufficient toxicity information was found to estimate the LOAELs or NOAELs for some COPECs.

VII.3.4 Risk Characterization

Maximum concentrations in soil and estimated dietary exposures were compared to plant and wildlife benchmark values, respectively. Table 14 presents results of these comparisons. HQs are used to quantify the comparison with benchmarks for plants and wildlife exposure.

HQs for plants exceeded unity for antimony, barium, cadmium, total chromium, copper, lead, mercury (organic), silver, thallium, vanadium, and zinc. Because of a lack of sufficient toxicity information, HQs for plants could not be determined for cyanide and ten of the organic COPECs. HQs exceeded unity for all three dietary regimes in the deer mouse for antimony, barium, cadmium, and copper, and for mercury when it was assumed to be entirely in organic form. HQs exceeded unity for only the omnivorous and insectivorous deer mice for arsenic, thallium, vanadium, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, indeno(1,2,3-c,d)pyrene, phenanthrene, and Aroclor 1260. In addition, HQs were greater than unity for only the insectivorous deer mouse from exposure to acenaphthylene, dibenz(a,h)anthracene, and pyrene. HQs for the deer mouse could not be determined for carbazole because of a lack of sufficient toxicity information. For the burrowing owl, HQs that exceeded unity were from exposures to mercury when it was assumed to be entirely in organic form, and from exposures to zinc and bis(2-ethylhexyl) phthalate. HQs for antimony, cyanide, silver, thallium and all organic COPECs except bis(2-ethylhexyl) phthalate and di-n-butyl phthalate could not be determined for the burrowing owl because of a lack of sufficient toxicity information. As directed by the NMED, HIs were calculated for each of the receptors (the HI is the sum of chemical-specific HQs for all pathways for a given receptor). All receptors had total HIs greater than unity, with a maximum HI of approximately 180 for the insectivorous deer mouse.

VII.3.5 Uncertainty Assessment

Many uncertainties are associated with the characterization of ecological risks at SWMU 30. These uncertainties result from assumptions used in calculating risk that could overestimate or underestimate true risk presented at a site. For this risk assessment, assumptions are made that are more likely to overestimate exposures and risk rather than to underestimate them. These conservative assumptions are used to be more protective of the ecological resources potentially affected by the site. Conservatisms incorporated into this risk assessment include the use of maximum measured analyte concentrations in soil to evaluate risk, the use of wildlife toxicity benchmarks based upon NOAEL values, the incorporation of strict herbivorous and strict insectivorous diets for predicting the extreme HQ values for the deer mouse, and the use of 1.0 as the area use factor for wildlife receptors regardless of seasonal use or home range size. Each of these uncertainties, which are consistent among each of the SWMU-specific

Table 13
Toxicity Benchmarks for Ecological Receptors at SWMU 30

Constituent of Potential Ecological Concern	Plant Benchmark[a,b]	Mammalian NOAELs			Avian NOAELs		
		Mammalian Test Species[c,d]	Test Species NOAEL[d,e]	Deer Mouse NOAEL[e,f]	Avian Test Species[d]	Test Species NOAEL[d,e]	Burrowing Owl NOAEL[e,g]
Inorganic							
Antimony	5	mouse	0.125	0.132	–	–	–
Arsenic	10	mouse	0.126	0.133	mallard	5.14	5.14
Barium	500	rat[h]	5.1	10.5	chicken	20.8	20.8
Cadmium	3	rat[i]	1.0	1.9	mallard	1.45	1.45
Chromium (total)	1	rat	2,737	5,354	black duck	1.0	1.0
Copper	100	mink	11.7	29.8	chicken	47	47
Cyanide	–	rat[j]	68.7	126	–	–	–
Lead	50	rat	8.0	15.7	American kestrel	3.85	3.85
Mercury (Organic)	0.3	rat	0.032	0.063	mallard	0.0064	0.0064
Mercury (Inorganic)	0.3	mouse	13.2	14.0	Japanese quail	0.45	0.45
Selenium	1	rat	0.20	0.39	screech owl	0.44	0.44
Silver	2	rat	17.8[k]	34.8	–	–	–
Thallium	1	rat[l]	0.0074	0.015	–	–	–
Vanadium	2	rat[m]	0.21	0.38	mallard	11.4	11.4
Zinc	50	rat	160	313	chicken	14.5	14.5
Organic							
Acenaphthylene	18[n]	mouse	1.0[o]	1.1	–	–	–
Anthracene	18[n]	mouse	100[p]	106	–	–	–
Benzo(a)anthracene	18[n]	mouse	1.0[o]	1.1	–	–	–
Benzo(a)pyrene	18[n]	mouse	1.0	1.1	–	–	–
Benzo(b)fluoranthene	18[n]	mouse	1.0[o]	1.1	–	–	–
Benzo(g,h,i)perylene	18[n]	mouse	1.0[o]	1.1	–	–	–
Benzo(k)fluoranthene	18[n]	mouse	1.0[o]	1.1	–	–	–
Benzoic acid	–	mouse	4.0[q]	4.23	–	–	–

Refer to footnotes at end of table.

Table 13 (Continued)
Toxicity Benchmarks for Ecological Receptors at SWMU 30

Constituent of Potential Ecological Concern	Plant Benchmark[a,b]	Mammalian NOAELs			Avian NOAELs		
		Mammalian Test Species[c,d]	Test Species NOAEL[d,e]	Deer Mouse NOAEL[e,f]	Avian Test Species[d]	Test Species NOAEL[d,e]	Burrowing Owl NOAEL[e,g]
Organic							
Bis(2-ethylhexyl) phthalate	–	mouse	18.3	19.4	ringed dove	1.1	1.1
Butyl benzyl phthalate	–	rat	159[r]	311	–	–	–
Carbazole	–	–	–	–	–	–	–
4-Chloro-3-methylphenol	–	rat	1.37[s]	2.68	–	–	–
2-Chlorophenol	–	rat	0.5[t]	0.98	–	–	–
Chrysene	18[n]	mouse	1.0[o]	1.1	–	–	–
Dibenzo(a,h)anthracene	18[n]	mouse	1.0[o]	1.1	–	–	–
Dibenzofuran	–	–	–	–	–	–	–
Dimethylphthalate	–	mouse	83[u]	88	–	–	–
Di-n-butyl phthalate	200	mouse	550	582	ringed dove	0.11	0.11
Di-n-octyl phthalate	–	mouse	79.4[v]	84.0	–	–	–
Fluoranthene	18[n]	mouse	12.5[w]	13.2	–	–	–
Fluorene	18[n]	mouse	12.5[w]	13.2	–	–	–
Indeno(1,2,3-cd)pyrene	18[n]	mouse	1.0[o]	1.1	–	–	–
2-Methylnaphthalene	18[n]	rat	2.45[x]	4.79	–	–	–
Naphthalene	18[n]	mouse	5.0[y]	5.3	–	–	–
PCBs, Aroclor 1260	40	rat	0.04[z]	0.08	–	–	–
Phenanthrene	18[n]	mouse	1.0[o]	1.1	–	–	–
Phenol	70	rat	60[r]	117	–	–	–
Pyrene	18[n]	mouse	7.5[aa]	7.9	–	–	–
1,2,4-Trichlorobenzene	–	rat	1.48[bb]	2.90	–	–	–

Refer to footnotes at end of table.

Table 13 (Concluded)
Toxicity Benchmarks for Ecological Receptors at SWMU 30

[a]In milligram(s) per kilogram soil dry weight.
[b]From Efroymson et al. (1997).
[c]Body weights (in kilograms) for the NOAEL conversion are as follows: lab mouse, 0.030; lab rat, 0.350; mink, 1.0 (except where noted).
[d]From Sample et al. (1996), except where noted.
[e]In milligram(s) per kilogram body weight per day.
[f]Based upon NOAEL conversion methodology presented in Sample et al. (1996), using a deer mouse body weight of 0.0239 kilogram and a mammalian scaling factor of 0.25.
[g]Based upon NOAEL conversion methodology presented in Sample et al. (1996). The avian scaling factor of 0.0 was used, making the NOAEL independent of body weight.
[h]Body weight: 0.435 kilogram.
[i]Body weight: 0.303 kilogram.
[j]Body weight: 0.273 kilogram.
[k]Based upon a rat LOAEL of 89 milligram(s) per kilograms per day (EPA 2000) and an uncertainty factor of 0.2.
[l]Body weight: 0.365 kilogram.
[m]Body weight: 0.26 kilogram.
[n]From Sims and Overcash (1983).
[o]No data available. Toxicity value based upon NOAEL for benzo(a)pyrene.
[p]Based upon a subchronic NOAEL of 1000 milligram(s) per kilograms per day (EPA 2000) and an uncertainty factor of 0.1.
[q]Based upon a chronic LOAEL of 40 milligram(s) per kilogram body weight per day (EPA 2000) and an uncertainty factor of 0.1.
[r]From EPA (2000).
[s]Based upon a rat NOAEL for 2-chlorophenol and the ratio of LD_{50} values for 4-chloro-3-methylphenol and 2-chlorophenol (Micromedex 1998).
[t]Based upon a subchronic NOAEL of 5.0 milligram(s) per kilogram body weight per day (EPA 2000) and an uncertainty factor of 0.1.
[u]Based upon a mouse NOAEL for bis(2-ethylhexyl) phthalate and the ratio of LD_{50} values for dimethylphthalate and bis(2-ethylhexyl) phthalate (Micromedex 1998).
[v]Based upon a mouse NOAEL for bis(2-ethylhexyl) phthalate and the ratio of LD_{50} values for di-n-octylphthalate and bis(2-ethylhexyl) phthalate (Micromedex 1998).
[w]Based upon a subchronic NOAEL of 125 milligram(s) per kilograms per day (EPA 2000) and an uncertainty factor of 0.1.
[x]Based upon a mouse NOAEL for pyrene scaled to a rat NOAEL and the ratio of rat LD_{50} values for 2-methylnaphthalene and pyrene (Micromedex 1998).
[y]Based upon a mouse NOAEL for pyrene and the ratio of mouse LD_{50} values for naphthalene and pyrene (Micromedex 1998).
[z]Based upon a NOAEL for Aroclor 1254 scaled from an oldfield mouse to a rat and the ratio of rat LD_{50} values for Aroclor 1260 and Aroclor 1254 (Micromedex 1998).
[aa]Based upon a subchronic NOAEL of 75 milligram(s) per kilogram body weight per day (EPA 2000) and an uncertainty factor of 0.1.
[bb]Based upon a subchronic NOAEL of 14.8 milligram(s) per kilogram body weight per day (EPA 2000) and an uncertainty factor of 0.1.

EPA = U.S. Environmental Protection Agency.
LD_{50} = Lethal dose to 50 percent of the test population.
LOAEL = Lowest-observed-adverse-effect level.
NOAEL = No-observed-adverse-effect level.
PCB = Polychlorinated biphenyl.
SWMU = Solid Waste Management Unit.
– = Insufficient toxicity data.

Table 14
HQs for Ecological Receptors at SWMU 30

Constituent of Potential Ecological Concern	Plant HQ[a]	Deer Mouse HQ (Herbivorous)[a]	Deer Mouse HQ (Omnivorous)[a]	Deer Mouse HQ (Insectivorous)[a]	Burrowing Owl HQ[a]
Inorganic					
Antimony	**1.2E+00**	**1.6E+00**	**4.4E+00**	**7.2E+00**	–
Arsenic	8.4E-01	5.9E-01	**5.3E+00**	**1.0E+01**	4.3E-03
Barium	**2.0E+00**	**2.6E+00**	**9.0E+00**	**1.5E+01**	1.1E-01
Cadmium	**8.7E+00**	**1.2E+00**	**1.3E+00**	**1.3E+00**	4.2E-02
Chromium (total)	**3.5E+01**	6.2E-05	1.1E-04	1.5E-04	1.2E-01
Copper	**1.1E+01**	**4.6E+00**	**3.1E+00**	**1.5E+00**	9.5E-02
Cyanide	–	1.6E-04	1.6E-04	1.6E-04	–
Lead	**4.9E+00**	2.7E-01	2.1E-01	1.5E-01	1.4E-01
Mercury (Organic)	**6.0E+00**	**4.6E+00**	**4.6E+00**	**4.6E+00**	**2.6E+01**
Mercury (Inorganic)	–	2.0E-02	2.0E-02	2.0E-02	3.6E-01
Selenium	8.9E-01	1.8E-01	2.7E-01	3.6E-01	5.9E-02
Silver	**1.1E+00**	1.0E-02	6.3E-03	2.7E-03	–
Thallium	**1.8E+00**	4.6E-01	**1.0E+01**	**2.0E+01**	–
Vanadium	**3.0E+01**	6.3E-01	**1.3E+01**	**2.5E+01**	1.4E-02
Zinc	**2.1E+01**	7.9E-01	4.8E-01	1.7E-01	**2.5E+00**
Organic					
Acenaphthylene	2.3E-02	1.2E-02	6.6E-01	**1.3E+00**	–
Anthracene	2.4E-02	7.8E-05	7.0E-03	1.4E-02	–
Benzo(a)anthracene	1.0E-01	1.1E-02	**3.3E+00**	**6.6E+00**	–
Benzo(a)pyrene	7.8E-02	6.5E-03	**2.7E+00**	**5.5E+00**	–
Benzo(b)fluoranthene	1.2E-01	8.5E-03	**4.5E+00**	**9.1E+00**	–
Benzo(g,h,i)perylene	4.9E-02	3.4E-03	**1.8E+00**	**3.6E+00**	–
Benzo(k)fluoranthene	1.1E-02	6.8E-04	4.0E-01	8.1E-01	–
Benzoic acid	–	7.3E-03	2.2E-02	3.7E-02	–
Bis(2-ethylhexyl) phthalate	–	2.9E-04	2.2E-01	4.3E-01	**1.1E+01**

Refer to footnotes at end of table.

Table 14 (Concluded)
HQs for Ecological Receptors at SWMU 30

Constituent of Potential Ecological Concern	Plant HQ[a]	Deer Mouse HQ (Herbivorous)[a]	Deer Mouse HQ (Omnivorous)[a]	Deer Mouse HQ (Insectivorous)[a]	Burrowing Owl HQ[a]
Butyl benzyl phthalate	–	3.0E-05	3.9E-03	7.8E-03	–
Carbazole	–	–	–	–	–
4-Chloro-3-methylphenol	–	1.5E-03	2.2E-02	4.3E-02	–
2-Chlorophenol	–	1.8E-02	7.8E-02	1.4E-01	–
Chrysene	8.9E-02	8.2E-03	**3.1E+00**	**6.1E+00**	–
Dibenz(a,h)anthracene	1.7E-02	1.2E-03	6.3E-01	**1.3E+00**	–
Dibenzofuran	–	–	–	–	–
Dimethylphthalate	–	6.2E-04	2.5E-03	4.5E-03	–
Di-n-butyl phthalate	2.1E-02	1.1E-04	1.2E-02	2.5E-02	2.4E-01
Di-n-octyl phthalate	–	1.3E-05	2.7E-03	5.3E-03	–
Fluoranthene	1.4E-01	2.3E-03	3.4E-01	6.8E-01	–
Fluorene	3.2E-02	1.1E-03	7.2E-02	1.4E-01	–
Indeno(1,2,3-cd)pyrene	4.3E-02	3.0E-03	**1.6E+00**	**3.2E+00**	–
2-Methylnaphthalene	9.4E-03	1.4E-03	5.7E-02	1.1E-01	–
Naphthalene	1.4E-02	3.7E-03	7.3E-02	1.4E-01	–
PCBs, Aroclor 1260	2.3E-02	5.7E-02	**2.4E+01**	**4.9E+01**	–
Phenanthrene	1.4E-01	4.2E-02	**4.3E+00**	**8.5E+00**	–
Phenol	9.4E-04	4.9E-04	9.3E-04	1.4E-03	–
Pyrene	1.4E-01	2.6E-03	6.0E-01	**1.2E+00**	–
1,2,4-Trichlorobenzene	–	3.9E-04	2.0E-02	4.0E-02	–
HI[b]	**1.3E+02**	**1.8E+01**	**1.0E+02**	**1.8E+02**	**4.0E+01**

[a]**Bold** text indicates HQ or HI exceeds unity.
[b]The HI is the sum of individual HQs using the value for organic mercury as a conservative estimate of the HI.
HI = Hazard index.
HQ = Hazard quotient.
PCB = Polychlorinated biphenyl.
SWMU = Solid Waste Management Unit.
– = Insufficient toxicity data available for risk estimation purposes.

ecological risk assessments, is discussed in greater detail in the uncertainty section of the ecological risk assessment methodology document for the SNL/NM ER Project (IT July 1998).

The assumption of an area use factor of 1.0 is a source of uncertainty for the burrowing owl. Because SWMU 30 is approximately 6.62 acres in size, an area use factor of approximately 0.19 would be justified for this receptor. This is sufficient to reduce the HQs for organic mercury from 26 to 5.0, for zinc from 2.5 to 0.48, and for bis(2-ethylhexyl) phthalate from 11 to 2.1. Because it is unlikely that a significant proportion of the mercury at this site is in organic form owing to the arid nature of the site, the assumption that all of the mercury is in organic form is highly conservative. Therefore, the risk to the burrowing owl from exposure to mercury at this site is probably insignificant.

In the estimation of ecological risk, background concentrations are included as a component of maximum on-site concentrations. Conservatisms in the modeling of exposure and risk can predict risk to ecological receptors when exposed at background concentrations. As shown in Table 15, HQs associated with exposures to background are greater than 1.0 for antimony, arsenic, barium, chromium, thallium, vanadium, and zinc. In the case of vanadium, the calculated HQs from background exposure area are as high as 1.7E+01 for plants and 1.4E+01 for the insectivorous deer mouse. It is, therefore, likely that the actual risks from antimony, arsenic, barium, chromium, thallium, vanadium, and zinc are overestimated by the HQs calculated in this screening assessment because of conservatisms incorporated into the exposure assessment and in the toxicity benchmarks for these COPECs (e.g., the use of NOAELs for wildlife receptors).

A significant source of uncertainty associated with predicting ecological risks at this site is the use of the maximum measured concentrations to evaluate risk. This results in a conservative exposure scenario that does not necessarily reflect actual site conditions. To assess the potential degree of overestimation caused by using the maximum measured soil concentrations in the exposure assessment, average soil concentrations were calculated for the COPECs with HQs greater than unity to determine whether these HQs can be accounted for by the magnitude of the extreme measurement. (Nondetects were included in these calculations as the full detection limit.) For antimony, arsenic, barium, chromium, vanadium, and zinc, the mean concentrations (2.0, 3.9, 197, 6.6, 27, and 46 mg/kg, respectively) were less than their corresponding background screening values. Therefore, ecological risks associated with exposures to these COPECs are considered within the range of the background risks shown in Table 15. The mean concentrations for all other COPECs except thallium, Aroclor 1260, benzo(b)fluoranthene, benzo(g,h,i,)perylene, and bis(2-ethylhexyl) phthalate did not result in HQs greater than unity for any of the ecological receptors.

For bis(2-ethylhexyl) phthalate, the mean concentration (0.31 mg/kg) resulted in an HQ greater than unity for the burrowing owl (HQ = 2.1). Applying the area use factor of 0.18 (as described above) to this HQ results in an HQ of 0.38, indicating no risk to this receptor. The mean concentrations for benzo(b)fluoranthene (0.26 mg/kg) and benzo(g,h,i,)perylene (0.34 mg/kg) resulted in HQs greater than unity for the insectivorous deer mouse only (HQs = 1.1 and 1.4, respectively). Because this receptor represents the extreme dietary regime for the species, the risk indicated by these HQs is considered insignificant. The mean concentration for Aroclor 1260 (0.079 mg/kg) resulted in an HQ of 2.1 for the omnivorous deer mouse and 4.2 for the insectivorous deer mouse. Because the latter HQ value is considered the extreme value for this species, ecological risk associated with exposure to Aroclor 1260 at this site is considered

Table 15
HQs for Ecological Receptors Exposed to Background Concentrations at SWMU 30

Constituent of Potential Ecological Concern	Soil Background Concentration (mg/kg)	Plant HQ[a]	Deer Mouse HQ (Herbivorous)[a]	Deer Mouse HQ (Omnivorous)[a]	Deer Mouse HQ (Insectivorous)[a]	Burrowing Owl HQ[a]
Inorganic						
Antimony	3.9E+00	7.8E-01	**1.0E+00**	**2.8E+00**	**4.7E+00**	–
Arsenic	4.4E+00	4.4E-01	3.1E-01	**2.8E+00**	**5.2E+00**	2.2E-03
Barium	2.0E+02	4.0E-01	5.0E-01	**1.8E+00**	**3.0E+00**	2.2E-02
Cadmium	5.0E-01[b]	1.7E-01	2.4E-02	2.5E-02	2.6E-02	8.1E-04
Chromium (total)	1.3E+01	**1.3E+01**	2.2E-05	3.9E-05	5.6E-05	4.3E-02
Copper	1.7E+01	1.7E-01	7.3E-02	4.8E-02	2.4E-02	1.5E-03
Cyanide	NC	–	–	–	–	–
Lead	1.1E+01	2.2E-01	1.2E-02	9.5E-03	6.7E-03	6.6E-03
Mercury (Organic)	5.0E-02[b]	1.7E-01	1.3E-01	1.3E-01	1.3E-01	7.1E-01
Mercury (Inorganic)	5.0E-02[b]	1.7E-01	5.7E-04	5.7E-04	5.7E-04	1.0E-02
Selenium	5.0E-01[b]	5.0E-01	1.0E-01	1.5E-01	2.0E-01	3.3E-02
Silver	5.0E-01[b]	2.5E-01	2.3E-03	1.4E-03	6.0E-04	–
Thallium	5.5E-01[b]	5.5E-01	1.4E-01	**3.1E+00**	**6.0E+00**	–
Vanadium	3.3E+01	**1.7E+01**	3.4E-01	**7.0E+00**	**1.4E+01**	7.8E-03
Zinc	7.6E+01	**1.5E+00**	5.7E-02	3.5E-02	1.2E-02	1.8E-01
HI[c]		**3.4E+01**	**2.7E+00**	**1.8E+01**	**3.3E+01**	**1.0E+00**

[a]**Bold** text indicates HQ or HI exceeds unity.
[b]Background specified as being less than a detection limit. The value shown is one half of the detection limit.
[c]The HI is the sum of individual HQs using the value for organic mercury as a conservative estimate of the HI.
HI = Hazard index.
HQ = Hazard quotient.
NC = Not calculated.
SWMU = Solid Waste Management Unit.
– = Insufficient toxicity data available for risk estimation purposes.

low. Finally, the mean concentration of thallium was calculated to be 0.94 mg/kg, which resulted in an HQ of 5.2 for the omnivorous deer mouse and 10 for the insectivorous deer mouse. The background value for thallium can only be specified as being less than 1.1 mg/kg. As shown in Table 15, one half this value (0.55 mg/kg), when used as an approximation of the background concentration for thallium, represents 60 percent of the mean exposure. Therefore, potential ecological risks from exposures to thallium are considered low at this site.

Based upon this uncertainty analysis, ecological risks at SWMU 30 are expected to be low. HQs greater than unity were initially predicted; however, closer examination of the exposure assumptions revealed an overestimation of risk primarily attributed to exposure concentration and the contribution of background risk. The potential for ecological risk associated with this site is further reduced by the limited habitat available at and near SWMU 30 due to its location in a developed area of TA-I. Small areas of habitat south of the site are of low quality due to disturbance and are not expected to support significant wildlife populations.

VII.3.6 Risk Interpretation

Ecological risks associated with SWMU 30 were estimated through a screening assessment that incorporated site-specific information when available. Overall, risks to ecological receptors are expected to be low because predicted risks associated with exposure to COPECs are based upon calculations using maximum detected values. Predicted risks from exposure to 24 COPECs were attributed to using maximum detected values. The average concentrations of six of these (antimony, arsenic, barium, chromium, vanadium, and zinc) were within the range of background concentrations. The risk based upon the average concentrations of thallium, Aroclor 1260, benzo(b)fluoranthene, benzo(g,h,i)perylene, and bis(2-ethylhexyl) phthalate were considered to be low. No risk was predicted for the other 13 COPECs based upon the average soil concentrations. The potential for ecological risk associated with this site is further reduced by the limited habitat available at and near SWMU 30 due to its location in a developed area of TA-I where the remaining areas of habitat are of low quality and are not expected to support significant wildlife populations. Based upon this final analysis, ecological risks associated with SWMU 30 are expected to be low.

VII.3.7 Screening Assessment Scientific/Management Decision Point

After potential ecological risks associated with the site have been assessed, a decision is made regarding whether the site should be recommended for NFA or whether additional data should be collected to assess actual ecological risk at the site more thoroughly. With respect to this site, ecological risks are predicted to be low. The scientific/management decision is to recommend this site for NFA.

VIII. References

Baes, III, C.F., R.D. Sharp, A.L. Sjoreen, and R.W. Shor, 1984. "A Review and Analysis of Parameters for Assessing Transport of Environmentally Released Radionuclides through Agriculture," ORNL-5786, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Callahan, M.A., M.W. Slimak, N.W. Gabel, I.P. May, C.F. Fowler, J.R. Freed, P. Jennings, R.L. Durfee, F.C. Whitmore, B. Maestri, W.R. Mabey, B.R. Holt, and C. Gould, 1979. "Water-Related Environmental Fate of 129 Priority Pollutants," EPA-440/4-79-029, Office of Water and Waste Management, Office of Water Planning and Standards, U.S. Environmental Protection Agency, Washington, D.C.

Connell, D.W., and R.D. Markwell, 1990. "Bioaccumulation in Soil to Earthworm System," *Chemosphere*, Vol. 20, pp. 91–100.

Dinwiddie, R.S. (New Mexico Environment Department). Letter to M.J. Zamorski (U.S. Department of Energy), "Request for Supplemental Information: Background Concentrations Report, SNL/KAFB." September 24, 1997.

DOE, see U.S. Department of Energy.

Dunning, J.B., 1993. *CRC Handbook of Avian Body Masses*, CRC Press, Boca Raton, Florida.

Efroymson, R.A., M.E. Will, G.W. Suter II, and A.C. Wooten, 1997. "Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants: 1997 Revision," ES/ER/TM-85/R3, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

EPA, see U.S. Environmental Protection Agency.

Haug, E.A., B.A. Millsap, and M.S. Martell, 1993. "*Speotyto cunicularia* Burrowing Owl," *in* A. Poole and F. Gill (eds.), *The Birds of North America*, No. 61, The Academy of Natural Sciences of Philadelphia.

