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Mr. Benito Garcia, Bureau Chief
New Mexico Environment Department
Hazardous and Radioactive Materials Bureau
2044 Galisteo Street
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Dear Mr. Garcia:

Enclosed are two copies of the final report on the Results of the Technical Areas III and V RCRA Facility Investigation (RFI) conducted by Sandia National Laboratories/New Mexico (SNL/NM), ID Number NM5890110518-1. The EPA letter of April 19, 1994, approving the RFI Work Plan for these Technical Areas required submission of this report by April of 1997.

If you have any questions, please contact John Gould at (505) 845-6089, or Mark Jackson at (505) 845-6288.

Sincerely,

George K. Laskar

for Michael J. Zamorski
Acting Area Manager

Enclosure

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Sandia National Laboratories

Results of the Technical Areas III and V RCRA Facility Investigation

June 1996

Environmental
Restoration
Project

United States Department of Energy
Albuquerque Operations Office

RESULTS OF THE TECHNICAL AREAS III AND V RCRA FACILITY INVESTIGATION

Prepared by
Paula J. Slavin (GRAM, Inc.) and Lon A. Dawson
Department 7582: Environmental Restoration for Technical Areas and Miscellaneous Sites

EXECUTIVE SUMMARY

A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was conducted in 1994 and 1995 at 21 Environmental Restoration (ER) sites within Technical Areas III and V (TA-III/V) at Sandia National Laboratories in Albuquerque, New Mexico (SNL/NM). This report details the investigations at each of the sites.

In the RFI Work Plan (SNL/NM 1993a, 1993b), the ER sites were grouped into five categories:

1. Sites proposed for No Further Action (NFA);
2. Potential petroleum-impacted sites;
3. Sites potentially impacted only by hazardous constituents of concern (COCs);
4. Sites potentially impacted only by radioactive constituents; and
5. Sites potentially impacted by both hazardous and radioactive compounds.

The sites were investigated separately and are discussed in the report in individual sections (Sections 3.0 through 23.0).

Three of the sites proposed for NFA (ER Sites 105, 188, and 195) were submitted to the U.S. Environmental Protection Agency (EPA) in 1995 for administrative NFA decisions. All three were granted NFA status in July 1995.

Based on confirmatory sampling, the following sites are proposed for NFA in this RFI report: Sites 26, 31, 34, 35, 36, 37, 51, 78, 100, 102, 107, 111, 196, and 241. A Class III permit modification request will be submitted following final determinations on sites addressed within this RFI report. This RFI report constitutes the NFA proposals for these sites. Most sites in this group exhibited no contamination above background levels; the remainder of these sites were contaminated at levels far below regulatory limits. Although Site 107 falls into this group, it has been identified as the preferred site for a future temporary unit and corrective action management unit (TU/CAMU) for the ER Project. Thus additional activities related to its TU/CAMU status will be conducted.

Several of the ER sites are still active (i.e., testing is currently being conducted at or immediately adjacent to the sites). Because of this, only limited investigations were conducted at Sites 26, 83, and 84 where ongoing testing significantly impacts thorough site characterization. Investigations at these sites included geophysical surveys to identify buried material at Sites 26 and 84 and surface radiation surveys (discussed below) at Sites 83 and 84. Investigations will be completed when these sites are decommissioned or placed in final inactive status. Site 240 was reactivated for testing after site characterization was completed. Thus, proposed geophysical investigations of Site 240 will be postponed until the site is placed in final inactive status.

A Voluntary Corrective Measure (VCM) was performed to survey and remove surface radiation hazards associated with testing conducted at several ER sites. Sites 18, 83, 84, 102, 240, and 241 were surveyed for radioactive anomalies. Removal activities were conducted at sites where anomalies were demonstrated to exist (Sites 18, 83, 84, and 240).

A VCM also was conducted at the Gas Cylinder Disposal Pit (Site 78) to mitigate the immediate hazard posed to human health and the environment. The site exhibited many unruptured gas cylinders containing hazardous and toxic gases, high-explosive (HE) residues, and radioactively contaminated soil and slag. The VCM was accelerated from the original schedule of site assessment, remedy selection, and full-scale remediation. The entire contents of the pit were removed and examined, the contaminants were identified, and hazardous, radioactive, and solid wastes were disposed in a manner appropriate to regulatory requirements. As indicated above, Site 78 is proposed for NFA based on the results of the VCM.

The investigation of Site 18 revealed limited chemical contamination for which a VCM is planned. Site 18 exhibited elevated levels of polychlorinated biphenyls (PCBs) in an area approximately 10 feet by 80 feet. The contamination is believed to be restricted to the upper few inches of soil; shallow excavation (scraping the soil) is proposed to remediate the hazard posed by the PCBs. The results of the VCM at Site 18 will be documented in an NFA proposal, and the adequacy of the cleanup will be evaluated in a Class 3 permit modification process.

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ACRONYMS AND ABBREVIATIONS

AIP	Agreement in Principle
AMSL	above mean sea level
ASTM	American Society for Testing and Materials
CA	Corrective Action
CEARP	Comprehensive Environmental Assessment and Response Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CMS	corrective measures study
Cn	critical number
COC	constituent of concern
CWL	Chemical Waste Landfill
DCP	direct current plasma
DNT	dinitrotoluene
DOE	U.S. Department of Energy
DOE/AL	U.S. Department of Energy/Albuquerque Operations Office
DOT	U.S. Department of Transportation
DQO	Data Quality Objective
DU	depleted uranium
EA	Environmental Assessment
EDE	effective dose equivalent
EM	electromagnetic
EORC	Environmental Operations Records Center
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ES&H	Environment, Safety, and Health
FID	flame ionization detector
FOP	Field Operating Procedure
GC	gas chromatograph
GC/MS	gas chromatograph/mass spectrometer
GCDP	Gas Cylinder Disposal Pit
GIF	Gamma Irradiation Facility
GIS	Geographic Information System
GJPO	Grand Junction Projects Office (DOE)
GM	Geiger-Müller
GPS	Global Positioning System
HASP	Health and Safety Plan
HE	high explosive
HERMES	High-Energy Radiation Megavolt Electron Source
HPCA	High Pressure Container Access
HPGE	high purity germanium

HSWA	Hazardous and Solid Waste Amendment
HWMF	Hazardous Waste Management Facility
ICM	interim corrective measure
ICP	inductively coupled plasma
ID	inner diameter
IH	industrial hygiene
KAFB	Kirtland Air Force Base
KAO	Kirtland Area Office
LCS	laboratory control sample
LIHE	light-initiated high explosive
LLW	low-level waste
LWDS	Liquid Waste Disposal System
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MDA	minimum detectable activity
MDL	method detection limit
ms/msd	matrix spike/matrix spike duplicate
MSA	Mine Safety Appliances
MSD	mass selective detector
MSDS	Material Safety Data Sheet
MWL	Mixed Waste Landfill
NA	not applicable
ND	nondetect
NFA	No Further Action
NIST	National Institute of Standards and Testing
NMED	New Mexico Environment Department
NMUSTR	New Mexico Underground Storage Tank Regulations
NRC	Nuclear Regulatory Commission
OD	outer diameter
OP	Operating Procedure
OSI	on-site investigation
OVA	organic vapor analyzer
PA	preliminary assessment
PCB	polychlorinated biphenyl
PCE	tetrachloroethene (tetrachloroethylene or perchloroethylene)
PIC	pressurized ionization chamber
PID	photoionization detector
PIP	Project Implementation Plan
PLQ	practical limit of quantitation
PPE	personal protective equipment
PVC	polyvinyl chloride

QA	quality assurance
QC	quality control
QAP	Quality Assurance Program
QAPjP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RMMA	Radioactive Materials Management Area
SAP	Sampling and Analysis Plan
SASN	silver acetylyde-silver nitrate
SI	site investigation
SMO	Sample Management Office
SNL/NM	Sandia National Laboratories/New Mexico
SVOC	semivolatile organic compound
SWHC	Site-Wide Hydrogeologic Characterization
SWMU	Solid Waste Management Unit
TA	Technical Area
TAL	target analyte list
TCA	trichloroethane
TCE	trichloroethene (trichloroethylene)
TCLP	Toxicity Characteristic Leaching Procedure
TD/GC	thermal desorption/gas chromatography
TNT	trinitrotoluene
TPH	total petroleum hydrocarbon
TU-CAMU	temporary unit and corrective action management unit
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
UST	underground storage tank
UTL	upper tolerance limit
VCM	Voluntary Corrective Measure
VOC	volatile organic compound
WRS	Wilcoxon Rank Sum
XRF	X-ray fluorescence

ABBREVIATIONS

Ag	silver
Am-241	americium-241
As	arsenic
Ba	barium
Be	beryllium

Bldg	Building
bgs	below ground surface
°C	degrees Celsius
Cd	cadmium
cm	centimeter(s)
C_n	critical number
Co-60	cobalt-60
cpm	counts per minute
cps	counts per second
Cr	chromium
Cs-137	cesium-137
Cu	copper
°F	degrees Fahrenheit
ft	foot (or feet)
ft^2	square feet
ft^3	cubic feet
g	gram(s)
gal.	gallon(s)
hr	hour(s)
in.	inch(es)
kg	kilogram(s)
km	kilometer(s)
L	liter(s)
lb	pound(s)
MBK	2-hexanone
MEK	2-butanone
MIBK	methyl isobutyl ketone
m	meter(s)
m^2	square meter(s)
mg	milligram(s)
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
µg	microgram
µg/kg	microgram(s) per kilogram
µR/hr	microroentgens per hour
mrem/yr	millirem per year
mi	mile(s)
min	minute(s)
mL	milliliter(s)
mm	millimeter(s)
mph	miles per hour

NaI	sodium iodide
Ni	nickel
Pb	lead
pCi/L	picocuries per liter
pCi/g	picocuries per gram
ppb	parts per billion
ppm	parts per million
psig	pounds per square inch, gauge
Se	selenium
sec	second(s)
Th	thorium
U	uranium
U_{tot}	total uranium
yd	yard(s)
yd^3	cubic yard(s)
yr	year
Zn	zinc

Approximate Conversion Factors for Selected SI (Metric) Units

Multiply SI (Metric) Unit	By	To Obtain U.S. Customary Unit
Cubic meters (m^3)	35.3	Cubic feet (ft^3)
Cubic meters (m^3)	1.31	Cubic yards (yd^3)
Centimeters (cm)	0.394	Inches (in.)
Meters (m)	3.28	Feet (ft)
Kilometers (km)	0.621	Miles (mi)
Square kilometers (km^2)	0.386	Square miles (mi^2)
Hectares (ha)	2.47	Acres
Liters (L)	0.264	Gallons (gal.)
Grams (g)	0.035	Ounces (oz)
Kilograms (kg)	2.2	Pounds (lb)
Micrograms per kilogram (μg/kg)	1	Parts per billion (ppb)
Milligrams per kilogram (mg/kg)	1	Parts per million (ppm)
Micrograms per liter (μg/L)	1 (approximately)	Parts per billion (ppb)
Milligrams per liter (mg/L)	1 (approximately)	Parts per million (ppm)
Celsius (^oC)	9/5 + 32	Fahrenheit (^oF)

Mass-to-mass ratio based on aqueous solutions.

1.0 INTRODUCTION

1.1 Site Background

The Sandia National Laboratories/New Mexico (SNL/NM) Environmental Restoration (ER) Project is chartered with the assessment and cleanup of inactive waste sites at its facilities. This document presents the results of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) of the SNL/NM sites within Technical Areas III and V (TA-III/V). The sites were identified during a preliminary assessment/site investigation (PA/SI) (DOE 1987) as potential areas of concern or as solid waste management units (SWMUs) as a result of past practices in TA-III/V. Detailed descriptions of these sites are found in the TA-III/V RFI Work Plan (SNL/NM 1993a, 1993b). The purpose of the RFI was to determine the presence or absence of contamination at each of the TA-III/V ER sites.

Sandia Corporation, a subsidiary of Lockheed Martin Corporation, operates SNL/NM as a prime contractor to the U.S. Department of Energy (DOE), which owns SNL/NM. SNL/NM conducts research, development, design, and testing of nuclear and conventional weapons, energy systems, and other programs. Figure 1-1 identifies SNL/NM and its technical areas in relation to Kirtland Air Force Base (KAFB) and the city of Albuquerque, and several surrounding physical features. TA-III/V were established in 1953 for testing weapons components in a variety of natural and simulated environments. TA-III/V are located approximately 6 kilometers (km) south of the main laboratories and offices known as Technical Area I (TA-I) (Figure 1-1).

1.2 RFI Work Plan Overview and Objectives

This RFI has been conducted in accordance with the U.S. Environmental Protection Agency (EPA)-approved TA-III/V RFI Work Plan (SNL/NM 1993a) and its amendment (SNL/NM 1993b). A total of 19 sites in TA-III/V were originally identified as requiring investigation. Varying levels of investigation were conducted at all sites originally identified in the RFI Work Plan. Table 1-1 provides a summary of the sites, their status, and the field investigations conducted at each site and Figure 1-2 shows the location of each site.

Sites were classified as active and inactive, based on use at the time of this RFI. Both active and inactive sites were investigated but full investigation and remediation of active sites was postponed until facility decommissioning. Two sites that were originally grouped together in the Work Plan were subdivided based on physical separation and difference in historical activities: Site 18 was divided into Site 18 (Concrete Pad) and Site 241 (Storage Yard); Site 83 was divided into Site 83 (Long Sled Track) and Site 240 (Short Sled Track).

The objectives of the RFI were to identify the nature and extent of contamination at sites within TA-III/V, evaluate potential risks posed by the contamination, and provide guidance for selecting remedial alternatives. The objective of this RFI report is to document and transmit this information to all stakeholders, including SNL/NM, the DOE, the EPA, the New Mexico Environment Department (NMED), and the general public.

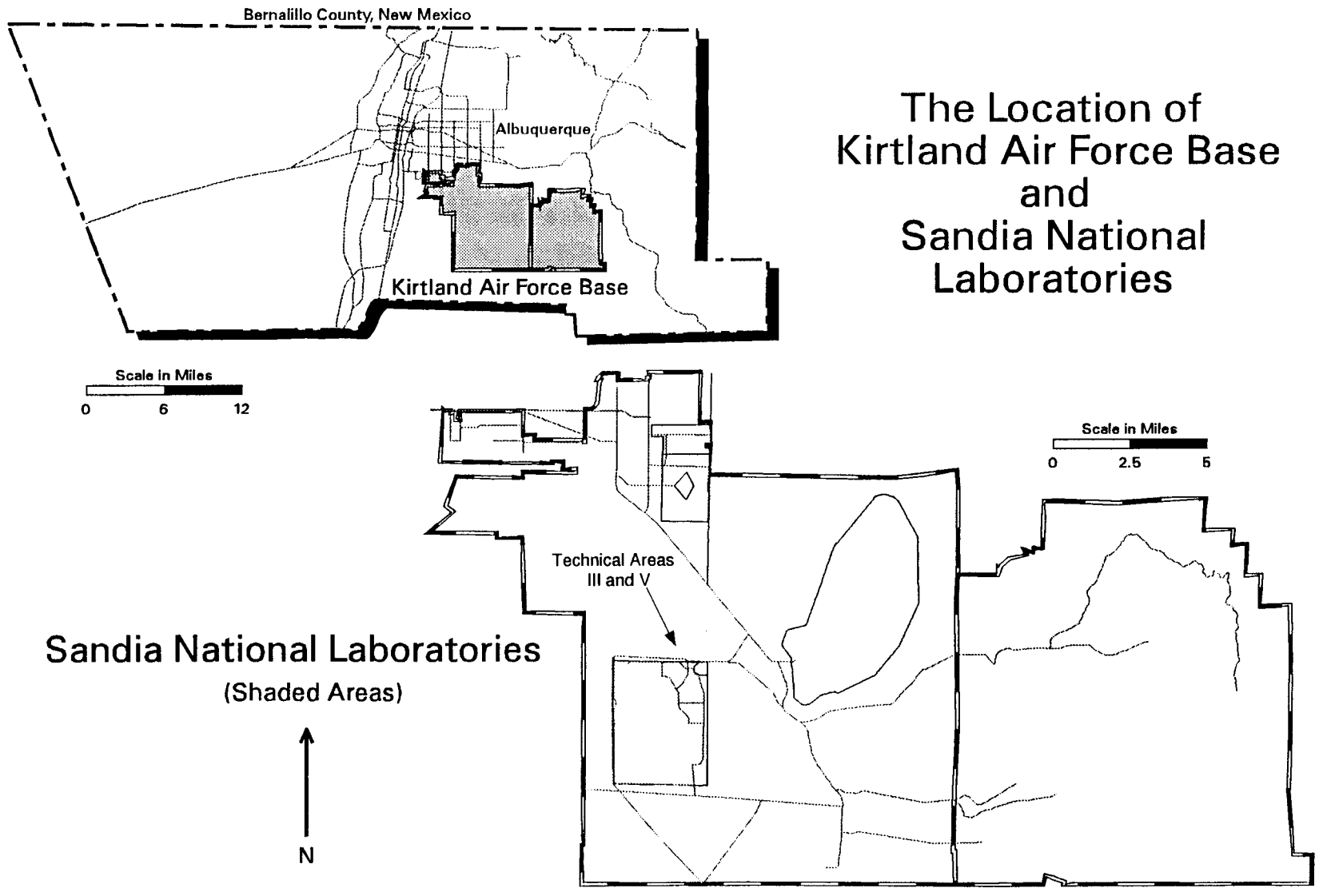


Figure 1-1 Location of Technical Areas III and V at Sandia National Laboratories, Albuquerque

Table 1-1
Summary of Environmental Restoration Sites Within Technical Areas III and V

Site Number	Site Name	Location	Areal Extent	Potential Contaminants[a]/ Detected During RFI?	Period of Operation (Status)	Sampling Method and Date	Total Samples	Field Screen Samples	Off-Site Analyses	Notes[b]
18	Concrete Pad	Central TA-III; South of Short Sled Track.	125 ft by 400 ft	Metals/Yes Radionuclides/Yes HEs/No Oil/Yes PCBs/Yes	1979 - present (Active).	Phase I: Surface, 04/27/94.	43	43	12	Rad. VCM completed. Extent of contamination defined for metals, PCBs, and TPH.
						Phase II: Auger, 01/24/95.	13	13	9	VCM planned.
26	Burial Site	West TA-III; West of Long Sled Track.	145 acres	Metals/NA[c] Radionuclides/Yes	Prior to 1989 (Inactive). Co-located with active Long Sled Track.	NA	NA	NA	NA	Geophysics done; found potential burials. These to be investigated with Site 83. Proposed for NFA.
31	Transformer Oil Spill	Central TA-III; Centrifuge Facility.	20 ft by 20 ft	Oil/No PCBs/No	1971 - present (Active).	Surface, 03/29/94.	11	3	11	No COCs above background. Proposed for NFA.
34	Centrifuge Oil Spill	Central TA-III; Centrifuge Facility.	90-ft diameter	Oil/No	1955 - present (Active).	Shallow subsurface, 05/20/95.	18	18	10	No COCs above background. Proposed for NFA.
35	Vibration Facility Oil Spill	Central TA-III.	20 ft by 50 ft	Oil/Yes PCBs/No	1955 - present (Active).	Phase I: Surface, 04/15/94.	4	0	4	Extent of oil defined. Proposed for NFA.
						Phase II: Shallow subsurface, 06/29/94.	13	13	4	

[a]Contaminants as follows: HEs = high explosives; PCBs = polychlorinated biphenyls; VOCs = volatile organic compounds.
[b]VCM = Voluntary Corrective Measure; TPH = Total petroleum hydrocarbons; NFA = No Further Action; COC = constituent of concern.
[c]NA = Not applicable. These sites were not sampled during the RCRA Facility Investigation (RFI); see Notes column.

Table 1-1
Summary of Environmental Restoration Sites Within Technical Areas III and V (Continued)

Site Number	Site Name	Location	Areal Extent	Potential Contaminants[a]/ Detected During RFI?	Period of Operation (Status)	Sampling Method and Date	Total Samples	Field Screen Samples	Off-Site Analyses	Notes[b]
36	HERMES Oil Spill	Central TA-V; North of Bldg 6596.	1 acre	Oil/Yes VOCs/Yes	1968 - 1989 (Inactive).	Phase I: Shallow subsurface, 07/6/94.	28	28	11	No oil detected in shallow subsurface. Defined extent of oil and VOCs. Proposed for NFA.
						Phase II: Drilling, 03/10/95.	40	40	36	
37	PROTO Oil Spill	Central TA-V; East of Bldg 6597.	1 acre	Oil/No	1978 - 1989 (Inactive).	Auger, 06/9/94.	23	23	8	No COCs above background. Proposed for NFA.
51	Bldg 6924 Pad, Tank, Pit	Southeast TA-III; Northwest of Site 241.	1/2 acre	Metals/Yes HEs/No VOCs/No	1963 - 1990 (Inactive).	Excavation, 09/6/94.	5	4	5	No COCs above background. Proposed for NFA.
78	Gas Cylinder Disposal Pit	Southeast TA-III; East of Chemical Waste Landfill.	80 ft by 180 ft	Toxic, corrosive, reactive, and flammable gases/Yes Radionuclides/Yes Metals/Yes HEs/Yes	1963 - 1984 (Inactive).	Phase I: Excavation - Radioactive.	94	386	91	Health and safety and geophysics surveys. Began VCM 07/94; finished 02/95.
						Phase I: Excavation - Chemical.	94	37	186	Detected chromium, thorium, gases, and reactive chemicals.
						Phase II: Gas analyses.	97	0	97	
						Phase II: Reactive chemicals.	32	32	0	No off-site analysis of reactive chemicals was feasible.
						Phase III: Confirmatory shallow subsurface.	20	0	20	No COCs above background during Phase III. Proposed for NFA.

[a]Contaminants as follows: HEs = high explosives; PCBs = polychlorinated biphenyls; VOCs = volatile organic compounds.
[b]VCM = Voluntary Corrective Measure; TPH = Total petroleum hydrocarbons; NFA = No Further Action; COC = constituent of concern.
[c]NA = Not applicable. These sites were not sampled during the RCRA Facility Investigation (RFI); see Notes column.

Table 1-1
Summary of Environmental Restoration Sites Within Technical Areas III and V (Continued)

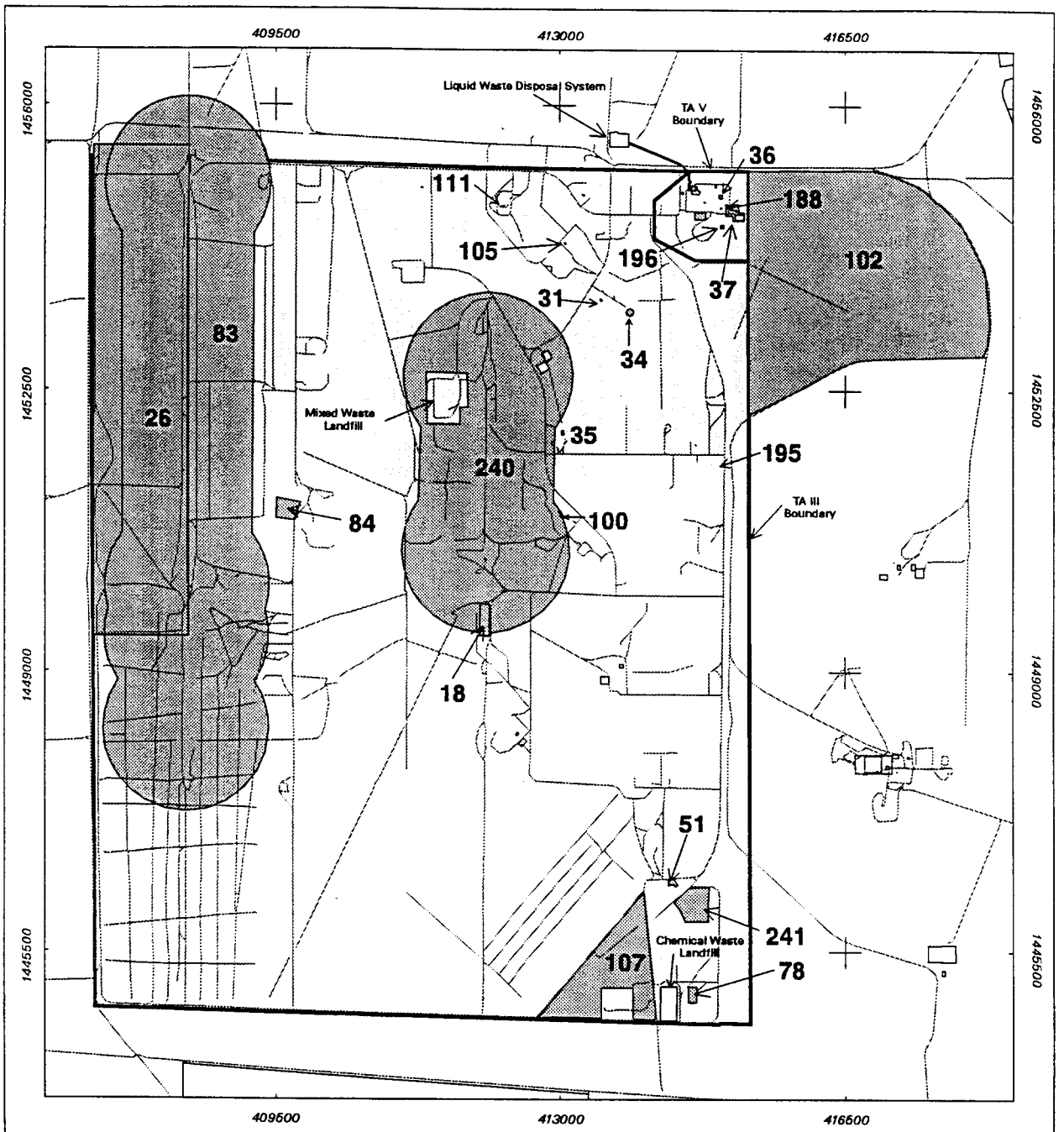
Site Number	Site Name	Location	Areal Extent	Potential Contaminants[a]/ Detected During RFI?	Period of Operation (Status)	Sampling Method and Date	Total Samples	Field Screen Samples	Off-Site Analyses	Notes[b]
83	Long Sled Track	West TA-III boundary.	350 acres	Metals/NA[c] HEs/NA Radionuclides/Yes	1966 - present (Active).	Surface, 04/15/94.	6	0	6	Minor surface sampling done. Rad. VCM completed. Full RFI when site deemed inactive.
84	Gun Facilities	West-central TA-III; East of Long Sled Track.	2 acres	Metals/NA HEs/NA Radionuclides/Yes	1965 - present (Active).	NA	NA	NA	NA	Rad. VCM completed. Full RFI when site deemed inactive.
100	Bldg 6620 Drain/Sump	Central TA-III, immediately southeast of Short Sled Track.	25 ft by 60 ft	Metals/NA HEs/NA	1958 - unknown (Inactive).	Exploratory trenching, 07/25/94.	0	0	0	Site not located during RFI. Proposed for NFA.
102	Radioactive Disposal Area	East of TA-V.	155 acres	Radionuclides/No	Unknown - 1967 (Inactive).	Excavation, 07/25/94.	3	0	3	Rad. survey done. No COCs above background. Proposed for NFA.
105	Mercury Spill at Bldg 6536	North-central TA-III.	20 ft by 20 ft	Mercury/NA	1972 - 1985 (Inactive).	Document search.	NA	NA	NA	Administrative NFA approved July 1995.
107	Explosives Test Area	Southeast TA-III; West of Chemical Waste Landfill.	25 acres	Metals/No HEs/No Nitrate and nitrite/No Radionuclides/No	1953 - 1972 (Inactive).	Surface, 05/17/94.	11	11	11	No COCs above background. Proposed for NFA. Future site of TU-CAMU.