Howard, P.H., 1989. *Handbook of Environmental Fate and Exposure Data for Organic Chemicals: Volume I, Large Production and Priority Pollutants*, Lewis Publishers, Inc., Chelsea, Michigan.

Howard, P.H., 1990. *Handbook of Environmental Fate and Exposure Data for Organic Chemicals: Volume II, Solvents*, Lewis Publishers, Inc., Chelsea, Michigan.

IAEA, see International Atomic Energy Agency.

International Atomic Energy Agency (IAEA), 1994. "Handbook of Parameter Values for the Prediction of Radionuclide Transfer in Temperate Environments," *Technical Reports Series No. 364*, International Atomic Energy Agency, Vienna, Austria.

IT, see IT Corporation.

IT Corporation (IT), July 1994. "Report of Generic Action Level Assistance for the Sandia National Laboratories/New Mexico Environmental Restoration Program," IT Corporation, Albuquerque, New Mexico.

IT Corporation (IT), July 1998. "Predictive Ecological Risk Assessment Methodology, Environmental Restoration Program, Sandia National Laboratories, New Mexico," IT Corporation, Albuquerque, New Mexico.

Ma, W.C., 1982. "The Influence of Soil Properties and Worm-Related Factors on the Concentration of Heavy Metals in Earthworms," *Pedobiologia*, Vol. 24, pp. 109-119.

Micromedex, Inc., 1998. "Registry of Toxic Effects of Chemical Substances (RTECS)," Hazardous Substances Databank.

Nagy, K.A., 1987. "Field Metabolic Rate and Food Requirement Scaling in Mammals and Birds," *Ecological Monographs*, Vol. 57, No. 2, pp. 111–128.

National Council on Radiation Protection and Measurements (NCRP), January 1989. "Screening Techniques for Determining Compliance with Environmental Standards: Releases of Radionuclides to the Atmosphere," *NCRP Commentary* No. 3, Rev., National Council on Radiation Protection and Measurements, Bethesda, Maryland.

NCRP, see National Council on Radiation Protection and Measurements.

Neumann, G., 1976. "Concentration Factors for Stable Metals and Radionuclides in Fish, Mussels and Crustaceans—A Literature Survey," Report 85-04-24, National Swedish Environmental Protection Board.

New Mexico Environment Department (NMED), March 1998. "Risk-Based Decision Tree Description," *in* New Mexico Environment Department, "RPMP Document Requirement Guide," New Mexico Environment Department, Hazardous and Radioactive Materials Bureau, RCRA Permits Management Program, Santa Fe, New Mexico.

New Mexico Environment Department (NMED), March 2000. Position Paper, "Assessing Human Health Risks Posed by Chemicals: Screening-level Risk Assessment," Hazardous and Radioactive Materials Bureau, New Mexico Environment Department, Santa Fe, New Mexico.

NMED, see New Mexico Environment Department.

Sample, B.E., and G.W. Suter II, 1994. "Estimating Exposure of Terrestrial Wildlife to Contaminants," ES/ER/TM-125, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Sample, B.E., D.M. Opresko, and G.W. Suter II, 1996. "Toxicological Benchmarks for Wildlife: 1996 Revision," ES/ER/TM-86/R3, Risk Assessment Program, Health Sciences Research Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Sandia National Laboratories/New Mexico (SNL/NM), January 2000. "Data Validation Procedure for Chemical and Radiochemical Data (AOP 00-03)," Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), March 2000. "Revised Notification of Self-Implementing Clean-Up and Disposal of Polychlorinated Biphenyls (PCBs) at Environmental Restoration Project Site 30 Reclamation Yard," Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico, U.S. Department of Energy, Albuquerque Operations Office.

Silva, M., and J.A. Downing, 1995. *CRC Handbook of Mammalian Body Masses*, CRC Press, Boca Raton, Florida.

Sims, R.C., and R.M. Overcash, 1983. "Fate of Polynuclear Aromatic Compounds (PNAs) in Soil-Plant Systems," *Residue Reviews*, Vol. 88, pp.1-67.

SNL/NM, See Sandia National Laboratories, New Mexico.

Stafford, E.A., J.W. Simmers, R.G. Rhett, and C.P. Brown, 1991. "Interim Report: Collation and Interpretation of Data for Times Beach Confined Disposal Facility, Buffalo, New York," *Miscellaneous Paper* D-91-17, U.S. Army Corps of Engineers, Buffalo, New York.

Travis, C.C., and A.D. Arms, 1988. "Bioconcentration of Organics in Beef, Milk, and Vegetables," *Environmental Science Technology*, Vol. 22, No. 3, pp. 271–274.

USDA, see U.S. Department of Agriculture.

U.S. Department of Agriculture (USDA), June 1977. "Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico," Soil Conservation Service, U.S. Department of the Interior Bureau of Indian Affairs and Bureau of Land Management, and New Mexico Agriculture Experiment Station, U.S. Government Printing Office, Washington, D.C.

U.S. Department of Energy (DOE), U.S. Air Force, and U.S. Forest Service, September 1995. "Workbook: Future Use Management Area 2," prepared by Future Use Logistics and Support Working Group in cooperation with U.S. Department of Energy Affiliates, U.S. Air Force, and U.S. Forest Service.

U.S. Environmental Protection Agency (EPA), 1989. "Risk Assessment Guidance for Superfund, Vol. I: Human Health Evaluation Manual," EPA/540-1089/002, Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1990. "Corrective Action for Solid Waste Management Units (SWMU) at Hazardous Waste Management Facilities, Proposed Rule," *Federal Register*, Vol. 55, Title 40, Code of Federal Regulations, Parts 264, 265, 270, and 271, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1991. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B)," Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1993. "Wildlife Exposure Factors Handbook, Volume I of II," EPA/600/R-93/187a, Office of Research and Development, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), July 14, 1994. Memorandum from Elliott Laws, Assistant Administrator to Region Administrators I-X, "Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Active Facilities," U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1996. "Region 9 Preliminary Remediation Goals (PRGs) 1996," electronic database maintained by Region 9, U.S. Environmental Protection Agency, San Francisco, California.

U.S. Environmental Protection Agency (EPA), 1997a. "Risk-Based Concentration Table," electronic database maintained by Region 3, U.S. Environmental Protection Agency, Philadelphia, Pennsylvania.

U.S. Environmental Protection Agency (EPA), 1997b. "Health Effects Assessment Summary Tables (HEAST), FY 1997 Update," EPA-540-R-97-036, Office of Research and Development and Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1997c. "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risks," Interim Final, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1998a. "Integrated Risk Information System (IRIS)," electronic database, maintained by the U.S. Environmental Protection Agency, Washington D.C.

U.S. Environmental Protection Agency (EPA), 1998b. "Guidelines for Ecological Risk Assessment," EPA/630/R-95/002F, Risk Assessment Forum, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 2000. "Integrated Risk Information System (IRIS)," electronic database, maintained by the U.S. Environmental Protection Agency, Washington, D.C.

U.S. Fish and Wildlife Service (USFWS), September 1995. "Migratory Nongame Birds of Management Concern in the United States: The 1995 List," Office of Migratory Bird Management, U.S. Fish and Wildlife Service, Washington, D.C.

USFWS, see U.S. Fish and Wildlife Service.

Vanderploeg, H.A., D.C. Parzyck, W.H. Wilcox, J.R. Kercher, and S.V. Kaye, 1975. "Bioaccumulation Factors for Radionuclides in Freshwater Biota," ORNL-5002, Oak Ridge National Laboratory, Oak Ridge Tennessee.

Wren, C.D. and G.L. Stephenson, 1991. "The Effect of Acidification on the Accumulation and Toxicity of Metals to Freshwater Invertebrates," Environmental Pollution, Vol 71, pp 205-241.

Yanicak, S. (Oversight Bureau, Department of Energy, New Mexico Environment Department). Letter to M. Johansen (DOE/AIP/POC Los Alamos National Laboratory), "(Tentative) list of constituents of potential ecological concern (COPECs) which are considered to be bioconcentrators and/or biomagnifiers." March 3, 1997.

This page intentionally left blank.

APPENDIX 1
EXPOSURE PATHWAY DISCUSSION FOR CHEMICAL AND RADIONUCLIDE CONTAMINATION

Introduction

Sandia National Laboratories/New Mexico (SNL/NM) proposes that a default set of exposure routes and associated default parameter values be developed for each future land use designation being considered for SNL/NM Environmental Restoration (ER) project sites. This default set of exposure scenarios and parameter values would be invoked for risk assessments unless site-specific information suggested other parameter values. Because many SNL/NM solid waste management units (SWMU) have similar types of contamination and physical settings, SNL/NM believes that the risk assessment analyses at these sites can be similar. A default set of exposure scenarios and parameter values will facilitate the risk assessments and subsequent review.

The default exposure routes and parameter values suggested are those that SNL/NM views as resulting in a Reasonable Maximum Exposure (RME) value. Subject to comments and recommendations by the U.S. Environmental Protection Agency (EPA) Region VI and New Mexico Environment Department (NMED), SNL/NM proposes that these default exposure routes and parameter values be used in future risk assessments.

At SNL/NM, all SWMUs exist within the boundaries of the Kirtland Air Force Base (KAFB). Approximately 157 potential waste and release sites have been identified where hazardous, radiological, or mixed materials may have been released to the environment. Evaluation and characterization activities have occurred at all of these sites to varying degrees. Among other documents, the SNL/NM ER draft Environmental Assessment (DOE 1996) presents a summary of the hydrogeology of the sites, the biological resources present and proposed land use scenarios for the SNL/NM SWMUs. At this time, all SNL/NM SWMUs have been tentatively designated for either industrial or recreational future land use. The NMED has also requested that risk calculations be performed based upon a residential land use scenario. All three land use scenarios will be addressed in this document.

The SNL/NM ER project has screened the potential exposure routes and identified default parameter values to be used for calculating potential intake and subsequent Hazard index (HI), excess cancer risk and dose values. The EPA (EPA 1989a) provides a summary of exposure routes that could potentially be of significance at a specific waste site. These potential exposure routes consist of:

- Ingestion of contaminated drinking water
- Ingestion of contaminated soil
- Ingestion of contaminated fish and shell fish
- Ingestion of contaminated fruits and vegetables

- Ingestion of contaminated meat, eggs, and dairy products
- Ingestion of contaminated surface water while swimming
- Dermal contact with chemicals in water
- Dermal contact with chemicals in soil
- Inhalation of airborne compounds (vapor phase or particulate)
- External exposure to penetrating radiation (immersion in contaminated air; immersion in contaminated water and exposure from ground surfaces with photon-emitting radionuclides).

Based upon the location of the SNL/NM SWMUs and the characteristics of the surface and subsurface at the sites, we have evaluated these potential exposure routes for different land use scenarios to determine which should be considered in risk assessment analyses (the last exposure route is pertinent to radionuclides only). At SNL/NM SWMUs, there does not currently occur any consumption of fish, shell fish, fruits, vegetables, meat, eggs, or dairy products that originate on site. Additionally, no potential for swimming in surface water is present due to the high-desert environmental conditions. As documented in the RESRAD computer code manual (ANL 1993), risks resulting from immersion in contaminated air or water are not significant compared to risks from other radiation exposure routes.

For the industrial and recreational land use scenarios, SNL/NM ER has, therefore, excluded the following four potential exposure routes from further risk assessment evaluations at any SNL/NM SWMU:

- Ingestion of contaminated fish and shell fish
- Ingestion of contaminated fruits and vegetables
- Ingestion of contaminated meat, eggs, and dairy products
- Ingestion of contaminated surface water while swimming.

That part of the exposure pathway for radionuclides related to immersion in contaminated air or water is also eliminated.

For the residential land use scenario, we will include ingestion of contaminated fruits and vegetables because of the potential for residential gardening.

Based upon this evaluation, for future risk assessments, the exposure routes that will be considered are shown in Table 1. Dermal contact is included as a potential exposure pathway in all land use scenarios. However, the potential for dermal exposure to inorganics is not considered significant and will not be included. In general, the dermal exposure pathway is generally considered to not be significant relative to water ingestion and soil ingestion pathways but will be considered for organic components. Because of the lack of toxicological parameter values for this pathway, the inclusion of this exposure pathway into risk assessment calculations may not be possible and may be part of the uncertainty analysis for a site where dermal contact is potentially applicable.

Table 1
Exposure Pathways Considered for Various Land Use scenarios

Industrial	Recreational	Residential
Ingestion of contaminated drinking water	Ingestion of contaminated drinking water	Ingestion of contaminated drinking water
Ingestion of contaminated soil	Ingestion of contaminated soil	Ingestion of contaminated soil
Inhalation of airborne compounds (vapor phase or particulate)	Inhalation of airborne compounds (vapor phase or particulate)	Inhalation of airborne compounds (vapor phase or particulate)
Dermal contact	Dermal contact	Dermal contact
External exposure to penetrating radiation from ground surfaces	External exposure to penetrating radiation from ground surfaces	Ingestion of fruits and vegetables
		External exposure to penetrating radiation from ground surfaces

Equations and Default Parameter Values for Identified Exposure Routes

In general, SNL/NM expects that ingestion of compounds in drinking water and soil will be the more significant exposure routes for chemicals; external exposure to radiation may also be significant for radionuclides. All of the above routes will, however, be considered for their appropriate land use scenarios. The general equations for calculating potential intakes via these routes are shown below. The equations are from the Risk Assessment Guidance for Superfund (RAGS): Volume 1 (EPA 1989a, 1991). These general equations also apply to calculating potential intakes for radionuclides. A more in-depth discussion of the equations used in performing radiological pathway analyses with the RESRAD code may be found in the RESRAD Manual (ANL 1993). Also shown are the default values SNL/NM ER suggests for use in RME risk assessment calculations for industrial, recreational, and residential scenarios, based upon EPA and other governmental agency guidance. The pathways and values for chemical contaminants are discussed first, followed by those for radionuclide contaminants. RESRAD input parameters that are left as the default values provided with the code are not discussed. Further information relating to these parameters may be found in the RESRAD Manual (ANL 1993).

Generic Equation for Calculation of Risk Parameter Values

The equation used to calculate the risk parameter values (i.e., hazard quotients/hazard index [HI], excess cancer risk, or radiation total effective dose equivalent [dose]) is similar for all exposure pathways and is given by:

Risk (or Dose) = Intake x Toxicity Effect (either carcinogenic, noncarcinogenic, or radiological)

$$= C \times (CR \times EFD/BW/AT) \times \text{Toxicity Effect} \quad (1)$$

where

C = contaminant concentration (site specific)
CR = contact rate for the exposure pathway
EFD = exposure frequency and duration
BW = body weight of average exposure individual
AT = time over which exposure is averaged.

The total risk/dose (either cancer risk or HI) is the sum of the risks/doses for all of the site-specific exposure pathways and contaminants.

The evaluation of the carcinogenic health hazard produces a quantitative estimate for excess cancer risk resulting from the constituents of concern (COC) present at the site. This estimate is evaluated for determination of further action by comparison of the quantitative estimate with the potentially acceptable risk range of 1E-6 for Class A and B carcinogens and 1E-5 for Class C carcinogens. The evaluation of the noncarcinogenic health hazard produces a quantitative estimate (i.e., the HI) for the toxicity resulting from the COCs present at the site. This estimate is evaluated for determination of further action by comparison of this quantitative estimate with the EPA standard HI of unity (1). The evaluation of the health hazard due to radioactive compounds produces a quantitative estimate of doses resulting from the COCs present at the site.

The specific equations used for the individual exposure pathways can be found in RAGS (EPA 1989a) and the RESRAD Manual (ANL 1993). Table 2 shows the default parameter values suggested for used by SNL/NM at SWMUs, based upon the selected land use scenario. References are given at the end of the table indicating the source for the chosen parameter values. The intention of SNL/NM is to use default values that are consistent with regulatory guidance and consistent with the RME approach. Therefore, the values chosen will, in general, provide a conservative estimate of the actual risk parameter. These parameter values are suggested for use for the various exposure pathways based upon the assumption that a particular site has no unusual characteristics that contradict the default assumptions. For sites for which the assumptions are not valid, the parameter values will be modified and documented.

Summary

SNL/NM proposes the described default exposure routes and parameter values for use in risk assessments at sites that have an industrial, recreational or residential future land use scenario. There are no current residential land use designations at SNL/NM ER sites, but this scenario has been requested to be considered by the NMED. For sites designated as industrial or recreational land use, SNL/NM will provide risk parameter values based upon a residential land use scenario to indicate the effects of data uncertainty on risk value calculations or in order to potentially mitigate the need for institutional controls or restrictions on SNL/NM ER sites. The parameter values are based upon EPA guidance and supplemented by information from other government sources. The values are generally consistent with those proposed by Los Alamos National Laboratory, with a few minor variations. If these exposure routes and parameters are acceptable, SNL/NM will use them in risk assessments for all sites where the assumptions are consistent with site-specific conditions. All deviations will be documented.

Table 2
Default Parameter Values for Various Land Use scenarios

Parameter	Industrial	Recreational	Residential
General Exposure Parameters			
Exposure frequency	8 hr/day for 250 day	4 hr/wk for 52 wk/yr	350 day/yr
Exposure duration (yr)	25[a,b]	30[a,b]	30[a,b]
Body weight (kg)	70[a,b]	70 adult[a,b] 15 child	70 adult[a,b] 15 child
Averaging Time (days) for carcinogenic compounds (= 70 y x 365 day/yr) for noncarcinogenic compounds (= ED x 365 day/yr)	 25,550[a] 9,125	 25,550[a] 10,950	 25,550[a] 10,950
Soil Ingestion Pathway			
Ingestion rate	100 mg/day[c]	200 mg/day child 100 mg/day adult	200 mg/day child 100 mg/day adult
Inhalation Pathway			
Inhalation rate (m^3/yr)	5,000[a,b]	260[d]	7,000[a,b,d]
Volatilization factor (m^3/kg)	chemical specific	chemical specific	chemical specific
Particulate emission factor (m^3/kg)	1.32E9[a]	1.32E9[a]	1.32E9[a]
Water Ingestion Pathway			
Ingestion rate (liter/day)	2[a,b]	2[a,b]	2[a,b]
Food Ingestion Pathway			
Ingestion rate (kg/yr)	NA	NA	138[b,d]
Fraction ingested	NA	NA	0.25[b,d]
Dermal Pathway			
Surface area in water (m^2)	2[b,e]	2[b,e]	2[b,e]
Surface area in soil (m^2)	0.53[b,e]	0.53[b,e]	0.53[b,e]
Permeability coefficient	chemical specific	chemical specific	chemical specific

[a]Risk Assessment Guidance for Superfund, Vol. 1, Part B (EPA 1991).
[b]Exposure Factors Handbook (EPA 1989b).
[c]EPA Region VI guidance.
[d]For radionuclides, RESRAD (Argonne National Laboratory, 1993. *Manual for Implementing Residual Radioactive Material Guidelines Using RESRAD*, Version 5.0, ANL/EAD/LD-2, Argonne National Laboratory, Argonne, IL. 1993) is used for human health risk calculations; default parameters are consistent with RESRAD guidance.
[e]Dermal Exposure Assessment (EPA 1992).
ED = Exposure duration.
EPA = U.S. Environmental Protection Agency.
hr = Hour.
kg = Kilogram(s).
m = Meter(s).
mg = Milligram(s).
NA = Not available.
wk = Week.
yr = Year.

References

ANL, see Argonne National Laboratory.

Argonne National Laboratory (ANL), 1993. *Manual for Implementing Residual Radioactive Material Guidelines Using RESRAD*, Version 5.0, ANL/EAD/LD-2, Argonne National Laboratory, Argonne, IL.

DOE, see U.S. Department of Energy.

EPA, see U.S. Environmental Protection Agency.

U.S. Department of Energy (DOE), 1996. "Environmental Assessment of the Environmental Restoration Project at Sandia National Laboratories/New Mexico," U.S. Department of Energy, Kirtland Area Office.

U.S. Environmental Protection Agency (EPA), 1989a. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual," EPA/540-1089/002, U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1989b. *Exposure Factors Handbook*, EPA/600/8-89/043, U.S. Environmental Protection Agency, Office of Health and Environmental Assessment, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1991. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B)," EPA/540/R-92/003, U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1992. "Dermal Exposure Assessment: Principles and Applications," EPA/600/8-91/011B, Office of Research and Development, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1996. "Soil Screening Guidance: Technical Background Document," EPA/540/1295/128, Office of Solid Waste and Emergency Response, Washington, D.C.

ANNEX 2-C
Self-Implementing VCM Cleanup Notification

REVISED NOTIFICATION OF SELF-IMPLEMENTING CLEAN-UP AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCBS) AT ENVIRONMENTAL RESTORATION PROJECT SITE 30, RECLAMATION YARD

Table of Contents

1.0 Introduction 1
1.1. Description of ER Site 30 1
1.2. Operational History 1
1.3. Physical Setting 2

2.0 Results of Investigations 3
2.1. Summary of 1986-1993 Investigations 4
2.1.1. 1986 Investigation 4
2.1.2. 1987 CEARP Comprehensive Environmental Assessment and Response Program (CEARP) Investigation 4
2.1.3. 1989/1990 Investigations of PCBs 4
2.1.4. 1991/1992 Investigation for Site Clearance 5
2.1.5. 1993 Investigation of an Unknown Substance 5

2.2. Summary of 1995-1997 RFI Field Investigations 6
2.2.1. March-April 1995 Investigation 6
2.2.2. February and June 1997 Investigations 7
2.2.3. Summary and Evaluation of 1995-1997 RFI Results 8
2.2.3.1. PCB Screening Analyses, March-April 1995 8
2.2.3.2. PCB Analyses, March-April 1995 9
2.2.3.3. PCB Analyses, February and June 1997 ..... ~~10~~ 9
2.2.3.4. Sample Blanks and Duplicates, February and June 1997 10

2.3. Summary of Storm Drain Investigations 10
2.3.1. June 1995 Investigation 10
2.3.2. September to October 1998 Investigation 10

2.4. January 2000 Field Investigation 11
2.5. Proposed Characterization Beneath Building 897X 11

3.0 Self-Implementing Expedited Cleanup 12
3.1. Overview and Rationale 12

3.2. Permitting, Approval, and Notification Requirements 12

3.3. Remediation Activities 12
3.3.1. Determination of the 1-ppm Isopleth 12
3.3.2. Cleanup Plans for PCB-Contaminated Areas 13

3.4. Waste Management Plan 14
3.4.1. Introduction 14
3.4.2. Waste Streams 14
3.4.3. Waste Containerization 14
3.4.4. Contingency Plan and Training Program ..... ~~15~~ 16
3.4.5. Waste Transport and Disposal 16
3.4.6. Equipment Decontamination 16
3.4.7. Waste Minimization 16

3.5. Site Activities and Sample Documentation 17

4.0 References 17

Table of Contents

5.0 Appendices 22
5.1. Figures 23
5.2. Tables 37
5.3. Record Retention Certification 55

1. INTRODUCTION

As required in 40 CFR 761.61(a) (1999), this document summarizes existing site and sampling information at Environmental Restoration (ER) Site 30, the Reclamation Yard and describes the proposed plan for conducting a self-implementing cleanup and disposal of PCBs at ER Site 30. Although this document is focused on the PCB contamination at ER Site 30, ER Site 30 is a Resource Conservation and Recovery Act (RCRA) site and has been evaluated for other contaminants. As a result of the RCRA site characterization and evaluation, it was determined that the site only needed to be remediated for PCBs. A summary of the previous characterization activities completed to evaluate the site for all potential contaminants is contained in the original Expedited Cleanup/ Voluntary Corrective Measure (EC/VCM) plan (SNL, 1998a).

The objective of this revised notification is to document plans for the removal and disposal of soils containing PCBs for the purpose of rendering the site in a suitable state for the construction of the Microsystem and Engineering Sciences Application (MESA) Facility, a multiple-facility integrated complex that will include three buildings. To meet the construction-start deadline for the buildings in this complex will require an aggressive cleanup schedule.

The proposed self-implementing cleanup and disposal will entail excavating approximately one foot of the surface soils from those areas of the site where soils are contaminated with a total PCB concentration of greater than 1 part per million (ppm). To confirm adequate cleanup, the cleaned-up portion of the site will be sampled as required in 40 CFR 761.283. Completion of this satisfy the 761.61(a)(4)(I)(A) requirements for high-occupancy use.

1.1 Description of ER Site 30

The 6.59-acre site is mainly southeast of M and 14th Streets, in the southeastern portion of Technical Area (TA)-I (Figure 1) (all figures are included in Appendix 5.1). Building 897X is located within the site boundary and until recently was being used for storage of geologic core samples by the ER Project. Until their removal in the early 1990s, other on-site structures included Building 889 (the Storage Shed Building) on the site's western boundary and a caretaker's office in the north-central part of the site. The boundaries that define the site were changed several times to reflect either historical usage as part of the Reclamation Yard or to include nearby areas with soils containing PCB concentrations of greater than 1 ppm. A portion of a nearby ditch containing soils with PCB concentrations greater than 1 ppm is included as part of the site. This ditch is the westernmost part of the site. The fenced-in area in the north central part of the site that was the former location of temporary office buildings (L & M Technologies, MO-220, MO-221, and MO-222) is also included as part of the site. The majority of the site is unpaved and flat, with little or no engineering control for surface-water runoff.

1.2 Operational History

Information regarding the early history and use of the site is sparse. By the early 1950s, surplus supplies and scrap materials were sold there every week. Items to be sold were separated by type and organized in different areas of the yard (SNL/NM 1995). The arrangement of materials in the yard is unknown and is assumed to have changed frequently over time. Materials stored and sold at this site included cabinets, desks, scrap metal, pallets, wood, machines, general equipment, capacitors, transistors, transformers of various sizes, miscellaneous electronic components, hardware (such as bolts), tools, epoxies, polyester resins, and hobby-type material (SNL/NM 1995). During the approximate 40-year history, waste oil (some apparently contaminated with

PCBs) was used for dust control at the site (discussed in Section 2.1). In September 1990, the site was cleared of salvage to allow for another use of the property (Jacobs 1991).

In the fall of 1991, an assessment and plans for remediation were expedited in the western portion of the site to prepare for construction of an office complex. A sampling and analysis plan was prepared and implemented in the spring of 1992 (IT Corporation 1992a). In the spring of 1993, it was determined that the existing data were insufficient to characterize the site and that a more rigorous EPA-approved strategy would be required for the next sampling event (as discussed in Section 2.2) (Miller 1993).

1.3 Physical Setting

The site's topography, climate, soil, hydrology, geology, ecology, cultural resources, and demographics are detailed in the TA-I RCRA Facilities Investigation (RFI) Work Plan (SNL/NM 1995) (hereafter referred to as the work plan), the annual Sitewide Hydrogeologic Characterization Reports (SNL/NM 1994a, 1993), and the Program Implementation Plan (SNL/NM 1994b). The ground surface at the site is nearly level, with a gradual slope to the west of 1 to 2 percent. Elevations from east to west across the main portion of the site vary from 5,433 to 5,425 feet (ft) above mean sea level, for a total relief of 8 ft.

A major drainage feature in the vicinity of the site is the Tijeras Arroyo, which drains to the west and is located approximately 3/4 mile south of the site. Surface runoff in the site area is collected in a combined above-ground and underground storm drain system that discharges into the Tijeras Arroyo south of TA-II. The site is one of only a few undeveloped areas remaining in TA-I.

Kirtland Air Force Base (KAFB) and SNL/NM are located near the east-central edge of the Albuquerque Basin. The basin is a rifted graben within the Rio Grande Rift that is bounded on the east and west by north-south trending faults. The site lies in a position between two down-to-the-west, north-south trending faults of the Albuquerque Basin: the Sandia Fault (or Fault Zone) and the Rio Grande Fault (Hawley and Haase 1992).

The site rests on a partially dissected bajada formed by coalescing multiple alluvial fan complexes that originate in the mountain ranges to the east. The Holocene and Pleistocene deposits on the surface are comprised of alluvial fan deposits shed from the eastern uplifts that interfinger with valley alluvium west of the site. The thickness of these Holocene and Pleistocene deposits is thought to be less than 10 ft. Surficial deposits derived from the Tijeras Arroyo drainage contain granitic and sedimentary lithologies from the Sandia Mountains and sedimentary and metamorphic lithologies from the Manzanita Mountains.

The soil at the site has been identified as being part of the Embudo-Tijeras complex, which consists of deep, well-drained, moderately alkaline soil (pH of 7.9 to 8.4) that formed in decomposed granitic alluvium on old alluvial fans (Hacker 1977). Permeability of this soil is moderate (0.6 to 2.0 inches [in.]/hour). As used here, the term "soil" refers to the weathered and biologically altered horizons above and within unconsolidated deposits. Throughout the remainder of this notification, the term "soil" will be used to refer to any unconsolidated deposits regardless of whether they contain developed soil horizons. This is the sense of the word as it is used by engineers who have devised a soil classification, based on mixtures of clay, silt, sand, and gravel, to describe any unconsolidated deposits.

Depth to regional groundwater in the vicinity of the site is approximately 530 ft, with the potential for perched water zones at shallower depths (approximately 300 ft). There are no wells

within the site boundaries, but there are numerous monitoring wells and three production wells within a 1-mile radius of the site. Two of the monitoring wells are within 300 yards of the site. Pumping of city wells has created a cone of depression in the northern portion of SNL/NM that may affect groundwater flow in the vicinity of the site.

The climatic conditions are those normally associated with the high desert plateau: low precipitation, sunny days, and wide temperature ranges. Precipitation for the SNL/NM--KAFB area averages 10 to 12 in./year (SNL/NM 1993). The weather is typically sunny and clear, with an average of 169 sunny days/year. The average diurnal temperature range is 28° F (NOAA 1990). Winter daily low temperatures normally fall to 23 to 27° F, and high normal temperatures during the summer months range from 82 to 91° F (DOE 1987). Winds are typically out of the east with an average speed of 9 miles per hour. Evapotranspiration has been estimated at 95 percent of the annual rainfall (Thompson and Smith 1985).

The site has been heavily disturbed by human activities for over 50 years. Generally, the diversity and abundance of animal species in areas in and around TA-I varies at given locations, depending on the quantity and quality of necessary habitat. Given the amount of known human intrusion at the site, a great diversity or abundance of animal species is unlikely, although the site-specific species have not been quantified. No suitable habitat remains within the site boundaries to sustain a viable ecological system.

Natural areas outside the site boundaries are dominated by grassland vegetation; black grama, blue grama, and western wheatgrass comprise 30 to 40 percent of the vegetative mass (SNL/NM 1994b). Indigenous wildlife includes amphibians, reptiles, birds, and small mammals. Thirteen species of concern have been identified at SNL/NM--KAFB locations (SNL/NM 1994b). Within TA-I, however, no threatened or endangered species and no species of concern have been identified. There are no permanent wetlands identified in TA-I.

With approximately 5,000 workers, TA-I has the largest employee population among the SNL/NM technical areas and other sites. Civilian and military residential areas with an approximate population of 6,600 are located within 2 miles to the north, northwest, and northeast of the site. Nonresidential facilities near the site include security offices, guard gates, credit unions, banks, restaurants, and other SNL/NM and U.S. Air Force research facilities and engineering offices.

2.0 RESULTS OF INVESTIGATIONS

Numerous investigations of soil contamination have been conducted at the site since the mid-1980s. Highlights of the investigations and operational history are provided in Table 1 (all tables are included in Appendix 5.2). The remainder of Section 2.0 provides more detailed information about the PCB results from the investigations. "Prior Investigations" refer to studies conducted before the TA-I RFI was completed in 1995. The RFI data, the 1989 and the 1991/1992 PCB data are summarized in the text, and presented in maps and tables. Some of the original analytical results were reported in ppm and parts per billion (ppb), whereas others were reported in milligrams per kilogram (mg/kg) and micrograms per kilogram (μg/kg). This notification presents all the results in ppm; in converting the results to ppm it was assumed that 1 ppm is equivalent to 1 mg/kg, and to 1000 μg/kg.

2.1 Summary of 1986 to 1993 Investigations

2.1.1 1986 Investigation

On February 28, 1986, soils at ER Site 30 were sampled to determine whether PCBs were present. Sampling was conducted because it was an alleged ". . . past practice at Sandia's Reclamation Yard for workers to puncture drums of oil and spread the oil on the ground in order to pack down dust in the yard driveways. We [SNL/NM group 3314] wished to determine if oil containing Polychlorinated Biphenyls (PCBs) could have inadvertently spread in the Reclamation Yards. . . " (Pei 1986).

Eleven soil samples were collected at locations along the unpaved driveways throughout the site. The samples were collected with a hand auger from a depth of 0 to 2 ft at locations where the soil was soaked, stained dark, or had a solvent odor. The SNL/NM Industrial Hygiene Services Laboratory analyzed the samples for PCBs (Analytical Method NIOSH 244). No PCBs were detected; however, detection limits and QA/QC protocols were not specified in the data presentation (Pei 1986).

2.1.2 1987 Comprehensive Environmental Assessment and Response Program (CEARP) Investigation

The site was listed as an ER site in 1987, and although the original document (Pei 1986) did not mention a PCB spill during waste transfer operations, the CEARP report (DOE 1987) describes the following release situation:

> "During waste transfer operations, some drums containing oil that may have been contaminated with polychlorinated biphenyls (PCBs) were spread in the Area 1 reclamation yards (north of Building 889 and south of Building 953-A) (Site 30). Sandia collected 20 soil samples and had them analyzed for PCBs. No PCBs were detected: however, some of the samples were darkly stained and had a solvent odor" (Pei 1986).

2.1.3 1989/1990 Investigations of PCBs

Investigations of PCB-contaminated soils were completed in 1989 and 1990 before all salvage materials were removed from the yard (BCM 1989, E&E 1990, and Hahn 1990a-c). SNL/NM Industrial Hygiene Department 3211 retained BCM Engineers in September 1989 to determine whether residual PCBs, metals, or asbestos contamination was present in the ER Site 30 soils. The BCM report describes collecting soil samples in the eastern 2/3 of the site. The samples were approximately one inch in diameter and one inch deep. The PCB samples were initially collected in areas of obvious soil discoloration at 31 locations; the sample locations were identified as SEP-1 through SEP-31. The samples were analyzed by EPA Method 8080 from "Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods (EPA SW-846)" (EPA 1986a, BCM 1989). Eleven of the samples had concentrations above 1 ppm. The sample at the SEP-3 location had a concentration of 42 ppm. The locations and concentrations of the samples are posted in Figure 2. Table 2 lists the sample locations and concentrations for those samples with detections.

Four months later (January 1990), the SNL/NM ER Program contractor (E&E) further investigated site soils in support of an interim response action (E&E 1990). This resampling included eight samples for PCB analysis. Of the eight samples, four were collected from a

previously unsampled oily stain in the southeastern corner of the site, and the other four were collected near the BCM Engineers (1989) sample location SEP-3 to verify the elevated sample analytical result of 42 ppm (E&E 1990). At the SEP-3 location, one surface [0 to 2 in. below the ground surface (bgs)] soil sample was collected at the base of the rebar stake that marked the original BCM Engineers' location, and three surface soil samples were collected at equally distant points approximately 4 ft north, southeast, and southwest from the rebar stake. Although E&E's report (1990) does not state which four of the eight samples correspond to the SEP-3 location, none of the eight analytical results approaches the 42 ppm result for SEP-3 found by BCM Engineers. All eight samples had detectable concentrations of PCBs, but they only ranged from 0.13 to 3.0 ppm total PCBs (mostly Aroclors 1254 and 1248). Because (1) the correspondence between the location and the sample analyzed is not documented and (2) the PCB concentrations are less than the maximum concentration found in the previous sampling effort, they are not posted on a map. However, the PCB concentrations associated with these samples are listed in Table 3.

As a further note, E&E removed the complete contents of the Reclamation Yard (at the time limited to the eastern two-thirds of the site) in September to October 1990.

2.1.4 1991/1992 Investigation for Site Clearance

The objective of the 1991/1992 investigation was to obtain definitive data regarding the presence or absence of PCBs or other constituents of concern (COCs) at this location (Cox and Steinborn 1991). The March and April 1992 soil sampling was conducted in the northwestern portion of ER Site 30 to determine whether hazardous contaminants were present (IT Corporation 1992a, 1992b). Surface (approximately 1.2 in. bgs) soil was sampled in a random pattern for PCBs as well as for other contaminants. In March 1992, 10 composite surface soil samples were collected from a four-quadrant grid, from areas around the site having visible staining, and from a background location. Five of the ten composites were analyzed for PCBs. All but one of the five samples were reanalyzed for PCBs in April. The maximum results of the March/April composite sampling event are posted in Figure 3. Table 4 lists the sample locations and concentrations for both sets of analyses.

Based on the results of the March/April data (which indicated PCB Aroclor 1254 concentrations of up to 0.75 ppm), additional sampling was conducted in April 1992. This sampling event included revisiting the composite PCB sample locations and collecting 16 individual samples for analysis.

The April 1992 discrete sampling event had two detections of PCBs. Both detections were in the western quadrants. One of the PCB concentrations was 2.3 ppm and the other 6.2 ppm. The results of the April discrete sampling event are posted in Figure 4. Table 5 lists the sample locations and concentrations for those samples with detections.

2.1.5 1993 Investigation of an Unknown Substance

For a second time, a tar-like substance was exposed in a gas-line excavation approximately 3-ft deep in the southwestern corner of the site, due east of the communications duct where the tar-based substance was first encountered in August 1991, near the electrical access point shown in Figures 5 through 8. (The first time the substance was encountered, a PCB analysis was not conducted on the sample.) A grab sample of this tar-based substance collected May 18, 1993 was analyzed for PCBs (Method EPA-600/4-81-45 with a detection limit of 0.001 ppm) (Stockham

1993a) as well as other hazardous contaminants. The PCB results were nondetect (Stockham 1993b).

2.2 Summary of 1995-1997 RFI Field Investigations

Details of the sampling strategy, site history, and data quality objectives for the site are presented in the TA-I RFI Work Plan (SNL/NM 1995), the ER Site 30 Data Evaluation Report (SNL/NM 1997a), the Supplemental Sampling and Analysis Plan (SAP) (SNL/NM 1997b), and the Supplemental Data Evaluation Report (SNL/NM 1997c). Field work conducted for the RFI was completed in two separate sampling events: one during the spring of 1995 (described in Section 2.2.1) and one in the spring/summer of 1997 (described in Section 2.2.2). The data collected during the spring 1995 event indicated that the characterization of the horizontal extent of contamination was not complete and therefore further sampling was required.

2.2.1 March - April 1995 Investigations

During the TA-I RFI, a field investigation was conducted at the site from March 20 through April 26, 1995. Soil sampling at this time was divided into two phases. Phase 1 included composite soil sampling and analysis using laboratory techniques, and PCB field screening of discrete samples using an immunoassay analysis technique, called PCB RIS-C® (by Ensys, Inc.); Phase 2 consisted of laboratory analysis of discrete samples located on the basis of Phase 1 PCB field-screening results. Phase 1 sampling included hand-augering 202 boreholes (BH001 through BH202; Figures 5 and 6) to a depth of 5 ft. During Phase 1, 84 composite soil samples (42 of which were at the 1 foot depth and 42 at the 5 foot depth) were collected from 11 grid areas. For Phase 2 sampling, 55 separate locations were sampled at the surface and the subsurface (BH300 through BH354; Figures 7 and 8) for a total of 110 discrete soil samples.

For the spring 1995 sampling, all soil samples were collected at the surface (0 to 1 ft bgs) and the shallow subsurface (4 to 5 ft bgs). Soils were analyzed offsite for PCBs and several other constituents, including VOCs, SVOCs, and target analyte list (TAL) inorganics. In addition, the ER Chemistry Laboratory (ERCL) completed PCB field screening analyses on a total of 404 Phase 1 soil samples (excluding waste management or QA/QC samples).

In accordance with the strategy specified in the RFI Work Plan, the site was divided into 11 separate grid areas for collecting systematic composite samples during Phase 1 (Figures 5 and 6). Approximately 19 sample locations were staked in each of the 11 grids. The sample locations were grouped into four subareas within each grid, designated A through D to produce four composite samples for each of the grid areas 1 through 4 and 7 through 11; three composite samples were taken in grid area 5 and 6. Within each grid subarea, samples were combined for each respective depth. Composite samples were sent to an off-site laboratory for PCB analysis. PCB field screening samples were collected from each location using a hand-scoop or auger, and were placed in a Ziplock bag for delivery to ERCL. A total of 404 Phase 1 samples from 202 locations (BH001 through BH202) were analyzed with the PCB field-screening test.

Additional samples that were not originally designated in the RFI Work Plan were collected from the site during Phase 2. Based upon a preliminary review of the RFI Work Plan, the EPA requested that 5 additional soil samples be collected from each grid, for a total of 55 extra samples (Miller, 1995). The EPA requested that the additional samples be discrete and that no more composite soil sampling be done. The discrete sample locations were located where (1) the Phase 1 PCB field screening results were greater than 0.4 ppm, (2) surface staining was evident, (3) surface water accumulated, or (4) small run-off channels occurred. The total PCBs resulting

from these discrete sampling events are posted in Figures 7 and 8. Table 6 lists the sample locations and total PCB concentrations for those samples with detections.

Another part of the RFI investigations completed in April 1995 included further investigation of the black tar-like substance that was encountered in the southwestern part of the site in 1991 and 1993. Seventeen exploratory holes were hand-augered within 12.5 to 15.5 ft east, north and west of the electrical access point where the tar-like substance was previously found. Four of the seventeen holes encountered the tar-like substance, and they were all east of the electrical access point. The tar-like substance was found at 12 to 15 in. bgs in these holes.

BH311 was located at one of the exploratory holes that was east of the electrical access point. The sample taken at BH311 contained the tar-like substance. Chunks of the black tar-like substance was also taken from the adjoining holes on the eastern boundary and added to the main sample from BH311. As indicated in Table 6 and Figure 7, the total PCB concentration at BH311 was 0.072 ppm.

2.2.2 February and June 1997 Investigations

Supplemental sampling activities were conducted during the spring/summer of 1997. Details of the sampling strategy, site history, and data quality objectives for the supplemental activities are presented in the Supplemental Sampling and Analysis Plan (SAP) (SNL/NM 1997b) as well as in the Supplemental Data Evaluation Report (SNL/NM 1997c). The data collected during the March/April 1995 sampling (Section 2.2.1) indicated that characterization of the horizontal extent of contamination was not complete, especially along the northwestern boundary of the site. The area of concern for the supplemental sampling included the area west of the current site boundary and along a drainage ditch that trends south along the western edge of the site.

In support of the development of the supplemental SAP, a cursory air-photo review was completed (Skelly 1997). The photos reviewed were nine stereo pairs from the last 40 years, specifically 1954, 1959, 1964, 1968, 1974, 1978, 1982, 1984, and 1989. The air-photo review showed that the original Reclamation Yard boundaries were west of the current boundary and extended into what is now 14th Street. The Reclamation Yard boundaries have had at least five changes over the last 40 plus years, especially with respect to the western and southern boundaries. In fact, the only corner that has remained "fixed" since 1954 is the northeastern corner. In addition to determining the Reclamation Yard boundaries, the air photos were reviewed to determine organization of materials stored in the yard. No obvious system of materials storage could be discerned, and no barrel storage areas could be identified. However, the air-photo review did show that the extreme northwest corner of the site (an area of approximately 50 by 75 ft) was fenced off from the rest of the yard from 1954 to 1982. The purpose of the fenced subarea is unknown, but it appeared to be empty in about half of the air photos reviewed (Skelly 1997). This is approximately the same area where elevated PCB concentrations have been detected.

Supplemental sampling during the spring/summer 1997 field investigation was conducted during two phases: February 13, 1997, and from June 6 through June 11, 1997. In February, it was thought that the 10 locations sampled would suffice to define the horizontal extent of contamination. However, the results of the February sampling indicated that additional sampling was required, and prompted the development of the more comprehensive investigation that took place in June (SNL/NM 1997b, 1997c).

The February/June 1997 sampling events consisted of sampling discrete locations based on PCB analytical results from the 1995 sampling. The February sampling event included hand-augering ten boreholes (BH400 through BH409) to a depth of 1 ft. Two of these locations (BH408 and BH409) were in the eastern part of the site to help define the boundary of an isolated area of elevated PCB concentrations found during the spring 1995 sampling. The June sampling event included hand-augering 38 boreholes (BH410 through BH447) to a depth of 1 ft or 1 in. (discussed below). For both events, soils were analyzed only for PCBs for a total of 48 samples (excluding waste management or QA/QC samples). Figure 7 includes the total PCBs resulting from these sampling events. Table 8 lists the sample locations and the concentrations for those samples with detections.

All soil samples collected at the site were analyzed using EPA-approved methods for PCBs (EPA Method 8080). One hundred percent of the samples were analyzed by ERCL, with an additional twenty percent of the samples sent to an off-site laboratory for verification. During the February sampling event, locations BH400 through BH407 were placed between locations of known high-level contamination (as determined by the spring 1995 sampling) and the asphalt of 14th Street (Figure 7).

For the June sampling event, the site sample locations were based on the following rationale:

1. Continuing the previously sampled hexagonal grid pattern from the RFI sampling program (SNL/NM 1995, 1997b) to determine the horizontal extent of PCB contamination; and
2. Collecting samples along the storm water pathway that was west of the site to determine the amount of off-site transport of PCBs.

For the grid strategy, 27 locations were sampled, including BH410 through BH434, BH446, and BH447. Additional samples were collected at five discrete sample locations (BH435 through BH439) from sediment accumulation areas within the storm water run-off channel that runs parallel to 14th Street. Some sampling locations overlapped in strategy: BH422, BH425, BH429, and BH433 were grid samples that happened to fall in the storm-drain system.

Samples were also collected to help determine the variability of the vertical distribution of PCBs in the soils. Co-located samples from depths of 1-in. and 1-ft were collected to help determine if there was a difference in the PCB concentrations in soils from these two depths. For this research, locations BH440 through BH445 were sampled immediately adjacent to (within 1 ft of) the February sample locations having the highest PCB concentrations. (See Table 8 for a comparison of the total PCB results.) The soil samples were sent to the ERCL or to an off-site analytical laboratory for PCB analyses by EPA Method 8080.

2.2.3 Summary and Evaluation of 1995-1997 RFI Results

All soil samples that were collected at the site and sent to a laboratory during the RFI were analyzed using EPA Method 8080 for PCBs. All Phase 1 soil samples (March - April 1995, BH001 to BH202) were field-screened for PCBs by ERCL

PCB Screening Analyses, March - April 1995: The detection limits for immunoassay analyses vary, depending on the Aroclor in question. The manufacturer states that this test method has a detection level of 0.4 ppm for Aroclors 1260 and 1254, 1 ppm for Aroclor 1248, and 2 ppm for Aroclor 1242. Of the 404 PCB immunoassay analyses performed at the site, 52 were positive for PCBs, with 42 at greater than 0.4 ppm and 10 at greater than 50 ppm (Table 9) (Kottenstette

1995). The majority of the detects were from Grids 1 through 5 in the western one-third of the site, with a minor grouping of detects in Grids 9 through 11 in the eastern part of the site. The majority of detections were from the 1-ft depth.

PCB Analyses, March - April 1995: PCBs were detected at 31 of the composite soil sample locations at a depth of 1 ft and at 6 of the composite sample locations at a depth of 5 ft (Table 6). Of the 31 PCB detections at 1 ft, 19 (61%) were Aroclor 1260 and the remaining 39% were Aroclor 1254. Of the 6 PCB detections at a depth of 5 ft, 4 (67%) were Aroclor 1260, one was Aroclor 1254, and one was Aroclor 1242. Generally, the PCB concentrations were very low, with only one of the composite concentrations greater than 1 ppm; the PCB concentration of one of the composite samples in Grid 1 was 16 ppm (Table 6).

PCBs were found at 42 of the discrete sample locations at a depth of 1 ft and at two of the locations at a depth of 5 ft (Table 7). Of the 42 PCB detections at 1 ft, 29 (69%) were Aroclor 1260, 12 (29%) were Aroclor 1254 and the remaining one was Aroclor 1248. Five of the discrete samples exceeded the 1 ppm level, with three samples in Grid 1 at 3.5, 4.1 and 18.0 ppm. One sample in Grid 10 had 14.0 ppm; and one sample in Grid 11 had 1.6 ppm.

During the Phase 1 sampling, 37 composite samples had PCB detections either at the 1-ft depth (31 locations) or the 5-ft depth (6 locations). At the 1-ft depth, detections were found within all 11 sample grid areas. A 1-ft sample from Quadrant 1A (Figure 5) had the greatest concentration with a value of 16.0 ppm. At the 5-ft depth, over 80% of the results were nondetections, with minor detections (less than 1 ppm) found in Quadrants 1A, 1B, 1C, 2C, 4C, and 4D.

During the Phase 2 sampling, 44 discrete samples had PCB detections, mostly at the 1-ft depth (only two 5-ft samples had detections). At the 1-ft depth, detects were found within all 11 sample grid areas, and had values ranging up to 18.0 ppm. Other significant discrete sample detections (greater than 1 ppm) were found in Quadrants 1A, 10D, and 11B. At the 5-ft depth, insignificant detections (less than 1 ppm) were found in Quadrant 1A.

Ten of the Phase 2 samples were collected at locations where PCB immunoassay analyses had indicated PCB concentrations greater than 50 ppm. Four of these immunoassay samples were located at a 5-ft depth and the remainder of the immunoassay samples were from a 1-ft depth. All but one of the discrete laboratory samples analyses had a concentration less than 1 ppm. The one sample with a PCB concentration greater than 1 ppm was found in a sample at a 1-ft depth. Table 10 displays the correlation between the immunoassay sample and the related discrete laboratory sample.

PCB Analysis, February and June 1997: All soil samples collected at the site were analyzed using EPA-approved methods for PCBs (EPA 8080; EPA 8081) (Lewis 1997; Chavez 1997; and ERCL 1997). PCBs were found at all soil sample locations (Tables 8 and 11). All of the PCBs detected were Aroclors 1254 and 1260, with Aroclor 1260 found at all locations and Aroclor 1254 found at six locations. Generally, the PCB detects were at low-level concentrations, with the majority of the concentrations below 1 ppm. Fifteen samples exceeded the 1 ppm level.

During the February sampling event, the sample from BH402 had the greatest concentration, with a value of 87 ppm (Table 8). During the June sampling event, some samples had PCB concentrations up to 14 ppm (Tables 8 and 11). These values are the greatest grouping (in aerial extent) of high concentrations found at the site and show that the highest concentrations of PCBs are in the northwestern corner of the site.

Sample Blanks and Duplicates, March - April 1995 and February and June 1997: The laboratory reported nondetects for PCBs in the equipment blanks. Eight duplicate samples were split and sent to the ERCL and General Engineering Laboratory (GEL), with the results presented in Table 11. In general, there is reasonable agreement between the split samples; however, the relative percent differences range from 22% to 135%. The relative percent differences seen for some sample pairs (especially BH414 and BH433; Table 11) suggest that a "nugget effect" may have a great influence on PCB concentrations in soil samples. Because PCBs strongly adhere to soil particles, it is possible that thorough mixing in the bowl may not effectively produce equivalent duplicate samples. The nugget effect is also supported by the BCM Engineers/E&E data; their 42 mg/kg analytical result could not be duplicated in any of four samples collected at immediately adjacent locations.

There were no indisputable relationships determined with the limited number of samples collected for the multiple-depth study. The samples collected at 1 in. and 1 ft had comparable concentrations that were generally within an order of magnitude (Tables 8 and 12).

2.3 Summary of Storm Drain Investigations

2.3.1 June 1995 Investigation

Concurrent with the spring 1995 investigation, sediment samples were collected near the site as part of the RFI for ER Site 96, the Storm Drain System (SNL/NM 1996). Sediment samples were collected from two outfalls near ER Site 30: SD006 through SD011 in the 14th Street storm drain channel immediately west of the site, and SD017 through SD021 in the storm drain channel between 14th and 17th Streets, approximately 200 ft south of the site. Figure 9 shows the locations of these storm drain samples. The sediment samples were collected from 0 to 6 in. bgs within 1 to 3 ft of the outfalls in a line nearly perpendicular to the water transport direction. Of the six samples collected west of the site, all had detectable concentrations (greater than 0.04 ppm), ranging up to 0.233 ppm of total PCBs. The PCBs were Aroclor 1262 at all six locations, as well as Aroclor 1254 at one location. Of the five samples collected south of the site, all had detectable PCB concentrations (greater than 0.04 ppm), ranging up to 0.953 ppm of total PCBs. The PCBs were Aroclor 1260 at all five locations, with Aroclor 1254 also found at two locations (SNL/NM 1996). Table 13 lists the sample locations and PCB concentrations for those samples with detections.