[a]Contaminants as follows: HEs = high explosives; PCBs = polychlorinated biphenyls; VOCs = volatile organic compounds.
[b]VCM = Voluntary Corrective Measure; TPH = Total petroleum hydrocarbons; NFA = No Further Action; COC = constituent of concern.
[c]NA = Not applicable. These sites were not sampled during the RCRA Facility Investigation (RFI); see Notes column.

Table 1-1
Summary of Environmental Restoration Sites Within Technical Areas III and V (Concluded)

Site Number	Site Name	Location	Areal Extent	Potential Contaminants[a]/ Detected During RFI?	Period of Operation (Status)	Sampling Method and Date	Total Samples	Field Screen Samples	Off-Site Analyses	Notes[b]
111	Bldg 6715 Sump/Drain	North-central TA-III.	20 ft by 20 ft	Silver/No HEs/No VOCs/No	1971 - 1988 (Inactive).	Shallow subsurface, 06/17/94.	10	9	4	No COCs above background. Proposed for NFA.
188	Bldg 6597 Aboveground Spill Contain.	TA-V; co-located with Site 37.	15 ft by 25 ft	Used oil/NA[c]	1983 - 1986 (?) (Inactive).	Aerial photographs; confirmatory sampling.	37	22	22	Administrative NFA approved July 1995 - water tanks.
195	Experimental Test Pit	East-central TA-III.	6 ft by 6 ft	Cobalt-60/NA	1955 - 1956 (Inactive).	Document search.	NA	NA	NA	Administrative NFA approved July 1995.
196	TA-V Cistern	South TA-V; West of Bldg 6597.	25-ft diameter	Metals/Yes Oil/Yes VOCs/No	Unknown - 1989 (Inactive).	Phase I: Sludge sampling, 06/27/94 and 10/10/94.	4	3	1	Defined extent of metals in soil. No VOCs or PCBs. Proposed for NFA.
						Phase II: Excavation, 05/95.	2	0	2	
						Phase III: Auger, 06/5/95.	26	26	3	
240	Short Sled Track	Central TA-III.	160 acres	Metals/Yes HEs/No Radionuclides/Yes	1951 - 1966 (Inactive).	Surface, 06/13/94 and 06/22/94.	201	40	40	Rad. VCM completed. Detected rad. and lead.
241	Storage Yard	Southeast TA-III, North of Site 78.	3 acres	Metals/Yes HEs/No Radionuclides/No	1953 - 1994 (Inactive).	Surface, 05/24/94.	29	29	16	Defined extent of lead. Proposed for NFA.

[a]Contaminants as follows: HEs = high explosives; PCBs = polychlorinated biphenyls; VOCs = volatile organic compounds.
[b]VCM = Voluntary Corrective Measure; TPH = Total petroleum hydrocarbons; NFA = No Further Action; COC = constituent of concern.
[c]NA = Not applicable. Thzese sites were not sampled during the RCRA Facility Investigation (RFI); see Notes column.



Legend

- TA-III/V ER Sites
- Technical Area Boundary
- Roads

Buildings, Elevation Contours and Drainages not shown.

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 1-2
ER Sites within
Technical Areas III/V

0 1000 2000
Scale in Feet

0 240 480
Scale in Meters

Unclassified

FINAL

1:24000

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

cheberl SNL GIS ORG. 7512 04/08/96 MAPID=950910

This RFI report consists of an executive summary, an introduction, a discussion of the Sampling and Analysis Program, descriptions of investigations conducted at individual sites, Voluntary Corrective Measures (VCMs) conducted at several sites, a summary and conclusion, a list of references, and supporting documentation in several appendices.

1.3 Facility Setting

SNL/NM consists of 2,820 acres of research laboratories and office facilities entirely contained within the 52,223-acre confines of KAFB (Figure 1-1). KAFB is bounded on the north and northwest by the city of Albuquerque, on the east by the Cibola National Forest, on the south by the Isleta Indian Reservation, and on the west by land owned by the State of New Mexico, the KAFB buffer zones, and the Albuquerque International Airport. Cibola National Forest access is controlled by the U.S. Forest Service (USFS) and is restricted within the buffer zones on the southwest corner of the base and within the Isleta Indian Reservation.

KAFB is located on a high, arid mesa (mean elevation of 5,350 feet [ft]) approximately 5 miles (mi) east of the Rio Grande. The mesa is cut by Tijeras Arroyo, which runs east-west and ultimately drains into the Rio Grande. The east side of KAFB is bounded by the southern end of the Sandia Mountains and the Manzanita Mountains. Most of the area is relatively flat, although the eastern portions of KAFB and SNL/NM extend into the Manzanita Mountains where some of the terrain is precipitous, rough, and cut by numerous arroyos (ERDA 1977).

1.4 Climate

The climate for SNL/NM is typical of high altitude, dry continental climates with a normal daily winter temperature range of 23 degrees Fahrenheit (°F) to 52°F and a normal daily summer temperature range of 57°F to 91°F (Bonzon et al. 1974). The average annual precipitation for the Albuquerque area is 8.54 inches (in.), and most rain occurs in the summer months (Williams 1986). Wind speeds seldom exceed 32 miles per hour (mph) but strong east winds, often accompanied by blowing dust, can occur (Bonzon et al. 1974).

1.5 Geology

The Albuquerque-Belen structural basin is one of the largest north- to south-trending basins in the Rio Grande Rift. The basin is a compound graben measuring 90 mi long and 30 mi wide, bordered by uplifted fault blocks to the east and west (Bjorklund and Maxwell 1961). The eastern boundary is marked by the Sandia, Manzanita, and Manzano mountains. The western side of the basin is bounded by the Lucero uplift, with the Ladron Mountains to the south and minor physiographic relief on the northwest side of the basin.

During the Miocene and Pliocene epochs, erosion from the surrounding highlands filled the Albuquerque Basin with up to 10,000 ft of sediments. This sequence of sediments is called the Santa Fe Group and consists of debris flows and channel, floodplain, and aeolian deposits; the Santa Fe Group thins toward the edges of the basin and is truncated by the bounding uplifts. The Santa Fe Group sediments are

interbedded with Tertiary and Quaternary basalts and pyroclastics, and are overlain in places by the Pliocene-age Ortiz gravel deposits and Rio Grande fluvial deposits (Bjorklund and Maxwell 1961).

1.6 Soil Characteristics

According to the Bernalillo County Soil Survey (USDA 1977), soils in TA-III/V consist of the Tijeras Series. The Tijeras Series is a deep, well-drained soil formed in decomposed granitic alluvium on old alluvial fans. The surface layer is a 4-in.-thick, brown, gravelly, sandy loam. The subsoil consists of 15 in. of brown, sandy loam, with some accumulation of calcium carbonate in the lower part. Below 19 in. is a pale brown, very gravelly, loamy sand extending to a depth of 5 ft. The gravel is angular and derived from granite (USDA 1977).

The Tijeras Series is a level to gently sloping soil (0 to 5 percent) subject to moderate runoff and water erosion. Permeability is moderate, with an available water capacity of 0.10 to 0.16 in. This soil is moderately alkaline and the effective rooting depth is 5 ft deep or more (USDA 1977).

1.7 Hydrogeology

The Rio Grande flows in a southerly direction and is the primary surface drainage feature in the Albuquerque-Belen Basin. In the basin, the ground-water system is controlled by the Rio Grande and its floodplain, tributary inflow, mountain front runoff, and recharge.

The principal aquifer in the area occurs in the unconsolidated and semiconsolidated sands, gravels, silts, and clays of the Santa Fe Group. The aquifer is generally unconfined, although semiconfined conditions may exist locally because of discontinuous, lenticular silt and clay-rich deposits.

Beneath KAFB, the regional aquifer generally flows toward the Rio Grande at an average gradient of approximately 10 ft/mi; however, local perturbations in the water table exist near municipal wells and as a result of lithologic and structural controls. Prior to extensive development of the regional aquifer by the city of Albuquerque and KAFB, the predominant ground-water flow direction in the SNL/NM KAFB area was west-southwest (Bjorklund and Maxwell 1961); however, pumping by the city of Albuquerque and KAFB has substantially affected the natural ground-water flow regime (Reeder et al. 1967; Kues 1987). The production wells have a substantial effect on the hydraulic gradient in the area, creating a depression in the potentiometric surface in the northern portion of KAFB. U.S. Geological Survey (USGS) projections indicate that, by the end of the century, the water table in the Albuquerque area will drop an estimated 30 to 50 ft from 1989 levels (Reeder et al. 1967).

Major structural controls on the local flow regime are in the form of a complex assemblage of faults along the margin of the basin. These fault systems include the Manzano, Hubbell Springs, Sandia, and Tijeras faults, all of which are expressed within a zone 1.5 mi east of TA-V. The specific impact of local faulting on ground-water flow is largely unknown; however, the Tijeras and Hubbell Springs faults may control ground-water movement. It has been postulated that travertine deposition (precipitation of calcium carbonate from solution in ground water) within fault fractures has reduced permeabilities such that the faults act as barriers to ground-water movement. Springs have been observed along the fault alignments, and there is a shallow water table east of the faults. The primary regional aquifer, the valley

fill, underlies KAFB west of the Hubbell Springs fault at a depth of 400 to 600 ft and east of the fault at a depth of 50 to 150 ft (DOE 1987).

The primary source of ground water in the TA-III/V area is the unconsolidated and semiconsolidated sedimentary deposits of the basin-fill aquifer. A relatively thick unsaturated zone of approximately 460 ft overlies the Santa Fe Group deposits. The basin-fill aquifer underlying TA-III/V is recharged primarily by inflow from the mountain areas to the east. Recharge resulting from direct infiltration of precipitation is inferred to be minor because of high surface coverage, high evaporation, low precipitation, and an extensive vadose zone.

Based on water levels measured in monitoring wells near the Liquid Waste Disposal System (LWDS) in TA-V and near the Chemical Waste Landfill (CWL) and MWL in TA-III, the depth to ground water is approximately 480 to 490 ft below ground surface (bgs) in TA-III/V. Water levels measured in all wells in TA-III indicate the general ground-water flow direction is west-northwest.

2.0 SAMPLING AND ANALYSIS PROGRAM

The sampling and analysis program for the sites in TA-III/V followed standard EPA procedures for sample collection (EPA 1987a), quality assurance/quality control (QA/QC) protocols (EPA 1987b, 1980), and statistical analysis (EPA 1992a). Each of these is discussed in the following sections.

2.1 Field Methods

Field investigations at the ER sites within TA-III/V followed phased approaches according to those proposed in the RFI Work Plan (SNL/NM 1993a, 1993b), except at six sites. Field conditions dictated that methods other than those specified in the Work Plan be used at Sites 34, 36, 78, 102, 111, and 196. Deviations from the Work Plan are noted in the individual descriptions of site activities (Sections 6.0, 8.0, 11.0, 15.0, 18.0, and 21.0).

The methods of investigation used during the TA-III/V RFI included the following:

- Aerial photograph analysis and ground-truthing;
- Nonintrusive geophysical investigations;
- Radiological surveying and scrap/debris removal;
- Surface soil sampling;
- Shallow subsurface soil sampling and deep subsurface soil sampling; and
- Trenching and excavation.

Protocols for sampling and analysis at SNL/NM followed the methodologies in the ER Project Quality Assurance Project Plan (QAPjP) and Operating Procedures (OPs) developed specifically for the ER Project. A complete list of OPs used during this project is provided in Table 2-1. Although much of the field work was done before the formal issuance of the SNL/NM ER OPs, activities were conducted in accordance with generally accepted practices and professional experience and judgment (i.e., American Society for Testing and Materials [ASTM] procedures, best engineering practices, and draft OPs), which ultimately formed the basis of the final OPs. All work was conducted following the requirements of site-specific Health and Safety Plans (HASPs), which are available for review in the Environmental Operations Records Center (EORC).

The following activities were conducted at the sites noted:

- Aerial photographic interpretation—all sites;

- Geophysical surveys—Sites 26, 78, and 84;

- Radiation surveys and associated removal of radioactive anomalies—Sites 18, 83, 84, 102, 240, and 241;

Table 2-1
Sandia National Laboratories/New Mexico Environmental Restoration Project Operating Procedures Applicable to Technical Areas III and V RFI Work

Operating Procedure (OP) Number	Title
AOP 94-40	ER Project Site Posting and Security
FOP 94-01	Safety Meetings, Inspections, and Pre-Entry Briefings
FOP 94-05	Borehole Lithologic Logging
FOP 94-22	Deep Soil Gas Sampling
FOP 94-23	Hand Auger and Thin-Wall Tube Sampler
FOP 94-25	Documentation of Field Activities
FOP 94-26	General Equipment Decontamination
FOP 94-27	Thin-Walled Tube Sampling of Soils
FOP 94-28	Health and Safety Monitoring of Organic Vapors (Flame Ionization Detector [FID] and Photoionization Detector [PID])
FOP 94-30	Health and Safety Monitoring of Combustible Gas Levels
FOP 94-34	Field Sample Management and Custody
FOP 94-38	Drilling Methods and Drill Site Management
FOP 94-39	Excavating Methods
FOP 94-40	Test Pit Logging, Mapping, and Sampling
FOP 94-52	Spade and Scoop Method for Collection of Soil Samples
FOP 94-57	Decontaminating Drilling and Other Field Equipment
FOP 94-68	Field Change Control
FOP 94-69	Personnel Decontamination (Level D, C & B Protection)
FOP 94-71	Land Surveying
FOP 94-78	Environmental Restoration Project Waste Management and Characterization Procedure
FOP 94-81	Establishment and Management of Less-Than-90-Day Accumulation Areas for Environmental Restoration Project Sites
FOP 95-23	Shallow Subsurface Drilling and Soil Sampling Using Mechanized Hydraulic Augers or the Geoprobe® Soil Core Sampler

Source: SNL/NM (1995a).

- Sampling of surface soils—Sites 18, 31, 35, 78, 107, 240, and 241;
- Subsurface sampling using augers, a hydraulic probe, or a full-size drill rig—Sites 18, 34, 35, 36, 37, 78, and 111;
- Trenching, excavation, and other cleaning—Sites 51, 78, 100, 102, 196, and 241; and
- Voluntary removal actions or cleanups (excluding the radiological removals)—Site 78.

Further investigation of Sites 26, 83, 84, and 240 (active sites) will be postponed until site decommissioning in the future. Site 26 is proposed in this RFI report (Section 4.0) to be combined with Site 83 for future investigation. No schedule for decommissioning or corrective action at these sites has been identified at this time.

Two VCMs were conducted during the course of the RFI. One was performed to survey and remove radiological constituents at the six sites listed above; details of this VCM are provided in Section 24.0. The second was performed at Site 78 to remove gas cylinders and mitigate health and safety hazards; the details of this VCM are provided in Section 11.0.

Subsurface and ground-water investigations conducted at the neighboring LWDS in TA-V are detailed in the RFI report submitted for that site in September 1995 (SNL/NM 1995b). Because no ground-water investigations were conducted during the TA-III/V RFI, the LWDS RFI report should be consulted for information on this subject. Reports on the ongoing investigation at the CWL in TA-III also should be consulted for ground-water information.

2.1.1 Aerial Photograph Analysis and Ground-Truthing

An examination of aerial photographs was conducted to locate possible additional ER sites within TA-III/V and to gather supplemental data on existing sites. Aerial photographs from 1973 to 1990 were assembled and digitized using an Arc/Info Geographic Information System (GIS) and were used to produce a set of year-specific overlays. A base photographic image was combined with the year-specific overlays to illustrate the changes in surface features over time (Plate I). All of the sites were evaluated within 1,000 ft of the site boundaries (unless noted otherwise) for signs of soil disturbance, vegetation changes, or new construction. Surface features were grouped into eight categories including cleared or disturbed surface, concrete pad, landfill, pile, possible excavation, tank/concrete target, trench, and unknown. An attempt was made to further subcategorize features, but no additional or valuable information was revealed.

After the aerial photograph interpretation was completed, ground-truthing (field verification) was performed to determine whether the interpretations were valid. Field personnel inspected the suspect areas for evidence of potential site impacts; e.g., cleared or disturbed surfaces were located to within 10 ft of the area seen on the photographs and were examined for signs of burning, scraping, or blading for road or facility construction, and were validated as such. In a few instances, revegetation and cultural activities did not permit the unequivocal verification of features identified in early photographs. Site-specific discussions of the aerial photograph interpretation are included in each site section.

2.1.2 Nonintrusive Geophysical Investigations

Nonintrusive electromagnetic (EM) conductivity (metal detection) and vertical-gradient magnetometer surveys were conducted at ER Sites 26, 78, and 84 to locate any potential subsurface objects. The sites were gridded to detect objects of a certain size and are listed below.

- Site 26, Northern Portion—Locate and map any objects equivalent to or larger than two 55-gallon (gal.) drums buried at a depth of 5 ft.
- Site 26, Southern Portion—Locate and map any objects equivalent to or larger than one 55-gal. drum buried at a depth of 5 ft.
- Site 78—Locate and map subsurface concentrations of metal, particularly cylinders with dimensions of 12 in. by 2 in.
- Site 84—Locate major fragments of depleted uranium (DU), lead, and metallic materials larger than 3 in. by 3 in. buried to a depth of 1.5 ft; and significant burials equivalent to a 5-gal. bucket buried to a depth of 3 ft.

Wooden stakes and plastic pin flags were used to delineate the traverse spacings. Electromagnetic data were gathered using a Geonics Ltd.™ EM-61 high-precision metal detector; magnetic data were gathered using a Geometrics™ G-856-AX proton precession magnetometer deployed in the vertical mode. A brief description of each follows.

The EM-61 generates EM pulses by passing a current through a 1-square-meter (m^2) coil. These pulses penetrate the subsurface and briefly induce secondary EM fields; soil has relatively low conductivity, and the secondary fields dissipate rapidly. Buried metallic objects have essentially infinite conductivity when compared to soil, and their secondary fields persist much longer. The EM-61 measures the strength of the secondary fields during the "off time" between the primary pulses. The measurement is delayed until the response from the soil has dissipated and only the response of buried metal is present. The secondary EM fields are measured by a 1-m^2 main sensor which is coincident with the transmitter coil, and by a second focusing coil positioned 40 centimeters (cm) above the main coil. Each sensor coil measures the secondary field strength during a time period between the primary pulses. Two sensor coils are used to allow differentiation between shallow objects and deeper objects. The EM-61 was deployed in the trailer mode, towed on wheels behind the operator, with data acquisition triggered by the wheel approximately every 20 cm.

The G-856-AX consists of two magnetic sensors mounted on the same vertical staff separated by a known distance. The instrument generates a pulse and registers the difference in time for the return magnetic pulse to be recorded by the top and bottom sensors. This difference is then converted to a standard reading. The G-856-AX was held vertically, and moved along the traverse manually, from grid node to grid node. Data acquisition was performed manually or programmed to be collected at regular intervals (every few seconds [sec]).

2.1.3 Surface Radiological Survey and Scrap/Debris Removal

Nonintrusive surface radiological surveys were performed at 64 sites at SNL/NM including six sites within TA-III/V, as part of a coordinated facility-wide assessment and removal VCM. Surveys were conducted in a manual sweep pattern using a line of five to six 2-in. by 2-in. sodium iodide (NaI) detectors optimized to detect DU. Gridded areas were surveyed by technicians in straight traverses, each covering a 6-ft-wide swath.

A list of radioactive anomalies (both point and area sources) at each site was compiled. After the surveys were complete, all the point sources and the majority of the area sources were removed by hand and placed in a container. Subsequent to the removal action, soil samples were collected to confirm effective cleanup. Brief discussions of results are included in the individual site sections, and a more detailed description of the radiological surveys conducted at the sites within TA-III/V that were suspected of exhibiting radioactive soil contamination is provided in Section 24.0.

2.1.4 Surface Soil Sampling

Surface soil samples were collected from a depth of 0 to 1 ft bgs using a stainless-steel trowel and bowl. All sampling equipment was cleaned between samples using dry decontamination methods (i.e., paper towels, brushing, etc.) where possible or rinsed with distilled water. Sample location coordinates are provided in Appendix A.

2.1.5 Shallow Subsurface Soil Sampling

Shallow subsurface soil sampling was accomplished using either hand or power augers or a small-diameter hydraulic probe. Discussions of these techniques follow.

Auger Sampling
Augering using a hand bucket or power auger and thin-walled stainless-steel samplers was generally performed at sites where sampling depth was a maximum of 10 ft bgs. Soil augering was performed to a predetermined depth approximately 6 in. above the level to be sampled, and the bucket auger was extracted. Loose soil was removed, and a separate sampling auger was used to collect the sample. All augering and sampling equipment was cleaned between sample locations using dry decontamination methods where possible or rinsed with distilled water.

Small-Diameter Boring
At sites where augering techniques would not attain the desired depths (generally greater than 10 ft bgs), a vehicle-mounted, hydraulically powered soil probing machine that uses static force and a percussion hammer was utilized to advance small-diameter sampling tools into the subsurface to collect soil samples to 30 ft bgs. The unit used was manufactured by Geoprobe™. The probe produced no drill cuttings and obtained samples through probe holes of 1 to 1.5 in. diameter with typical penetration rates of 1 to 2 ft per minute.

Small quantities of soil were obtained by driving the probe to a predetermined depth, disengaging an expendable drive point at the target depth and pulling back 3 to 6 in. on the probe rods, and then redriving the hollow rods. The end of the rod was filled with soil cut from the wall of the hole.

2.1.6 Deep Subsurface Sampling

Drilling was conducted at Site 36 using an air rotary casing hammer rig to drill to depths of greater than 300 ft bgs. A more detailed discussion of the drilling and sampling procedures used at the site is included with the Site 36 activity description in Section 8.0.

2.1.7 Excavation and Trenching

Excavation, trenching, and cleanouts were accomplished using a backhoe, trackhoe, clamshell, or front-end loader at several sites. Details of the excavations and cleanouts are provided in the individual site sections for Sites 51, 78, 100, 102, 196, and 241.

2.2 Field Screening and On-Site Laboratory Analysis Methods

Where feasible, field screening was conducted on approximately 100 percent of the collected soil samples from all sites investigated in TA-III/V. At least 20 percent of these were submitted for confirmatory analysis at an EPA-approved Contract Laboratory Program (CLP) laboratory (Section 2.3). The field screening data for each site are included in Appendix B. Discussions of the following field-screening methods used during the RFI are included in subsequent sections:

- Photoionization detection (PID) and flame ionization detection (FID) of volatile organic compounds (VOCs);
- Soil vapor detection of VOCs;
- Thermal desorption detection of mineral oil;
- Immunoassay detection of polychlorinated biphenyls (PCBs) and high explosives (HEs);
- X-ray fluorescence (XRF) analysis of metals;
- Direct current plasma (DCP) and inductively coupled plasma (ICP) analysis of metals; and
- Gamma spectroscopic analysis of radionuclides.

2.2.1 Photoionization Detection and Flame Ionization Detection of Volatile Organic Compounds

Screening for VOCs in the field was generally accomplished using hand-held PIDs and FIDs. The units used were manufactured by HNU and Foxboro. Soil samples were placed in a glass jar, sealed, agitated, and warmed to allow volatile constituents to develop in the headspace of the jar. The PID or FID sample probe was placed in the headspace, where a sample of vapor was drawn into a chamber, ionized, and interpreted by the instrument. The low sample rate allowed for only very localized readings. Monitoring for health and safety levels was also performed during drilling activities at 5-ft intervals downhole, as well as in the breathing zone. Where elevated organic vapor levels were encountered, monitoring was

performed continuously in the breathing zone. The instrument calibrations and readings were recorded in the field logbook.

2.2.2 Soil Vapor Analysis

Soil samples were collected for on-site analysis of soil vapor for the presence of VOCs during drilling activities at Site 36 and were immediately transported to the TA-III ER Field Laboratory for analysis. Soil vapors were collected by polyethylene tubing connected to a glass bulb using a pump under vacuum.

Soil vapor analyses were conducted by purging a 500-milliliter (mL) gas bulb for 20 minutes (min) with helium onto a trap and desorbing the trap onto a gas chromatograph equipped with a mass selective detector (MSD). Purging the entire contents of the sample bulb allowed attainment of lower detection levels for the sensitive soil vapor analysis. All analyses were performed on an HP 5972 MSD with an HP 5890 Series II plus gas chromatograph. EPA Methods 8240/8260 (EPA 1986) procedures were used for calibration and quantitation. The target analyte list (TAL) for EPA Method 8240 was used. For heavily contaminated soils, a smaller aliquot of gas was subsampled from the 500-mL bulb.

2.2.3 Thermal Desorption/Gas Chromatography

SNL/NM ER personnel conducted an investigation of available technologies to locate an alternative heavy-end total petroleum hydrocarbon (TPH) field-screening technique that was more reliable than the Hanby Method. Neither the Hanby Method nor field screening using immunoassay kits was effective because neither is sensitive to the nonaromatic High Energy Radiation Megavolt Electron Source (HERMES) transformer oil (discussed below). As a response to these ineffective screening methods, SNL/NM developed a technique that employs thermal desorption/gas chromatography (TD/GC) to rapidly quantify non-PCB-containing transformer oil in soil.

The transformer oil used at the HERMES-II facility is primarily a mixture of aliphatic and alicyclic hydrocarbons, and contains no significant quantities of EPA-regulated hazardous constituents as manufactured (e.g., PCBs or VOCs). Indeed, any appreciable amount of VOCs in the dielectric oil would have significantly altered the insulating properties of the oil. The boiling point for the mineral oil ranges from approximately 120 degrees Celsius (°C) to 365°C; its relatively low volatility makes it undetectable by real-time field monitoring instruments such as PIDs and FIDs, which rely on volatilization of contaminants at ambient conditions.

TD/GC has been used to characterize fuel-contaminated soils (i.e., those containing volatile and/or semivolatile constituents) and soils containing PCBs (Goldsmith 1994). The technique utilizes the direct injection of organic contaminants from soil onto a GC column, avoiding the use of environmentally harmful solvents. The method detection limit (MDL) is 10 milligrams per kilogram (mg/kg). The low MDL is a result of direct sample analysis without the potential dilution problems associated with sample preparation. Method sensitivity is also enhanced by analysis of the soil sample within hours of field collection, which minimizes potential storage loss and cross-contamination.

TD/GC analyses for mineral oil were performed using an SRI Model 8610 GC equipped with a TD oven and a manual sampling valve. The system was equipped with an FID that was used for the detection and quantitation of the oil after it had passed through the TD/GC sequence. An aliquot of soil

(approximately 1.0 gram [g]) was placed in the desorption chamber for 1 min at 325°C to vaporize organic constituents. The vapors were then swept onto the GC column for separation. A relatively nonpolar megabore capillary column (J&W Scientific, DB-5, 8 ft by 0.53 millimeter [mm]) was used for constituent separation and quantitation. A five-point calibration curve was generated by spiking clean sand with a mixture of HERMES oil in toluene (10 to 500 mg/kg). The curve was linear with a correlation coefficient of $r^2 = 0.998$. TPH in soil was quantified by "pattern recognition" using the total area under the distinctive mineral oil chromatogram. An external standard (dodecane) was added to determine sample matrix interference and injection efficacy. QA samples included replicate analyses for every 10 samples and a mid-range calibration check standard prior to daily sample analyses, after every 20 samples, or at the end of a 12-hour (hr) period.

2.2.4 Immunoassay Tests for Polychlorinated Biphenyls and High Explosives

Immunoassay tests for chemical constituents are based on the antibody response of mammalian immune systems to the introduction of chemical contaminants. To produce the desired antibodies in the kit, predetermined concentrations of specific chemicals are introduced into a test animal, causing the animal's immune system to produce antibodies to that chemical. Antibodies are extracted, separated, purified, and encapsulated for test kits. The antibodies in the test kits respond to varying concentrations of chemical compounds by giving varying responses. The test kits for PCBs and HEs, both manufactured by EnSys Inc., are discussed below.

PCBs

The protocol for PCB test kits conforms to SW-4020, immunoassay-based field screening for PCBs in soil. Detection limits range from 400 microgram per kilogram (µg/kg) for Aroclors 1254 and 1260 (prevalent Aroclors in dielectric fluids at SNL/NM) to 1, 2, 4, and 4 mg/kg for Aroclors 1248, 1242, 1016, and 1232, respectively. The test is specific to PCBs and has no anticipated interferences. The field test is positively biased for PCBs. Rigorous testing against lab-GC SW-8080 (prior to commercial availability of the test kit) resulted in false negatives in less than 1 percent of field tests performed. When testing samples, the method requires standard replicate analysis with each environmental sample analyzed; the relative standard deviation must be within ±20 percent, or the sample analysis will be repeated.

HEs

The field test kit for HE conforms to proposed SW-8515 for field screening for trinitrotoluene (TNT) in soil and can detect TNT, dinitrotoluene (DNT) isomers, and trinitrobenzene at concentrations of approximately 1 mg/kg in soil as measured by colorimetric reaction. The test is positively biased for HEs. Prior to commercialization of the test kit, false negatives were identified by SW-8515 in less than one percent of the field samples.

2.2.5 X-Ray Fluorescence

XRF was conducted using a Spectrace® 6000 Spectrometer. XRF is a whole-rock quantitation method for analyzing concentrations of elemental metals in environmental samples. Characteristic X-ray spectra are emitted when a specimen is irradiated with a beam of sufficiently short wavelength X-radiation. Standard reference materials of the National Institute of Standards and Testing (NIST) are used to verify the accuracy of the calibration. XRF can analyze metals with detection limits of 10 to 60 mg/kg. XRF is

a nondestructive method for analyzing environmental samples and generates no waste; samples are dried and ground prior to analysis. XRF was used during sampling activities as a field-screening tool for metals to direct the sampling for off-site laboratory analyses.

2.2.6 Direct Current Plasma/Inductively-Coupled Plasma

DCP and ICP elemental analyses for metals concentrations were conducted in accordance with SW-6010A using a Leeman PS 1000 sequential ICP. Soil samples were prepared by microwave-assisted acid digestion (EPA Methods 3051 and 6010 QA requirements). An aerosolized sample is introduced into a plasma of argon gas, producing characteristic spectra.

2.2.7 Mercury Analysis

Soil samples were analyzed for mercury content following EPA SW-7471A, "Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)" (EPA 1994). The instruments used were a Leeman AP200 Automated Mercury Preparation System and a Leeman PS200 Automated Mercury Analyzer. A 0.1-g aliquot of soil was used for sample preparation and analysis. The practical limit of quantitation (PLQ) was 0.3 μg/kg.

2.2.8 Gamma Spectroscopy

All soil samples collected from areas suspected to be impacted by radioactive compounds were screened for radiological constituents using gamma spectroscopy. In some instances, these screens were mandatory to allow samples to be shipped to an off-site laboratory for chemical analysis. In other cases, the only analysis of the samples was the gamma spectroscopy.

Soil samples were collected in 500-mL Marinelli beakers, sealed, swiped, and counted in the field for loose, surface, radioactive contamination. Upon completion of the field check, the samples were transported to the SNL/NM 7715 laboratory for fixed gamma spectroscopic analysis.

The equipment used by the SNL/NM 7715 laboratory consists of a Canberra high purity germanium (HPGE) detector shielded by 4 in. of lead lined with cadmium and copper sheets. Twelve samples in Marinelli beakers can be run unattended using an autosampler. A typical sample is counted for 600 sec. Peaks generated during the gamma spectroscopy are matched against a user-defined library to identify individual radionuclides. Laboratory control sample (LCS) analyses are performed for americium-241, cesium-137, and cobalt-60 with identical analytical methods to monitor routine sample analysis data usability.

2.3 Off-Site Laboratory Chemical Analyses

Off-site laboratory analyses for constituents of concern (COCs) from each site were conducted in accordance with the EPA-approved protocols listed in SW-846 (EPA 1986). The COCs, field-screening techniques, laboratory analysis methods, and the corresponding method numbers are listed in Table 2-2. The data are provided in electronic format in Appendix C.

Table 2-2
Field Screening and Laboratory Analyses for Constituents of Concern[a]

Constituent of Concern	Field-Screening Techniques	On-Site Laboratory Analysis Methods	Off-Site Laboratory Analysis Methods	EPA Method Number
Metals	NA[a]	X-ray Fluorescence/ Directly Coupled Plasma	Inductively Coupled Plasma/Atomic Absorption	6010/7000
Volatile Organic Compounds (VOCs)	Photoionization Detector/ Flame Ionization Detector	Gas Chromatography/ Mass Spectrometry	Gas Chromatography/ Mass Spectrometry/ Toxicity Characteristic Leaching Procedure	8240 1311
Total Petroleum Hydrocarbons (TPH)	NA	Thermal Desorption/Gas Chromatography	Infrared	418.1
High Explosives (HEs)	Colorimetry	High-Performance Liquid Chromatography	High-Performance Liquid Chromatography	8330
Polychlorinated Biphenyls (PCBs)	Immunoassay	NA	Gas Chromatography	8080
Nitrates/Nitrites	NA	Colorimetry	Colorimetry	353.2
Radionuclides	G-M Pancake Probe/Sodium Iodide (NaI) Scintillometer	Gamma Spectroscopy	Gamma Spectroscopy/ Isotopic Analyses	6010

Source: EPA 1986.
[a]NA = Not applicable.

2.4 Summary of Quality Assurance/Quality Control Activities

As part of the sampling activities conducted in support of the RFI, a plan for QA/QC was developed to ensure that sampling procedures and laboratory analyses were performed to a rigid standard. The following QA/QC soil and water samples were collected to assure sampling procedure integrity and laboratory quality:

- Field Blank—Water poured directly from a freshly opened bottle of distilled water into laboratory-prepared sample bottles to determine whether any field conditions affected sample collection.

- Trip Blank—Laboratory-prepared water sample for analysis of VOCs to determine whether any VOCs were inadvertently introduced during sampling or shipment.

- Equipment Blank—Water sample prepared in the field after decontaminating equipment to determine whether any contaminants were introduced from improperly cleaned equipment.

- Duplicate—Soil sample split from an original field sample to determine reproducibility of laboratory analytical results.

- Matrix Spike/Matrix Spike Duplicate—Soil sample split from an original field sample to determine effects of matrix (e.g., soil) on laboratory results (i.e., whether any interference occurred); sample is spiked with a known concentration of a reference chemical, then analyzed to ascertain recovery of that chemical.

Results of the QA/QC program indicated very few problems with the collection of the data. Some general trends in laboratory QC were noted. The off-site laboratory used for the chemical analyses has consistently shown levels of VOCs (primarily acetone and methylene chloride) in their method blanks; however, this mainly impacted the data collected for Site 36, where elevated levels of several VOCs were noted (see Section 8.0). Independent analyses conducted by the on-site SNL/NM laboratory confirmed the presence of contamination in the samples, however, so the impact of laboratory contamination is somewhat lessened.

Some elevated levels of VOCs were noted in some soil trip blanks submitted for Site 78. Preparation of the soil trip blanks involved collection of soil from an area known to be uncontaminated, followed by heating of the sample to drive off any potential VOCs, which effectively removed any moisture that might have been in the sample. It is believed that, because the sample was dehydrated, when it reached the laboratory, the ambient humidity and vapor-phase VOCs typical of many laboratories (i.e., those VOCs commonly used for sample preparation [acetone, methylene chloride, toluene, etc.]) caused rapid adsorption of the laboratory chemicals onto the soil matrix, producing erroneous results. The process for preparing soil blanks on-site is currently under review, because it does not appear to be a useful tool in its present form, given the problems cited above. Regardless of the results of the trip blanks for Site 78, no elevated VOCs were noted in the soil samples collected for confirmatory analyses.

The same laboratory exhibited low concentrations of lead in their blanks, affecting the data for the rinsate and field blanks from Sites 18 and 107, but at concentrations too low to account for the concentrations detected above the statistical background levels for Site 18.

Matrix spike/matrix spike duplicate (ms/msd) data indicated occasional elevated recoveries for some metals (antimony, barium, beryllium, and zinc) that are ubiquitous in the surrounding granite-derived soils. No general problems with the laboratory's recovery were noted, however. The single exception is for the ms/msd data for antimony at Site 241. Because of apparent erroneous recovery data, the sample that had been split for a ms/msd had an anomalously high antimony concentration (29.6 mg/kg). The location (plus two others) was resampled and found to have nondetectable antimony. The results of the QA/QC program are provided in electronic format in Appendix D.

2.5 Statistical Analysis of Background Data

To determine whether the soil sampling results for potentially contaminated sites within TA-III/V indicated the presence of COCs, the results were compared to the samples collected from TA-III and TA-V during the site-wide investigation of background concentrations at SNL/NM (IT 1994a). Thus, a subset of the full site-wide background data set was selected for the TA-III/V evaluation. The COCs for

evaluation (barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, uranium, and zinc) were chosen based on site knowledge and their likelihood of being a site contaminant within TA-III/V. At the time the statistical tests were completed, no site-wide background data sets existed for other COCs of interest (e.g., antimony, mercury, PCBs, etc.); thus a direct comparison to the applicable site-wide upper tolerance limits (UTLs, discussed below) updated in January 1996 was made for those COCs.

2.5.1 Background Concentration Determinations

To determine the range of background concentrations, the 95th UTL and 95th percentile were calculated for parametric and nonparametric data sets, respectively. The following steps were completed: (1) a priori screening of the data; (2) determination of the percentage of nondetects in the data sets, with a cutoff level of 15 percent; (3) distribution analysis of the portion of the data set that exhibited less than 15 percent nondetects, including coefficients of skewness, histograms, and probability plots; (4) a second screening of the data performed by the calculation of the T_n statistic for parametric data; and finally (5) calculation of the UTL for parametric data sets or the 95th percentile for nonparametric data sets. Each is discussed in the following sections, and example calculations, together with histograms and probability plots, are provided in Appendix E.

A Priori Screening

The a priori test involved a visual inspection of the data to eliminate any outliers. The data values were sorted from highest to lowest to facilitate the inspection. Maximum values that were a factor of three higher than their nearest neighbor were removed from the data set before the next test in the sequence was applied.

Determination of Parametric Versus Nonparametric Data

The data sets were divided into parametric or nonparametric by this process (discussed in the following paragraphs):

- Initial division based on the percentage of nondetect data; and
- Subdivision of the data sets with fewer than 15 percent nondetect values into normal, lognormal, or nonparametric.

First, the percentage of nondetect data in each of the data sets was determined. Raw nondetect data were not equated with "zero" values; rather, they were replaced with a coded value of one-half of the PLQ (EPA 1992a). Those sets with fewer than 15 percent nondetect values were identified as eligible for parametric distribution analysis; those sets with greater than 15 percent nondetect values were identified as eligible for nonparametric analysis. Coded data sets tend to skew the data toward zero and decrease the effectiveness of reporting the mean. Therefore, the median is reported as the measure of central tendency when greater than 15 percent of the data are nondetects (i.e., the data set appears nonparametric).

Distribution analyses then were conducted on the data to determine whether the data were parametric (normal or lognormal) or nonparametric. The distribution analyses included computing the coefficients of skewness and producing the histograms and probability plots for each COC for normal and lognormal (i.e., log transformed) data; the histograms and probability plots for each tested COC are included in Appendix E.

Calculation of T_n Statistic

The T_n statistic test was performed on data determined to be parametric (normal or lognormal) after the distribution analysis was completed to verify that no other statistical outliers existed. The datum was considered an outlier if the T_n statistic exceeded the critical number (C_n) identified in the EPA guidance for a given sample size (EPA 1992a). The test was run iteratively until the largest value in the data set passed. A new mean and standard deviation were calculated for each data set that had outliers removed in the T_n statistic analysis before the test was run again.

Calculation of UTL and 95th Percentile

Basic statistical parameters, including the mean, standard deviation, and UTL, were calculated for each normal or lognormal parametric population data set. The UTL establishes a concentration range that is constructed to contain a specified proportion of the population with a specified confidence. The proportion of the population included is referred to as the coverage, and the probability with which the tolerance interval includes the proportion is referred to as the tolerance coefficient. The EPA-recommended coverage value of 95 percent and tolerance coefficient value of 95 percent were used to calculate the UTLs (EPA 1992a). Most elementary statistical textbooks provide detailed descriptions of basic parametric statistics.

Nonparametric statistics were used when data sets did not exhibit normal or lognormal distributions, or when the percentage of nondetects exceeded 15 percent. The data sets examined exhibited fewer than 90 percent nondetects, so the median (50th percentile) was used to describe central tendency, and the 95th percentile was used for background comparison. Most elementary statistical textbooks provide detailed descriptions of basic nonparametric statistics.

Results

Table 2-3 presents the results of the a priori tests conducted on the data sets. None of the COCs examined were determined a priori to be outliers.

Table 2-4 provides the results of the probability plot, coefficient of skewness, and histogram for determination of the distribution type for each TA-III/V background data set. Background distributions for barium, beryllium, cadmium, copper, lead, nickel, and zinc were lognormal. The data set for silver was nonparametric, and the data set for total uranium (U_{tot}) was normally distributed.

Tests were performed for outliers using the T_n statistic (Table 2-5). Only the nickel data set was censored for the calculation of TA-III/V background values by removing the three highest values for nickel (30.9, 30.0, and 29.5 mg/kg. Three possible reasons for the anomalously high nickel data are noted. Nickel might exhibit a wide natural variation, and this sampling effort happened to access areas that were relatively mineral rich. Alternatively, laboratory error might have produced elevated analytical results. It is also possible that the higher nickel concentrations are anthropogenic, although these higher concentrations are well below the proposed RCRA Subpart S soil action level for nickel (2,000 mg/kg). To be conservative, these values were removed from the data set, and the censored data set was used for all subsequent comparisons for TA-III/V sites.

The natural logs of the means and standard deviations of the TAL metals and their corresponding UTLs or 95th percentiles are provided in Table 2-6. Proposed RCRA Subpart S soil action levels for the COCs detected during the RFI sampling effort are provided in Table 2-7. As stated earlier, only those COCs

Table 2-3
Technical Areas III and V Background Samples - A Priori Sampling

Parameter	Maximum Value	Next Maximum	X Factor[a]	Result
Barium	730	320	2.28	Pass
Beryllium	1.1	1.1	1.00	Pass
Cadmium	8.5	7.7	1.10	Pass
Chromium	58.1	57.3	1.01	Pass
Copper	29	27.5	1.05	Pass
Lead	73	73	1.00	Pass
Nickel	30.9	30	1.03	Pass
Silver	10	9.7	1.03	Pass
Uranium (total)	4.66	4.61	1.01	Pass
Zinc	59.9	56	1.07	Pass

[a]X factor is the ratio of the maximum value to the next maximum. If the ratio is greater than or equal to 3, it indicates the maximum value is anomalously high.

Table 2-4
Results of the Distribution Analysis for Technical Areas III and V

Parameter	Probability Plot	Coefficient of Skewness[a]	Histogram	Distribution Type
Barium	Lognormal	-2.3	Lognormal	Lognormal
Beryllium	Lognormal	-0.30	Lognormal	Lognormal
Cadmium	Lognormal	0.49	Lognormal	Lognormal
Chromium	Lognormal	-1.72	Lognormal	Lognormal
Copper	Lognormal	-0.15	Lognormal	Lognormal
Lead	Lognormal	0.50	Lognormal	Lognormal
Nickel	Lognormal	-0.48	Lognormal	Lognormal
Silver	Nonparametric	-0.59	Nonparametric	Nonparametric
Uranium (total)	Normal	-0.23	Lognormal	Normal
Zinc	Lognormal	0.69	Lognormal	Lognormal

[a]Critical Coefficient of Skewness is -1 to 1.

Table 2-5
Technical Areas III and V T_n Statistic Analysis for Target Analyte List Metals

Parameter	Distribution	Natural Log (Ln) of Maximum Value	Natural Log Mean	Natural Log Standard Deviation	T_n Statistic	Number of Samples	Critical Value[a]	Pass or Fail T_n Statistic
Barium	Lognormal	6.59	3.84	1.13	2.44	503	3.74	Pass
Beryllium	Lognormal	0.10	-1.14	0.43	2.87	331	3.60	Pass
Cadmium	Lognormal	2.14	-0.89	0.99	3.06	176	3.39	Pass
Chromium	Lognormal	4.06	1.86	0.8	2.75	538	3.76	Pass
Copper	Lognormal	3.37	1.82	0.48	3.22	392	3.66	Pass
Lead	Lognormal	4.29	1.89	0.73	3.29	259	3.52	Pass
Nickel (first iteration)	Lognormal	3.43	1.84	0.43	3.70	403	3.67	Fail
Nickel (second iteration)	Lognormal	3.40	1.83	0.42	3.74	402	3.67	Fail
Nickel (third iteration)	Lognormal	3.38	1.83	0.42	3.70	401	3.67	Fail
Nickel (fourth iteration)	Lognormal	3.31	1.83	0.41	3.62	400	3.67	Pass
Silver	Nonparametric	ND[b]	ND	ND	ND	247	ND	ND
Uranium (total)	Normal	4.66[c]	2.05[c]	0.99[c]	2.64	81	3.13	Pass
Zinc	Lognormal	4.09	3.1	0.34	2.89	158	3.36	Pass

[a]One-sided critical values for the upper 5 percent significance level; critical values derived from Table 8 (EPA 1992a) for given number of samples.
[b]ND = Not determined.
[c]Normal maximum values (i.e., actual values) provided for normally distributed uranium.

Table 2-6
Upper Tolerance Limits for Target Analyte List Metals in Technical Areas III and V Soil

Target Analyte List (TAL) Metal	Distribution	Censored?	Natural Log Mean	Natural Log Standard Deviation	Mean	Standard Deviation	One-Sided Tolerance Factor (K)	Natural Log UTL	UTL	Number of Samples
Barium	Lognormal	No	3.84	1.13	NA[a]	NA	1.76	5.83	341.0	503
Beryllium	Lognormal	No	-1.14	0.43	NA	NA	1.79	-0.37	0.7	331
Cadmium	Lognormal	No	-0.89	0.99	NA	NA	1.85	0.94	2.6	176
Chromium	Lognormal	No	1.86	0.8	NA	NA	1.76	3.27	26.2	538
Copper	Lognormal	No	1.82	0.48	NA	NA	1.78	2.67	14.5	392
Lead	Lognormal	No	1.89	0.73	NA	NA	1.81	3.21	24.8	259
Nickel	Lognormal	Yes	1.83	0.4	NA	NA	1.78	4.40	81.3	400
Silver[a]	Nonparametric	NA	NA	NA	NA	NA	NA	NA	NA	247
Uranium (total)	Normal	No	NA	NA	2.05	0.99	1.96	NA	4.0	81
Zinc	Lognormal	No	3.1	0.34	NA	NA	1.86	3.73	41.8	158

[a]NA = Not applicable.
[b]For silver, the 50th percentile value was 1 mg/kg and the 95th percentile value was 4 mg/kg; these describe the central tendency for nonparametrically distributed parameters.

Table 2-7
Generic Proposed Soil Action Levels Under Proposed RCRA Subpart S

Analyte	Proposed RCRA Subpart S Soil Action Level (mg/kg)
1,2-Dichloroethane	8
Acetone	8,000
Aluminum	NA[a]
Antimony	30
Arsenic	20
Barium	6,000
Beryllium	0.2
Bis (2-Ethylhexyl) Phthalate	50
2-Butanone	50,000
Cadmium	80
Calcium	NA
Chromium (VI)	400
Cobalt	NA
Copper	NA
2-Hexanone	NA
Iron	NA
Lead	2,000[b]
Lithium	NA
Magnesium	NA
Manganese	NA
Mercury	20
Nickel	2,000
Nitrate	100,000
Nitrite	8,000
Polychlorinated Biphenyls	0.1
Potassium	NA
Selenium	400
Silver	400
Sodium	NA
Toluene	20,000
Total Petroleum Hydrocarbon	100[c]
Uranium	NA
Vanadium	600
Xylenes (total)	200,000
Zinc	20,000

[a]NA = No proposed RCRA Subpart S soil action level is currently listed for the analyte.
[b]Lead action level not formally promulgated; proposed 2,000 mg/kg (EPA 1996).
[c]Not EPA-regulated. Standard from New Mexico Environmental Improvement Board Underground Storage Tank Regulations (NMEIB/USTR 1990).

for which site-wide background data sets existed (at the time of this RFI) were analyzed for statistical significance. The proposed RCRA Subpart S soil action levels for the remaining COCs are provided for comparison to site sampling data.

2.5.2 Comparison Tests: Background Data Versus Environmental Restoration Site Data

Two nonparametric, two parametric tests, and one test that utilized both parametric and nonparametric analyses were used to compare TA-III/V background data to data from potentially contaminated TA-III/V ER sites (Appendix E). The nonparametric tests included the Wilcoxon Rank Sum (WRS) Test and the Quantile test. The parametric tests included Student's t-tests using assumptions of equal and of unequal variance. The hot-measurement comparison uses either the 95th UTL calculation (for parametric data) or the 95th percentile calculation (in the case of nonparametric data) as recommended by the EPA (EPA 1992a). Nonparametric tests were applied to all soil data; however, parametric tests were not applied to nonparametric data.

The WRS test is performed by ordering all observations from background and the potentially contaminated site according to their magnitude and then assigning a rank from lowest to highest. The ranks in the potentially contaminated area are summed and compared to a table of critical values to determine whether the site is contaminated.

The WRS test is a nonparametric test more powerful than the Quantile test (described below) in determining whether the potentially contaminated area has concentrations uniformly higher than background (EPA 1992a). However, the WRS test allows for fewer less-than measurements than the Quantile test. As a general rule, the WRS test should be avoided if more than 40 percent of the measurements taken at the potentially contaminated area or at background areas are nondetects. All soil analytical data were subjected to the WRS test in this analysis, although the test power was known to be greatly reduced when the nondetect percent was greater than 40.

The Quantile test is performed by separating background data and individual site data. The data are then ordered from highest to lowest. The number of background and individual site data points are calculated. The number of data points for background and the selected potentially contaminated site is then compared to a table that identifies how many of the highest measurements must come from the potentially contaminated site versus background to indicate contamination.

The Quantile test is a nonparametric test that has more power than the WRS test to detect when only a small portion of the remediated site has not been completely cleaned up. Also, the Quantile test can be used even when a fairly large proportion of the measurements is below the limit of detection (EPA 1992a).

The hot-measurement comparison consists of comparing each measurement from the potentially contaminated area with an upper-limit concentration value. This upper-limit concentration value is such that any measurement from the potentially contaminated area that is equal to or greater than this value indicates an area of relatively high concentrations that must be further investigated (EPA 1992a). Concentrations exceeding the upper-limit value may indicate inappropriate sample collection, handling, or analysis procedures, or actual contamination. The upper-limit concentration value was calculated as previously described based on the 95th percentile for nonparametric data and the 95th UTL for parametric data.

The t-test is a parametric test that compares the means of two samples. To use the t-test statistic, both sampled populations must be approximately normally (or lognormally) distributed with approximately equal population variances, and the random samples must be selected independently of each other. The equations and methodology for applying the t-test are explained in most statistics books, including McClave and Dietrich (1982) and Mendenhall (1975).