2.3.2 September to October 1998 Investigation

As a result of a request for supplemental information from the New Mexico Environment Department and, at the time, the imminent construction of covered culverts in the present location of surface outfalls, additional soil sampling was conducted in the vicinity of the two outfalls near ER Site 30. Samples GP065 through GP069 were collected in the 14th Street storm drain channel immediately west of the site, and GP060 through GP064 in the storm drain channel between 14th and 17th Streets, approximately 200 ft south of the site. Figure 9 show the locations of these storm drain samples.

GP065 through GP067 were at essentially the same location as the storm drain samples, SD006 through SD011, collected in June 1995; the samples at GP065 through GP067 started at 5 ft and ranged to 20 ft bgs. GP068 and GP069 were located about 25 ft downstream from GP065 through GP067; a surface sample as well as samples from 5 to 20 ft bgs were collected at these locations. GP060 through GP062 were at essentially the same location as the storm drain samples, SD017 through SD021, collected in June 1995; the samples at GP060 through GP062 started at 5

ft and ranged to 20 ft bgs. GP063 and GP064 were located roughly 25 ft upstream from GP060 through GP062; a surface sample as well as samples from 5 to 20 ft bgs were collected at these locations.

The only PCBs that were detected were in the 14th Street storm drain. The two surface samples had detectable PCB concentrations (greater than 0.0015 ppm for each Aroclor) ranging up to 0.252 ppm of total PCBs. Both Aroclor 1260 and Aroclor 1254 were detected at the surface locations. PCBs were also detected in the 5 ft samples at GP065 and GP067; Aroclor 1260 was detected at concentrations of 0.0044 and 0.0021 ppm. Table 14 lists the sample locations and PCB concentrations for those samples with detections.

2.4 January 2000 Field Investigation

In November 1999, while reviewing documentation in preparation for the cleanup of the site, it became apparent that a portion of the site had not been characterized. This area is approximately 96 ft by 131 ft in dimension, and is located in the northern portion of the site. Air photos indicate that this portion of the site was used as a storage yard from 1954 to 1984. Sometime between 1984 and 1989 it was separated from the remainder of the site, and mobile trailers were set up to house personnel from L&M Technologies. The mobile trailers were removed in December 1997 to January 1998.

This area is presently being characterized using a 3-m grid interval as specified in 40 CFR 761.265 and using procedures specified in 40 CFR 761.283 and 40 CFR 761.286. When the laboratory analytical results are available, the information will be reviewed. If any of the samples have total PCB concentrations greater than 1 ppm, the sample area of inference will be included in the cleanup of Site 30. The cleanup depth, clean-up screening and verification sampling will be the same as that planned for the remainder of Site 30 (discussed in Section 3.0).

2.5 Proposed Characterization Beneath Building 897X

Building 897X (Figure 2) is presently planned for decontamination and decommissioning (D&D) in March 2000. Sandia National Laboratories Facilities is responsible for the D&D of the building and its slab; they plan to follow appropriate regulations in the D&D of the building. Areas of the concrete slab that are obviously contaminated (oily-appearing), especially the peeling painted area at the SE corner of the building, will be sampled for PCBs. Samples will be collected by coring or "scabbling" the material. A sample from the SE corner of the building will be collected to a minimum 3-inch depth. Any concrete found to be contaminated with PCBs will be disposed of as specified in 761.61(a)(5)(v)(A), and pages 23 and 24 of the Q&A Manual (EPA 1999).

When the building and slab have been removed, the soil under the footprint of the slab will be characterized using a 3-m grid interval as specified in 40 CFR 761.265 using procedures specified in 40 CFR 761.283 and 40 CFR 761.286. When the laboratory analytical results are available, the information will be reviewed. If any of the samples have total PCB concentrations greater than 1 ppm, the sample area of inference will be included in the cleanup of Site 30. The cleanup depth, clean-up screening and verification sampling will be the same as that planned for the remainder of Site 30 (discussed in Section 3.0).

3.0 Self-Implementing Expedited Cleanup

The following subsections describe the proposed approach to remediate ER Site 30.

3.1 Overview and Rationale

The remediation at ER Site 30 is intended to contain and remove the PCB-contaminated soil from the site in order to release the site for future use. The level of PCBs left on site (less than or equal to 1 ppm total PCBs) will not require deed restrictions, and will accommodate construction of buildings on this site. Verification soil samples will be collected as specified in 40 CFR 761.283 to ensure that there is no PCB contamination exceeding the proposed 1-ppm cleanup level for PCBs. Removal actions are anticipated to take two to four months; the completion of a Resource Conservation and Recovery Act No Further Action Proposal that documents all ER work at the site, including the PCB cleanup, will be completed not more than twelve months from the start of cleanup.

3.2 Permitting, Approval, and Notification Requirements

This self-implementing cleanup is proposed as a final remedy. This written plan serves as the cleanup notification required by 40 CFR 761.61(a). Work will start once this cleanup proposal is approved by EPA. At the conclusion of the cleanup, all sampling plans, sample collection procedures, sample preparation procedures, extraction procedures and chemical analysis procedures will be kept on file at Sandia National Laboratories for three years; Appendix 5.3 contains a signed certification that these records will be retained on file. Upon completion of the cleanup and archival of the records, the site will be suitable for any high-occupancy use.

3.3 Remediation Activities

The main areas at Site 30 to be cleaned up have been defined based on the characterization information described in Section 2.0. The areas to be remediated are displayed in Figure 10. Figure 11 is a transparency of the topographic contours that includes the ER Site 30 boundary for registration. Figure 11 can be used as an overlay on Figures 1 through 10 to see the relationship between the topographic contours and the sample data that was collected. As indicated in Sections 2.4 and 2.5, additional cleanup areas may be defined in the north-central area and in the footprint of Building 897X when the additional characterization information is available.

Section 3.3.1 describes the process used to define the main cleanup areas; remediation procedures are described in Section 3.3.2.

3.3.1 Determination of the 1-ppm isopleth

The 1-ppm isopleth for PCBs in soils was estimated by using Surfer® for Windows, a commercially-available contouring and three-dimensional surface-mapping program commonly used for environmental applications. This program is typically used to contour data and map contaminant isopleths by employing standard geostatistical methods such as kriging, the inverse distance method, and triangulation with linear interpretation.

Kriging was used to model the PCB data set for this site because kriging is the default contouring method for Surfer®, and because it generally presents the best representation for data sets of this size. The PCB data set was modeled using the default parameters for the Surfer® program, i.e., a

linear variogram model was employed with zero drift, no anisotropy, and a search radius of 634 ft.

The PCB data set used in Surfer® included the 1995-1997 RFI data, the 1991/1992 data, and the 1989 BCM data. The composite data from the RFI and the 1991/1992 investigations were included very conservatively; each composite sample location was assigned the result of the maximum PCB composite result multiplied by the number of aliquots comprising the composite.

The isopleths that resulted from contouring the characterization data using Surfer® were modified as follows. The isopleths were arbitrarily limited by physical features such as the toe of the drainage ditch at the western site boundary and historical fence boundaries. Additional isopleth smoothing was performed by hand to eliminate the sometimes highly erratic boundary generated by Surfer®. This smoothing was always performed conservatively, such that within a specific isopleth there may be sample points with PCB concentrations less than the value of a particular isopleth.

The sampling results and subsequent geostatistical analysis of the PCB data indicated that there are two primary areas of PCB contamination in soils at ER Site 30: one near the western boundary of the site and the other near the eastern boundary of the site (Figure 10). Both the field-screening and off-site laboratory data indicate that the highest concentrations of PCBs were detected in the upper 1 ft of soil at ER Site 30 (Figures 5 and 7); the samples collected at the 5-ft depth (Figures 6 and 8) show extremely low (or nonexistent) levels of PCBs.

3.3.2 Cleanup Plans for PCB-Contaminated Areas

The top 12 inches of soil within the 1-ppm isopleth will be excavated, and sent to one or more permitted waste facilities for disposal. After excavation of this lift, samples from the bottom of the excavations will be field screened to obtain preliminary confirmation that there is no soil with a PCB concentration remaining above 1 ppm. This field screening may be either immunoassay or on-site laboratory analyses. If the field-screening result is positive (greater than or equal to 1 ppm total PCBs), an additional lift will be excavated that is centered on the sample point and includes its area of inference. Field-screening for PCBs will be repeated after each 6-in. lift of soil.

Offsite laboratory analyses will verify that the cleanup level of 1 ppm has been reached within the pre-cleanup isopleths of 1 ppm. The off-site verification samples will be collected from remediated areas on a 1.5-m grid interval as specified in 40 CFR 761.283 and 40 CFR 761.286. (Figures 12 and 13 show examples of a 1.5-m verification sampling grid overlaying the two largest areas of contamination.) The verification samples will be composite samples consisting of a maximum of 9 aliquots each as specified in 40 CFR 761.289 (b) (1) (i). As specified in 40 CFR 761.292, the verification samples will be analyzed using EPA Method 3500B/3540C or Method 3500B/3550B from EPA's SW-846, "Test Methods for Evaluating Solid Waste" for chemical extraction of PCBs and EPA Method 8082 to analyze the extracts for PCBs (EPA 1996).

During all phases of the self-implementing cleanup, the potential for migration of PCBs on and off the site will be eliminated by implementation of best management practices. These practices will ensure that surface water run-on is diverted from reaching the contaminated soils, and runoff is contained within the site. Best management practices may include sandbags or ditches to divert run-on, and ditches, sediment ponds, silt fences, and straw bales to prevent sediment from exiting the site.

Because none of the proposed excavations are expected to be greater than 4 ft deep, they will not require shoring or benching. However, if any excavation extends more than 4 ft below the surface, shoring or benching will be conducted per Occupational Safety and Health Act (OSHA) requirements.

Construction of any permanent structures on the site will not start until the laboratory results confirm that the site has been cleaned up to less than 1 ppm.

3.4 Waste Management Plan

3.4.1 Introduction

Activities for the ER Site 30 self-implemented cleanup include excavation and segregation of PCB-contaminated soils and field-screening and verification soil sampling. This section describes the management plan for waste which will be generated during the course of these activities. This plan is tiered to Chapter 19 of the SNL/NM ES&H Manual, MN471001 (SNL/NM, 1999). The ES&H Manual is formulated to be consistent with all the applicable regulations and guidelines of SNL/NM, DOE, EPA, and NMED. The ER Site 30 Task Leader will be responsible for ensuring that waste generated at the site is managed according to this plan.

3.4.2 Waste Streams

The types of waste that will be generated during the self-implemented cleanup at the site include excavated PCB-contaminated soil, minor amounts of reclamation-yard debris (scrap metal and miscellaneous hardware), decontamination water, personal protective equipment (PPE), and ordinary trash. It is estimated that as much as 2500 cubic yards of PCB-contaminated soil will be removed from the site. For this effort, those soils within the 1-ppm contour will be considered PCB-contaminated and those soils outside the contour will be considered clean. Because of the complete geochemical characterization of the site soils conducted during the RFI sampling, waste generated at the site within the 1-ppm contour is known to be contaminated with only PCBs.

As specified at 40 CFR 761.61, the PCB-contaminated soil is regulated, and will be managed and disposed based on the "concentration at which the PCBs are found", or the "as-found" concentration as discussed on pages 16, 17, 24, and 46 of the "Interpretative Guidance, 1999 PCB Questions and Answers Manual, Part 2" (EPA 1999). This means that the PCB tenor of the waste will be determined solely from the existing site characterization sample data, and that additional waste characterization sampling after excavation of the soil will not be necessary. The soil will be excavated from the contaminated areas of the site, and will be loaded directly into trucks for transport to the disposal facilities. It will not be temporarily stored in piles or lifts pending disposal. SNL/NM will follow U.S. Department of Transportation regulations for the packaging and transport of wastes. SNL/NM will ensure that any PCB-contaminated wastes generated during these activities are disposed of at facilities authorized and permitted to accept the wastes.

All waste will be managed in accordance with Chapter 19 of the SNL/NM ES&H Manual, MN471001.

3.4.3 Waste Containerization

All containers used to store waste such as PPE, decontamination water, contaminated paper wipes, etc. will be marked with the appropriate labels and signage. Container labels will be

marked in permanent ink and will include waste source, suspected contaminants, results of field screening, contents, the dates accumulation began and ended, associated sample numbers, and the waste owner's name and telephone number. Labels will be numbered sequentially, and an SNL/NM "*Waste Generation Log*" will be completed.

The only wastes expected to be generated during field activities will be soil and perhaps minor salvage yard debris from the excavation, paper wipes lightly sprinkled with diesel (used for heavy equipment decontamination), decontamination water, PPE, and ordinary trash. These wastes will be containerized as follows:

- Soil excavated from the site will be loaded directly into trucks for transport to the disposal facilities, and will not be temporarily stored in piles or containers at the site.

- Surfaces of heavy equipment that come into contact with PCB-contaminated soil will normally be decontaminated by scraping or brushing off any residual soil, and then by wiping the surfaces down with paper wipes sprinkled lightly with diesel fuel (see Section 3.4.6).

- Personnel and equipment decontamination will be conducted on a dry basis to the degree possible, but decontamination using water will have to be used in some instances. Some decontamination water will be generated from the cleaning of sampling equipment and PPE, and perhaps heavy equipment. Heavy equipment decontamination using water (if necessary) will be performed at a temporary decontamination pad installation. Decontamination water will be collected in open-topped, 55-gallon drums for ease of handling and sampling. Once full or otherwise complete, drums will be sampled and analyzed for PCBs, and any other analyses that may be required for waste acceptance at the waste disposal facility. Once results have been received and evaluated, the Waste Management Department will provide disposal guidance.

- All disposable PPE will be stored as waste in open-topped, 55-gallon drums upon completion of each day's work. All PPE that is not to be reused will be disposed as ordinary solid waste as specified in 40 CFR 761.61 (a)(V), "Cleanup Wastes." Uncontaminated PPE, and decontaminated PPE that will be reused will be temporarily stored in drums segregated from all other contaminated wastes. The drums will then be labeled according to their contents.

- All ordinary (non-contaminated) trash will be stored in plastic trash bags upon completion of each day's work. Ordinary trash is considered nonregulated and will be placed in an SNL/NM commercial dumpster.

- Drums with decontamination water will be stored on secondary containment pallets to contain spills or leaks, and all solid waste drums will be stored on wooden pallets.

3.4.4 Contingency Plan and Training Program

Activities at the site will follow the General Contingency Plan for waste management units at SNL/NM developed to address incidents and emergencies that may occur during waste storage (SNL/NM, 1998c). Personnel responsible for waste generation, tracking, and documentation will be properly trained to perform their waste management duties and to ensure full compliance with applicable federal, state, and local regulations, SNL/NM policies, and DOE orders.

3.4.5 Waste Transport and Disposal

Soils with PCB concentrations from 1 to less than 50 ppm, as determined from site characterization sampling, will be excavated from the site with a front end loader and/or bulldozer, and will be loaded directly into dump trucks for transport to the disposal facility. As specified in 761.61(a)(5)(I)(B)(*2*)(*ii*) referencing 761.61(a)(5)(v)(A), and pages 23 and 24 of the Q&A Manual (EPA 1999), soil with less than 50 ppm PCBs can be disposed at "...a facility permitted, licensed, or registered by a state to manage municipal solid waste... or non-municipal, non-hazardous waste...". A municipal solid waste landfill in the Albuquerque area is therefore an appropriate and acceptable disposal facility for the 1 to less than 50 ppm PCB soils. We anticipate that as much as 2,500 cubic yards of 1-50 ppm PCB soil will be removed from the site during one or two phases of excavation.

Soils with PCB concentrations of 50 or more ppm, as determined from site characterization sampling, will be excavated from the site and will be hauled and disposed at the Safety Kleen PCB disposal facility at Aragonite, UT. We anticipate that up to 24 cubic yards of soil with 50 or more ppm PCBs will be excavated from the site, and will be hauled to the disposal facility in two trucks.

Waste transportation and disposal will be managed by SNL/NM Department 7134. Waste, other than soil, meeting the definition of commercial solid waste may be disposed of in dumpsters. As mandated in Chapter 19 of SNL's ES&H Manual (SNL/NM, 1999), all waste not meeting that definition will be categorized as hazardous waste and will be disposed of accordingly by Department 7134. An ER Environmental Customer Support Team member will be contacted with any questions regarding waste-stream classification.

3.4.6 Equipment Decontamination

It is anticipated that little or no oily residue will be visible on excavating equipment surfaces that come into contact with PCB-contaminated soil, based on past sampling experience at the site. Nonetheless, surfaces of excavation and hauling equipment that come into contact with PCB-contaminated soil will be thoroughly decontaminated after each phase of excavation. As specifed in 761.79(c)(2) (decontamination standards and procedures), movable and sampling equipment will be decontaminated by swabbing surfaces that come into contact with the PCB soils with a solvent. As specified in 761.79(c)(3)(iii), diesel is one of the solvents that may be used for equipment decontamination purposes. As mandated in Chapter 19 of SNL's ES&H Manual (SNL/NM, 1999), materials used to clean equipment surfaces will be managed and disposed as hazardous waste.

3.4.7 Waste Minimization

Federal and state laws and DOE orders require that SNL/NM plan, implement, and document the minimization of all types of waste, including water discharges and air emissions. Therefore,

waste minimization practices will be implemented during field activities at the site to reduce the quantity of waste generated. These practices include minimizing liquid wastes by using dry decontamination techniques and by generating decontamination water only when necessary. Whenever possible, equipment and PPE will be inspected for areas of gross contamination before general decontamination is performed. This allows for "spot" decontamination to remove and separate any possible gross contamination prior to performing general decontamination; once decontaminated, the PPE and equipment can be reused, rather than discarded.

3.5 Site Activities and Sample Documentation

All activities will be documented on appropriate forms and in field notebooks. All samples collected at the site, including QA/QC and waste management samples, will be documented on chain-of-custody forms. All soil sample locations will be determined using sub-centimeter Global Positioning System (GPS) technology, measuring tapes, etc. Results of confirmatory sampling and sample locations will be presented in the NFA proposal for ER Site 30, to be submitted in fiscal year (FY) 2001. As required by 40 CFR 761.295, all records (log books, field forms, analytical data packages, etc.) pertaining to each sample will be managed by the SNL/NM ES&H Record Center for at least three years.

The Sample Management Office (SMO) will manage shipping and receipt of all off-site analytical sample information after the field team relinquishes custody of the samples. When the samples are shipped to the analytical laboratory, the SMO will enter sample information into a database and track the status of the analytical results. When data become available, the SMO will transmit the summary data reports and laboratory QC sample results to the TA-I Assistant Task Leader. Also, site characterization sample analytical data that is also being used for waste characterization purposes will be archived in the ES&H Record Center for at least three years following cleanup of the site.

4.0 References

40 CFR Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions (1999).

BCM Engineers (BCM), 1989. *Asbestos, Metal, and Polychlorinated Biphenyls Containing Materials Survey for Building 897, 2nd and 3rd Yards.* Prepared for Sandia National Laboratories, Albuquerque New Mexico (Industrial Hygiene, Department 3211 [as of 1989]) by BCM Engineers of Dallas, Texas. October, 1989.

Chavez, A. 1997. *SNL/NM Memo to D. Miller (Dept. 6682) from Angela Chavez (Dept. 7578). Subject: Preliminary Results for COC 06721.* July 15, 1997.

Cox, W., 1991. *Informal Transfer of Analytical Results for Sample SNLA005417,* September 22, 1991.

Cox, W., and T. Steinborn, 1991. Discussion of TA-I Reclamation Yard as an Environmental Restoration Site. Sandia National Laboratories memorandum to P. Montoya, November 13, 1991.

DOE (U.S. Department of Energy), 1987. *Comprehensive Environmental Assessment and Response Program (CEARP), Phase I: Installation Assessment, Sandia National Laboratories, Albuquerque, New Mexico* [DRAFT]. U.S. Department of Energy, September 1987.

E&E (Ecology and Environment), 1990. *Report of Follow-up PCB and Asbestos Sampling at the Sandia Salvage Yard ER Program Site #30 Task AL-SA-9.* Prepared for Sandia National Laboratories, Albuquerque, Environmental Restoration Program, Project Group. Albuquerque, New Mexico by Ecology and Environment, Inc. Albuquerque, New Mexico. January, 1990.

EPA (U.S. Environmental Protection Agency), 1985. *Verification of PCB Spill Cleanup by Sampling and Analysis,* EPA-560/5-85-026. Office of Toxic Substances, U.S. Environmental Protection Agency, Washington, DC. August 1985.

EPA (U.S. Environmental Protection Agency), 1986a. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, Third Edition.* U.S. Environmental Protection Agency, Washington, DC. 1986.

EPA (U.S. Environmental Protection Agency), 1986b. *Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup,* EPA-560/5-86-017. Office of Toxic Substances, U.S. Environmental Protection Agency, Washington, DC. May, 1986.

EPA (U.S. Environmental Protection Agency), 1996. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, Third Edition, Revisions 2 and 3.* U.S. Environmental Protection Agency, Washington, DC. December 1996.

EPA (U.S. Environmental Protection Agency), 1999. *1999 PCB Question and Answer Manuals, Part 2.* U.S. Environmental Protection Agency, Washington, DC. 1999.

ERCL (Environmental Restoration Chemistry Laboratory). 1997. Informal transmittal of Preliminary Data (COC 06720) to Michael Skelly (Dept. 6682) from SNL ER Chemistry Laboratory (Dept. 6684). July 15, 1997.

Hacker, L., 1977. *Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico.* U. S. Department of Agriculture, Washington, D.C.

Hahn, G. 1990a. Ecology and Environment, Inc. Internal memorandum from Gary Hahn to Jim Buchanan. Subject: *Interim Remedial Action of Sandia Salvage Yard. Job Reference: 9000.207.* February 2, 1990.

Hahn, G. 1990b. Ecology and Environment, Inc. Internal memorandum from Gary Hahn to Jim Buchanan. Subject: *Interim Remedial Action of Sandia Salvage Yard. Job Reference: 9000.214.* February 2, 1990.

Hahn, G. 1990c. Ecology and Environment, Inc. Internal memorandum from Gary Hahn to Jim Buchanan. Subject: *Sandia Salvage Yard-- Interim Remedial Action. Job Reference: 9000.213.* February 12, 1990.

Hawley, J.W., and C.S. Haase, eds., 1992. *Hydrogeologic Framework of the Northern Albuquerque Basin.* New Mexico Bureau of Mines and Mineral Resources, Open File Report 387.

IT Corporation, 1992a. *Site Specific Sampling and Analysis Plan, Technical Area I Reclamation Yard.* Prepared for Sandia National Laboratories, New Mexico, Environmental Restoration Program, February 1992.

IT Corporation, 1992b. *Technical Area I, Reclamation Yard Surface Soil Sampling Report.* Prepared for Sandia National Laboratories, New Mexico, Environmental Restoration Program, 1992.

Jacobs, J., 1991. Old Reclamation Yard Cleanup. Sandia National Laboratories memorandum to R.W. Lynch, October 7, 1991.

Kottenstette, R.J., 1995. *SNL/NM Memo to D. Miller (Dept. 7582) from Richard Kottenstette (Dept. 7584). Subject: PCB Testing at Site 30.* April 21, 1995.

Lewis, P. 1997. *SNL/NM Memo to D. Miller (Dept. 6682) from Patrick Lewis (Dept. 6684). Subject: Results for ARCOC#4979.* February 24, 1997.

Miller, D., 1993. *Construction Activities Adjacent to ER Program Site #30, Reclamation Yard.* Sandia National Laboratories memorandum to W.B. Cox, March 17, 1993.

Miller, D., 1995. *Environmental Restoration Site #30, Old Reclamation Yard.* Sandia National Laboratories memorandum to Nancy Morlock (U.S. EPA Region VI), March 31, 1995.

NMED (New Mexico Environment Department), 1998a. Department of Energy Oversight Bureau's *Review of "Expedited Cleanup/Voluntary Corrective Measure Plan for the Environmental Restoration Site 30 (Reclamation Yard)."* July 27, 1998.

NMED (New Mexico Environment Department), 1998b. *Hazardous & Radioactive Materials Bureau's Request for Supplemental Information: Technical Area I RCRA Facilities* Investigation, Expedited Cleanup/Voluntary Corrective Measure Plan, ER Project Site 30, Reclamation Yard, Sandia National Laboratories. September 18, 1998.

NOAA (National Oceanographic and Atmospheric Administration), 1990. *Local Climatological Data, Annual Summary with Comparative Data, Albuquerque, New Mexico.*

Pei, P., 1986. Reclamation Yard PCB Soil Survey. Sandia National Laboratories memorandum to W.D. Burnett, April 24, 1986.

Skelly, M. F. 1997. SNL/NM (Department 6682) Memo to David Miller (SNL/NM Department 6682) and Tim Goering (SNL/NM Department 6685). Subject: *Evaluation of Air Photos for Determining Former Boundaries of the Reclamation Yard (ER Site 30).* May 9, 1997.

Skelly, M. F. 1998. SNL/NM (Department 6682) Memo to John Gould (DOE-KAO). Subject: *Revised Map and Supplemental Data for the ER Site 30 Voluntary Corrective Measure Plan.* June 26, 1998.

SNL/NM (Sandia National Laboratories, New Mexico), 1993. *Site-Wide Hydrogeologic Characterization Project (SWHCP) Calendar Year 1992 Annual Report.* Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office.

SNL/NM (Sandia National Laboratories, New Mexico), 1994a. *Site-Wide Hydrogeologic Characterization Project Calendar Year 1993 Annual Report.* Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office.

SNL/NM (Sandia National Laboratories, New Mexico), 1994b. *Program Implementation Plan for Albuquerque Potential Release Sites* [DRAFT]. Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office, September 1993.

SNL/NM (Sandia National Laboratories, New Mexico), 1995. *Technical Area I (ADS 1302) RCRA Facility Investigation Work Plan.* Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office. February 1995.

SNL/NM (Sandia National Laboratories, New Mexico), 1996. *Technical Area I RCRA Facility Investigation Data Evaluation Report, Environmental Restoration Site 96, Storm Drain System.* Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office. 1996.

SNL/NM (Sandia National Laboratories, New Mexico), 1997a. *Technical Area I RCRA Facility Investigation Data Evaluation Report, Environmental Restoration Site 30, Reclamation Yard.* Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office. February 1997.

SNL/NM (Sandia National Laboratories, New Mexico), 1997b. *Technical Area I (ADS 1302) RCRA Facility Investigation Supplemental Sampling and Analysis Plan, Environmental Restoration Site 30, Reclamation Yard.* Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office. May 1997.