Results

Comparison tests between background data and the maximum concentrations for TA-III/V site data were performed for metals at Sites 18, 51, 107, 111, 240, and 241 in accordance with the RFI Work Plan (SNL/NM 1993a). In the case of Site 78, a simple comparison of maximum metal concentrations to the TA-III/V background UTLs were made for the samples collected during the confirmatory sampling event. These were the only sites where metals were regarded as suspect contamination. The respective text sections herein contain discussions of the significance of the statistical tests on data for each site and comparisons to the relevant proposed RCRA Subpart S soil action levels (Table 2-7) for each constituent.

2.6 Contaminant Fate and Transport/Risk Assessment

The majority of contaminants detected at sites in TA-III/V were restricted to the upper 2 ft of surface soils. No conclusive evidence has been found that any sites investigated during this RFI have had an impact on the local ground water (at depths of 480 to 500 ft bgs).

For those sites at which contaminants were elevated with respect to background, a comparison was made of each elevated constituent relative to its proposed RCRA Subpart S soil action level. All COCs were at least one to two orders of magnitude below their corresponding action levels, except at Site 18 (which displayed PCBs above the proposed RCRA Subpart S soil action level). As indicated in the individual section for this site, the efficacy of conducting a VCM was evaluated. Three other sites (35, 36, and 196) also exhibited TPH above the New Mexico Underground Storage Tank Regulations (NMUSTR) standard, but each of these is proposed for NFA because TPH is in the form of a nonhazardous mineral oil.

3.0 ER SITE 18: CONCRETE PAD

The Concrete Pad is a 400-ft by 125-ft concrete surface located in central TA-III at the southern end of the Short Sled Track (ER Site 240, Figure 3-1). Constructed in 1979, the pad has been used to store transformers, capacitors, rocket motors, generators, and rocket fuel inhibitors from TA-III activities, primarily sled track experiments. Because of the nature of some sled track activities, equipment might have been contaminated with HE residue, cadmium, chromium, zinc and other metals, and DU; transformers might have leaked oil or PCBs. The field investigation protocols and results are discussed below.

3.1 Field Investigation Protocols

3.1.1 Aerial Photograph Analysis

Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features during successive years at the Concrete Pad. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

3.1.2 Surface Radiation Survey

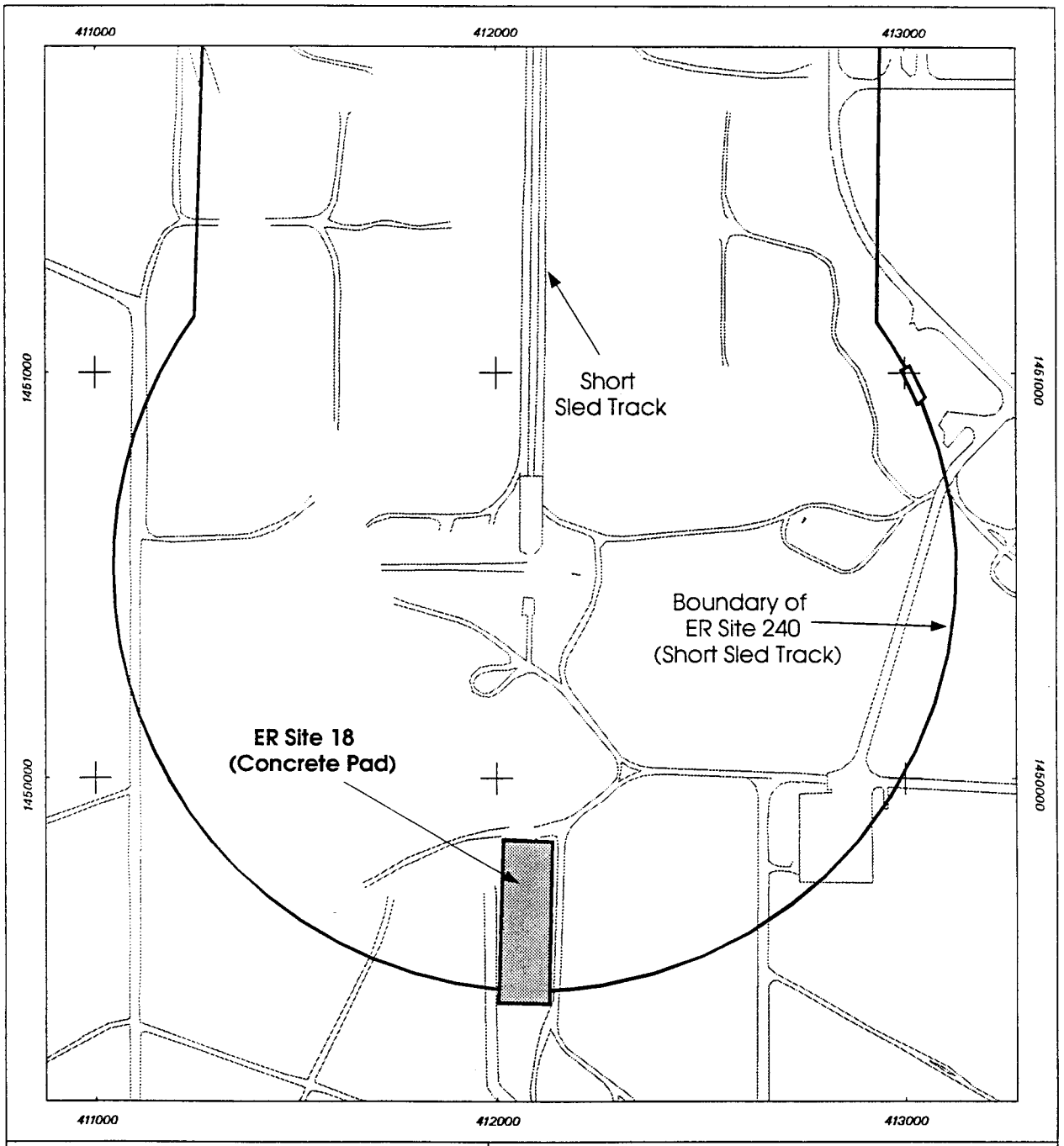
Site 18 was surveyed during March 1994 as part of the ER Project-wide surface radiation survey and removal VCM, which is discussed in greater detail in Section 24.0. The survey consisted of approximately 2 acres and included the Concrete Pad and surrounding flat terrain, which is covered by low grasses and brush. A gamma scan survey was performed on 6-ft centers over the exterior surface area of the site. Field gamma measurements 30 percent higher than background were identified as anomalous radiation sources.

3.1.3 Sampling Strategies

The sampling and analysis plan was modified slightly from the RFI Work Plan (SNL 1993a) to include more samples near equipment and materials identified as possible sources of contamination and near radiation anomalies noted during the surface radiation survey (completed after submittal of the Work Plan). A walkover visual survey was conducted to locate any areas showing evidence of spills, leaks, or staining but no additional sampling locations were identified during the walkover survey. The sampling strategy included initial surface soil sampling events to determine the presence and extent of contamination, and follow-up near-subsurface soil sampling using augers to determine the vertical extent of contamination. In addition, subsequent to the radiological survey, the radioactive anomalies were removed, and confirmatory soil samples were collected.

Surface Soil Sampling

Surface soil sampling was conducted with slight modification from the RFI Work Plan. Samples were collected using a random number selection process based on 5-ft intervals surrounding and adjacent to the perimeter of the Concrete Pad. An additional sample was collected from a surface radiation anomaly



Legend

ER Site 18

Roads

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Figure 3-1
ER Site 18 - Concrete Pad, TA-III

0 200 400
Scale in Feet

0 48 96
Scale in Meters

Unclassified

FINAL

1:4800

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

Mapid=950911 11/14/95 SNL GIS ORG. 7512 cheberl rfi18_31.aml

identified during the radiation survey (Figure 3-2). Surveyed sample location coordinates are provided in Appendix A.

Surface sampling was completed in two phases. Forty-three samples were collected initially from 42 locations (18-SS-01 through -42, Table 3-1) for field screening of metals, PCBs, and HEs (including one field duplicate). The samples were split in the field for PCB and HE analysis by immunoassay field screening and for metals by XRF. Off-site laboratory analysis was performed on soils when field screening results indicated the possible presence of PCBs, HEs, and/or metals.

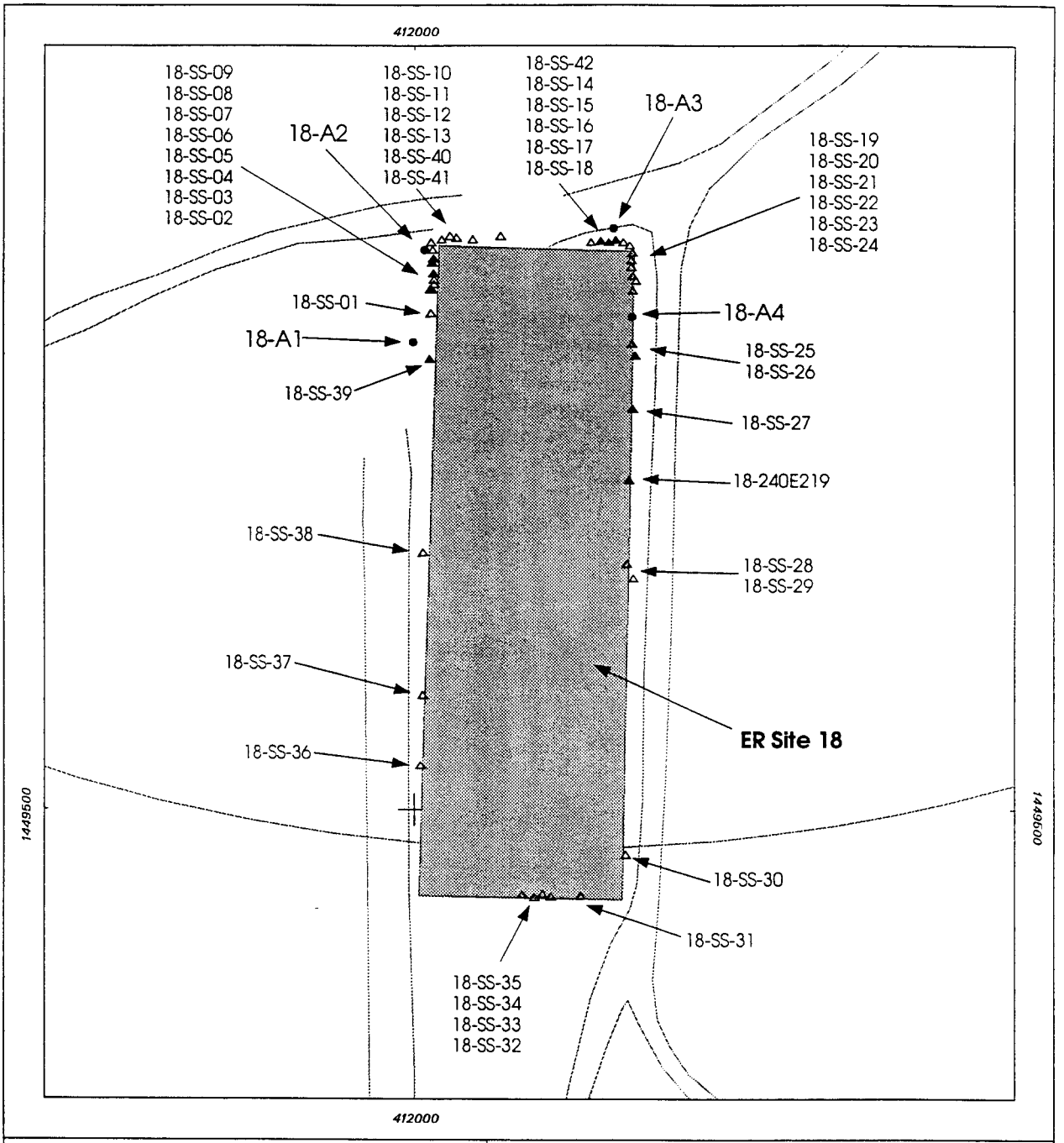
Based on the field screening results, 12 surface soil samples were collected for off-site laboratory analysis (Table 3-1) at 0 to 1 ft depth bgs using a trowel and stainless-steel bowl following appropriate Field Operating Procedures (FOPs) (Table 2-1). Samples were analyzed for TPHs, PCBs, metals, HEs, and gamma spectroscopy in accordance with the EPA methods identified in Table 2-2. In addition, two of these samples were analyzed for isotopic uranium based on the results of the total uranium analyses.

Table 3-1
Summary of Soil Samples Collected at Site 18, Concrete Pad

Phase	Area	Screen Sample IDs	Field Screen Methods	Laboratory Samples	Laboratory Analyses
Surface Sampling	Transformer Leak Area	18-SS-01 through 18-SS-13	PCBs, HEs, and XRF Metals	18-SS-02, -06, -07, and -08	TPH, PCBs, HEs, TAL Metals, and Gamma Spec.
	Locomotive Dismantling Area	18-SS-14 through 18-SS-23	HEs and XRF Metals	18-SS-14, -14D, -15, and -16	TPH, HEs, TAL Metals, and Gamma Spec.
	Site Perimeter	18-SS-24 through 18-SS-43	HEs and XRF Metals	18-SS-26, -27, -39, and 240E219	TPH, HEs, TAL Metals, and Gamma Spec.
Subsurface Sampling	Northwest and Northeast Corners of the Pad	18-A1 through 18-A4	None	18-A1-2, -6; 18-A2-2, -6; 18-A3-2, -6; and 18-A4-2, -6, -6D	TPH, Metals, and Gamma Spec.

Shallow Subsurface Soil Sampling

Subsurface sampling was conducted at four locations (18-A1 through -A4) based on the results of surface sampling (Figure 3-2). Subsurface soil samples were collected at 2-ft intervals to a total depth of 6 ft using a power auger. The samples were analyzed for cadmium, chromium, lead, zinc, and TPH; gamma spectroscopy was performed on two composite soil samples. Samples sent to the laboratory were analyzed in accordance with the EPA methods identified in Table 2-2.



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ER Site 18

Roads

18-SS-01 Field Screened Sample

18-SS-02 Off-Site Lab Sample

18-A1 Soil Boring

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Figure 3-2
Location of Surface Soil Samples and Soil Borings - ER Site 18, TA-III

0 50 100 Scale in Feet

0 12 24 Scale in Meters

Unclassified

FINAL

1:1200

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

cheberl SNL GIS ORG. 7512 04/26/96 MAPID=950913

3.2 Field Investigation Results

The results of the aerial photograph analysis, surface radiation VCM, and two phases of soil sampling (surface and subsurface) are presented in the following sections.

3.2.1 Aerial Photograph Interpretation

Based on review of aerial photographs for Site 18, construction of the Concrete Pad occurred in 1979, and some construction areas or additional storage areas south of the pad were always associated with it (Plate I). The aerial photograph interpretation of Site 18 is listed below in chronological order from 1979 to 1990.

- 1979: An initial disturbance was noted in 1979 when the Concrete Pad first appeared. No evidence of this feature was found in earlier photographs. A cleared or disturbed surface south of the pad was used as a staging area during construction of the Concrete Pad.

- 1982: The Concrete Pad feature remained in the 1982 photograph, but only the southern half of the cleared or disturbed surface associated with it was visible.

- 1983: Only the Concrete Pad feature appeared in the 1983 photograph.

- 1986: The Concrete Pad feature remained in the 1986 photograph, and the full cleared or disturbed surface that first appeared in 1979 reappeared.

- 1990: The same features appeared in the 1990 photograph as in the 1986 photograph, but the shape of the cleared or disturbed surface had changed from a long rectangle to more of an oval.

On-ground examination of the vicinity revealed no new areas of potential impact related to Site 18.

3.2.2 Radiation Survey and Site Screening

The survey identified one anomalous radiation area source that exhibited a count rate in excess of normal background (10 to 11 microroentgens per hour [μR/hr]) for Site 18. The soil area source was removed and disposed (Table 3-2 and Figure 3-3). Figure 3-3 includes those radiation anomalies detected near the Concrete Pad during the overlapping survey of Site 240 (the Short Sled Track).

Confirmatory soil sampling was conducted after the anomaly was removed. Gamma spectroscopic analyses indicated the presence of cobalt-60, at a concentration of 5.82 picocuries per gram (pCi/g). A follow-up gamma spectroscopic analysis of the anomaly was conducted in spring 1996; results indicated a decrease in cobalt-60 activity to 0.9 pCi/g at this location. A preliminary exposure assessment was conducted for the higher activity level (5.82 pCi/g) and is discussed in Section 3.3.

A more detailed discussion of the radiation survey and the voluntary cleanup of radioactive materials at all TA-III/V sites, including Sites 18 and 240, is presented in Section 24.0.

Table 3-2
Area of Gamma Activity at Site 18

Anomaly Type	Quantity	Gamma Radiation Activity (μR/hr)	Description
Soil Area Source	1	17	Located on the eastern edge of the concrete pad; no visible evidence of DU. Removed. Cobalt-60 detected in confirmatory gamma spectroscopic analysis.

3.2.3 Chemical Contamination

Tables 3-3 and 3-4 summarize all constituents detected in concentrations greater than the MDL for the soil samples collected during the surface and subsurface investigations, respectively. Table 3-5 summarizes their relationship to TA-III background. Detailed soil field screening results are provided in Appendix B; soil sampling laboratory analytical results and sampling QA/QC results are provided in electronic format in Appendices C and D, respectively. Figure 3-4 illustrates the distribution of these COCs.

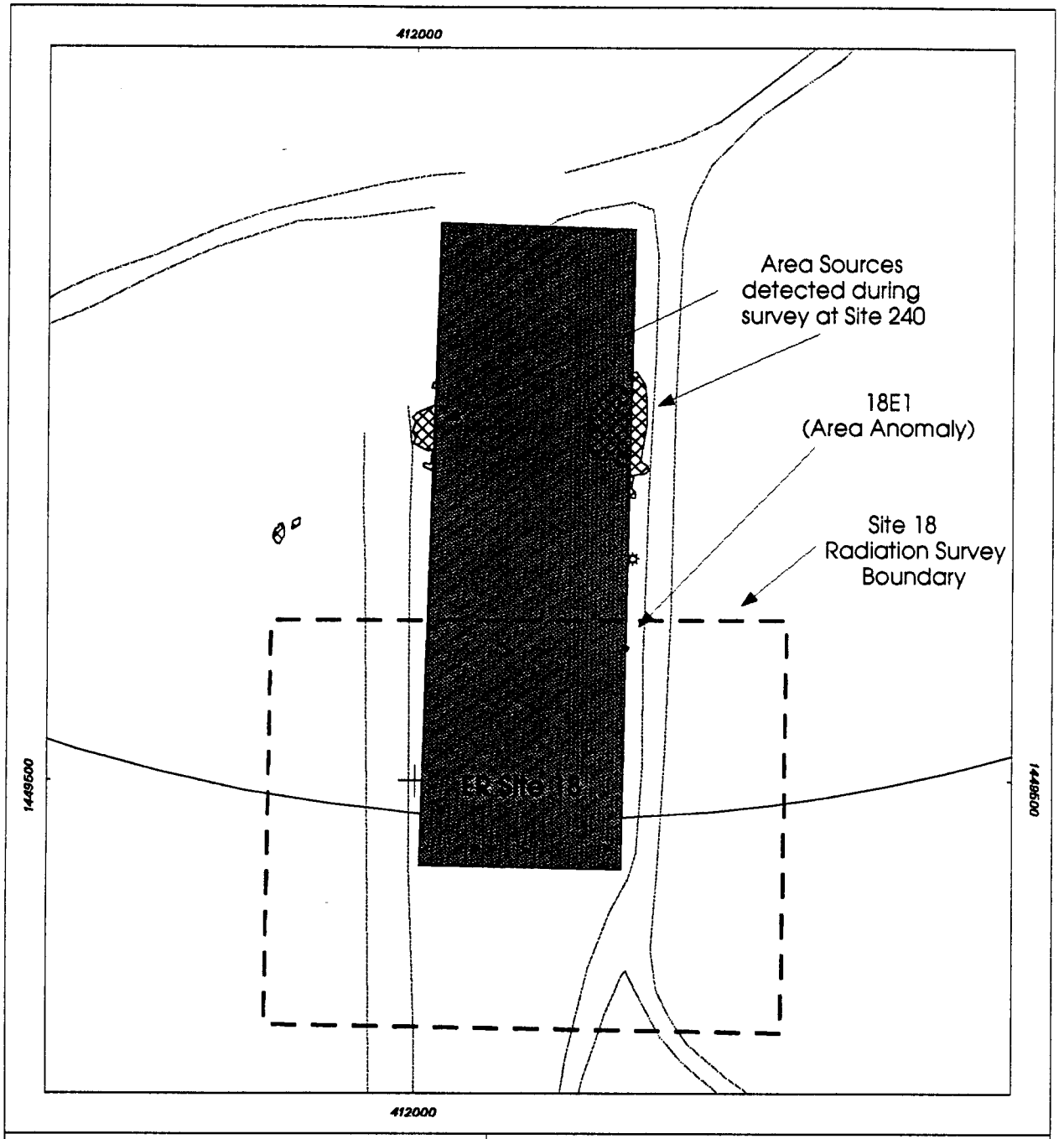
3.2.3.1 Surface Soil

Concentrations of metals at the surface were within background concentrations (Section 2.4), except at two locations where cadmium, copper, lead, and zinc were slightly elevated (Table 3-3). Elevated chromium and nickel were noted only in a single sample (18-SS-08). Uranium concentrations were within background. Equilibrium evaluation of isotopic uranium activities indicated no elevated enriched or DU.

HEs were not detected above their MDLs. Concentrations of all but one PCB were below their MDL; Aroclor-1254 ranged from 0.7 to 36 mg/kg. Only two samples exhibited TPH concentrations above 100 mg/kg (18-SS-26 contained 367 mg/kg TPH; 18-SS-39 contained 2,250 mg/kg TPH). Soil staining was not identified with elevated concentrations of any constituent.

3.2.3.2 Subsurface Soil

Soil samples from four shallow auger holes drilled in the areas having elevated surface constituents were analyzed for contaminant metals and TPH to define the vertical extent of contamination. No cadmium was detected in any of the soil samples. None of the other metals exceeded TA-III background. Concentrations of TPH decreased within the first 2 to 6 ft bgs to less than the New Mexico Underground Storage Tank Regulations (NMUSTR) standard of 100 mg/kg (Table 3-4; Appendix C).



Legend

- ER Site 18
- Roads
- Surface Radiation Anomalies
  - Area Sources
  - Point Sources
- Radiation Survey Boundary

0 50 100
Scale in Feet

0 12 24
Scale in Meters

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Figure 3-3
Location of Surface Radiation Anomalies - ER Site 18, TA-III

Unclassified

FINAL

1:1200

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

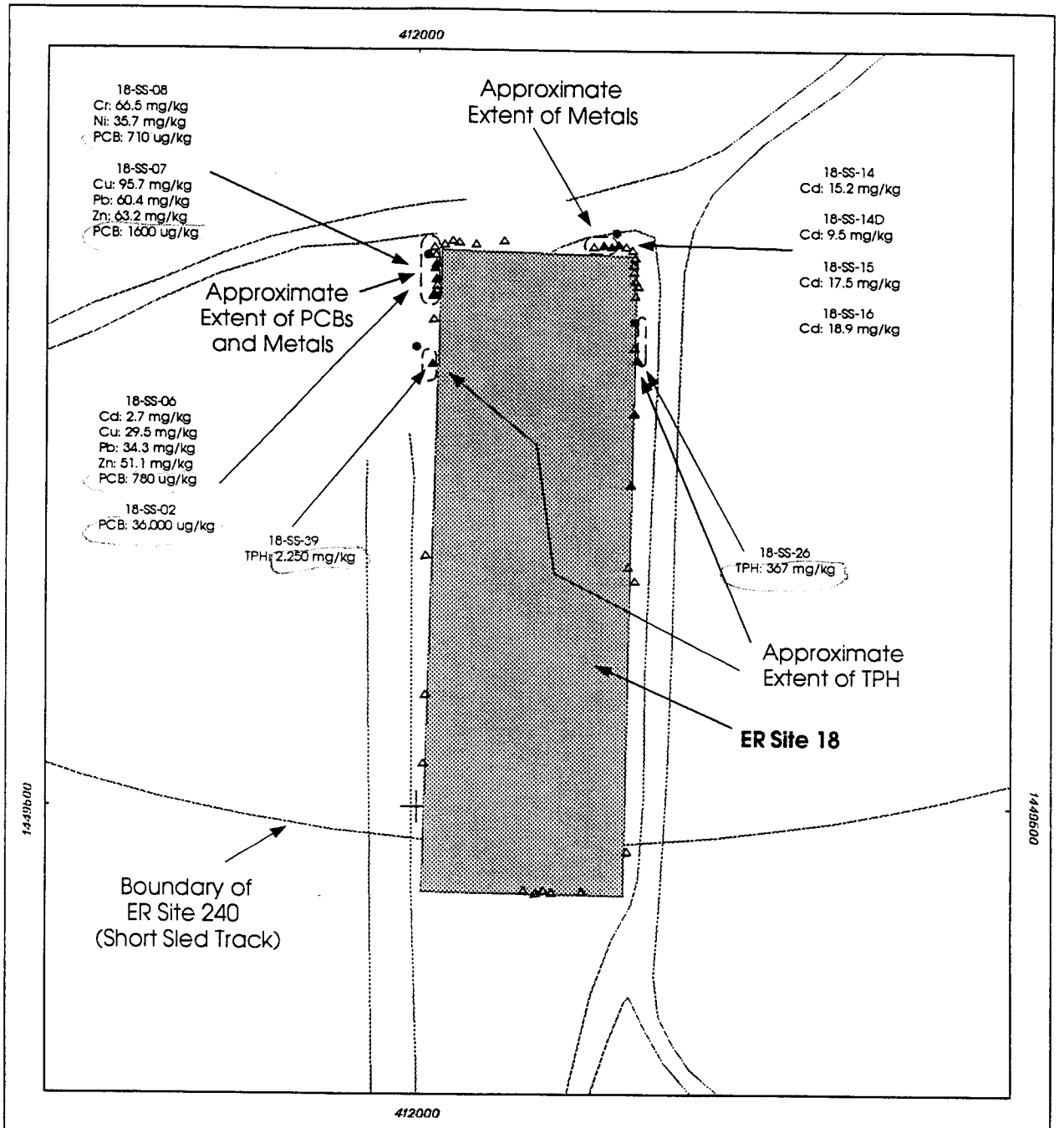
chebarl SNL GIS ORG. 7512 04/15/96 MAPID=950912

Table 3-3
Summary of Detected Constituents of Concern in Site 18 Surface Soils

Analyte	Range (mg/kg)	Detection Limit (mg/kg)	Total Samples	Mean (mg/kg)	Number of Non-Detects	Samples ≤ Mean	Samples > Mean
Aluminum	3,810-7,950	10	12	5,372	0	5	7
Antimony	2.6-8	6	12	5.2	10	5	7
Aroclor-1254	0.71-36	0.33-1.3	4	2.4	0	3	1
Arsenic	2.3-3.2	1	12	2.7	0	5	7
Barium	65-123	1	12	87	0	5	7
Beryllium	0.3-0.7	0.2	12	0.4	0	9	3
Cadmium	0.5-18.9	0.5	12	5.8	4	8	4
Calcium	2,800-46,600	20	12	13,601	0	6	6
Chromium	5.4-66.5	1	12	9.1	0	9	3
Cobalt	2.9-4.1	1	12	3.2	0	8	4
Copper	6.9-95.7	2	12	11.6	0	9	3
Iron	6,440-8,190	10	12	7,161	0	6	6
Lead	6.8-60.4	0.3	12	12.7	0	8	4
Magnesium	1,530-3,160	20	12	2,042	0	5	7
Manganese	120-176	1	12	138	0	7	5
Mercury	0.07-0.11	0.1	12	0.1	11	11	1
Nickel	5.7-35.7	4	12	7.7	0	10	2
Potassium	848-1,920	500	12	1,246	0	6	6
Total Petroleum Hydrocarbon	20-2,250	20	12	41	7	10	2
Uranium, total	0.4-0.9	0.0025	12	0.6	0	6	6
Vanadium	9.3-13.7	1	12	11.5	0	6	6
Zinc	20-70	2	12	31.3	0	7	5

Table 3-4
Summary of Detected Constituents of Concern in Site 18 Subsurface Soils

Analyte	Range (mg/kg)	Detection Limit (mg/kg)	Total Samples	Mean (mg/kg)	Number of Non-Detects	Samples ≤ Mean	Samples > Mean
Chromium	6.4-13.1	1	9	9.0	0	5	4
Copper	3.2-12.7	2	9	5.7	0	5	4
Lead	3.3-5.5	5	9	4.2	6	5	4
Total Petroleum Hydrocarbon	20-697	20	5	60	2	3	2
Zinc	14.4-26.3	2	9	21.1	0	4	5



Legend

ER Site 18

Roads

18-SS-01 **Field Screened Sample**

18-SS-02 **Off-Site Lab Sample**

18-A1 **Soil Boring**

Note: Only those samples with concentrations of metals exceeding the Upper Tolerance Limits (UTLs) are shown.

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Figure 3-4 ER Site 18 Extent of Select Metals, TPH, and PCBs in Surface Soil

0 50 100 Scale in Feet

0 12 24 Scale in Meters

Unclassified

FINAL

1:1200

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

cheberl SNL GIS ORG. 7512 04/26/96 MAPID=950913

3.3 Evaluation of Data

The radiation survey of Site 18 overlapped the survey and cleanup of Site 240 (the Short Sled Track), which exhibited many radiation anomalies around the Concrete Pad. It is likely that the radiation anomalies at Site 18 are directly related to activities at the Short Sled Track, rather than to any activities associated with material storage at the Concrete Pad.

Because several metals are essential nutrients or are geologically prevalent (i.e., the soil-forming Sandia granite naturally contains high concentrations of aluminum, calcium, iron, magnesium, manganese, and potassium), these metals were removed from further consideration. Furthermore, no proposed RCRA Subpart S soil action levels are currently promulgated for any of these constituents.

The statistical evaluation of surface metals indicated that six metals showed elevated maximum soil concentrations when compared to background (Table 3-5). Section 2.5 provides a discussion of background constituents and statistical methods used.

Comparisons of the central tendencies for barium and beryllium to those of the TA-III/V background data set resulted in failures for three of the tests (Table 3-5), indicating that the mean and median for the barium and beryllium sample sets might have exceeded those for the background set. However, the maximum barium and beryllium concentrations are equal to or below the UTLs for the background sets, and both metals pass the Quantile test (which is considered more powerful for detecting discrete contamination), so neither metal is considered a site contaminant. Maximum concentrations of the remaining metals, including cadmium, chromium, copper, lead, nickel, and zinc, were below their respective proposed RCRA Subpart S soil action levels (Table 3-6). The follow-on subsurface soil samples were within background concentrations for selected metals at all depths (2 to 6 ft).

A few metals (arsenic, cobalt, mercury, and vanadium) were compared to the revised site-wide report (IT 1996) because there were no TA-III/V site-wide background data available at the time the statistical analyses were completed; these comparisons are provided in Table 3-7. None of these metals exceeded site-wide UTLs.

Surface concentrations of TPH and Aroclor-1254 (a PCB) were considered to be elevated in the area where transformers were stored. There is no proposed RCRA Subpart S soil action level currently promulgated for TPH; therefore, the NMUSTR standard of 100 mg/kg was used for comparison. Based on correspondence with EPA Region VI personnel in spring 1996, the proposed industrial land-use RCRA Subpart S soil action level for PCBs will be 10 mg/kg, below the highest PCB (Aroclor-1254) concentration of 36 mg/kg.

Elevated contaminant concentrations of chromium, copper, lead, nickel, zinc, and Aroclor-1254 in soil were associated with the northwest corner of the Concrete Pad where a transformer and the majority of the rockets were previously stored (sample locations 18-SS-02, -06, -07, and -08 in Figure 3-4). Elevated concentrations of cadmium were associated with the northeast corner of the pad where several other rockets were stored (sample locations 18-SS-14, -15, and -16).

A preliminary exposure assessment using an industrial land-use scenario was performed on the confirmatory soil sample that contained 5.82 pCi/g of cobalt-60 to determine the potential effective dose equivalent (EDE) to an on-site worker. The results indicated the maximum annual EDE to a reasonably

Table 3-5
Comparison of Site 18 Surface Soil Results to Technical Areas III and V Background Data

Parameter	Population Distribution	Statistical Test Applied					Maximum Concentration at Site 18 (mg/kg)	Site Contaminant[b]	Number of Samples Greater than UTL
		Student's t - test							
		Equal Variance	Unequal Variance	Wilcoxon	Quantile	UTL[a] or 95th Percentile (mg/kg)			
Barium	Lognormal	Fail[c]	Fail	Fail	Pass[d]	341.0	123	No	0
Beryllium	Lognormal	Fail	Fail	Fail	Pass	0.7	0.7	No	0
Cadmium	Lognormal	Fail	Fail	Fail	Fail	2.6	18.9	Yes	5
Chromium	Lognormal	Pass	Pass	Pass	Pass	26.2	66.5	Yes	1
Copper	Lognormal	Fail	Fail	Fail	Fail	14.5	95.7	Yes	2
Lead	Lognormal	Fail	Fail	Fail	Fail	24.8	60.4	Yes	2
Nickel	Lognormal	Fail	Pass	Pass	Pass	12.9	35.7	Yes	1
Uranium (total)	Normal	Pass	Pass	Pass	Pass	4.0	0.9	No	0
Zinc	Lognormal	Fail	Fail	Fail	Pass	41.8	70	Yes	3

[a]UTL = upper tolerance limit.
[b]Assessment of site contaminant based upon a qualitative evaluation of each statistical test applied to the data. For example: If all tests "fail," the highest concentration is statistically "greater " than background. If one or more tests "pass," other criteria may indicate that the highest concentration is not obviously, or statistically, greater than background. Other criteria include (1) the power of the individual statistical test and (2) whether the maximum concentration exceeds the UTL or 95th percentile.
[c]Fail = Reject the null hypothesis that test statistics are equal.
[d]Pass = Accept the null hypothesis that test statistics are equal.

Table 3-6
Comparison of Site 18 Soil Analytical Results to Proposed RCRA Subpart S Soil Action Levels

Parameter	Maximum Concentration at Site 18 (mg/kg)	Proposed RCRA Subpart S Soil Action Level (mg/kg)	Exceeds Proposed RCRA Subpart S Soil Action Level?
Aroclor-1254	36	10[a]	Yes
Cadmium	18.9	80	No
Chromium	66.5	400	No
Copper	95.7	NA[b]	NA
Lead	60.4	2,000	No
Nickel	35.7	2,000	No
Zinc	70	20,000	No

[a]Proposed (spring 1996).
[b]Not applicable; no action level currently promulgated for this constituent.

Table 3-7
Comparison of Site 18 Data to Site-Wide Background

Parameter	Maximum Concentration (mg/kg)	Site-Wide UTL (IT 1996) (mg/kg)
Arsenic	3.2	5.6
Cobalt	4.1	5.2
Mercury	0.11	0.31
Vanadium	13.7	20.4

maximally exposed on-site worker to be approximately 9 millirem per year (mrem/yr) above natural background, well below the DOE annual dose limit of 100 mrem for general workers (or 5,000 mrem/yr for radiological workers). This area, therefore, is not considered a significant radiation hazard.

3.4 Summary and Conclusions

Aerial photograph analysis identified the approximate date the Concrete Pad was built, and indicated its use and features in the vicinity. Radiation surveys identified some DU on the site, which was removed. Other areas around Site 18 also exhibited DU (from overlapping Site 240); this material was also removed.

Soil sampling identified elevated surface concentrations of metals and PCBs, as well as some elevated surface and subsurface oil in small, isolated areas. Only Aroclor-1254 was present in surface soils at a level above the proposed RCRA Subpart S soil action level. Six metals in soils were elevated when compared to background, but all were below proposed RCRA Subpart S soil action levels.

The oil at the site is not considered hazardous (it was not co-located with any hazardous constituents), and because depth to ground water is greater than 450 ft, the characterization of this COC is considered complete.

A VCM is planned to remove the PCB contamination at the site that exceeds the 10-mg/kg action level. Excavation to a depth of approximately 1 ft in an area approximately 10 ft by 80 ft on the northwest corner of the pad is projected to remove the majority of the PCB-impacted soil. Screening for PCBs using immunoassay kits will be performed to more closely define the extent and to direct cleanup activities in the field. Soil samples will then be collected for off-site analysis to confirm removal activities.

Until the VCM is conducted, institutional controls are currently in place that will effectively limit access of the public or workers to the site. The site is posted as an ER site, and access to TA-III is strictly controlled and monitored. Upon completion of the VCM, the site will be proposed for NFA.

4.0 ER SITE 26: BURIAL AREA (WEST OF THE LONG SLED TRACK)

Site 26, the Burial Area, is a 150-acre site located along the western side of the Long Sled Track (Figure 4-1). According to interviews, radioactive materials, scrap metal, and wood derived from Long Sled Track activities may have been buried here.

COCs include DU and heavy metals. The field investigation protocols and results are discussed below.

4.1 Field Investigation Protocols

Investigation activities at Site 26 performed during the RFI included aerial photograph interpretation and nonintrusive geophysical surveys. Because Site 26 overlaps Site 83 (an active site), additional intrusive investigation will be deferred until Site 83 is decommissioned.

4.1.1 Aerial Photograph Analysis

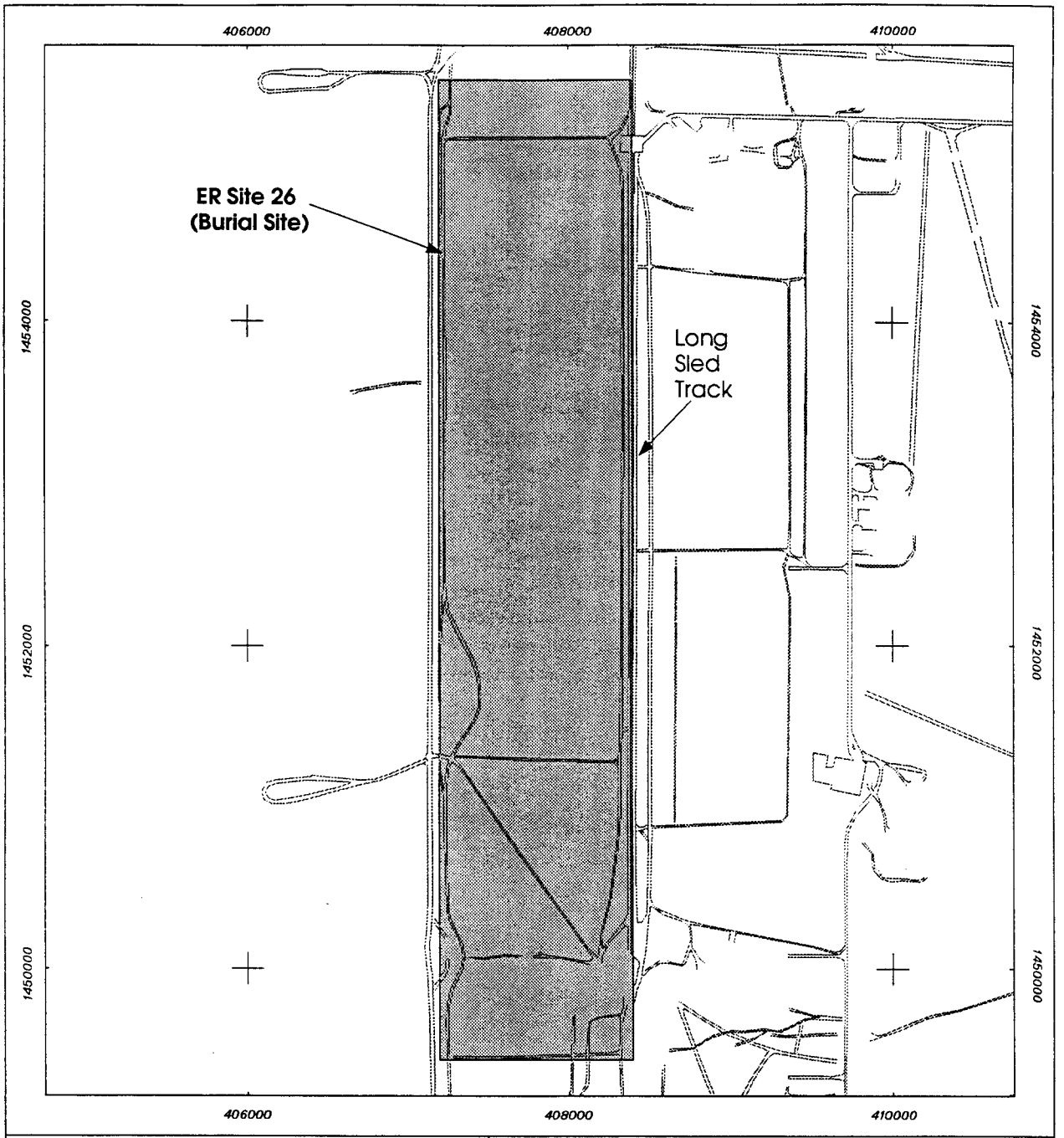
Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features in succeeding years at the burial site. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

4.1.2 Shallow Geophysical Surveys

Two geophysical surveys have been conducted at Site 26. The first investigation was performed in 1992 prior to this RFI, and a subsequent investigation was performed in 1994 specifically for this RFI. Approximately 5 acres were surveyed during the first operation, which is discussed in greater detail in the RFI Work Plan (SNL/NM 1993a); the second survey encompassed the entire site (approximately 150 acres).

Since the time of the initial survey, a radiological removal VCM was performed at the Long Sled Track (Site 83). In addition, a significant number of sled track tests have required site modifications. Additional geophysical surveys were necessary because the locations of the geophysical anomalies identified in the 1992 survey could not be confirmed at the time of site scoping and planning for the TA-III/V RFI.

Magnetic and electromagnetic surveys were designed to locate possible burial sites (Lamb Associates, Inc. 1994a). Survey activities were performed in two phases (A and B) because of the large size of Site 26. Survey A covered the northern portion of Site 26 from the northern site boundary to Station 1,000 of the Long Sled Track, and included 120 acres (Figure 4-2). Survey B covered the southern 30 acres from Station 1,000 to a point 1,670 ft south of the station.



Legend

ER Site 26

Roads

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Environmental Restoration Geographic Information System

Figure 4-1 ER Site 26
Burial (West of Long Sled Track), TA-III

0 500 1000
Scale in Feet

0 120 240
Scale in Meters

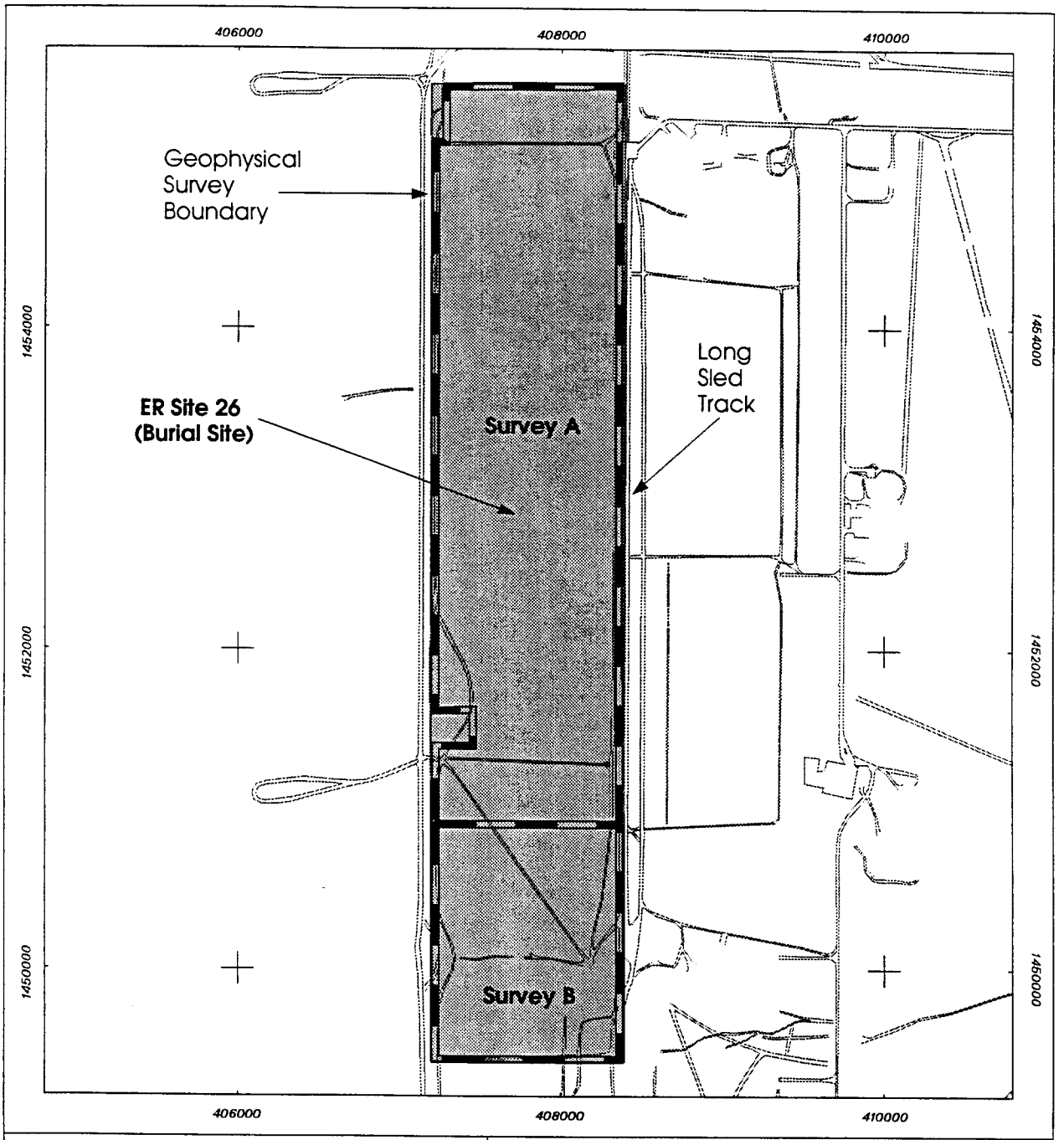
Unclassified

FINAL

1:12000

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

cheberl SNL GIS ORG. 7512 04/15/96 MAPID=950914



Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 4-2 ER Site 26
Location of
Geophysical Survey Boundaries, TA-III

ER Site 26

Roads

1994 Geophysical Survey Boundary

0 500 1000
Scale in Feet

0 120 240
Scale in Meters

Unclassified

FINAL

1:12000

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

cheberl SNL GIS ORG. 7512 04/15/96 MAPID=950915

Survey A was designed to locate and map any buried objects equivalent to or larger than two 55-gal. drums buried at a depth of 5 ft. The survey grid was 16 by 16 ft. Survey B was designed to locate and map any buried objects equivalent to or larger than a single 55-gal. drum buried at a depth of 5 ft. As such, Survey B was conducted on a more closely spaced grid (5 by 10 ft).

A Geonics EM-31 ground conductivity meter was used for acquiring EM data. A Geometrics G-856-AX proton precession gradiometer was used to obtain vertical magnetic gradient measurements. The EM-31 data were reduced using the DAT31 program (Geonics Ltd.); the magnetic data were reduced with the MAGLOC program (TerraSense Inc.). The data subsequently were processed and imaged using the Geosoft Mapping and Processing System (Geosoft Inc.).

4.2 Field Investigation Results

4.2.1 Aerial Photograph Interpretation

Several features, some several acres in extent, were identified in aerial photographs for ER Site 26 from 1973 to 1990 (Plate I). Most of these features were associated with brush fires, which commonly result from sled track tests; however, some construction also was noted around the site. These features were compared to the geophysical survey results, and no correlation was evident. Therefore, the features are not believed to represent large buried objects. Features are listed chronologically below.

- 1973: Six features were present in the 1973 photograph on or near Site 26, all of which were cleared or disturbed surfaces. The collection of these six features measured about 4,800 ft long in the north/south orientation, and about 600 ft in the east/west direction at the widest point. There were two more small cleared or disturbed features within 1,000 ft of the site boundaries. These appear to be brush-fire related.

- 1975: All of the same features from the 1973 photograph were present in the 1975 photograph, as well as two new features. One of these was a cleared or disturbed surface, which appeared in the northeast corner of the burial site and was likely brush-fire related. The second feature was classified as an unknown feature and appeared west of the original six features, connected to them by a new road. This feature measured about 1,200 ft long and 900 ft wide at the widest spot.

- 1978: A large unknown feature was identified in the 1978 photograph near the middle of the sled track. Approximately one-third of the southern extent of Site 26 was cut off because the 1978 photograph did not extend to the southern boundary of TA-III.

- 1979: The 1979 photograph displayed two new cleared or disturbed surfaces. The first feature was in the southeast corner of Site 26. This was a relatively small feature, measuring 450 ft in the north/south direction and about 90 ft in the east/west direction. This feature was likely a construction laydown area for the sled track because of its small size, the location within Site 26, its relation to the sled track, and because it only appeared in the 1979 photograph. The second new feature appeared near the southern end of Site 26 and was classified as a cleared or disturbed surface; this was likely brush-fire related.

- 1982: In the 1982 photograph, the small cleared or disturbed surface near the southeast corner of the site was not seen. All other known features were present.

- 1983: Three new features were found in the 1983 photograph. The first feature was a large elliptical cleared or disturbed surface, approximately 1,900 ft long and about 650 ft wide, southwest to northeast. This feature appeared to be a burned area. The second new feature, trending southeast/northwest, was located in the southern one-third of the site and was classified as a cleared or disturbed surface, measuring about 750 ft by 400 ft. The third new feature was also classified as a cleared or disturbed surface near the geographical center of Site 26.

- 1986: No changes in the 1986 photograph were noted from the 1983 aerial photograph, except for some minor shape changes in the features previously noted; these may be the result of revegetation in cleared or disturbed areas.

- 1990: Tanks/concrete targets appeared at the southern end of Site 26 in the 1990 photograph. These are associated with the Long Sled Track (ER Site 83, Section 12.0); but, because of the overlap between the two sites, they were noted with Site 26 as well.

On-ground investigations of the features identified in the aerial photographs confirmed that the areas interpreted to be brush-fire related had indeed been burned. Several attempts to locate the large unknown area that appeared in the 1975 photograph were unsuccessful. The cleared surfaces noted in the 1979 photographs were related to construction activities at the Long Sled Track.

4.2.2 Geophysical Surveys

During the geophysical surveys conducted in 1994, several surface objects were identified that generated a significant response. These objects included an observation tower/foundation, scrap metal/debris, reinforced concrete, a sign post/picket/rebar marker, a metal post/benchmark/experimental apparatus, empty drums, and scattered miscellaneous metallic debris.

Several small magnetic subsurface anomalies were identified in the northern portion of the site, but only three of them had corresponding EM responses (Plate II). In the southern portion of the site, few magnetic anomalies were identified, but several large EM anomalies were noted. Two of the EM anomalies also generated magnetic responses, but both were on the edge of unsurveyed areas (where equipment storage prevented adequate coverage).

Some overlap of the geophysical anomalies and radiation anomalies (identified during the surface radiation and removal VCM conducted at the Long Sled Track) was noted (Plate II). However, no direct correlation between geophysical and radiation anomalies was observed.

4.3 Evaluation of Data

The nature and extent of contamination is not conclusive or comprehensive, based on the information collected here. The geophysics data from 1994 do not agree with data collected in 1992, and it appears that anomalies identified in 1992 are no longer present. Removal of the equipment that hindered surveying in the southern portion of the site should allow more definitive identification of the magnetic

and EM anomalies observed there. The lack of any observable hard correlation between the geophysical and radiation anomalies indicates that there is probably little relationship between the two.

Because this site overlaps ER Site 83, some additional investigation (subsurface borehole sampling or trenching) after Site 83 is decommissioned will be performed around anomalies identified in the 1994 geophysics survey to define the nature of the potential burials identified there. No schedule for decommissioning Site 83 is currently available.

4.4 Summary and Conclusions

Because the geophysical anomalies identified in the northern and southern portions of the site lie within the Site 83 boundaries, it is proposed that they be addressed under the future work planned for Site 83.

If the objects noted during the geophysical surveys are scrap on or near the surface, then the buried objects are innocuous concentrations of construction debris. To perform further investigation of this area, however, the armored vehicles and experimental apparatus should be moved to enable a complete survey after Site 83 is decommissioned. A complete characterization of the site using subsurface boreholes, trenching, or a better available technology will be conducted at that time. Site 26 is therefore proposed for NFA.