SNL/NM (Sandia National Laboratories, New Mexico), 1997c. *Technical Area I RCRA Facility Investigation Supplemental Data Evaluation Report, Environmental Restoration Site 30, Reclamation Yard.* Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office. February 1997.

SNL/NM (Sandia National Laboratories, New Mexico), 1998a. *Technical Area I RCRA Facility Investigation Expedited Cleanup/Voluntary Corrective Measure Plan, Environmental Restoration Site 30, Reclamation Yard.* Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office. April 1998.

SNL/NM (Sandia National Laboratories, New Mexico), 1998b. Response to NMED RSI comments on the Technical Area I RCRA Facility Investigation Expedited Cleanup/Voluntary Corrective Measure Plan, Environmental Restoration Site 30, Reclamation Yard. Environmental Restoration Project, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office. November 18, 1998.

SNL/NM (Sandia National Laboratories, New Mexico), 1998c. General Contingency Plan for SNL/NM Resource Conservation and Recovery Act-Regulated Waste Management Units, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office. December 21, 1998.

SNL/NM (Sandia National Laboratories, New Mexico), 1999. Environmental Safety and Health Manual, Chapter 19, MN471001, Issue CP, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office. December 17, 1999.

Units, Sandia National Laboratories, U.S. Department of Energy, Albuquerque Operations Office. December 21, 1998.

Stockham, D.J., 1993a. Petroleum Spill at the Old Reclamation Yard (ER Site #30). Sandia National Laboratories memorandum to A. Guss, June 9, 1993.

Stockham, D.J., 1993b. PCB Sample Results. Sandia National Laboratories memorandum to D. Szklarz, August 11, 1993.

Thompson, B.M., and G.J. Smith, 1985. "Investigation of Groundwater Contamination Potential at Sandia National Laboratories." *Proceedings of the Fifth DOE Environmental Protection Information Meeting,* CONF-841187:531-540. Albuquerque, New Mexico, November 1984.

Appendix 5.1

Figures

List of Figures

Figure 1. ER Site 30: Reclamation Yard

Figure 2. ER Site 30: 1989 PCB Data, Discrete Sample Locations, 1-Inch Depth

Figure 3. ER Site 30: PCB Data from 1992 Composite Sample Locations, 1.2-Inch Depth

Figure 4. ER Site 30: PCB Data from 1992 Discrete Sample Locations, 1.2-Inch Depth

Figure 5. ER Site 30: PCB Data from 1995 Composite Sample Locations, 1-Foot Depth

Figure 6. ER Site 30: PCB Data from 1995 Composite Sample Locations, 5-Foot Depth

Figure 7. ER Site 30: PCB Data from RFI 1995 and 1997 Discrete Sample Locations, 1-Foot Depth

Figure 8. ER Site 30: PCB Data from RFI 1995 Discrete Sample Locations, 5-Foot Depth

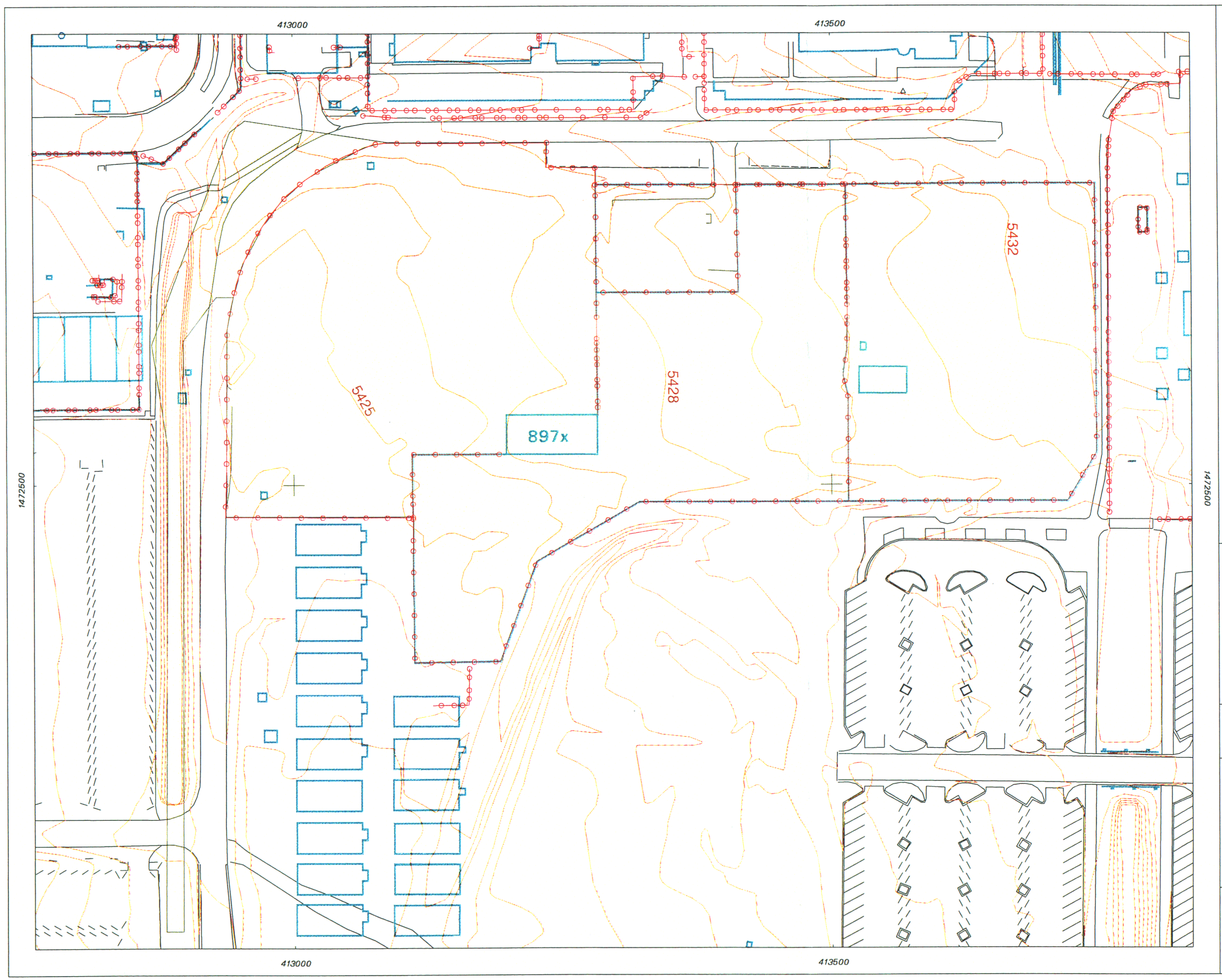
Figure 9. ER Site 30: Location of Storm Drain Investigation Samples, June 1995 and September to October 1998

Figure 10. Summary of ER Site 30 1989-1997 Discrete and Composite Sample PCB Concentrations (in ppm) with Contours, 1.2-Inch to 1-Foot Depth

Figure 11. Transparency of Topographic Contours at ER Site 30

Figure 12. ER Site 30, East Site: PCB Concentration Contours Based on 1989-1997 Discrete and Composite Samples, 1-Inch to 1-Foot Depths, with Proposed Excavation Area and Verification Sampling Grid

Figure 13. ER Site 30, West Site: PCB Concentration Contours Based on 1989-1997 Discrete and Composite Samples, 1-Inch to 1-Foot Depths, with Proposed Excavation Area and Verification Sampling Grid

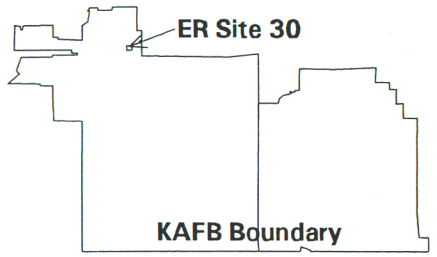


Legend

- Road/paved walkway
- Fence
- 1-Foot Contour
- Building/structure
- ER Site 30

0 100 200
Scale in Feet

0 24 48
Scale in Meters



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 1
ER Site 30:
Reclamation Yard

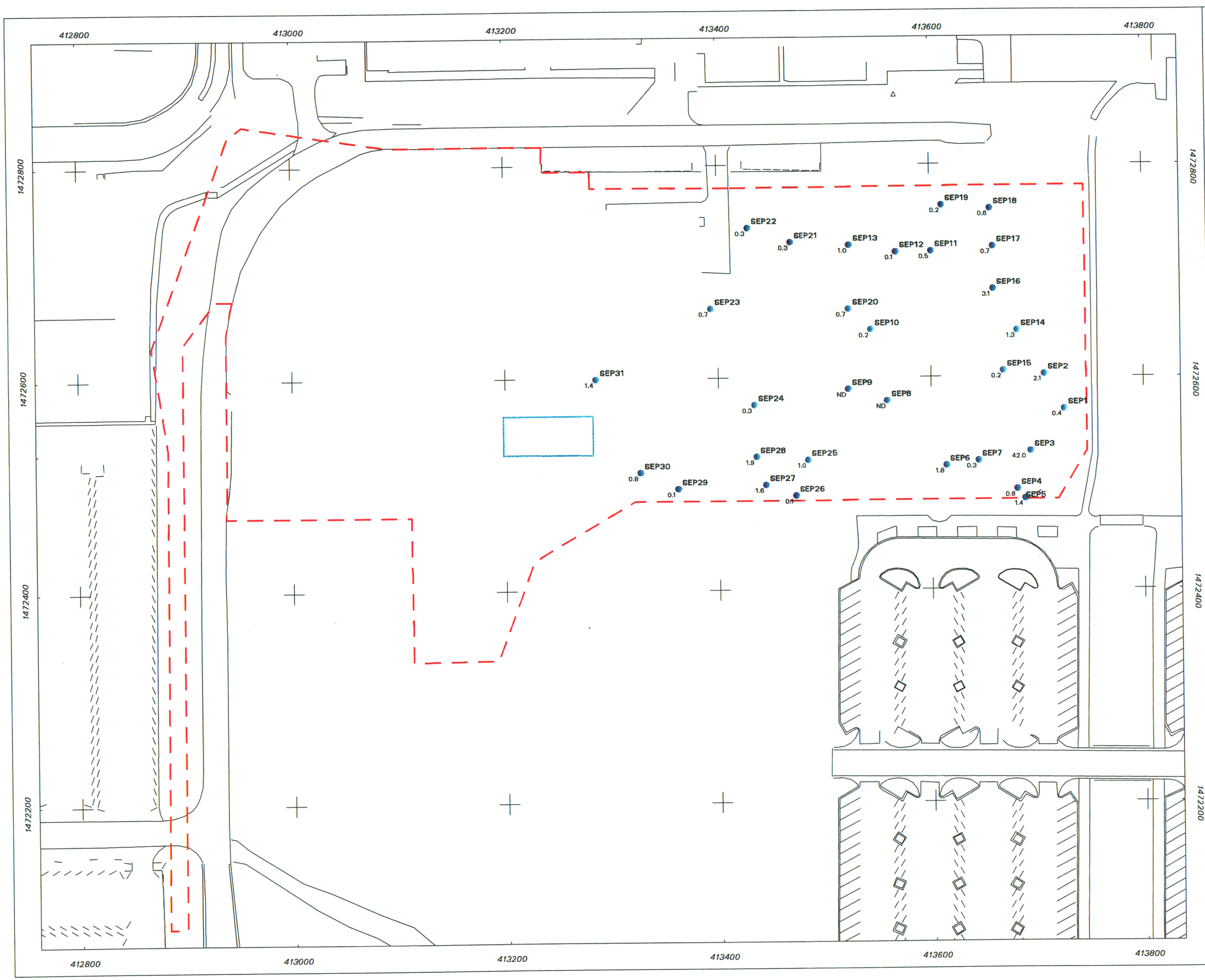
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=000084

Unclassified

SNL GIS ORG. 6804

Rachel Loehman rl000084.aml 02/15/00



Legend

0.3 SEP22 — Sample Location (with Sample ID and total PCB concentration in ppm)

Road/paved walkway

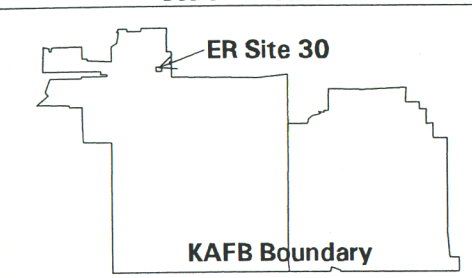
ER Site 30 Boundary

Building 897x

ND — Non-detect: method detection limits are unknown, but reporting limits range from 0.066 to 0.33 ppm

0 100 200
Scale in Feet

0 24 48
Scale in Meters



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 2
ER Site 30: 1989 PCB Data, Discrete Sample Locations, 1-Inch Depth

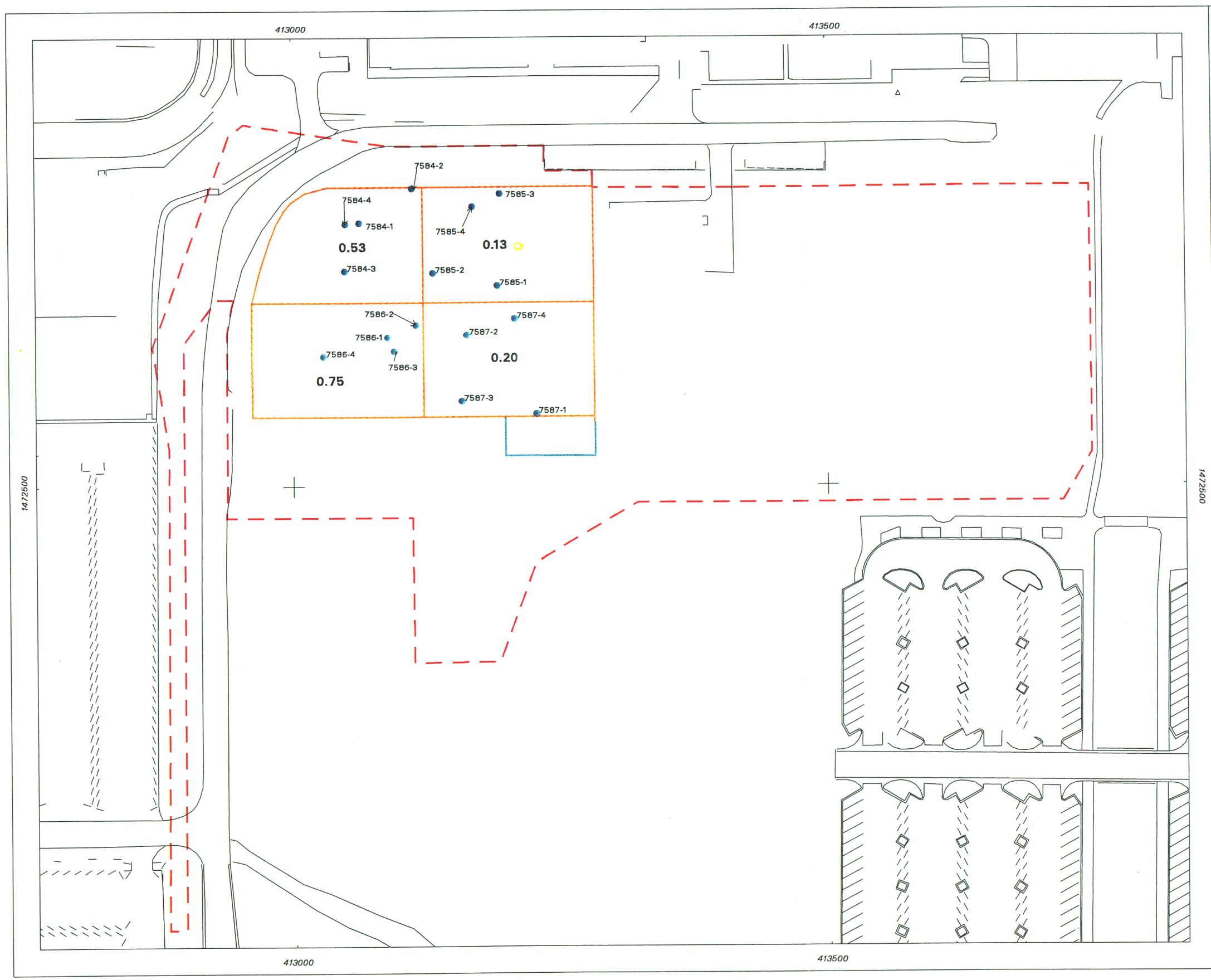
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=000051

Unclassified

SNL GIS ORG. 6804

Doug Rizor | dr000051.aml | 02/15/00



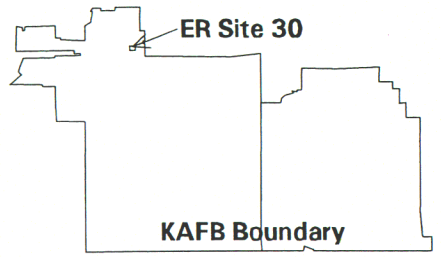
Legend

- 7584-4 Sample Location (with Sample ID)
- Road/paved walkway
- ER Site 30 Boundary
- Sampling Quadrant (with composite PCB concentration in ppm)
- Building 897x

Note: Method detection limit is 0.10 ppm

0 100 200
Scale in Feet

0 24 48
Scale in Meters

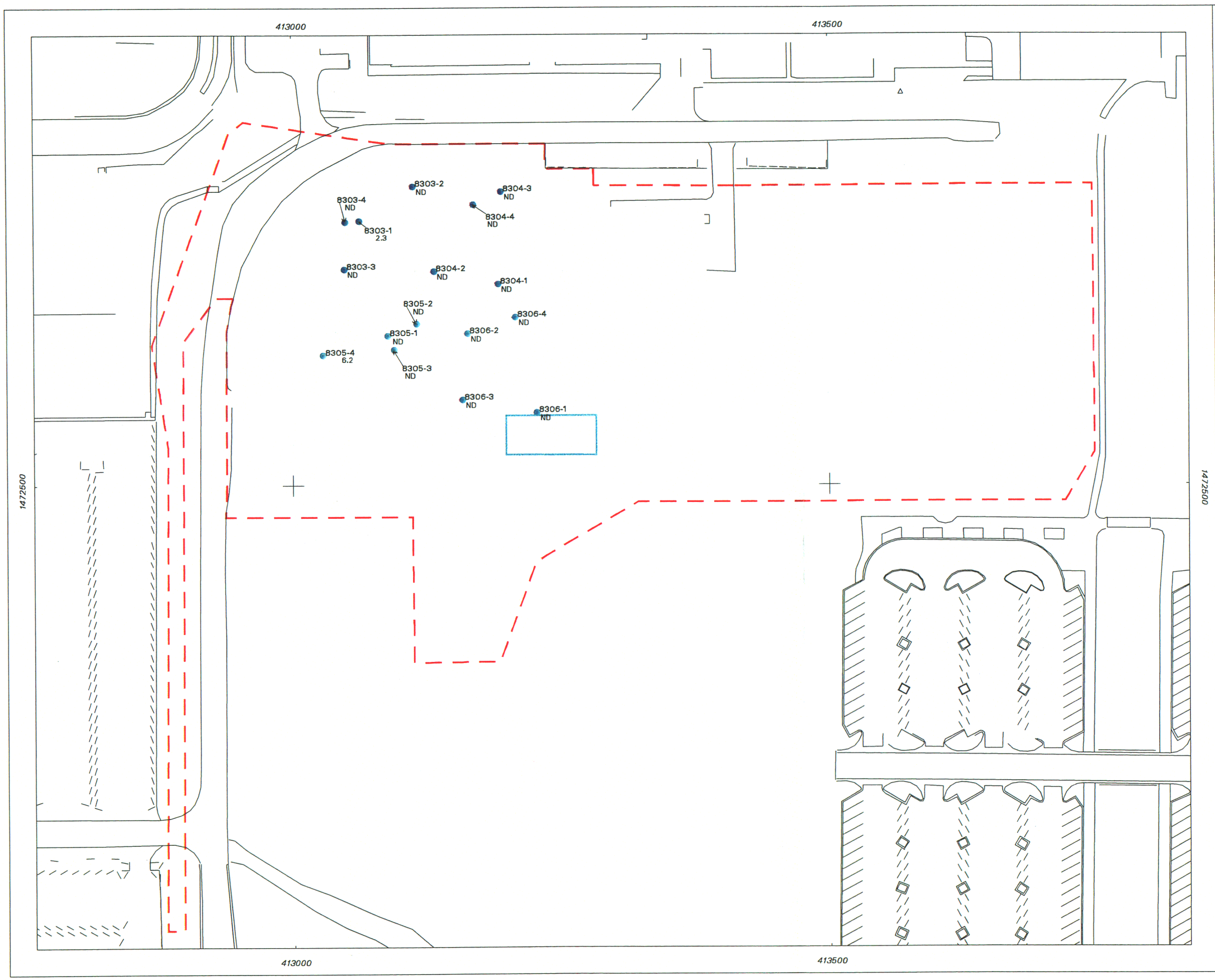


Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 3
ER Site 30: PCB Data from 1992 Composite Sample Locations, 1.2-Inch Depth

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

		MAPID=990840
Unclassified		SNL GIS ORG. 6804
Rachel Loehman	rl990840.aml	02/15/00



Legend

2.30 ● 8303-1 — Sample Location (with Sample ID and PCB concentration in ppm)

Road/paved walkway

ER Site 30 Boundary

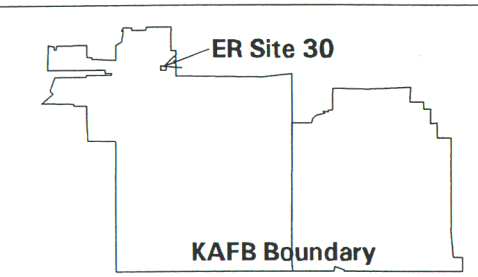
Building 897x

ND — Non-detect

Note: Method detection limit is 0.10 ppm

0 100 200
Scale in Feet

0 24 48
Scale in Meters



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 4
ER Site 30: PCB Data from 1992 Discrete Sample Locations, 1.2-Inch Depth

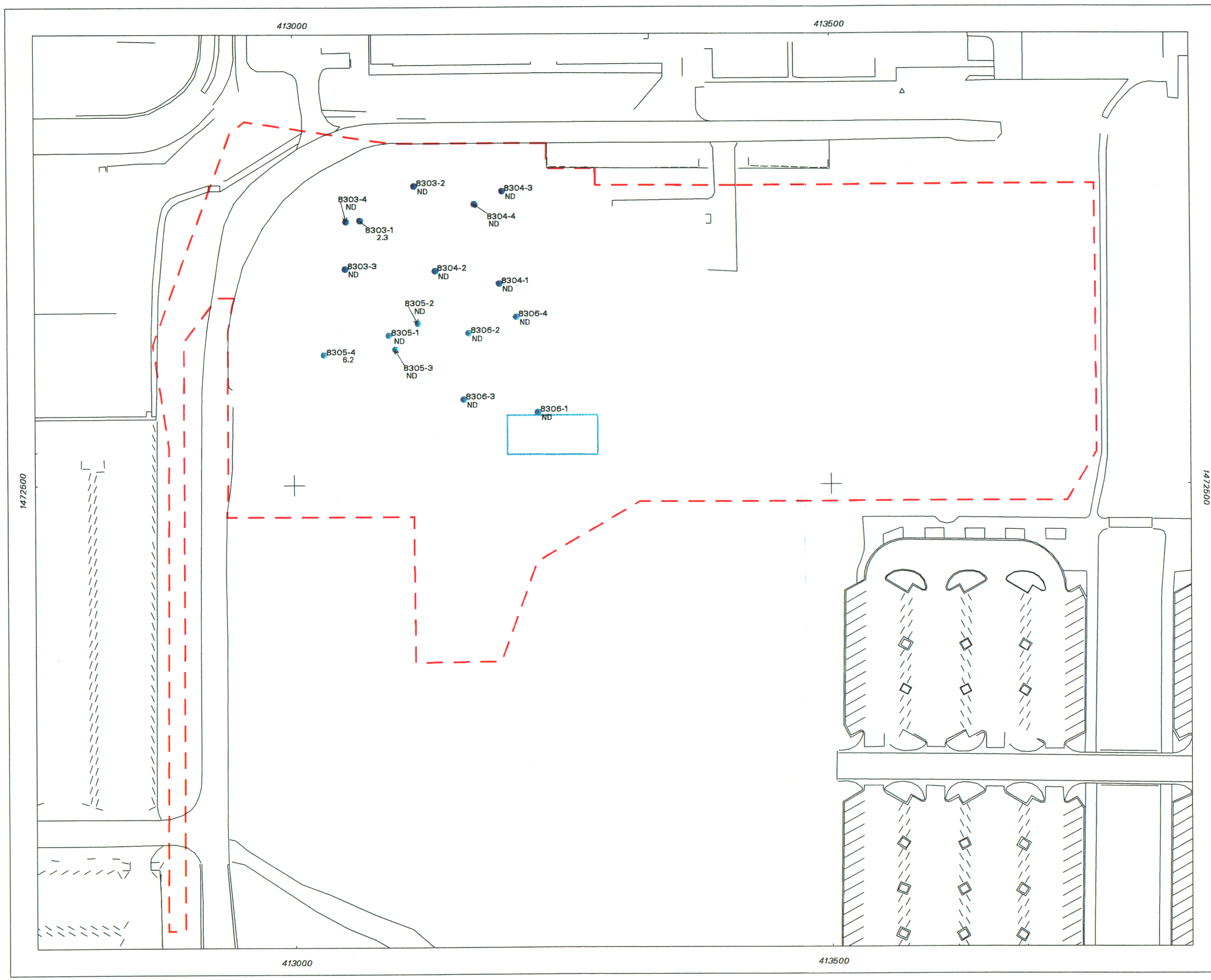
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=990841

Unclassified

SNL GIS ORG. 6804

Rachel Loehman | rl990841.aml | 02/15/00



Legend

2.30 ● 8303-1 — Sample Location (with Sample ID and PCB concentration in ppm)

Road/paved walkway

ER Site 30 Boundary

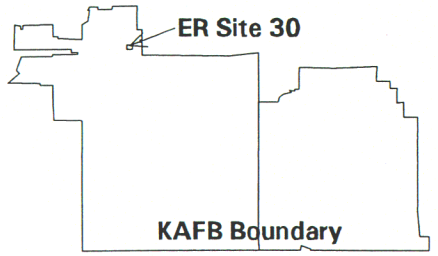
Building 897x

ND — Non-detect

Note: Method detection limit is 0.10 ppm

0 100 200
Scale in Feet

0 24 48
Scale in Meters



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 4
ER Site 30: PCB Data from 1992 Discrete Sample Locations, 1.2-Inch Depth

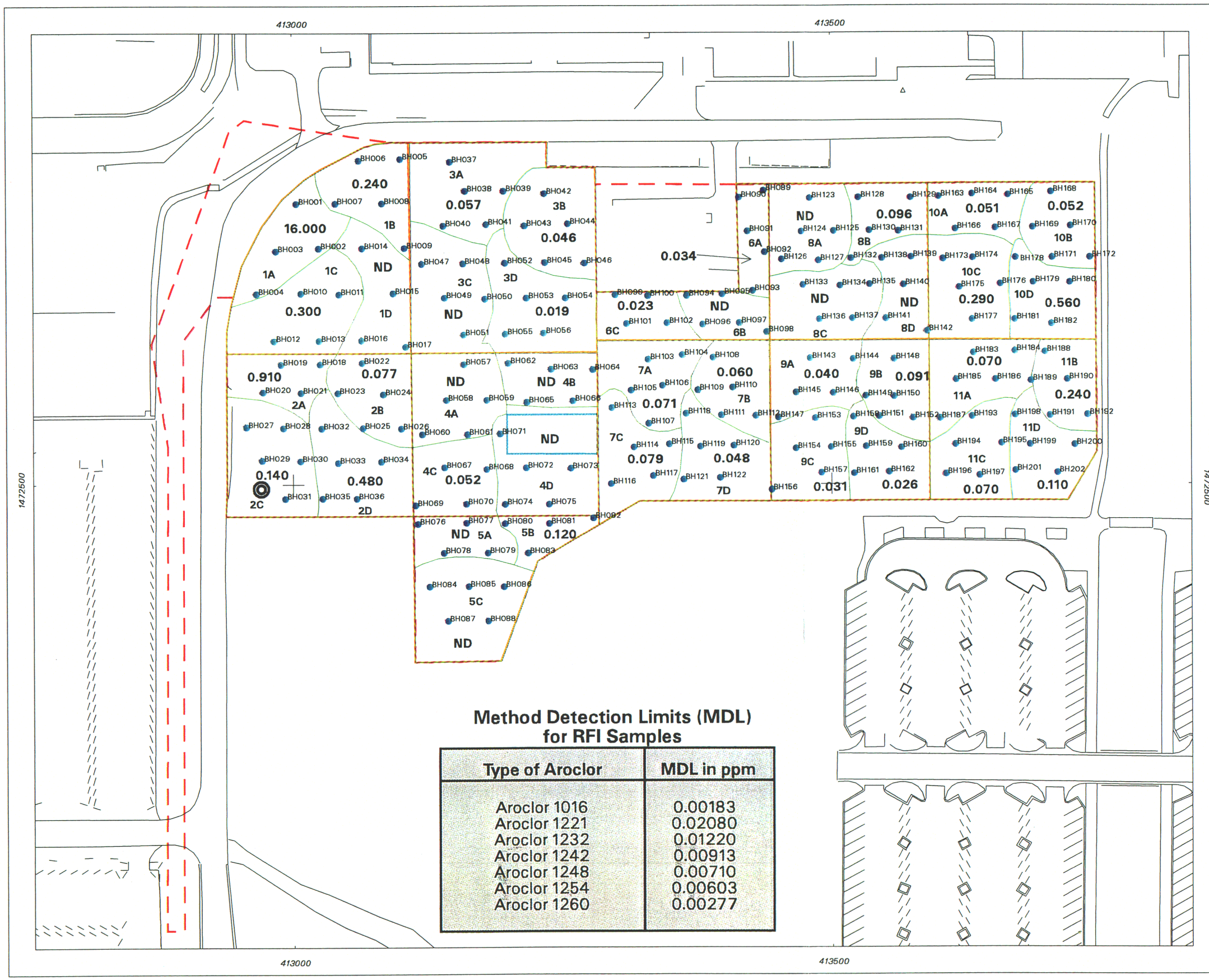
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=990841

Unclassified

SNL GIS ORG. 6804

Rachel Loehman rl990841.aml 02/15/00



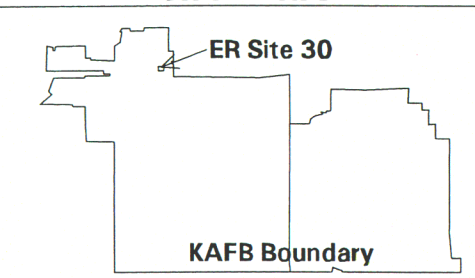
Method Detection Limits (MDL) for RFI Samples

Type of Aroclor	MDL in ppm
Aroclor 1016	0.00183
Aroclor 1221	0.02080
Aroclor 1232	0.01220
Aroclor 1242	0.00913
Aroclor 1248	0.00710
Aroclor 1254	0.00603
Aroclor 1260	0.00277

Legend

- BH102 — Sampling Location (with Sample ID)
- Electrical access point
- Sampling Grid Boundary
- Sampling Subarea (with composite PCB concentration in ppm)
- Road/paved walkway
- ER Site 30 Boundary
- Building 897x
- ND — Non-detect: see table for method detection limits

0 100 200
Scale in Feet
0 24 48
Scale in Meters



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

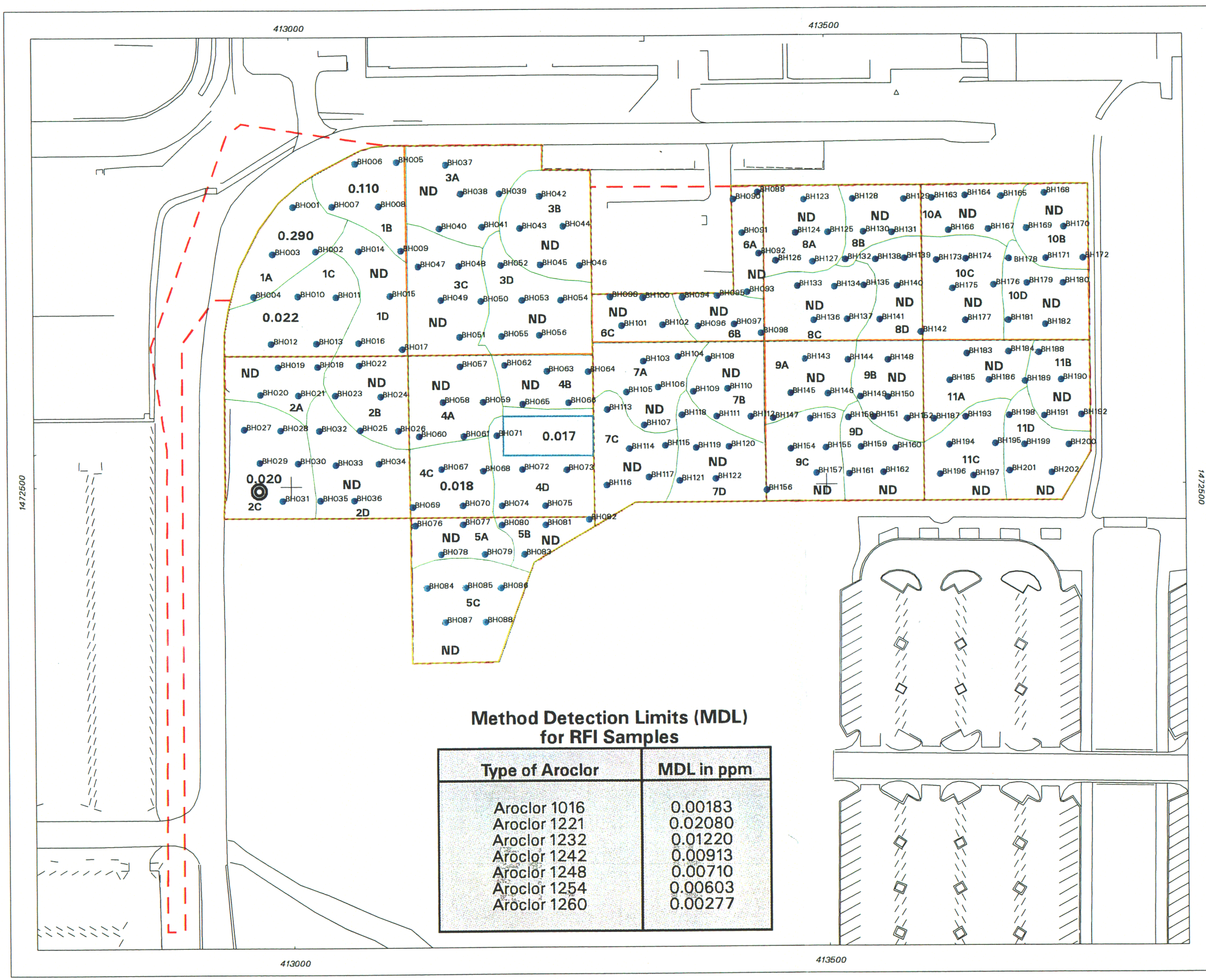
Figure 5
ER Site 30: PCB Data from RFI 1995 Composite Sample Locations, 1-Foot Depth

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=990836

Unclassified | SNL GIS ORG. 6804

Rachel Loehman | rl990836.aml | 02/15/00



Method Detection Limits (MDL) for RFI Samples

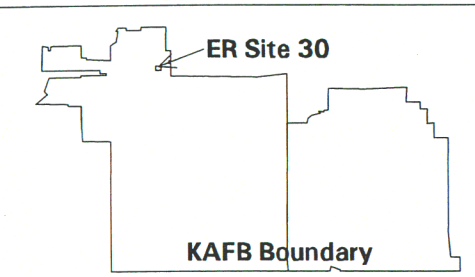
Type of Aroclor	MDL in ppm
Aroclor 1016	0.00183
Aroclor 1221	0.02080
Aroclor 1232	0.01220
Aroclor 1242	0.00913
Aroclor 1248	0.00710
Aroclor 1254	0.00603
Aroclor 1260	0.00277

Legend

- BH102 — Sample Location (with Sample ID)
- Electrical access point
- Sampling Grid Boundary
- Sampling Subarea (with composite PCB concentration in ppm)
- Road/paved walkway
- ER Site 30 Boundary
- Building 897x
- ND — Non-detect: see table for method detection limits

0 100 200
Scale in Feet

0 24 48
Scale in Meters



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 6
ER Site 30: PCB Data from RFI 1995 Composite Sample Locations, 5-Foot Depth

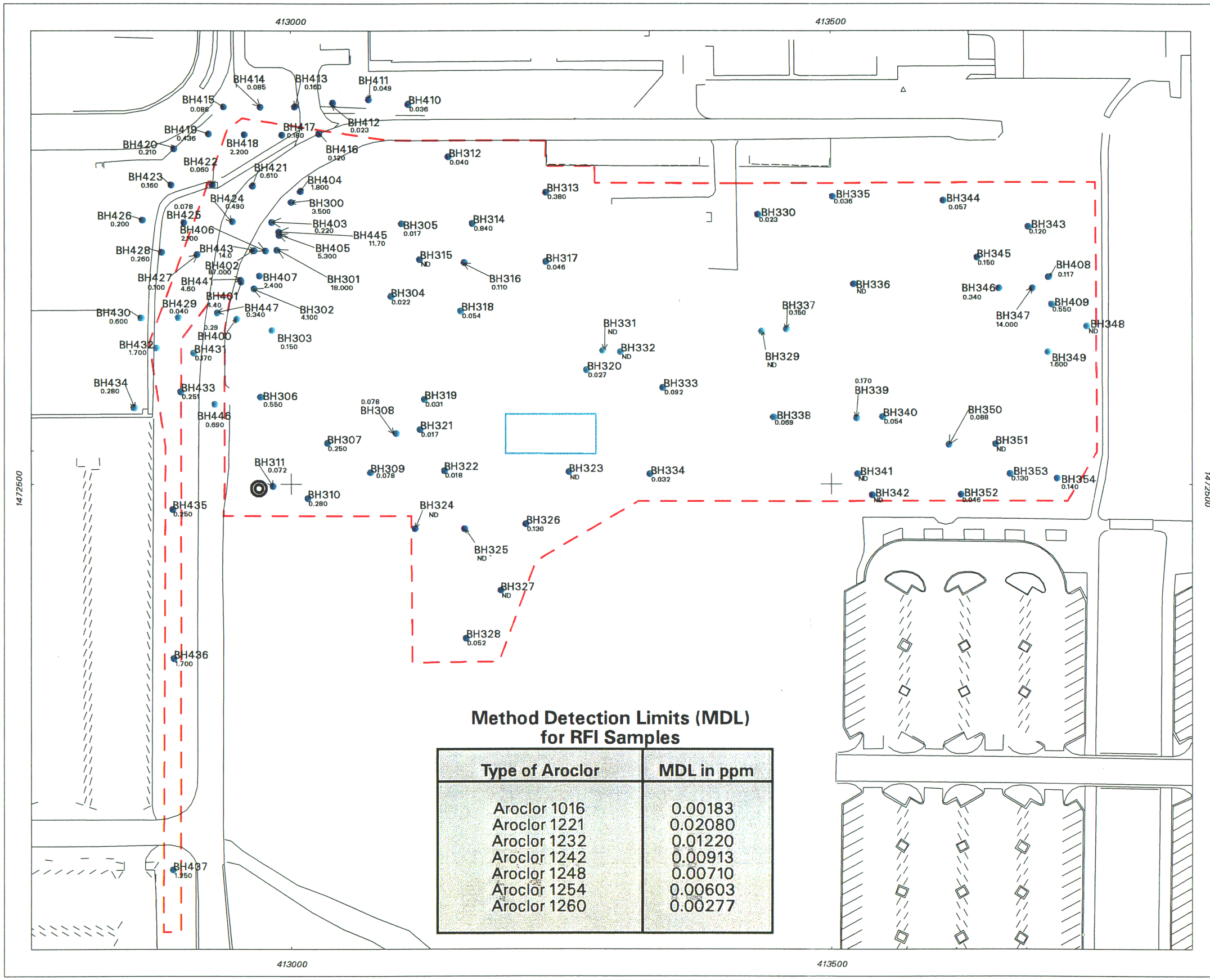
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=990839

Unclassified

SNL GIS ORG. 6804

Rachel Loehman rl990839.aml 02/15/00



Method Detection Limits (MDL) for RFI Samples

Type of Aroclor	MDL in ppm
Aroclor 1016	0.00183
Aroclor 1221	0.02080
Aroclor 1232	0.01220
Aroclor 1242	0.00913
Aroclor 1248	0.00710
Aroclor 1254	0.00603
Aroclor 1260	0.00277

Legend

.024 BH102 — Sample location (with Sample ID and PCB concentration in ppm)

Electrical access point

Road/paved walkway

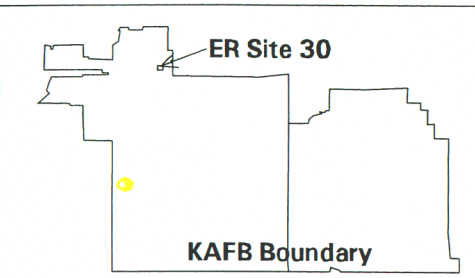
ER Site 30 boundary

Building 897x

ND — Non-detect: see table for method detection limits

0 100 200
Scale in Feet

0 24 48
Scale in Meters



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

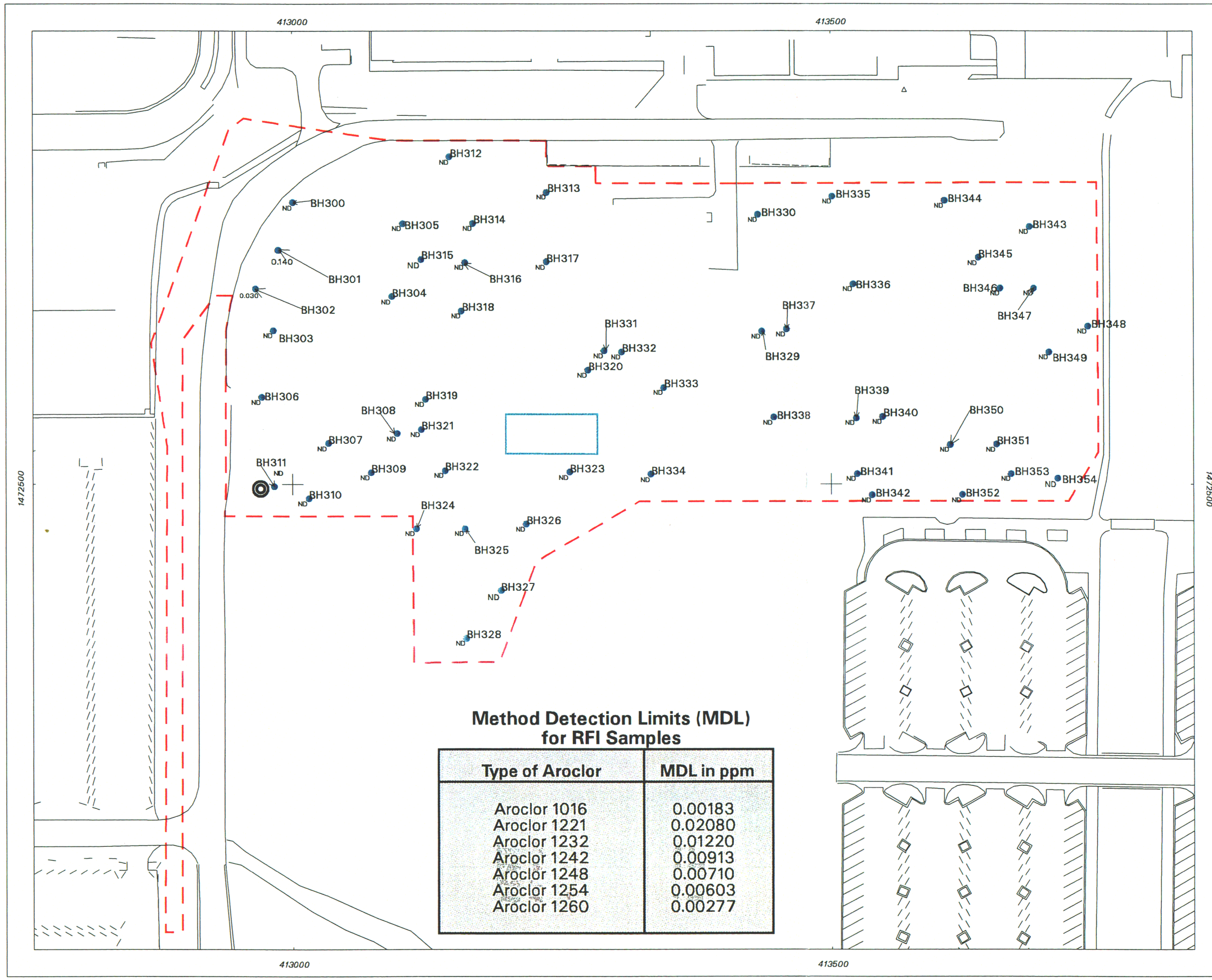
Figure 7
ER Site 30: PCB Data from RFI 1995 and 1997 Discrete Sample Locations, 1-Foot Depth

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=990837

Unclassified — SNL GIS ORG. 6804

Rachel Loehman — rl990837.aml — 02/15/00



Method Detection Limits (MDL) for RFI Samples

Type of Aroclor	MDL in ppm
Aroclor 1016	0.00183
Aroclor 1221	0.02080
Aroclor 1232	0.01220
Aroclor 1242	0.00913
Aroclor 1248	0.00710
Aroclor 1254	0.00603
Aroclor 1260	0.00277

Legend

.140 BH102 — Sample Location (with Sample ID and PCB concentration in ppm)

Electrical access point

Road/paved walkway

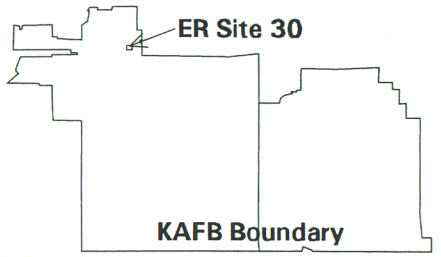
ER Site 30 Boundary

Building 897x

ND — Non-detect: see table for method detection limits

0 100 200
Scale in Feet

0 24 48
Scale in Meters



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

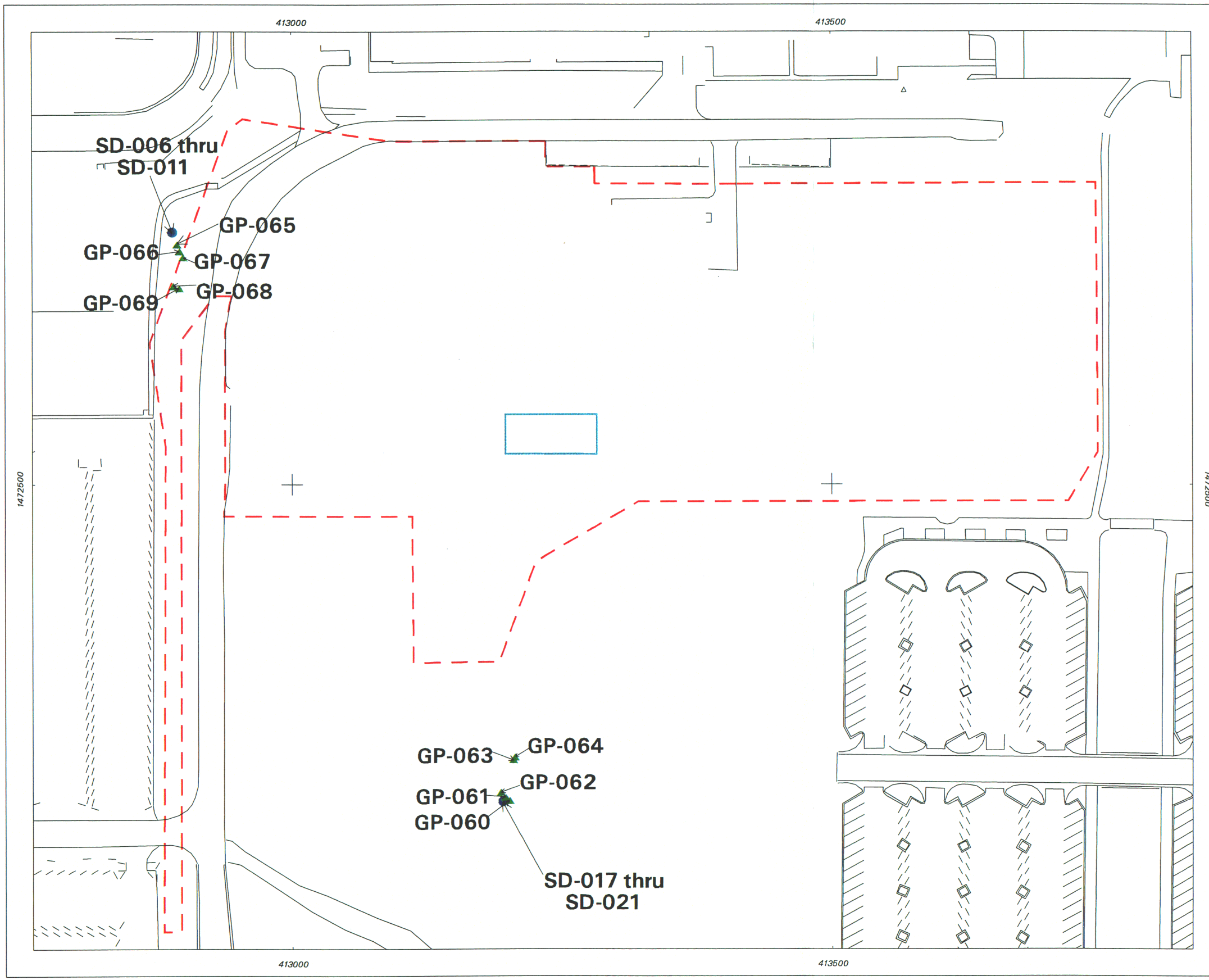
Figure 8
ER Site 30: PCB Data from RFI 1995 Discrete Sample Locations, 5-Foot Depth

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=990838

Unclassified | SNL GIS ORG. 6804

Rachel Loehman | rl990838.aml | 02/01/00

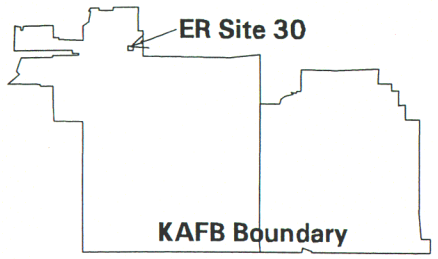


Legend

- SD sample location (with Sample ID)
- GP sample location (with Sample ID)
- Road/paved walkway
- ER Site 30 boundary
- Building 897x

0 100 200
Scale in Feet

0 24 48
Scale in Meters



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 9
ER Site 30: Location of Storm Drain Investigation Samples, June 1995 and September to October 1998