In requesting NFA for Site 26, the following criteria, taken from the RCRA Facility Assessment Guidance (EPA 1987a) and from the 1996 Document of Understanding between EPA, NMED, and SNL/NM, were examined to determine site eligibility for an NFA designation:

- Criterion 1. The site cannot be located or has been found not to exist, is a duplicate site, or is located within and therefore, investigated as part of another site.

- Criterion 2. The site has never been used for the management (that is, generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents or other CERCLA hazardous substances.

- Criterion 3. No release to the environment has occurred, nor is likely to occur in the future.

- Criterion 4. There was a release, but the site was characterized and/or remediated under another authority which adequately addresses corrective action, and documentation, such as a closure letter, is available.

- Criterion 5. The site 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.

Specifically, Site 26 is proposed for NFA based on Criterion 1 since it overlaps with ER Site 83 and is a result of activities conducted at Site 83 (the Long Sled Track).

5.0 ER SITE 31: ELECTRICAL TRANSFORMER OIL SPILL

Site 31, the Electrical Transformer Oil Spill, consists of a 20-ft by 20-ft concrete pad contained within the Centrifuge Facility near Building 6523 (Figure 5-1). The pad was used to store assorted equipment from the centrifuge, including an electrical transformer, which, according to one interviewee, exploded in 1973, releasing about 30 gal. of transformer oil onto the pad and its surrounding soil (DOE 1987). However, another interviewee stated that the transformer only blew a circuit, and no oil was spilled. The transformer was later moved.

Potential COCs include oil and PCBs. Discussions of the investigation protocols and results follow.

5.1 Field Investigation Protocols

5.1.1 Aerial Photograph Analysis

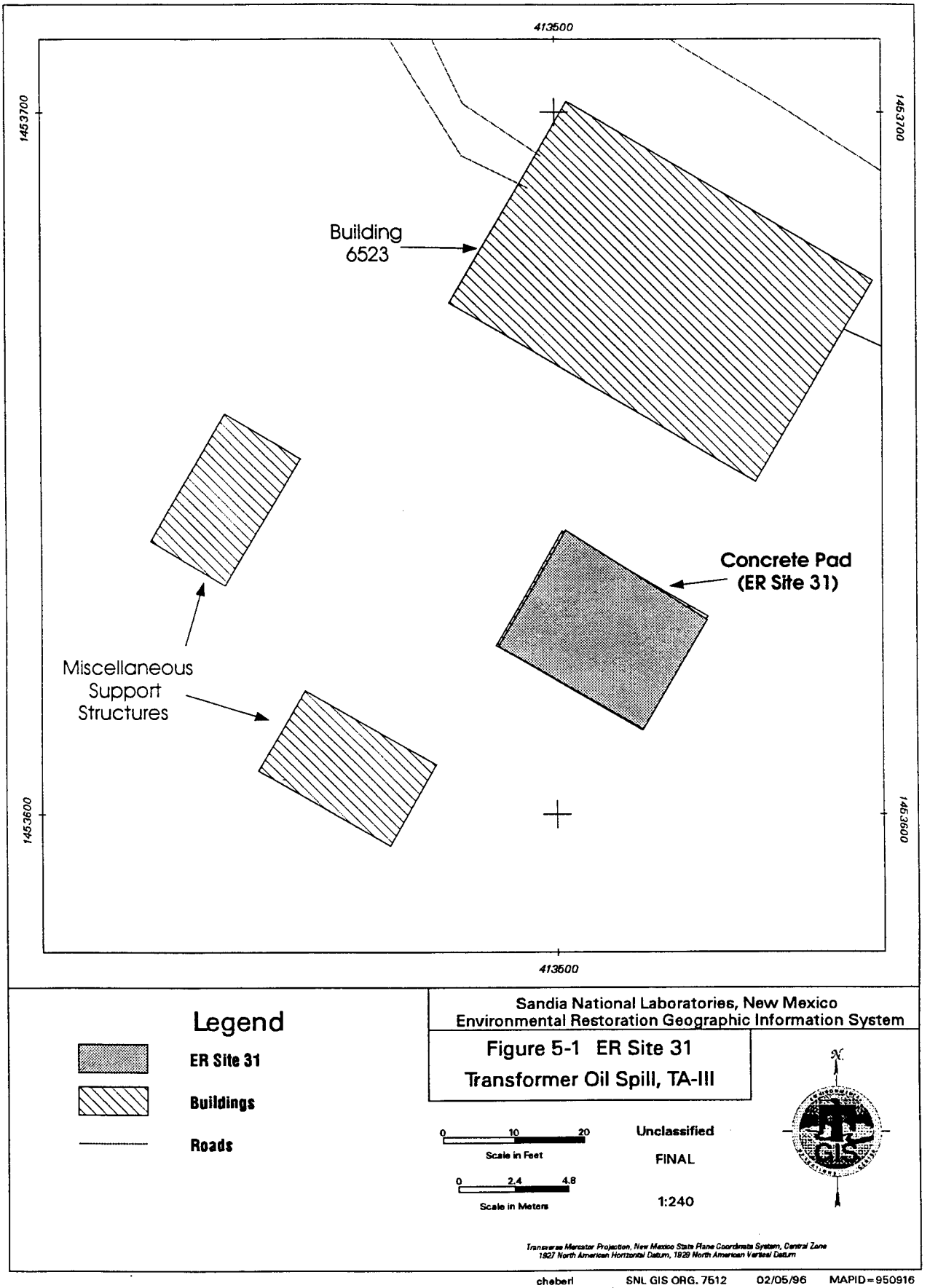
Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features in succeeding years at the Centrifuge Facility. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

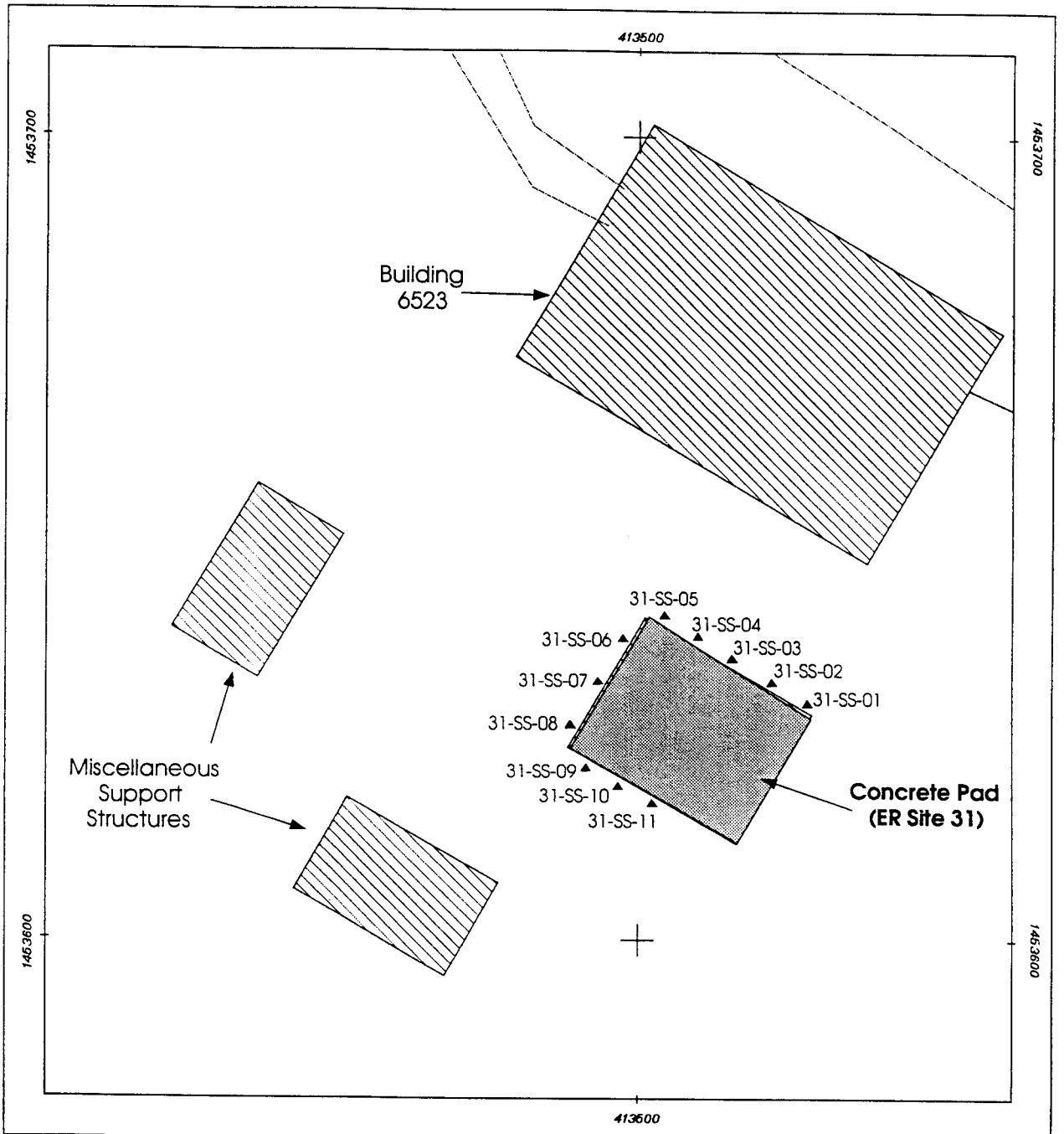
5.1.2 Sampling Strategies

Surface soil sampling and analysis was conducted with minor modification from the RFI Work Plan (SNL/NM 1993a, 1993b). An initial walkover of the concrete pad was performed to identify stains, spills, or leaks; none was noted. A sampling and analysis plan was designed around the location and placement of equipment and materials that had been identified as possible sources of contamination. The location of heavy equipment on the southeast end of the pad precluded sampling in this area; however, the pad is sloped slightly to the northwest, so any spills are expected to have traveled to the northwest rather than the southeast. The sampling strategy included near-surface soil sampling around the perimeter of the concrete pad to determine the presence and extent of contamination, if any.

Samples were collected at 5-ft intervals surrounding and adjacent to the perimeter of the pad (Figure 5-2), except on the southeastern side where heavy equipment was stored that could not be moved and therefore precluded sampling in this area. Surveyed sample coordinates are provided in Appendix A.

Eleven soil samples were collected from 0 to 1 ft bgs using a trowel and stainless-steel bowl, following the appropriate FOPs. Twelve soil samples (including a duplicate sample) were submitted for off-site analysis of TPH, and three soil samples were split for both field analysis of PCBs using immunoassay techniques and for off-site laboratory analysis of PCBs, in accordance with the methods listed in Table 2-2.


413500
1453700
1453600
Building
6523
Concrete Pad
(ER Site 31)
Miscellaneous
Support
Structures
Legend
ER Site 31
Buildings
Roads
Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System
Figure 5-1 ER Site 31
Transformer Oil Spill, TA-III
0 10 20
Scale in Feet
0 2.4 4.8
Scale in Meters
Unclassified
FINAL
1:240
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone
1927 North American Horizontal Datum, 1929 North American Vertical Datum
cheberl
SNL GIS ORG. 7612
02/05/96
MAPID=950916



Legend

- ER Site 31
- Buildings
- Roads
- 31-SS-01 Surface Soil Samples

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 5-2 ER Site 31
Location of
Surface Soil Samples, TA-III

0 10 20
Scale in Feet

0 2.4 4.8
Scale in Meters

Unclassified

FINAL

1:240

N

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

cheberl SNL GIS ORG. 7512 02/05/96 MAPID=950917

5.2 Field Investigation Results

5.2.1 Aerial Photograph Interpretation

Aerial photographs available for Site 31 indicated that no surface features were found within the boundaries of Site 31, although several piles of soil appeared and disappeared over the years within 1,000 ft of this site (Plate I). Features are listed chronologically as indicated below.

- 1973: Two features were noted in the 1973 photograph, including one pile about 600 ft to the west of the site and a pile about 900 ft to the west-southwest of the southern site boundary. These piles have no known excavations associated with them.

- 1975: No new features were found in the 1975 photograph. The photograph did not extend eastward the full 1,000 ft.

- 1978: The 1978 photograph exhibited the same features as the 1973 photograph, although the northernmost pile was smaller than it was in 1973.

- 1979: No new features were found in the 1979 photograph, although the piles exhibited minor shape changes.

- 1982: Two new pile features appeared in the 1982 photograph to the west (approximately 600 ft) and east (approximately 800 ft) sides of Site 31. These piles had no known excavations associated with them.

- 1983: No new features were found in the 1983 photograph.

- 1986: No new features were found in the 1986 photograph, although the piles exhibited minor shape changes.

- 1990: The pile to the east of Site 31 disappeared in the 1990 photograph, but the three piles to the west remained unchanged.

On-ground examination of the areas identified in the aerial photograph analysis as piles was performed, but it appeared that the piles had no relationship to, or impact on, Site 31.

5.2.2 Nature and Extent of Contamination

Table 5-1 summarizes the constituents that were detected in concentrations greater than the detection limit for the soil samples collected during the surface investigation. Detailed soil sampling results are provided in Appendix C. TPH was found above the MDL in two samples. Concentrations of TPH in these two samples were approximately 28 and 54 mg/kg. PCBs were not detected in excess of the MDL for any sample. Sampling QA/QC data are provided in Appendix D. Both the rinsate and field blanks contained minor amounts of TPH (2.6 milligrams per liter [mg/L] and 5.3 mg/L, respectively).

Table 5-1
Summary of Surface Soil Sample Analytical Results - Site 31

Analyte	Minimum/ Maximum	Sample ID	Result	Units	Detection Limit	Action Level[a]
Total Petroleum Hydrocarbon	Minimum	TA3/5-31-SS-02	27.8	mg/kg	20	100 mg/kg
	Maximum	TA3/5-31-SS-05	53.6			

[a]Action level derived from New Mexico Underground Storage Tank Regulations (NMEIB 1990).

5.3 Evaluation of Data

TPH was identified above the MDL in 2 of 12 samples. There is no proposed RCRA Subpart S soil action level currently promulgated for TPH; therefore, the NMUSTR (NMEIB 1990) action level of 100 mg/kg was used for comparison. The concentrations of TPH detected were below this standard; therefore, the minor concentrations of TPH in the rinsate and field blanks are not significant.

5.4 Summary and Conclusions

Based on surface soil sampling, no elevated concentrations of either TPH or PCBs exist in the vicinity of the concrete pad at Site 31. Because these constituents clearly are not elevated, no additional activities were conducted at this site, and no additional sampling or remediation appears to be warranted. This site is proposed for NFA in accordance with Criterion 3 noted in Section 4.4 of this RFI report.

6.0 ER SITE 34: CENTRIFUGE OIL SPILL

Site 34, the Centrifuge Oil Spill, is a 90-ft-diameter area beneath the outdoor centrifuge near the northeast corner of TA-III (Figure 6-1). The Centrifuge Facility has been used for acceleration and loading tests from 1955 to the present. Reportedly, one or more oil releases from the hydraulic drive system that runs underground between the control building and the centrifuge itself might have occurred. The drive system, located beneath the centrifuge's main bearing, has a concrete floor with a 2-ft-diameter French drain that was designed to collect oil spills and discharge them directly to the soils beneath the unit.

The potential COC is hydraulic oil. A discussion of the investigations conducted at the site in support of the RFI follows.

6.1 Field Investigation Protocols

Field activities conducted at Site 34 included aerial photograph analysis, subsurface sampling, and exploratory sampling within the confined space of the control box. Some minor modifications to the approach identified in the RFI Work Plan (SNL/NM 1993a, 1993b) were necessary because of the confined nature of the centrifuge itself, and the configuration of the control box, centrifuge bearing, and sump/French drain beneath the centrifuge. No angled borehole immediately under the control box/French drain area was possible. Therefore, an attempt was made to use a hand auger in the confined space of the control box/French drain. The investigation activities, including this variance from the RFI Work Plan, are discussed below.

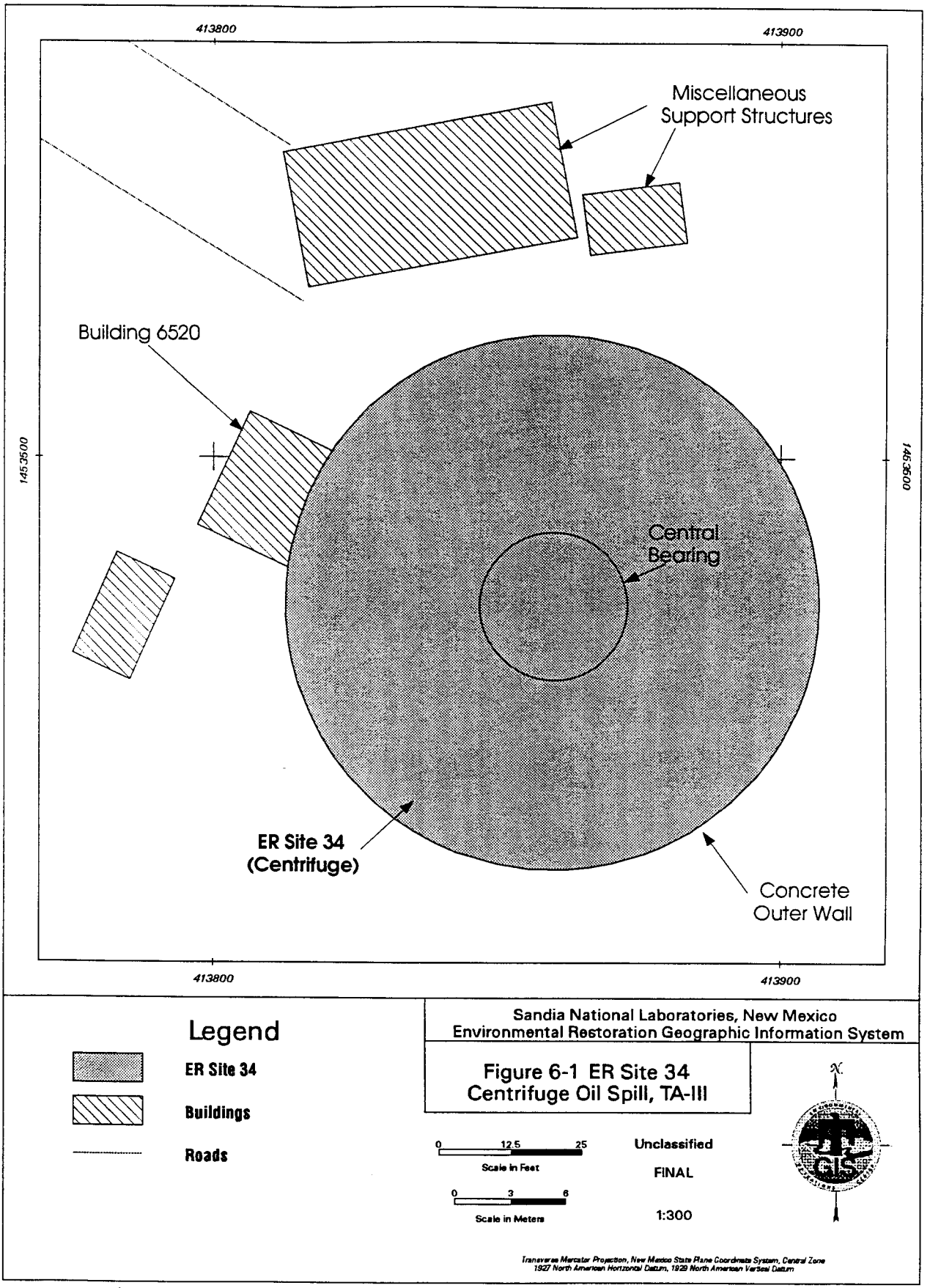
6.1.1 Aerial Photograph Analysis

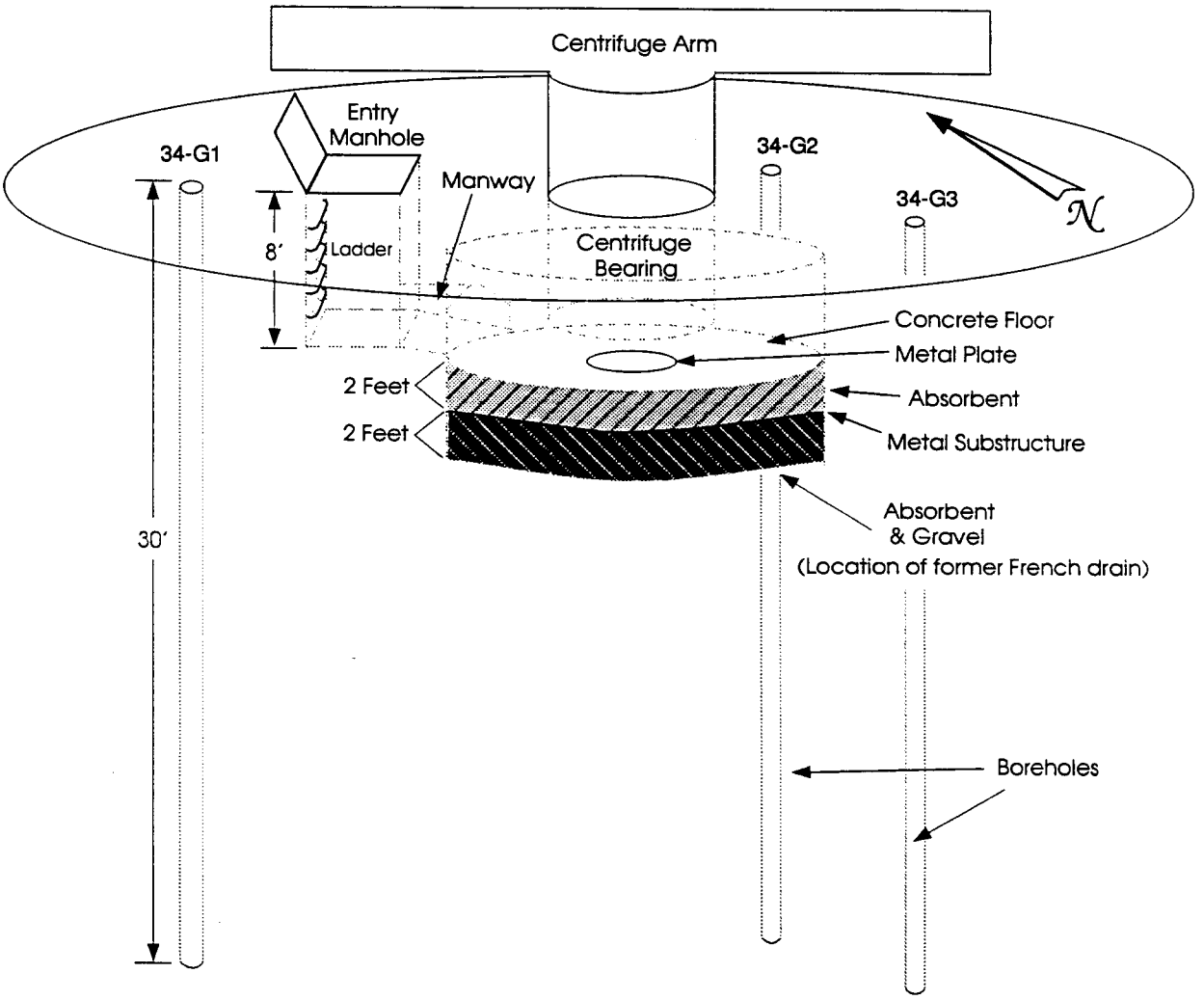
Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features in succeeding years at the Centrifuge Facility. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

6.1.2 Sampling Strategies

In accordance with the RFI Work Plan (SNL/NM 1993a, 1993b) sampling and analysis plan, three shallow, vertical boreholes were advanced through the concrete floor of the centrifuge (Figure 6-2) adjacent to the bearing and control box/French drain using a hydraulic probe. Surveyed borehole coordinates are provided in Appendix A. No staining or odors were detected during the probing activities. Soil samples were collected at 5-ft-depth intervals to a total depth of 30 ft and were analyzed for TPH in accordance with EPA Method 418.1 (Table 2-2).

An angled borehole as specified in the RFI Work Plan (SNL/NM 1993a, 1993b) was not possible immediately under the bearing and control box/French drain for a variety of reasons. The configuration of the centrifuge concrete walls would not allow a drilling unit to drill at an angle effective for sampling 30 ft beneath the control box/French drain. A drill rig placed outside the centrifuge would require advancing the hole at greater than 60 degrees from vertical (Figure 6-2), and the drill rigs used for SNL/NM ER activities were not capable of performing at the angle required.


413800
413900
Miscellaneous
Support Structures
Building 6520
1453500
1463500
Central
Bearing
ER Site 34
(Centrifuge)
Concrete
Outer Wall
Legend
ER Site 34
Buildings
Roads
Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System
Figure 6-1 ER Site 34
Centrifuge Oil Spill, TA-III
0 12.5 25
Scale in Feet
0 3 6
Scale in Meters
Unclassified
FINAL
1:300
N
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone
1927 North American Horizontal Datum, 1929 North American Vertical Datum
cheberl
SNL GIS ORG. 7512
02/05/96
MAPID=950918



- Not to Scale -

Figure 6-2. ER Site 34 Centrifuge Ghost-View and Borehole Locations

Therefore, an attempt was made to perform direct sampling in the confined space of the control box underneath the centrifuge bearing using a hand auger or trowel. SNL/NM consulted directly with New Mexico Environment Department (NMED) during this portion of the work to determine the best way to obtain a sample during the confined space work. The area beneath the bearing was found to have a metal plate covering 2-in.-thick concrete, 2 ft of absorbent clay material, and a metal substructure beneath these. According to centrifuge operators consulted during this activity, these layers were constructed after 2 ft of oil-stained soil and the French drain were removed from beneath the bearing some time around 1989, when the historical oil leak from the bearing was found. The absorbent in the subfloor was not visibly contaminated. Because of the limited space, and the sandwiched configuration of metal, concrete, absorbent, and metal, no soil sample could be collected.

6.2 Field Investigation Results

6.2.1 Aerial Photograph Interpretation

The aerial photograph interpretation is identical to the discussion for Site 31 (Section 5.2.1) because of the proximity of the two sites (Plate I). No additional site-specific aerial photographic interpretation was performed for Site 34.

6.2.2 Nature and Extent of Contamination

Results of the soil sampling indicate that TPH was not present in any borehole in excess of the MDL (Table 6-1; Appendix C). PID readings taken upon opening the head space (created by the removal of the oil-contaminated soil and French drain) indicated the possible presence of organic compounds; however, the PID readings decreased to, and remained at, safe, nondetectable levels after ventilation of the area. The initial elevated readings might have been a result of the high humidity in the enclosed space since excess moisture can cause erroneous, elevated PID readings. The absorbent material showed no indication of spill absorption and was dry and powdery. Therefore, this area was not considered to be contaminated by oil. Residual vapors that might have remained from the removal operation or have originated from the centrifuge bearing itself also might have caused initially elevated PID readings.