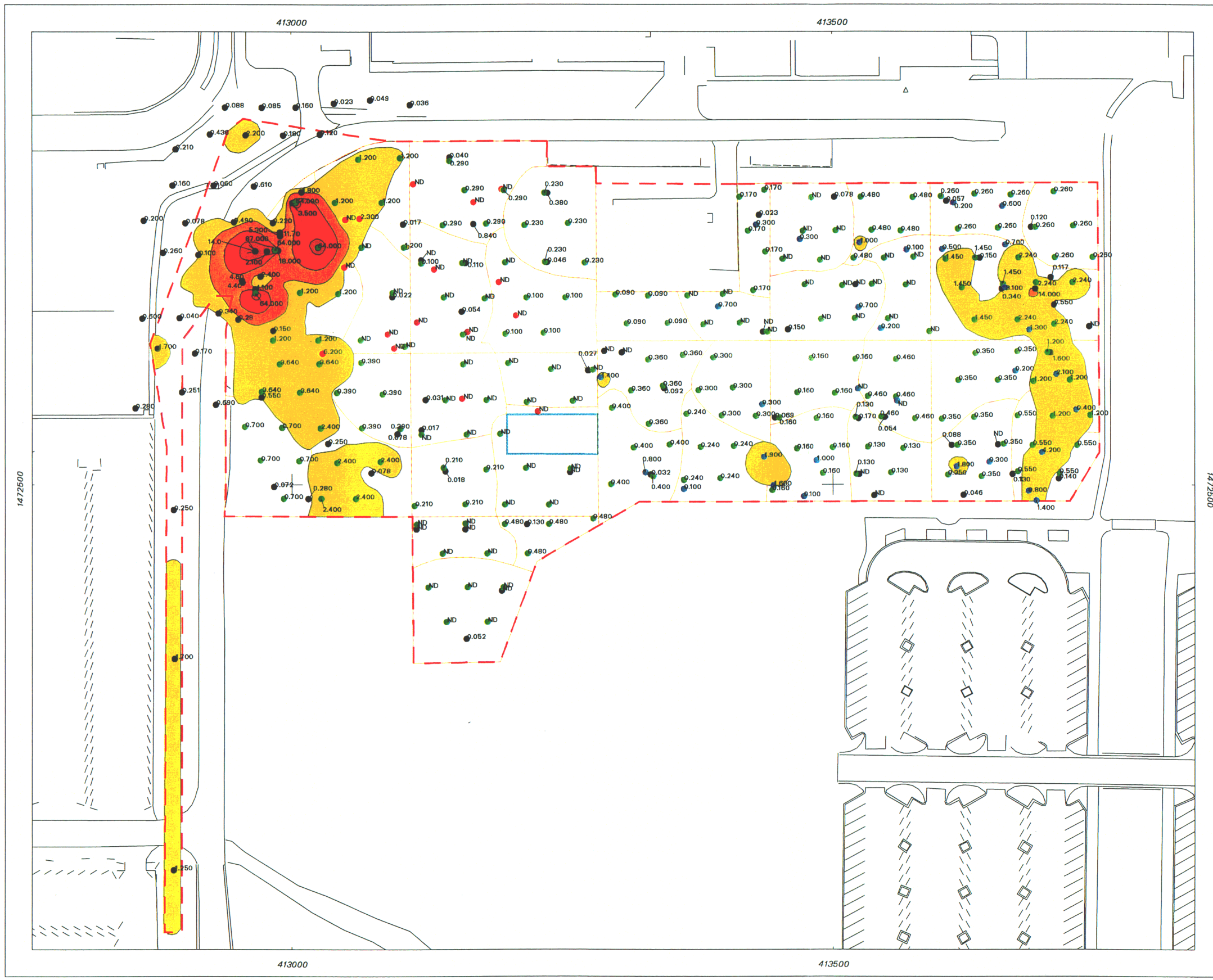
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=000205

Unclassified

SNL GIS ORG. 6804

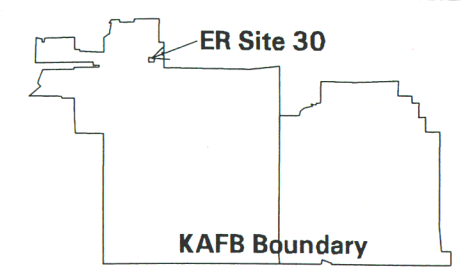
Rachel Loehman rl000205.aml 02/15/00



Legend

- 1989 Discrete Sample Location
- 1991/1992 Discrete Sample Location
- RFI 1995 Composite Sample Location
- RFI 1995 and 1997 Discrete Sample Location
- Sampling Subarea for Composite Samples
- Road/paved walkway
- ER Site 30 Boundary
- Building 897x
- 1-ppm PCB Contour
- 10-ppm PCB Contour
- 25-ppm PCB Contour
- 50-ppm PCB Contour

0 100 200
Scale in Feet
0 24 48
Scale in Meters



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 10
Summary of ER Site 30 1989-1997 Discrete and Composite Sample PCB Concentrations (in ppm) with Contours, 1-Inch to 1-Foot Depth

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=000033

Unclassified

SNL GIS ORG. 6804

Rachel Loehman rl000033.aml 02/15/00

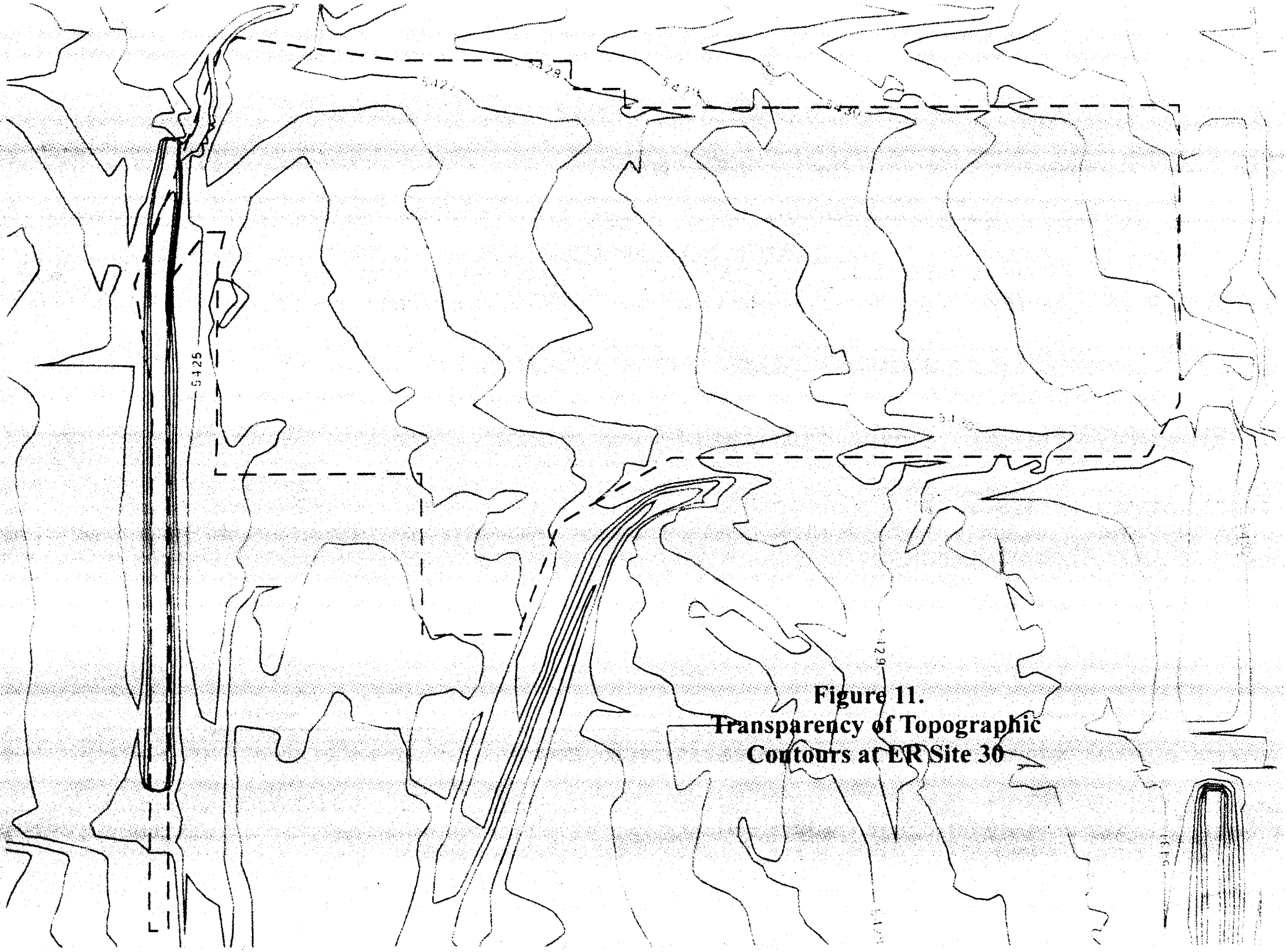
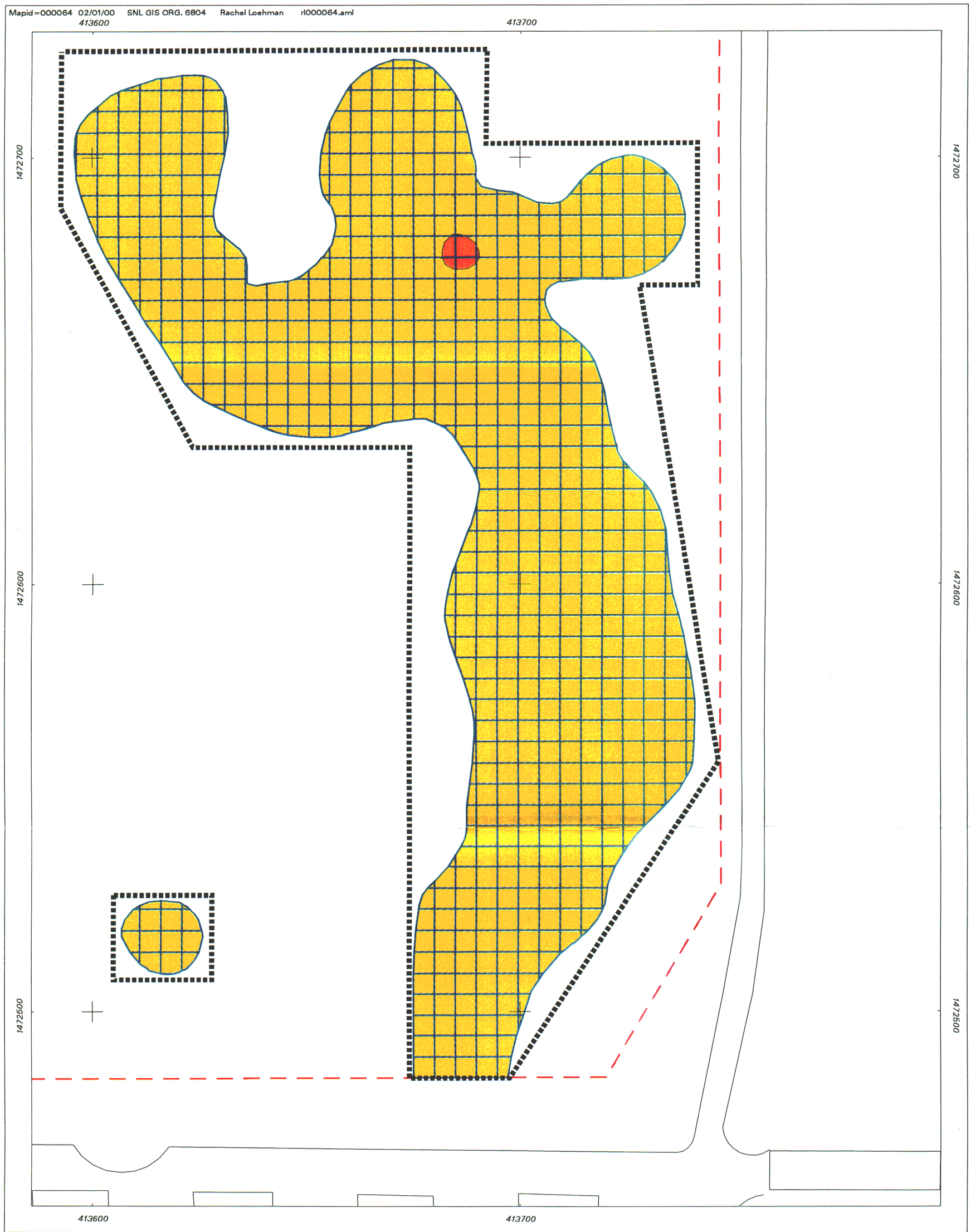


Figure 11.
Transparency of Topographic Contours at ER Site 30

Mapid=000064 02/01/00 SNL GIS ORG. 6804 Rachel Loehman rl000064.aml



Legend

- Road/paved walkway
- 1.5 Meter Verification Grid
- ER Site 30 Boundary
- Proposed Excavation Area Boundary
- 1-ppm PCB Contour
- 10-ppm PCB Contour

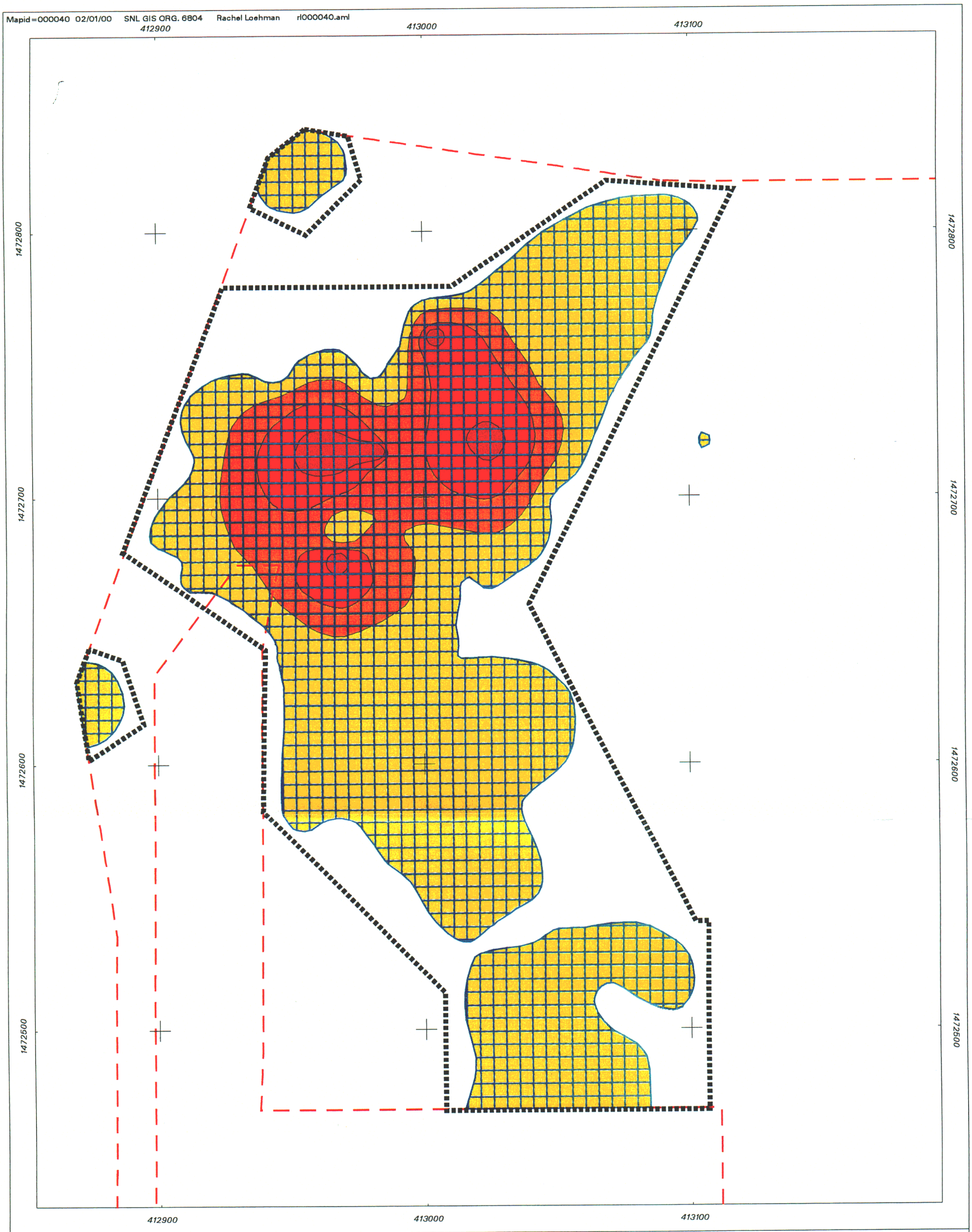
Figure 12
ER Site 30, East Side: PCB Concentration Contours Based on 1989-1997 Discrete and Composite Samples, 1-Inch to 1-Foot Depths, with Proposed Excavation Area and Verification Sampling Grid

0 25 50
Scale in Feet

0 6 12
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Mapid=000040 02/01/00 SNL GIS ORG. 6804 Rachel Loehman rl000040.aml



Legend

- 1.5 Meter Verification Grid
- ER Site 30 Boundary
- Proposed Excavation Path
- 1-ppm PCB Contour
- 10-ppm PCB Contour
- 25-ppm PCB Contour
- 50-ppm PCB Contour

Figure 13
ER Site 30, West Side: PCB Concentration Contours Based on 1989-1997 Discrete and Composite Samples, 1-Inch to 1-Foot Depths, with Proposed Excavation Area and Verification Sampling Grid

0 40 80
Scale in Feet

0 10 20
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Appendix 5.2

Tables

List of Tables

Table 1: ER Site 30: Timeline

Table 2: ER Site 30: Detected Total PCB Concentrations in Discrete Soil Samples, Off-Site Laboratory, 1989

Table 3: ER Site 30: Detected PCB Concentrations in Discrete Soil Samples, Off-Site Laboratory, 1990

Table 4: ER Site 30: Detected PCB Concentrations in Composite Soil Samples, Off-Site Laboratory, March-April 1992

Table 5: ER Site 30: Detected PCB Concentrations in Discrete Soil Samples, Off-Site Laboratory, April 1992

Table 6: ER Site 30: Detected PCB Concentrations in Phase 1 RFI Composite Soil Samples, Off-Site Laboratory, March-April 1995

Table 7: ER Site 30: Detected PCB Concentrations in Phase 2 RFI Discrete Soil Samples, Off-Site Laboratory, March-April 1995

Table 8: ER Site 30: Detected Total PCB Concentrations in RFI Discrete Soil Samples, On-Site Laboratory, February and June 1997

Table 9: ER Site 30: Detected Total PCB Concentrations in RFI Composite Soil Samples, Immunoassay Field Screening Results, March-April 1995

Table 10: Correlation of Immunoassay Samples with Greater Than 50 ppm with the Corresponding Off-Site Laboratory Discrete Samples, March-April 1995

Table 11: ER Site 30: Detected Total PCB Concentrations in RFI Discrete Soil Samples, Comparison of Results From On-Site and Off-Site Laboratories, June 1997

Table 12: ER Site 30: Detected Total PCB Concentrations in RFI Discrete Soil Samples From the Northwest Corner of the Site, On-Site and Off-Site Laboratories, February and June 1997

Table 13: PCB Concentrations in Storm Drain Discrete Sediment Samples, Off-Site Laboratory, June 1995

Table 14: PCB Concentrations in Storm Drain Discrete Soil Samples, Off-Site Laboratory, September and October 1998

Table 1 (Page 1 of 2)

ER Site 30 Timeline

Month	Year	Event	Reference
Unknown	Early 1950s	Surplus & scrap materials stored and sold. During ~40-year history, waste oil with PCBs used for dust control.	SNL/NM 1995a
February	1986	Soils sampled for PCBs. No PCBs detected.	Pei 1986
Unknown	1987	Listed as an ER site.	DOE 1987
September	1989	Eastern 2/3 of site sampled for PCBs, metals, and asbestos.	BCM 1989
January	1990	Collected 35 surface (0 to 1 in.) soil samples, 12 located to verify asbestos. Could not verify previous concentrations.	E&E 1990; Hahn 1990a,1990b,1990c
September - October	1990	Contents of eastern 2/3 of the yard removed.	E&E 1990; Jacobs 1991
August	1991	Tar-like substance in southwestern corner of site; analyzed for TCLP metals, VOCs, and SVOCs.	Cox 1991
Fall	1991	Sampling and analysis plan prepared to obtain definitive data on PCBs or other COCs.	IT Corporation 1992a; Cox and Steinborn 1991
March	1992	Collected 10 surface soils samples in the northwest portion of the site for RCRA metals, radionuclides, SVOCs, TPH and PCBs; 5 of the composite samples were analyzed for PCBs.	IT Corporation 1992a, 1992b
April	1992	Collected 16 discrete samples at previous composite locations for toxic metals and PCBs.	IT Corporation 1992a, 1992b
March	1993	Existing data deemed insufficient to characterize the site. EPA recommends 19-point composite sampling strategy.	Miller 1993; EPA 1985, 1986b
May	1993	The tar-like substance re-sampled and analyzed for TCLP VOCs, metals, BNAs, and PCBs.	Stockham 1993a, 1993b
February	1995	Final draft of the Technical Area I RCRA Facilities Investigation (RFI) Plan produced.	SNL/NM 1995a
March	1995	Based upon a preliminary review of the RFI Work Plan, the EPA requested an additional 55 discrete samples to augment the composite soil samples.	Miller 1995
March – April	1995	Phase 1 RFI completed; samples collected at 1 and 5 ft at 202 locations using composite strategy.	SNL/NM 1995a, 1997a
April	1995	Phase 2 RFI completed; samples collected at 1 and 5 ft at 55 discrete locations.	Miller 1995; SNL/NM 1997a
Unknown	1996	Data Evaluation Report produced that discusses sediment data collected from the storm drain channel adjacent to the site.	SNL/NM 1996; Kottenstette 1995
February	1997	RFI sampling results documented in the Data Evaluation Report.	SNL/NM 1997a

Table 1 (Page 2 of 2)

ER Site 30 Timeline

February	1997	10 additional locations sampled to characterize the PCB hotspots in the northwest corner and east central portion of the site.	SNL/NM 1997c; Lewis 1997
May	1997	Air photos reviewed to determine former site boundaries.	Skelly 1997
May	1997	Supplemental sampling plan created to characterize the PCB hotspots in the northwest corner and east central portion of the site.	SNL/NM 1997b
June	1997	38 locations sampled to characterize the PCB hotspots in the northwest corner, the storm water channel, and east central portion of the site.	Chavez 1997; ERCL 1997; SNL/NM 1997b, 1997c
February	1998	PCB cleanup activities discussed at a public meeting	SNL/NM 1998a
April	1998	VCM Plan prepared and sent to NMED.	SNL/NM 1998a
June	1998	Informal, verbal request for supplemental information received from NMED. Additional data submitted to NMED	Skelly 1998
July	1998	NMED DOE OB provides review of the VCM Plan.	NMED 1998a
September	1998	NMED HRMB submits an RSI of the VCM Plan.	NMED 1998b
November	1998	SNL responds to NMED's RSI	SNL/NM 1998b

Table 2
ER Site 30: Detected Total PCB Concentrations in Discrete Soil Samples, Off-Site Laboratory, 1989

Sample Location	Depth (inches)	Result (mg/kg or ppm)*
SEP-1	1	0.4
SEP-2	1	2.1
SEP-3	1	42.0
SEP-4	1	0.8
SEP-5	1	1.4
SEP-6	1	1.8
SEP-7	1	0.3
SEP-10	1	0.2
SEP-11	1	0.5
SEP-12	1	0.1
SEP-13	1	1.0
SEP-14	1	1.3
SEP-15	1	0.2
SEP-16	1	3.1
SEP-17	1	0.7
SEP-18	1	0.6
SEP-19	1	0.2
SEP-20	1	0.7
SEP-21	1	0.3
SEP-22	1	0.3
SEP-23	1	0.7
SEP-24	1	0.3
SEP-25	1	1.0
SEP-26	1	0.1
SEP-27	1	1.6
SEP-28	1	1.9
SEP-29	1	0.1
SEP-30	1	0.8
SEP-31	1	1.4

*The method detection limit is unknown, but reporting limits range from 0.066 to 0.33 ppm.

Table 3
ER Site 30: Detected PCB Concentrations in Discrete Soil Samples, Off-Site Laboratory, 1990

Sample Identification	Aroclor	Result (mg/kg or ppm)	Reporting Limit (mg/kg or ppm)
P001	Aroclor 1254	1.40	0.10
P002	Aroclor 1254	1.90	0.08
"	Aroclor 1248	0.45	0.08
P003	Aroclor 1254	3.00	0.20
P004	Aroclor 1254	0.79	0.06
"	Aroclor 1248	0.20	0.06
P005	Aroclor 1254	0.23	0.10
"	Aroclor 1248	0.33	0.10
P006	Aroclor 1254	0.12	0.02
"	Aroclor 1248	0.14	0.02
P007	Aroclor 1254	0.096	0.02
"	Aroclor 1248	0.13	0.02
P008	Aroclor 1260	0.13	0.02

Table 4
ER Site 30: Detected PCB Concentrations in Composite Soil Samples, Off-Site Laboratory, March-April 1992

Sample Location	Depth (inches)	Aroclor	Result (ppm)*	
			Analysis 1	Analysis 2
7584	1.2	Aroclor 1260	0.42	0.53
7585	1.2	Aroclor 1254	0.12	0.13
7586	1.2	Aroclor 1254	0.75	0.59
7587	1.2	Aroclor 1254	0.15	0.20

*Method detection limit is 0.10 ppm.

Table 5
ER Site 30: Detected PCB Concentrations in Discrete Soil Samples, Off-Site Laboratory, April 1992

Sample Location	Depth (inches)	Aroclor	Result (ppm)
8303-1	1.2	Aroclor 1260	2.3
8305-4	1.2	Aroclor 1254	6.2

* Laboratory reporting limit is 1 ppm.

Table 6
ER Site 30: Detected PCB Concentrations in Phase 1 RFI Composite Soil Samples, Off-Site Laboratory, March - April 1995

Sample Grid	Depth (ft)	Aroclor	Result (ppm)
1A	1	1260	16.000
1A	5	1260	0.290
1B	1	1260	0.240
1B	5	1260	0.110
1C	1	1260	0.300
1C	5	1260	0.022 J
2A	1	1260	0.910
2B	1	1260	0.077
2C	1	1260	0.140
2C	5	1260	0.02 J
2D	1	1260	0.480
3A	1	1260	0.057
3B	1	1260	0.046
3D	1	1260	0.019 J
3D	1 (dup)	1260	0.017 J
4C	1	1254	0.052
4C	5	1254	0.018 J
4D	5	1242	0.017 J
5B	1	1254	0.120
6A	1	1260	0.034
6C	1	1260	0.023 J
7A	1	1260	0.071
7B	1	1260	0.060
7C	1	1260	0.079
7D	1	1260	0.048
7D	1 (dup)	1260	0.047
8B	1	1254	0.096
9A	1	1254	0.040
9B	1	1260	0.091
9C	1	1260	0.031
9D	1	1260	0.026 J
9D	1 (dup)	1260	0.023 J
10A	1	1254	0.051
10B	1	1254	0.052
10C	1	1254	0.290
10D	1	1254	0.560
11A	1	1254	0.070
11B	1	1254	0.240
11C	1	1254	0.070
11D	1	1254	0.100
11D	1 (dup)	1254	0.110

Notes:
J = The associated value is below the reporting limit and above the detection limit, and therefore is an estimated value.