Table 6-1
Summary of Subsurface Soil Analytical Results - Site 34

Analyte	Sample IDs	Result	Detection Limit	Action Level[a]
Total Petroleum Hydrocarbon	34-G1-01 through 34-G3-30	Not Detected	20 mg/kg	100 mg/kg

[a]Action level derived from New Mexico Underground Storage Tank Regulations.

6.3 Summary and Conclusions

No soil samples exhibited any TPH in excess of the MDL. Because this constituent clearly is not elevated, no additional sampling or remediation was conducted at this site, and no additional sampling is warranted here. It appears that the removal of the oil-soaked soil and French drain in 1989 remediated the site sufficiently. This site is proposed for NFA in accordance with Criterion 4 listed in Section 4.4 of this RFI report.

7.0 ER SITE 35: VIBRATION FACILITY OIL SPILL

Site 35, the Vibration Facility Oil Spill, is a 20-ft by 50-ft site located approximately 1 mi south of the TA-III entrance gate (Figure 7-1). The site consists of a soil area adjacent to the Vibration Facility, which is used for vibration tests on instruments and equipment. The hydraulic system for the shakers at the facility contained about 200 gal. of hydraulic oil in a closed-loop system. An unknown amount of hydraulic oil (reportedly Shell Diala AX) was spilled onto the soil near the southeast corner of Building 6560. The oil was reportedly absorbed into some highly absorbent clay and deposited on the ground to the northeast of the building.

The potential COC is hydraulic oil. Discussions of the investigation protocols and results follow.

7.1 Field Investigation Protocols

7.1.1 Aerial Photograph Analysis

Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features in succeeding years at the Vibration Facility. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

7.1.2 Sampling Strategies

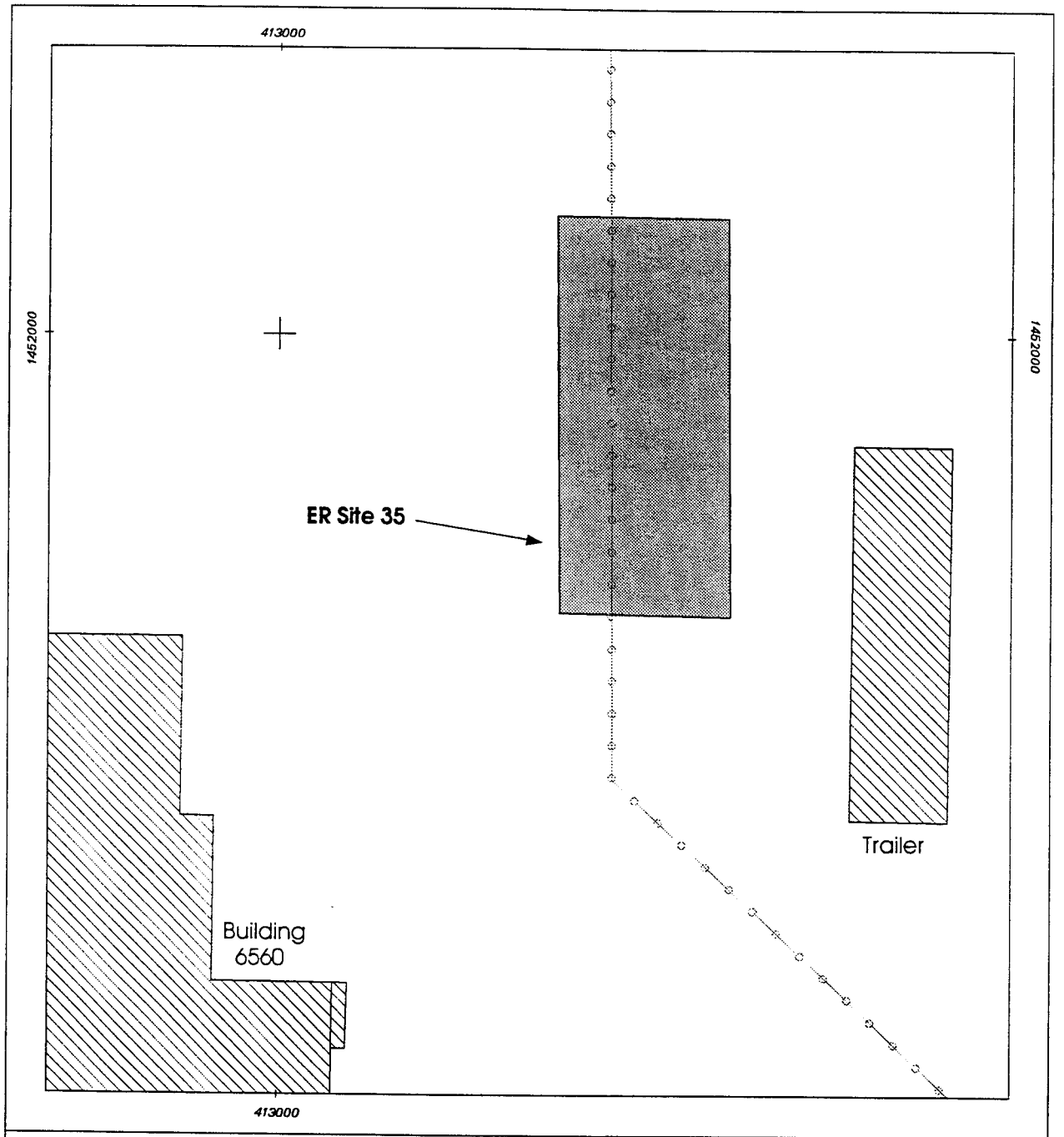
The sampling and analysis plan was developed based on the area of Site 35 (Figure 7-1) that had been identified as a possible source of contamination. The sampling strategy included near-surface soil sampling at the site to determine the presence and extent of contamination, and follow-on subsurface probing to determine vertical extent. Appendix A provides the surveyed surface sample and borehole location coordinates.

Surface Soil Sampling

Surface soil sampling was conducted without modification from the RFI Work Plan (SNL/NM 1993a, 1993b). Four samples (three plus a duplicate) were collected during Phase I from 0 to 1 ft depth bgs using a trowel and stainless-steel bowl, following appropriate FOPs. Soil samples were analyzed for TPH in accordance with the EPA methods listed in Table 2-2.

Shallow Subsurface Soil Sampling

Subsurface soil sampling was conducted as closely as possible (limited by underground utilities) to each of the surface soil sample locations after initial surface sample results indicated the presence of TPH concentrations in excess of the regulatory standards. Eleven additional surface samples (Phase IIa) were collected from depths of 0.5 to 1.5 ft bgs to confirm the original sampling and to define the horizontal extent. Four hydraulic probe borings (Figure 7-2) were advanced to a depth of 15 ft bgs, and soil samples were collected from 3-ft, 8-ft, and 13-ft depths for a total of 12 subsurface samples. All samples were field screened for TPH using TD/GC and for PCBs using immunoassay methods. Based on field screening results, seven samples subsequently were submitted for laboratory analysis of TPH and PCBs



Legend

- ER Site 35
- Buildings
- Roads
- Fences

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 7-1
ER Site 35 - Vibration
Facility Oil Spill, TA-III

0 10 20
Scale in Feet

0 2.4 4.8
Scale in Meters

Unclassified

FINAL

1:240

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

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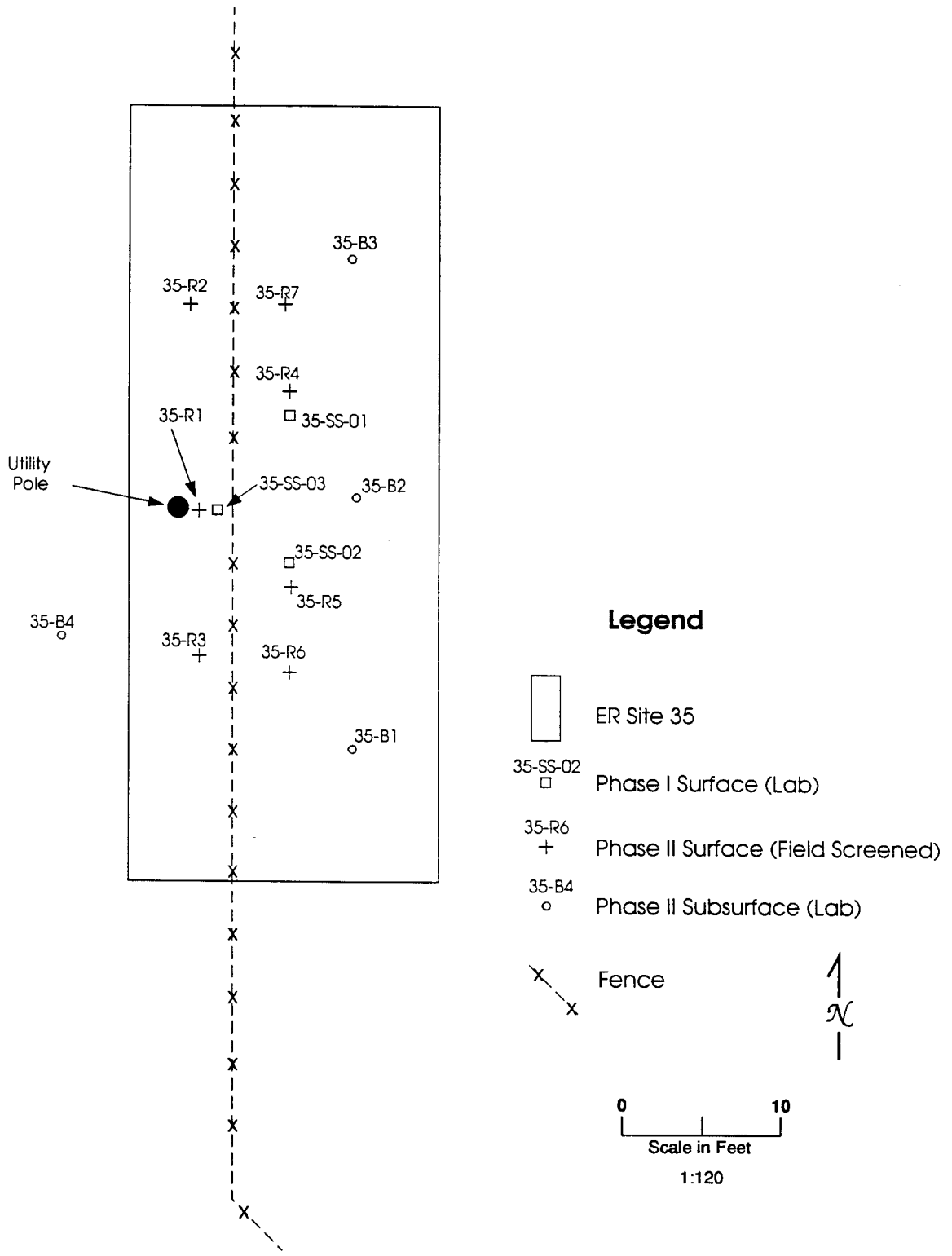


Figure 7-2. ER Site 35 Location of Surface Soil Samples, TA-III

in accordance with the EPA methods listed in Table 2-2. These included samples screening positive for TPH and samples from the total depth (13 ft) in each borehole.

7.2 Field Investigation Results

7.2.1 Aerial Photograph Interpretation

Plate I summarizes the aerial photograph interpretation for all sites. There were no surface features within 1,000 ft of ER Site 35 for the years 1973, 1975, or 1978. Discussions of the subsequent years follow in chronological order.

- 1979: A small unknown feature appeared in the 1979 photograph 850 ft northwest of the site boundary.
- 1982: The same feature noted in the 1979 photograph was observed in the 1982 photograph, as well as a new cleared or disturbed surface about 700 ft northwest of ER Site 35, south of the first feature.
- 1983: No surface features appeared in the 1983 photograph.
- 1986: In 1986, the cleared or disturbed surface seen in 1982 was the only feature present in the photograph.
- 1990: In 1990, no features remained at this site.

7.2.2 Nature and Extent of Contamination

Table 7-1 contains a summary of soil sample analytical results. Field screening results are provided in Appendix B; off-site soil sample analytical results and QA/QC data are provided in electronic format in Appendices C and D, respectively.

Elevated TPH in the Phase I surface soil samples (35-SS-01 through 35-SS-03) ranged from 968 mg/kg to 7,200 mg/kg (Table 7-1 and Figure 7-3). TPH in the 11 Phase IIa surface samples (35-R1 through 35-R7) ranged from less than the detection limit to 6,000 mg/kg, thereby confirming the Phase I surface sampling results and further delineating the horizontal extent of the hydraulic oil.

Of the 12 subsurface samples collected (35-B1 through 35-B4), only one soil sample exhibited elevated TPH concentrations (58 mg/kg at a depth of 3 ft) (Table 7-1 and Figure 7-3). PCBs were not detected above the MDL in any sample. The horizontal and vertical extent of hydraulic oil appears to be restricted to the suspect area to a depth no greater than 2 ft bgs.

None of the QA/QC samples for either the surface or subsurface sampling events contained any COCs above the MDLs.

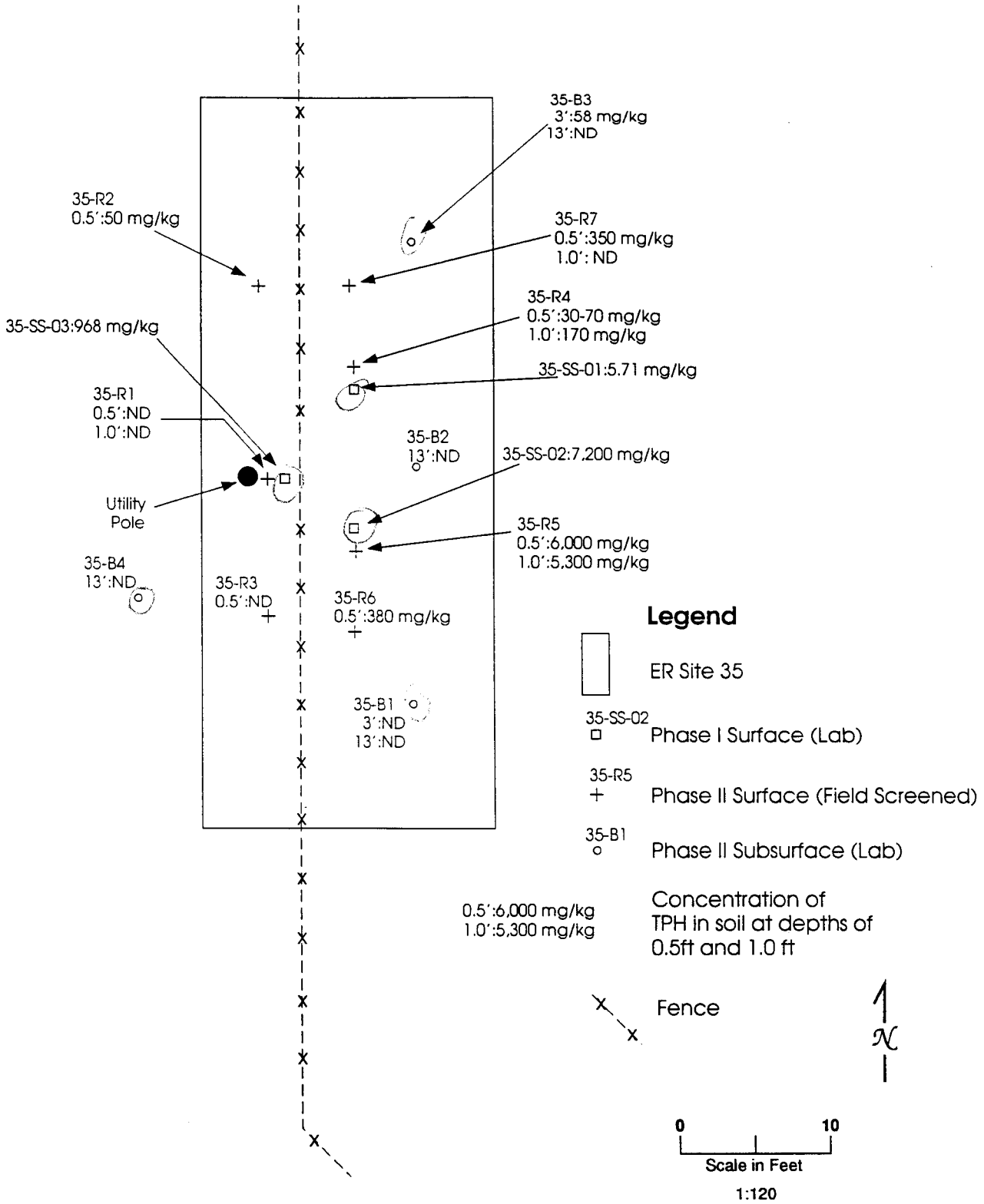


Figure 7-3. ER Site 35 Extent of Total Petroleum Hydrocarbon in Soil

Table 7-1
Summary of Total Petroleum Hydrocarbon in Soil - Site 35

Work Phase	Range (mg/kg)	Detection Limit (mg/kg)	Total Samples[a]	Number of Non-Detects	Number ND-100 mg/kg	Number 100-500 mg/kg	Number 500-2,000 mg/kg	Number >2,000 mg/kg
I - Surface	968-7,200	20	4 (Lab)	0	0	0	1	3
IIa - Surface	ND-6,000	10	11 (FS)	4	5	4	0	2
IIb - Subsurface	ND-125	5	12 (FS)	11	1	0	0	0
	ND-58	20	7 (Lab)	6	1	0	0	0

[a]FS = Field Screen; Lab = Submitted for off-site analysis of TPH by EPA Method 418.1.

7.3 Evaluation of Data

Because PCBs were not detected, the only COC at the site is the hydraulic oil. The oil spilled at the site was reportedly Shell Diala AX, for which the Material Safety Data Sheet (MSDS) lists only slight health risks, and each of these is associated with pure product contact (rather than contact with oil-impacted soil): skin contact can cause dermatitis; product ingestion can cause vomiting (which could result in aspiration pneumonitis). Neither of these scenarios is very likely because the oil is adsorbed onto soil.

7.4 Summary and Conclusions

Sampling and analysis at Site 35 indicated approximately 100 square feet (ft^2) of soil impacted by hydraulic oil to a depth of 2 ft bgs. No RCRA-regulated constituents are contained in the oil, and there are no significant health effects from chronic exposure to the substance. According to the NMUSTR, Section 1209, and to correspondence from NMED to DOE/KAO (NMED 1992), "soil remediation is considered complete when the vertical extent of soil contamination is 50 ft or above the seasonal high static groundwater level. Therefore, once the vertical extent of soil contamination has been defined ... remediation ... will not be required ...." Because the depth to ground water for the area is approximately 450 to 500 ft and the horizontal and vertical extent of oil has been defined, this site is proposed for NFA in accordance with Criterion 4 listed in Section 4.4 of this RFI report.

8.0 ER SITE 36: HERMES OIL SPILL

The High-Energy Radiation Megavolt Electron Source (HERMES) Oil Spill is a 1-acre site located in the eastern portion of TA-V near Building 6596, which housed the HERMES II Facility (Figure 8-1). Oil was stored in five 35,000-gal. underground storage tanks (USTs) north of Building 6596 and was pumped in a circulating system between the building and the tanks. Several large spills of oil from the tanks occurred throughout the course of operation of the facility from 1968 to 1989, when the facility was permanently closed.

Potential COCs include mineral oil, VOCs, and PCBs. A discussion of the field investigation protocols and results is presented in the following sections.

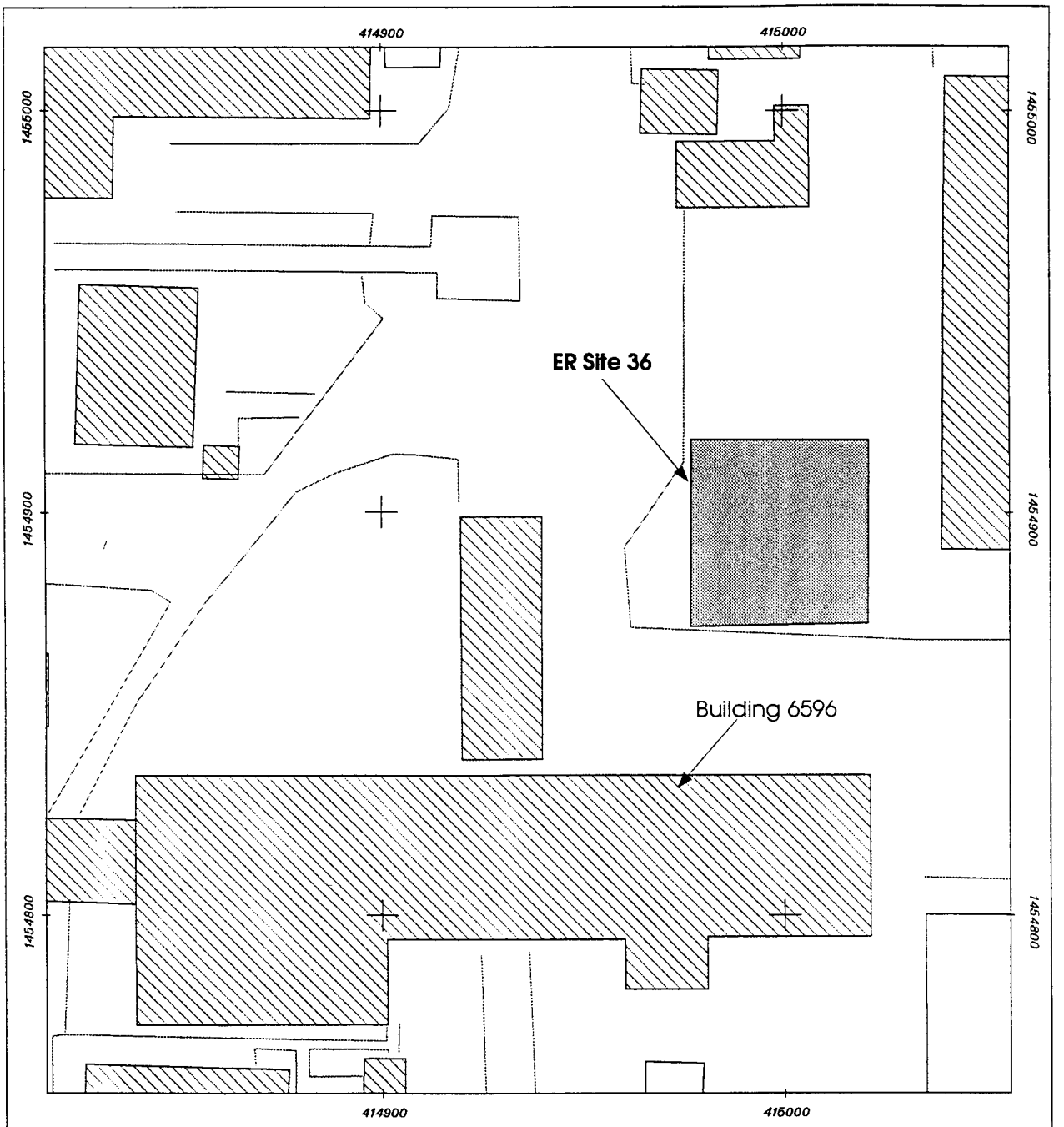
8.1 Site History

In August 1991, the five USTs and associated piping at the HERMES II Facility were excavated and removed. During these removal activities, soil stains were observed throughout the excavated pit area. In accordance with NMUSTRs, an on-site investigation (OSI) was conducted: six boreholes were drilled within, and adjacent to, the backfilled UST excavation in November and December 1991 to assess the extent of petroleum hydrocarbons in the subsurface soil underlying the former UST site. The first borehole (HERMES-C, Figure 8-2) was drilled to a depth of 280 ft, which was the lower extent of soil contamination based on field screening with the Hanby Method. The borehole was abandoned prior to receipt of off-site laboratory analytical results that indicated TPH concentrations in excess of the state regulatory standard of 100 mg/kg at 280 ft. As a result of this experience and that of other investigations, the Hanby Method was demonstrated to be an inadequate field-screening method for heavy-end petroleum hydrocarbons because it frequently underestimates the concentrations of contamination by two or more orders of magnitude.

The analytical results of soil samples collected from three boreholes to the northwest, northeast, and southeast of the UST pit (Figure 8-2) indicated no TPH contamination from the surface to a depth of approximately 280 ft, thereby defining the horizontal extent of mineral oil at these locations. The horizontal extent of contamination in the southwest direction, however, was not completely defined because TPH was present at depths ranging from 30 to 230 ft in the HERMES-SW borehole.

Based on the results of this investigation, the site required further characterization to determine the horizontal extent of mineral oil to the southwest as well as the vertical extent of oil beneath Borehole HERMES-C. Therefore, drilling was conducted at the site during the RFI in February and March 1995. In April 1995, based on the OSI results and prior to receipt of the RFI sampling results, NMED/UST Bureau issued a determination of NFA for the site (NMED 1995).

In addition to the OSI conducted specifically for the HERMES site, a RFI was conducted at the nearby LWDS. During ground-water sampling at the LWDS, trichloroethylene (TCE) and other VOCs were noted that were demonstrated not to have emanated from the LWDS. A search for another possible source within TA-V revealed the existence of another site, the TA-V Seepage Pits, which has since been designated ER Site 275. The Seepage Pits are located approximately 200 yards (yd) to the southwest of the HERMES site.