Table 7
ER Site 30: Detected PCB Concentrations in Phase 2 RFI Discrete Soil Samples, Off-Site Laboratory, March - April 1995

Sample Location	Sample Grid	Depth (ft)	Aroclor	Result (ppm)
BH300	1A	1	1260	3.500
BH301	1A	1	1260	18.000
BH301	1A	5	1260	0.140
BH302	1A	1	1260	4.100
BH302	1A	5	1260	0.030 J
BH303	1C	1	1260	0.150
BH304	1D	1	1254	0.022 J
BH305	1B	1	1254	0.017 J
BH306	2A	1	1260	0.550
BH307	2D	1	1260	0.250
BH308	2B	1	1260	0.078
BH309	2D	1	1260	0.780
BH309	2D	1 (dup)	1260	0.750
BH310	2C	1	1260	0.280
BH311	2C	1	1260	0.072
BH312	3A	1	1260	0.040
BH313	3B	1	1260	0.380
BH314	3A	1	1254	0.840
BH316	3C	1	1260	0.110
BH317	3B	1	1260	0.046
BH318	3C	1	1260	0.054
BH319	4A	1	1260	0.031 J
BH320	4B	1	1260	0.027 J
BH321	4A	1	1260	0.017 J
BH322	4C	1	1254	0.018 J
BH326	5B	1	1254	0.130
BH328	5C	1	1260	0.052
BH330	6A	1	1260	0.023 J
BH333	7A	1	1260	0.092
BH334	7C	1	1260	0.032 J
BH335	8A	1	1260	0.036
BH337	8C	1	1254	0.150
BH338	9A	1	1254	0.069
BH339	9D	1	1260	0.170
BH340	9B	1	1260	0.054
BH343	10B	1	1254	0.120
BH344	10A	1	1248	0.057
BH345	10C	1	1254	0.150
BH346	10C	1	1254	0.340
BH347	10D	1	1254	14.000
BH349	11B	1	1254	1.600
BH350	11C	1	1260	0.075
BH350	11C	1 (dup)	1260	0.088
BH352	11C	1	1260	0.046
BH353	11D	1	1254	0.130
BH354	11D	1	1254	0.140

Notes:

J = The associated value is below the reporting limit and above the detection limit, and therefore is an estimated value.

Table 8 (Page 1 of 2)
ER Site 30 RFI: Detected PCB Concentrations in RFI Discrete Soil Samples, On-Site Laboratory, February and June 1997

Sample Location	Depth (inches)	Aroclor	Result (ppm)
February Samples:			
BH400	12	1260	0.29
BH401	12	1260	4.4
BH402	12	1260	87
BH403	12	1260	0.22
BH404	12	1260	1.8
BH405	12	1260	5.3
BH406	12	1260	2.1
BH407	12	1260	2.4
BH408	12	1254	0.065
"	"	1260	0.052
BH409	12	1254	0.4
"	"	1260	0.15
June Grid Samples:			
BH410	12	1260	0.036
BH411	12	1254	0.025
"	"	1260	0.024
BH412	12	1260	0.023
BH413	12	1260	0.16
BH414	12	1260	0.085 J
BH414*	12	1260	0.399 J
BH415	12	1260	0.088
BH416	12	1260	0.12 J
BH417	12	1260	0.18
BH418	12	1260	2.2
BH419	12	1260	0.35 J
BH419*	12	1260	0.436
BH420	12	1260	0.21
BH421	12	1260	0.61
BH422	12	1260	0.06 J
BH423	12	1260	0.16
BH424	12	1260	0.49
BH424*	12	1260	0.383
BH425	12	1260	0.078 J
BH426	12	1260	0.2
BH427	12	1260	0.10 J
BH428	12	1260	0.26
BH429	12	1260	0.029

Table 8 (Page 2 of 2)
ER Site 30 RFI: Detected PCB Concentrations in RFI Discrete Soil Samples, On-Site Laboratory, February and June 1997

Sample Location	Depth (inches)	Aroclor	Result (ppm)
June Grid Samples (cont.):			
BH429*	12	1260	0.397 J
BH430	12	1260	0.6
BH431	12	1260	0.17
BH432	12	1260	1.7
BH433	12	1254	0.015 J
"	"	1260	0.034
BH433*	12	1260	0.251
BH434	12	1260	0.28
BH446	12	1260	0.69
BH447	12	1260	0.34
June Storm Drain Sediment Samples:			
BH435	12	1260	0.25
BH436	12	1260	1.7
BH437	12	1254	0.22 J
"	"	1260	0.77
BH437*	12	1260	1.25
BH438	12	1254	0.078 J
"	"	1260	0.29
BH439	12	1260	0.45
June Multiple Depth Study Samples:			
BH440a	1	1260	9.2
BH441a	12	1260	4.6
BH442b	1	1260	11
BH443b	12	1260	9.3
BH444c	1	1260	3.2
BH445c	12	1260	8.4

Notes:

J = The associated concentration was observed below thePractical Quanitation Limit (PQL).

Samples were analyzed by the SNL ER Chemistry Laboratory (Lewis 1997, ERCL1997).

For the non-detect results in February samples the MDL was 0.010 ppm, and the PQL was 0.04 ppm.

For the non-detect results in all other samples the MDL was 0.0033 ppm and the PQL was 0.013 ppm at a dilution factor of 1.0.

J values apparently greater than the PQL are due to dilution of a sample.

* Sample duplicate.

[a] Co-located samples.

[b] Co-located samples.

[c] Co-located samples.

Table 9
ER Site 30: Detected Total PCB Concentrations in RFI Discrete Soil Samples, Immunoassay Field Screening Results, March-April 1995

Sample Location	Sample Grid	Depth (ft)	Results (ppm)
BH001	1A	1	> 0.4
BH001	1A	5	> 0.4
BH003	1A	1	**> 50**
BH004	1A	1	**> 50**
BH009	1B	5	> 0.4
BH011	1C	1	> 0.4
BH012	1C	1	> 0.4
BH013	1C	5	> 0.4
BH015	1D	5	> 0.4
BH016	1D	5	> 0.4
BH018	2A	1	> 0.4
BH019	2A	1	> 0.4
BH020	2A	1	> 0.4
BH020	2A	5	> 0.4
BH026	2B	1	**> 50**
BH034	2D	1	> 0.4
BH036	2D	1	> 0.4
BH037	3A	5	> 0.4
BH042	3B	1	> 0.4
BH045	3B	5	**> 50**
BH046	3B	5	> 0.4
BH047	3C	1	**> 50**
BH048	3C	1	**> 50**
BH053	3D	5	> 0.4
BH060	4A	1	> 0.4
BH063	4B	1	> 0.4
BH064	4B	5	**> 50**
BH067	4C	5	**> 50**
BH068	4C	1	> 0.4
BH073	4D	5	> 0.4
BH076	5A	1	> 0.4
BH077	5A	5	> 0.4
BH083	5B	1	> 0.4
BH086	5C	5	> 0.4
BH087	5C	5	> 0.4
BH098	6B	5	**> 50**
BH106	7A	1	> 0.4
BH117	7C	5	> 0.4
BH147	9A	1	> 0.4
BH151	9B	1	> 0.4
BH158	9D	1	> 0.4
BH161	9D	1	> 0.4
BH163	10A	1	> 0.4
BH169	10B	1	> 0.4
BH174	10C	1	> 0.4
BH176	10C	1	> 0.4
BH179	10D	1	> 0.4
BH188	11B	1	> 0.4
BH194	11C	1	**> 50**
BH195	11C	5	> 0.4
BH201	11D	5	> 0.4
BH202	11D	1	> 0.4

Notes:

Samples analyzed by SNL/NM ERCL (Bldg. 6540) using EnSys, Inc. PCB RIS^{CR} Immunoassay testing kits (Kottenstette 1995).
Only positive results (hits) are shown, all other results were less than 0.4 ppm.

Table 10

Comparison of Immunoassay Samples with Greater Than 50 ppm PCBs with the Corresponding Off-Site Laboratory Discrete Samples, March-April 1995

Immunoassay Sample ID (Figures 5 and 6)	Depth (ft)	Total PCB Concentration using Immunoassay (ppm)	Corresponding Discrete Sample ID (Figures 7 and 8)	Total PCB Concentration using Method 8080/8081 (ppm)	Results of Discrete Samples Collected at Different Depth at Same Location
BH003	1	>50	BH301	18	5 ft depth -- 0.140 ppm
BH004	1	>50	BH302	4.1	5 ft depth -- ND*
BH026	1	>50	BH308	0.078	5 ft depth -- ND*
BH045	5	>50	BH317	ND*	1 ft depth -- 0.046 ppm
BH047	1	>50	BH315	ND*	5 ft depth -- ND*
BH048	1	>50	BH316	0.11	5 ft depth -- ND*
BH064	5	>50	BH320	ND*	1 ft depth -- 0.027 ppm
BH067	5	>50	BH322	ND*	1 ft depth -- 0.018 ppm
BH098	5	>50	BH329	ND*	1 ft depth -- ND*
BH194	1	>50	BH350	0.075	5 ft depth -- ND*

* ND - Total PCB concentration is less than 0.0664. The detection limits for the individual Aroclors ranged from 0.00183 to 0.02080.

Table 11
ER Site 30: Detected Total PCB Concentrations in RFI Discrete Soil Samples, Comparison of Results from On-Site and Off-Site Laboratories, June 1997

Sample Location	GEL Result (ppm)	ERCL Result (ppm)	Relative Percent Difference
BH414	0.0399 J	0.085 J	72
BH419	0.436	0.35 J	22
BH424	0.383	0.490	25
BH429	0.0397 J	0.029	31
BH433	0.251	0.049 J*	135
BH437	1.250	0.99 J*	23
BH443	14.000	9.300	40
BH445	11.700	8.400	33

Notes:
J = The associated concentration was observed below the PQL.
Off-site laboratory analysis performed by General Engineering Laboratories (Chavez 1997).
All samples sent to GEL were collected from 0 to 12 inches; all results were PCB Aroclor 1260.
For the GEL results, the DL was 0.0015 ppm, RL was 0.0415 ppm at a dilution factor of 10.
* = Separate Aroclor concentrations have been added together for this table; qualifiers maintained.

Table 12
ER Site 30: Detected Total PCB Concentrations in RFI Discrete Soil Samples from the Northwest Corner of the Site, On-Site and Off-Site Laboratories, February and June 1997

Sample Location	Depth (inches)	ERCL Result (ppm)	GEL Result (ppm)
BH401	12	4.4	
BH440	1	9.2	
BH441	12	4.6	
BH402	12	87.0	
BH442	1	11.0	
BH443	12	9.3	14.0
BH405	12	5.3	
BH444	1	3.2	
BH445	12	8.4	11.7

Notes:

All results were PCB Aroclor 1260.

Locations in a group were collected within 1 ft of each other.

Table 13
PCB Concentrations in Storm Drain Discrete Sediment Samples, Off-Site Laboratory, June 1995

Sample Location	Depth (inches)	Aroclor	PCB Concentration* (ppm)
SD006	6	Aroclor 1262	0.0955
SD007	6	Aroclor 1262	0.0757
SD008	6	Aroclor 1262	0.146
SD009	6	Aroclor 1262	0.0647
SD010	6	Aroclor 1262	0.122
SD011	6	Aroclor 1254	0.0363
"	"	Aroclor 1262	0.197
SD017	6	Aroclor 1260	0.0584
SD018	6	Aroclor 1260	0.0552
SD019	6	Aroclor 1254	0.0458
"	"	Aroclor 1260	0.0495
SD020	6	Aroclor 1260	0.0474
SD021	6	Aroclor 1260	0.163

*Method detection limit ranges from 0.0323 to 0.0333 ppm.

Table 14
PCB Concentrations in Storm Drain Discrete Soil Samples, Off-Site Laboratory, September and October 1998

Sample Location	Depth (ft)	Aroclor	PCB Concentration* (ppm)
GP065	5	1260	0.0044
GP067	5	1260	0.0021
GP068	Surface	1254	0.092
"	"	1260	0.16
GP069	Surface	1254	0.074
"	"	1260	0.11

* The detection limits for Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260 is 0.0015 ppm.

Appendix 5.3

Certification Statement for Maintenance and Availability of Sampling/Analysis Records

As required by 40 CFR 761.61(a)(3)(E), we certify that the following information, related to the management of polychlorinated biphenyl (PCB) contaminated waste generated during remediation of ER Site 30 (Reclamation Yard), will be maintained onsite at the ESH Records Center, Sandia National Laboratories, located on Kirtland Air Force Base:

- sampling plans, sample collection procedures, sample preparation procedures, and instrumental/chemical analysis procedures used to assess or characterize the PCB contamination at ER Site 30.

The identified records will be maintained at the ESH Records Center and will be available for inspection by the Environmental Protection Agency.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

Peter B. Davies
Director
Geoscience and Environment Center, 6100
Sandia Corporation
Albuquerque, New Mexico
Co-Operator

2/24/00
Date

Michael J. Zamorski
Area Manager
Kirtland Area Office
U.S. Department of Energy
Albuquerque Operations Office
Owner and Co-Operator

Date

Enclosure 2

Responses to Deficiency Comments on the Planned Remediation at Sandia National Laboratories (SNL) for Environmental Restoration (ER) Site 30, under 40 CFR 761.61(a)(3) (A)-(E), EPA I.D. NM5890110518

1. General Comment: For future PCB plans, it is recommended that Sandia include only PCB information and not mix other RCRA constituents into the plan, since EPA will only look at the PCB pertinent material. Also, do not include enclosures to replace parts of the plan which were completed much earlier and are not pertinent now.

Response: The revised PCB notification contains only information about PCBs and does not mix discussions of other RCRA constituents into the plan. In addition, this revised notification does not include enclosures to replace parts of the plan and is therefore a stand-alone document. SNL will follow this guidance for any future submittals related to 40 CFR 761.

2. General Comment: EPA cannot determine from the information included in the plan whether adequate site characterization was performed at site 30. Although Sandia completed several phases of soil sampling, it appears that Sandia did not meet the requirement of a 3 meter square grid sampling. From reviewing Figure 2, most samples appear to be 20-30 feet apart. Please justify that you have met EPA's site characterization requirements under 40 CFR 761.265. Also, please include a map(s) showing results at the various depths sampled, including the topographic contours and drainage on all maps. On Figure 3, please include a larger scaled map and please indicate which samples are field screening data.

Response:
Adequate site characterization is required by 40 CFR 761.61(a)(2), which references Subpart N (40 CFR 761.265). Subpart N provides, but does not mandate, an acceptable method of site characterization. Because most data collection activities for Site 30 were conducted before Subpart N was promulgated, there are some differences between the Subpart N methods and those actually implemented at Site 30. However, as we discussed with EPA staff in a meeting held on January 20, 2000, the site characterization information collected does adequately characterize Site 30 (with the exception of the area under the Building 897X slab). The information has been reorganized and reformatted in maps and tables to better demonstrate adequate site characterization under 761.61(a)(2). Figures 1 through 8 and Figure 10 (Appendix 5.1) are updated versions of maps transmitted to the EPA on December 9, 1999 for the purpose of discussing the sufficiency of site characterization at Site 30. As agreed in our meeting of January 20, 2000 the area under the Building 897X slab will be characterized as suggested in Subpart N.

In the revised notification, the site location map includes topographic contours and the topographic contours were included on the larger, plate-size mylar maps that were transmitted to the EPA in December 1999. Topographic contours are not included on the remainder of the maps in the revised notification in order to present the site characterization data more clearly. However, a transparency of the topographic contours is included with the renotification; the site boundary is included on the transparency so that it can be used to register the transparency with the ER Site 30 data maps. Field-screening data were not used in defining cleanup areas and, therefore, are not plotted on any of the maps in the revised notification.

3. General Comment: Although Sandia included the RCRA constituent results in the plan, only a portion of the PCB lab analysis results were included in tabular form. Please include all previous PCB soil analysis performed at the site in the revised plan.

Response: The PCB lab analysis results used in defining the cleanup areas are included in tables in the revised notification. Only the results above detection are tabulated, and detection limits are provided for nondetects.

4. General Comment: Under the requirements of 40 CFR 761.61(a)(3)(A)-(E), a risk assessment is not required in the remediation plan.

Response: The revised notification no longer includes a risk assessment.

5. Page 4; Cleanup Levels: Sandia included a statement in the plan referring to the TSCA PCB Spill Policy at Sec. 761.120. This Spill Policy does not apply to 40 CFR 761.61(a)(3)(A)-(E) cleanup requirements.

Response: The revised notification no longer includes this statement.

6. Page 18; Waste Management Issues: Sandia must specify where the excavated waste will be disposed at under 40 CFR 761.61(a)(3)(D). Please revise the plan accordingly.

Response: Section 3.4.5, Page 16 of the revised notification gives facility options for the disposal of the excavated waste.

7. Page 20; Final Report: Please include in the plan an approximated date in which the remediation report will be submitted to EPA.

Response: As specified in Section 3.1, page 12, of the revised notification, SNL will send EPA a copy of the RCRA No Further Action (NFA) Proposal that fulfills the requirements of a remediation report. This is scheduled for completion in the spring of 2001, within a year from the start of cleanup. As EPA requested in our meeting of January 20, 2000, the PCB results will be included as a separate section in the NFA Proposal.

8. Page 21; Schedule: The schedule for this work is incorrect, May 1998 has already passed. Please amend the schedule in the revised plan, which should include revision of Figure 6 in the plan.

Response: There is a revised schedule stated in the text of Section 3.1, page 12, of the revised notification. Because a start date is contingent upon EPA approval of the notification, the start date is not included within the notification. If EPA approves this version of the notification, the anticipated cleanup start date is May 2000.

9. Page 1; Implementation Plans: Please include the following Field Operating Procedures in revised remediation plan: 94-23; 94-25; 94-26; 94-34; 94-52; 94-54; and 94-78. EPA does not have those FOPs. The remediation plan should be a "stand alone" document.

Response: The revised notification no longer includes reference to these Field Operating Procedures (FOPs). Because the revised notification is now a stand-alone document only directed at compliance with 40 CFR 761, references to these procedures are no longer needed. Procedures needed to conduct the PCB cleanup in compliance with 40 CFR 761 are either referenced as specified in 40 CFR 761 or are summarized in the text of the revised notification.

10. Page 5; Waste Management Plan: Sandia's plan is inadequate in addressing the storage of excavated PCB wastes. Please address the requirements of 761.65 in the revised plan.

    Also, the plan is inadequate in addressing how the excavated PCB soils will be characterized. Please address the requirements of 761.340 in the revised plan.

    In addition, the plan is inadequate in addressing the decontamination of storage and cleanup equipment. Please address the requirements of 761.360.

Response: The present plans for the cleanup of the site no longer include storage. Section 3.4.3, page 14 of the revised notification documents the plans for loading PCB soils directly into trucks for offsite disposal. The requirements of 761.65 are no longer applicable.

The excavated PCB-contaminated soils will not be further characterized. These soils will be managed and disposed based on the "concentration at which the PCBs are found," or the "as-found" concentration as discussed on pages 16, 17, 24, and 46 of EPA's *"Interpretative Guidance, 1999 PCB Questions and Answers Manual, Part 2."* These plans are documented in Section 3.4.2, page 14 of the revised notification. The requirements of 761.340 are no longer applicable.

The decontamination of cleanup equipment is addressed in Section 3.4.6, page 16 of the revised notification. 761.79(c)(2) indicates that there are three options for decontaminating PCB-contaminated movable equipment, tools and sampling equipment when conducting a self-implementing cleanup. Two of the options are: (i) "swabbing surfaces that have contacted PCBs with a solvent" and (ii) "a double wash/rinse as defined in subpart S [761.360] of this part." Option (i) will be used in our cleanup and therefore the requirements of 761.360 are not applicable.

Enclosure 3

Construction Plans for the ER Site 30 Drainage Channel

The Storm Drain, Sanitary Sewer and Domestic Water Systems Modernization (SSWM) infrastructure project to upgrade water and waste-water systems began in FY98. The storm drain system for Tech Areas I, II, III, IV, and V is being up-graded to protect against flooding associated with potential 100-year storm events. In addition, drainage channels are being lined or replaced by culverts to eliminate erosion that threatens roads, utilities, and other infrastructure. The drainage channel on the western boundary of ER Site 30 will be impacted by the SSWM project. Current plans for the ER Site 30 channel are to current install a covered pipe in fiscal year 2002. The pipe will be 48 to 54 in. in diameter and will be installed about 3 ft. below the roadway grade.

ANNEX 2-D
Surface-Water Assessment

SURFACE WATER SITE ASSESSMENT Part B (3 pages)

Site Information:

1a) Site # 30 1b) Building # (if applicable) N/A 1c) OU # 1302

2. Date/Time (M/D/Y H:M, 24Hr) 8/6/98 13:00

Site Setting:

3a) ✓ On Alluvial Plain.

3b) ◯ Within a bench of an arroyo or drainage basin

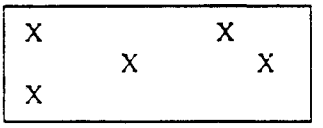
3c) ◯ In canyon floor/drainage basin, but not in an established channel.

3d) ◯ Within established arroyo channel/drainage basin

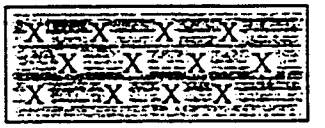
Explanation: Empty gravel lot, 1/3 clear 2/3 weeds/brush

4. Estimated ground and / or canopy cover at the site: (deciduous leaves, pine needles, vegetation, trees, rocks)

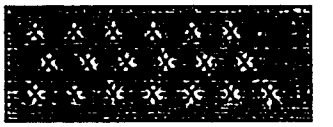
Estimated percent of ground cover:

a) 

◯ 0-25% cover

b) 

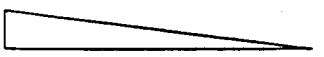
✓ 25-75% cover

c) 

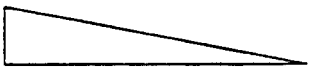
◯ 75-100% cover

Explanation: Combined areas

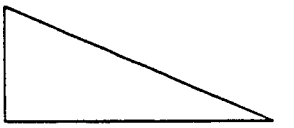
5. Steepest slope at the area impacted:

a) 

✓ less than 10%

b) 

◯ 10 to 30%

c) 

◯ 30% or greater

Explanation: FLAT - very limited slope

Runoff Factors:

Y / N

✓ ◯ 6) Is there visible evidence of runoff discharging from the site? If yes, answer a) – c) below:

✓ ◯ 6a) Is runoff channelized? If yes, describe. ◯ Man-made channel. ✓ Natural Channel.

6b) Where does evidence of runoff terminate?

Drainage or wetland. (name) STORMWATER DISCHARGE

Within bench of Canyon setting. (name)

Other (retention pond, meadow, mesa top etc)

Explanation: Short natural channels discharge to SW.

✓ ◯ 6c) Has runoff caused visible erosion at the site? If yes, explain. ◯ Sheet ◯ Rill ✓ Gully

Explanation: @ SW discharge 8-10" deep

Run-on Factors:

Rate the potential for storm water to run on to this site: (Check **EITHER** #7 or #9)

Note: Include comments in appropriate boxes if both natural and man-made run-on exist.

✓ ◯ 7. Are structures creating run-on to the site? (buildings, roof drains, parking lots, storm drains)

Explanation: runoff due to road (along NE to W side)

✓ ◯ 8. Are current operations adversely impacting run-on to the site? (fire hydrants, NPDES outfalls)

Explanation: Fire hydrants N/S boundaries

◯ ✓ 9. Are natural drainage patterns directing stormwater onto the site?

Explanation:

Assessment Finding:

Y / N

( ) (✓) 10. Based on the above criteria and the assessment of this site, do soil erosion potentials exist? **(REFER TO EROSION POTENTIAL MATRIX)**

Explanation:

11.

ER SW Representative

Task Leader or Designee

SWL / 6133 / 284-2593

Company / Organization / Phone #

Company / Organization / Phone

Initials of Independent Reviewer. [ ] Check here when information is entered into database. [ ]

Notes Recommendations & Photos. (Please attach photos)

(✓) ( ) 12a. Is there visible trash / debris on the site?

( ) (✓) 12b. Is there visible trash / debris in the watercourse?

Description of existing BMP's: Small metal debris (nuts/bolts etc)

BMPS: Silt Fence Across Discharge Channel

(✓) ( ) 13a. Are BMP's being properly maintained? (If no, describe in "Other Internal Notes")

(✓) ( ) 13b. Are BMP's effectively keeping sediment in place and reducing erosion potential?

Recommended BMP's for this site: Maintain current installations
— Stormwater system "reduces" run-on

Other Internal Notes: Silt fence needs minor repair

Surface Water Site Assessment Erosion Matrix Sheet

SWMU / IRP # 30

CRITERIA EVALUATED	Value	Erosion / Sediment transport Potential Factor: Low 0.1	Medium 0.5	High 1.0	Calculated Score
Site Setting (43 point max)					
On Mesa top or hill top	1	No Multiplying Factor Defined Based on Topgraphic Setting			1
Within bench of canyon/drainage basin	4				
Within canyon floodplain or drainage basin, but not in watercourse	13				
Within canyon bottom or drainage basin and in watercourse	17				
Estimated % ground and canopy cover	13	> 75 %	25 - 75 %	< 25 %	6.5
Slope at area impacted	13	0 - 10 %	10 - 30 %	> 30 %	1.3
Surface Water Run-off Factors (46 point max)				Section Total	
Visible evidence of runoff discharge? (Y/N)	5	If NO, Score 0 for Run-off Section. If YES, Score 5 and Complete Section.			5
Where does runoff terminate?	19	Other	Bench Setting	Drainage/Wetland	19
Has runoff caused visible erosion? (Y/N)	22	Sheet	Rill	Gully	22
		If NO, Score as 0. If YES, Caculate and Record Value.			
Surface Water Run-on Factors (11 point max)				Section Total	
Do structures adversely affect run-on?* (Y/N)	7	If YES, Score as 7. If NO, Score as 0.			7
Does natural drainage adversely affect site run-on?* (Y/N)	7	If YES, Score as 7. If NO, Score as 0.			–
Do current operations adversely impact site run-on? (Y/N)	4	If YES, Score as 4. If NO, Score as 0.			4
* Select either structures OR natural drainage.					
MAX. POSSIBLE EROSION MATRIX SCORE:	100	Score: < 40 = low erosion potential 40 - 60 = moderate erosion potential > 60 = high erosion potential		Total Score	45.8

October 13, 2003

ADDITIONAL /SUPPORTING DATA

CAN BE VIEWED AT THE
ENVIRONMENTAL, SAFETY, HEALTH
AND SECURITY (ES&H and Security)
RECORD CENTER

FOR ASSISTANCE CALL
844-4688