Legend

ER Site 36

Buildings

Roads

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 8-1 ER Site 36
HERMES Oil Spill, TA-V

0 20 40
Scale in Feet

0 4.8 9.6
Scale in Meters

Unclassified

FINAL

1:480

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

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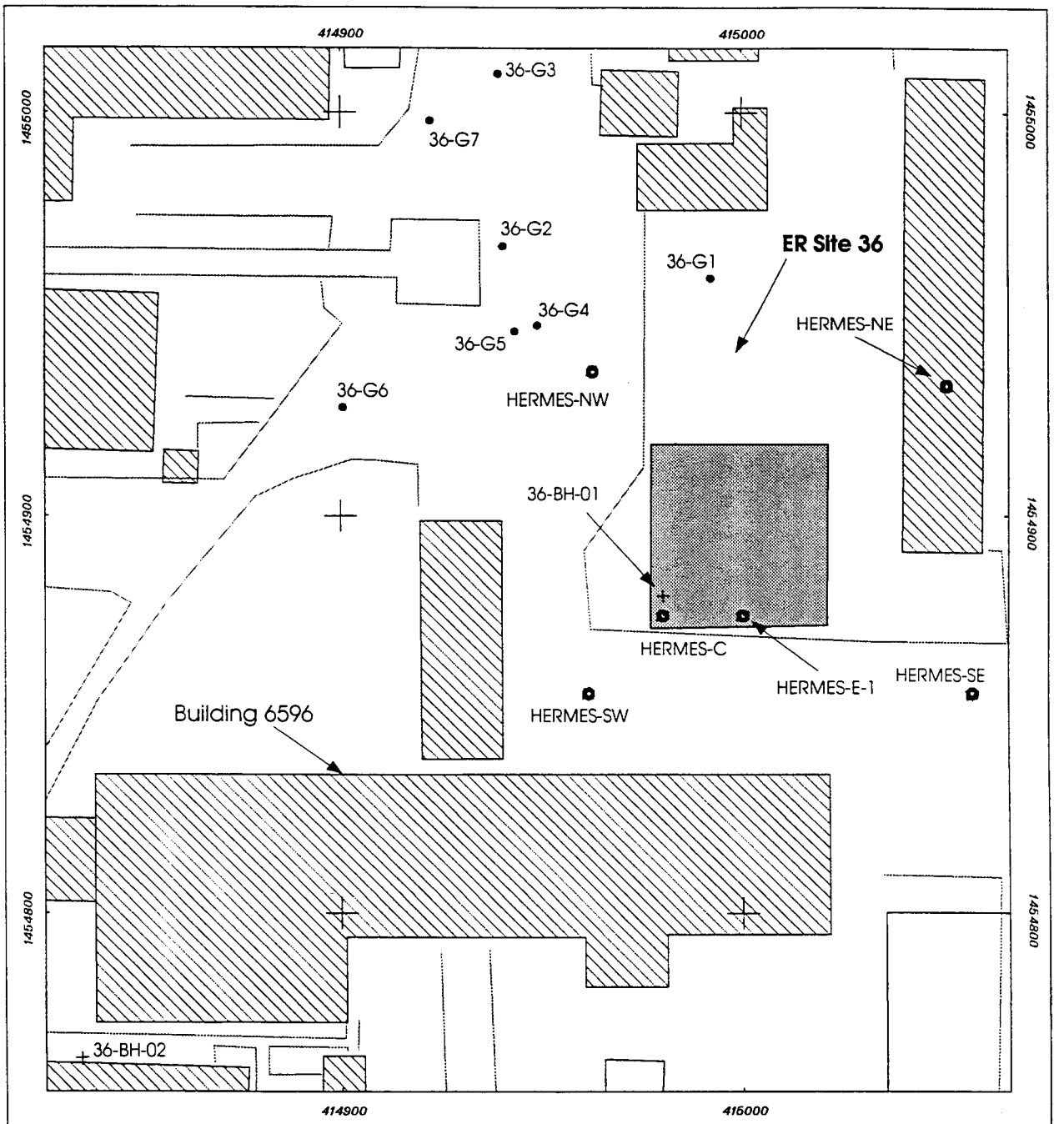

Legend

- ER Site 36
- Buildings
- Roads
- 36-G6 Shallow RFI Borehole Location
- 36-BH-01 Deep RFI Borehole Location
- HERMES-SW 1991 UST Investigation Borehole Location

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Figure 8-2 ER Site 36
Location of Shallow- and Deep-Subsurface Soil Boreholes, TA-V

0 20 40 Scale in Feet

0 4.8 9.6 Scale in Meters

Unclassified

FINAL

1:480

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

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Investigations of the Seepage Pits site were conducted to determine whether it could have been the source of the VOCs detected in ground water beneath TA-V and to better define the extent of any possible contamination. The investigation at the HERMES site was conducted at the same time as that at the Seepage Pits and was modified to include sampling protocols to help define the horizontal extent of any Seepage Pits contamination.

8.2 Field Investigation Protocols

Field investigation protocols included aerial photograph analysis (Plate I) and subsurface sampling. A sampling and analysis plan was developed based on the area that had been identified in the RFI Work Plan (SNL/NM 1993a) as a possible source of contamination. The subsurface sampling strategy included shallow investigation with a hydraulic probe and deep investigation using a drilling rig.

8.2.1 Aerial Photograph Analysis

Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features during successive years at the HERMES site. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes (indicating soil disturbance), or new construction.

8.2.2 Sampling Strategies

Shallow subsurface soil investigations were conducted with a small-diameter hydraulic probe, and deep subsurface soil sampling was conducted using an air rotary casing hammer drilling rig. Each of these strategies is discussed in greater detail in the following sections.

8.2.2.1 Shallow Subsurface Soil

Seven shallow boreholes were advanced with a small-diameter hydraulic probe in the vicinity of the former HERMES tanks within the pathway most likely followed by spilled oil, i.e., adjacent to and northwest of the former USTs (Figure 8-2; shallow borehole location coordinates are provided in Appendix A). Soil samples were collected from depths of 1, 5, 10, and 15 ft bgs from each shallow borehole (36-G1 through 36-G7), for a total of 28 samples. Sampling protocols followed appropriate FOPs (Table 2-1). Field screening of all samples included PID screening for VOCs and immunoassay kits for PCBs. Based on field screening results, 17 soil samples were analyzed at an off-site laboratory for TPH, and a select number were also analyzed for VOCs and PCBs in accordance with the EPA methods discussed in Table 2-2.

8.2.2.2 Deep Subsurface Soil Boreholes

Two deep soil boreholes were drilled to define vertical and horizontal extent of mineral oil contamination detected in the 1991 OSI (Figure 8-2). One borehole (36-BH-01) was drilled to a total depth of 340 ft bgs, next to the HERMES-C borehole (which had contained the greatest concentrations of TPH detected during the OSI) to define the vertical extent of contamination. The second borehole (36-BH-02) was drilled to a total depth of 320 ft at the southwest corner of Building 6596, approximately 300 ft east and 50 ft north of the Seepage Pits, to define the horizontal extent of contamination for both the HERMES and the Seepage Pits sites. Location coordinates for the deep boreholes are included in Appendix A.

Each borehole was drilled with a CP-650 drill rig using an air rotary casing hammer with 10.5-in. outer diameter (OD) steel casing. The boreholes were lithologically logged from drill cuttings and drive samples. Detailed borehole logs, including lithology descriptions of each borehole, are illustrated in Appendix F. Soil samples were collected at 10- and 20-ft intervals with a 2-in. inner diameter (ID) split-spoon sampler driven through an 8.6-in. OD open-center button bit. All soil samples were collected in steam-cleaned stainless-steel liners, sealed with Teflon® tape and plastic end caps, wrapped with duct tape, labeled, and immediately placed on ice. The boreholes were backfilled with their drill cuttings.

Because the investigation at the neighboring Seepage Pits site centered on defining the source of a variety of VOCs in the subsurface, particularly TCE, the original sampling plan for Site 36 identified in the TA-III/V RFI Work Plan (SNL/NM 1993a) was modified to include active soil vapor sampling and soil sampling for VOCs. Soil samples were collected at intervals of 10 to 20 ft for analysis of TPH and VOCs, and active soil gas samples were collected at intervals of approximately 40 ft to determine relative concentrations of VOCs in the vadose zone (Table 8-1).

Field screening was conducted on all samples collected during drilling at the HERMES site. A total of 10 active soil vapor samples from Borehole 36-BH-01 and 11 active soil vapor samples from 36-BH-02 were collected for on-site analysis of VOCs. Active soil vapor samples were collected at 10- and 20-ft intervals from a hollow steel rod lined with Teflon® tubing capped with a slotted drive point driven about 1 ft beyond the drill bit. A constant flow sample pump was connected to the surface end of the tubing. After purging a minimum of three tubing volumes (approximately 1,500 mL), a 500-mL sample of soil vapor was collected and submitted to SNL/NM's 7584 on-site laboratory for analysis of VOCs in accordance with EPA Method 8240.

A total of 13 samples from 36-BH-01 and 23 samples from 36-BH-02 were collected for screening of TPH by thermal desorption to determine concentrations of mineral oil throughout the soil column. Soil samples were collected from the areas of highest oil concentration and from the total depth of the boreholes for rapid (24-hr turnaround) off-site analysis of TPH by EPA Method 418.1 to verify that the vertical extent of contamination had been determined prior to closing the boreholes.

Based on the field screening results, additional soil samples were submitted for off-site laboratory analysis of VOCs and TPH. A total of 11 samples from 36-BH-01 and 13 samples from 36-BH-02 (including duplicates) were submitted for laboratory analysis of VOCs in accordance with EPA Method 8240. Thirteen samples from 36-BH-01 and 23 samples (including duplicates) from 36-BH-02 were submitted for off-site analysis of TPH in accordance with EPA Method 418.1.

Table 8-1
Summary of Soil Samples Collected From Boreholes 36-BH-01 and 36-BH-02

Sample Depth (ft)	Soil Vapor Sample		VOCs by 8240		TPH by TD/GC		TPH by 418.1	
	BH-01	BH-02	BH-01	BH-02	BH-01	BH-02	BH-01	BH-02
10		X		X		X		
20	X	X	X (D[a])	X	X		X	X
30		X				X		
40	X				X	X		
50		X				X		
60	X	X			X	X		
70		X		X		X		X (D)
80	X		X	X	X	X	X	X (D)
90				X		X		X (D)
100	X	X	X	X (D)		X (D)	X	X (D)
120	X		X	X		X (D)	X	X (D)
140	X	X				X		
160					X	X		
180					X	X		
200	X	X	X (D)	X (D)		X (D)	X (D)	X (D)
220					X	X		
240		X		X		X		X (D)
250	X							
260						X	X	X (D)
280			X		X	X	X	X (D)
300	X		X	X	X	X	X	X (D)
310					X		X	
320		X	X	X	X	X	X	X (D)
330					X		X	
340			X		X		X	
Total Samples by Type	10	11	11	13	13	23	13	23

[a]D = Duplicate sample.

8.3 Field Investigation Results

8.3.1 Aerial Photograph Interpretation

No new site features (other than those previously noted for the area) were identified within 1,000 ft of the site boundaries in any of the aerial photographs from 1973 to 1990 (Plate I). Lower altitude aerial photographs of TA-V over the same time frame show oil spills around the HERMES site, but no new sites or potential impacts from other sites were noted.

8.3.2 Shallow Subsurface Soil

All field screening and laboratory analytical results for the shallow subsurface soil samples are provided in electronic format in Appendices B and C, and the QA/QC data are provided in electronic format in

Appendix D. Only two samples exhibited TPH above the MDL of 20 mg/kg, and both of these contained asphalt fragments; TPH concentrations for these two samples were approximately 2,200 to 2,500 mg/kg. No samples contained any PCBs above the MDL of 33 µg/kg. No VOCs were detected above their respective MDLs.

8.3.3 Deep Subsurface Soil

A summary of those deep, subsurface soil samples containing organic analytes above the respective MDLs is provided in Table 8-2; detailed results for field screening, laboratory analyses, and QA/QC data are provided in electronic format in Appendices B, C, and D, respectively.

Table 8-2
Summary of Detected Constituents of Concern in Borehole 36-BH-01

Analyte	Range (mg/kg)	Detection Limit[a]	Total Samples	Number of Nondetects
2-Butanone	0.010-2.9	0.010-1.0	11	9
2-Hexanone	0.014-1.6	0.010-1.0	11	7
Acetone	0.005-12.0	0.010-1.0	11	6
Toluene	0.001-0.016	0.005-0.5	11	10
Xylene	0.005-0.044	0.005-0.5	11	9
TPH	20-36,000	20-1,000	21	9

[a]Detection limits for some samples were raised because of high TPH concentrations.

The general lithologies noted in Boreholes 36-BH-01 and 36-BH-02 (Appendix F) were brown to yellow-brown, medium-grained silty and gravelly sands. Occasional lenses of gravel, with diameters greater than 3 in., were encountered. The estimated permeability of the soils was generally moderate to high, with the gravel lenses expected to have the highest permeabilities.

8.3.3.1 Extent of Mineral Oil

Mineral oil contamination in the subsurface is profiled in Figure 8-3 by the thermal desorption screening and 24-hour turnaround TPH results from Borehole 36-BH-01 (the point of the highest contamination); results from the two methods agree well. Elevated oil concentrations begin at a depth of approximately 30 ft bgs (just below the 20-ft backfill depth) and range from 9,000 mg/kg to 36,000 mg/kg, with the highest concentrations occurring at a depth of 200 ft bgs. The levels quickly decrease from this point, however, and remain below 100 mg/kg from a depth of 200 ft bgs to the total depth of the borehole (340 ft).

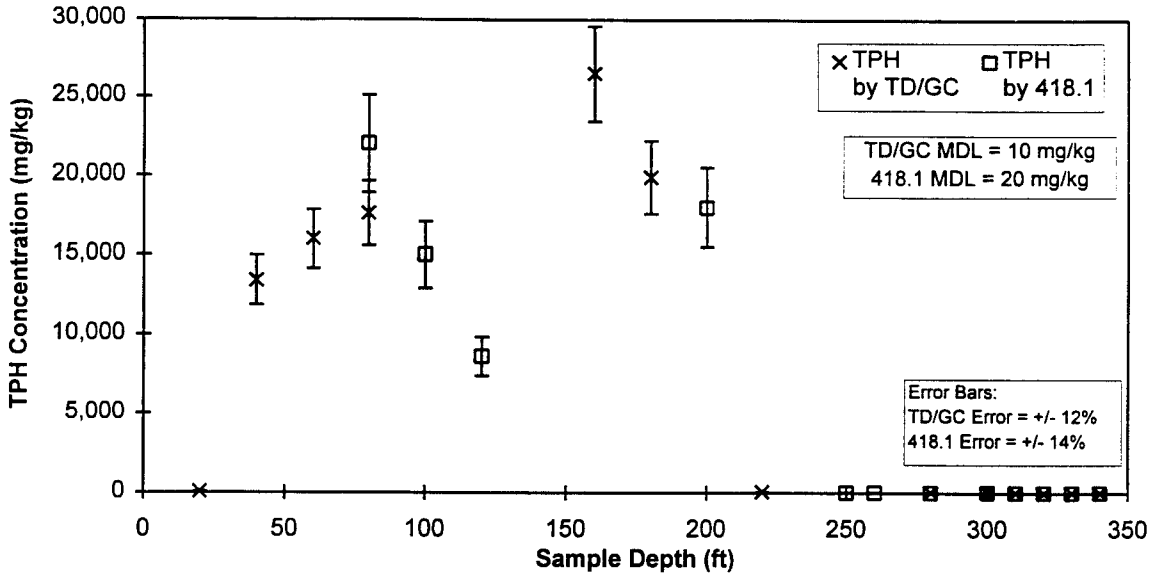


Figure 8-3a. Comparison of TPH Concentrations by Thermal Desorption/ Gas Chromatography and EPA Method 418.1 for Borehole 36-BH-01

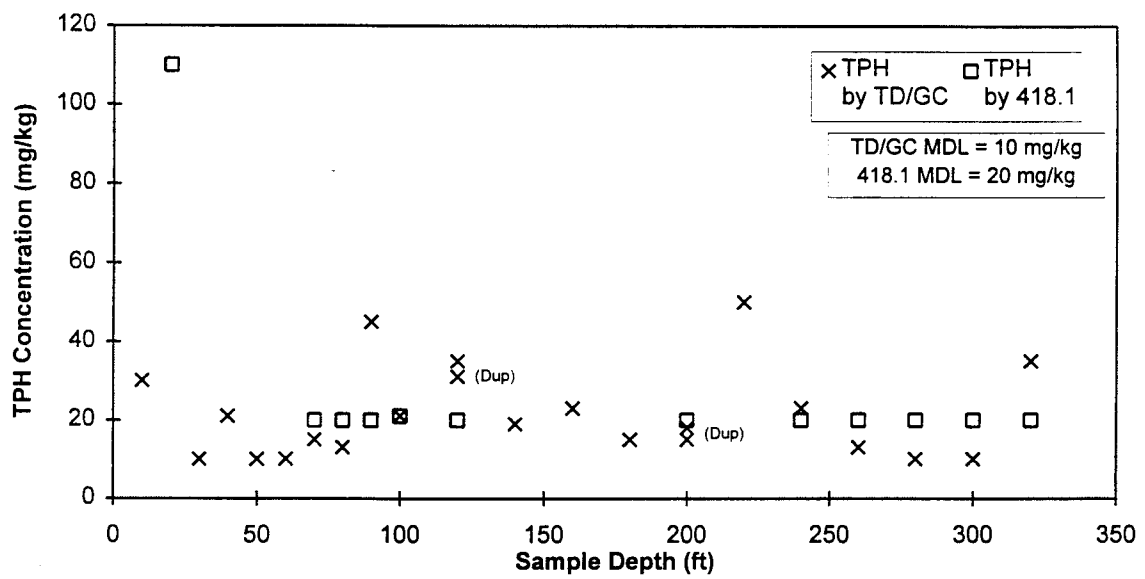


Figure 8-3b. Comparison of TPH Concentrations by Thermal Desorption/ Gas Chromatography and EPA Method 418.1 for Borehole 36-BH-02

The southwest extent of mineral oil, as profiled by the TPH results from Borehole 36-BH-02, appears to occur somewhere beneath Building 6596. Only one sample (at a depth of 20 ft bgs) contained TPH above 100 mg/kg (at a concentration of 110 mg/kg); all other samples indicated nondetect for TPH or ranged from 20 to 60 mg/kg.

8.3.3.2 Extent of Volatile Organic Compounds

The pattern of VOC concentrations is considerably more complex than the TPH concentration profiles (Figure 8-4). Levels of toluene and a variety of ketones, including acetone, 2-butanone (MEK), 2-hexanone (MBK), and methyl isobutyl ketone (MIBK), were indicated in both the active soil vapor and off-site soil sample analytical results.

The active soil vapor profile (included in Appendix B) for Borehole 36-BH-01 generally followed that for mineral oil: detectable concentrations of ketones were noted at a depth of 80 ft, increasing to higher levels at a depth of 200 ft, then dropping off at 250 ft bgs. A single occurrence of TCE in soil vapor was noted in the sample from 300 ft. In the second borehole (36-BH-02), a low level of xylene only was seen at a depth of 30 ft; a low level of MEK was noted at a depth of 200 ft. No VOCs in soil vapor were detected below this depth in the second borehole.

Off-site laboratory analytical results for the soil samples collected from Borehole 36-BH-01 indicated low concentrations of toluene, xylenes, and ketones throughout the soil column, but again, peaking at a depth of 200 ft bgs. At this depth, acetone concentrations reached 12,000 μg/kg. Initially believed to be a result of laboratory contamination, a soil sample split for the SNL/NM on-site laboratory was run for VOCs by EPA Method 8240, and acetone was confirmed in the sample because the on-site laboratory does not use acetone for any sample preparation processes. Three samples that similarly showed elevated ketones were reanalyzed, and the results for both the original analyses and the reanalyses are provided in Appendix C; the affected samples were all in Borehole 36-BH-01 and were from depths of 80.75, 201.00, and 201.25 ft bgs. All reanalysis results were within the same order of magnitude as the original analyses.

Concentrations of toluene were generally "J" values (i.e., an estimated value below the practical quantitation limit), except for a sample from a depth of 320 ft bgs, which had a concentration of 16 μg/kg toluene. Similarly, xylene concentrations were "J" values, except for one concentration of 13 μg/kg at a depth of 280 ft.

In Borehole 36-BH-02, a single occurrence of acetone (21 μg/kg) was noted at 20 ft; a single occurrence of methylene chloride (8.8 μg/kg) was noted at 320 ft bgs. No other VOCs were detected in Borehole 36-BH-02 above their respective MDLs.

Comparative profiles for TPH by thermal desorption and EPA Method 418.1, and for VOCs by soil vapor and EPA Method 8240, are illustrated for each of the boreholes in Figures 8-3 and 8-4, respectively.

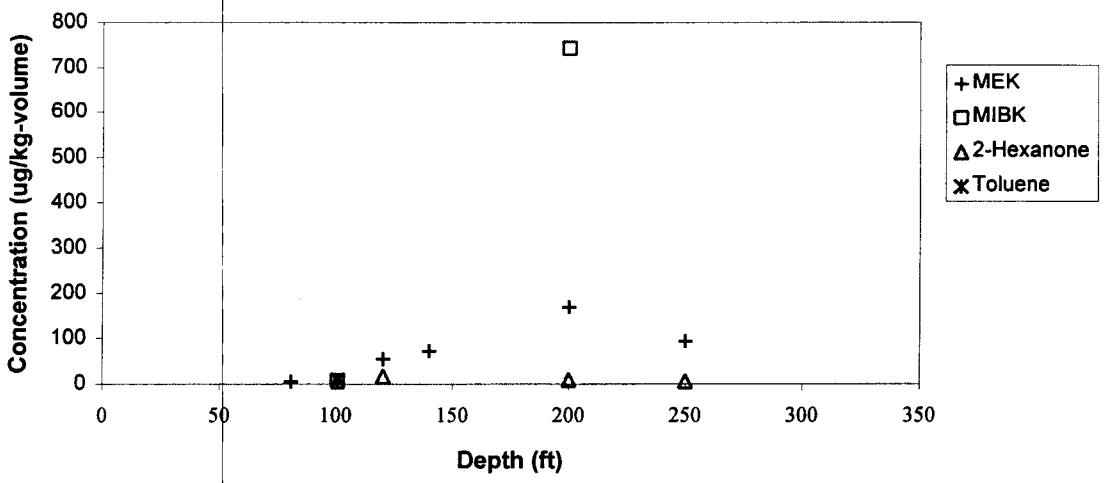


Figure 8-4a. Site 36 - On-Site Active Soil Vapor VOC Results (EPA 8240) for Borehole 36-BH-01

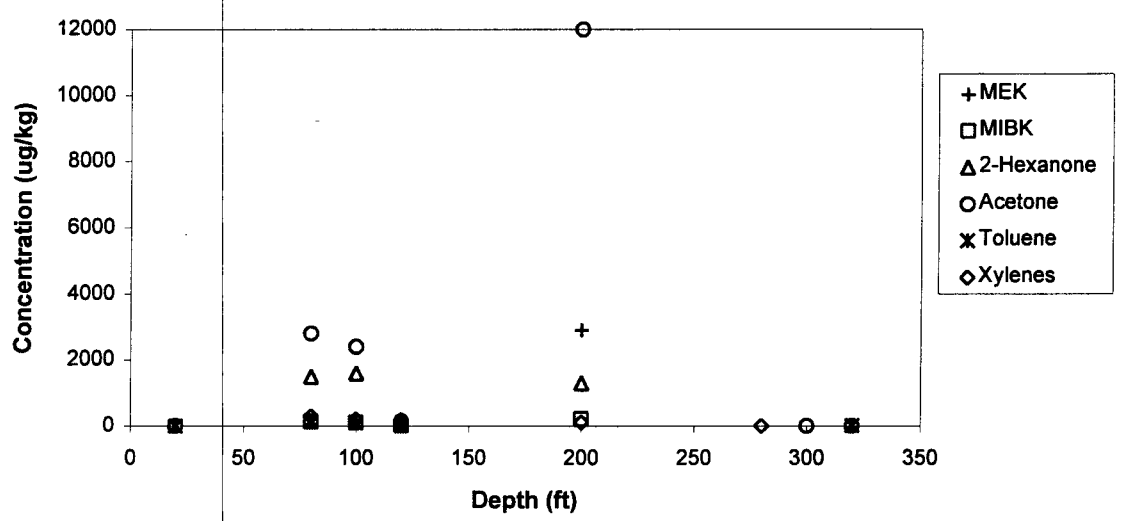


Figure 8-4b. Site 36 - Off-Site Soil Analytical VOC Results (EPA 8240) for Borehole 36-BH-01

8.4 Evaluation of Data

8.4.1 Shallow Subsurface

The data collected during the investigation of the shallow subsurface (i.e., less than 15 ft bgs) indicate that no shallow oil contamination exists at the site in the pathways most likely followed by the spilled oil. As indicated earlier, the only two samples that exhibited TPH above the MDL (20 mg/kg) were collected from a depth of 0 to 1 ft bgs and contained visible asphalt, the presence of which accounts for the elevated concentrations (approximately 2,000 mg/kg) observed in the two samples.

The QA/QC data collected for this sampling event indicate no off-normal occurrences in the off-site laboratory analyses.

8.4.2 Deep Subsurface

The variety of analytical methods employed during the investigation of the deep subsurface have generated a clearer, albeit more complex, profile of the organic contamination beneath the HERMES site than that provided by the OSI conducted in 1991.

The thermal desorption field screening for oil content, coupled with rapid off-site laboratory analysis, enabled a more detailed profile of oil contamination than previously delineated. In Borehole 36-BH-01, drilled in the area of highest contamination, oil concentrations increased dramatically from 20 ft to 40 ft bgs. Concentrations ranged from 9,000 mg/kg to 36,000 mg/kg at 40 ft to 200 ft bgs, then dropped off sharply to less than 100 mg/kg at a depth of 220 ft bgs. Good correlation was noted between the thermal desorption and off-site analytical TPH results (Figure 8-3).

Because it was initially believed that the high concentrations of acetone seen at a depth of 200 ft bgs were the result of laboratory contamination, the samples were reanalyzed at the off-site laboratory, and splits were analyzed at the SNL/NM on-site laboratory for VOCs per EPA Method 8240. The presence of acetone was confirmed. Thus, the COCs that are identified for the site are mineral oil, toluene, xylenes, and ketones.

Attempts were made to identify possible origins for the ketones and toluene. The mineral oil, as manufactured, contains no ketones. Any significant quantities of VOCs in the mineral oil would have adversely altered the insulating properties for which the oil was used. The oil does contain butylated hydroxy toluene in a concentration of less than 0.2 percent (by weight). This level is enough to produce the toluene concentrations seen in the soil column, approximately 5 to 16 μg/kg.

The origin of the ketones, however, is more problematic. There is no record of anyone using ketones in any quantity around the site.

One possible reason for the elevated levels of ketones observed in the first borehole is bacterial fermentation of aliphatic hydrocarbons by beta oxidation, which has been shown to produce acetone and other ketones (Cookson 1995; Britton 1984). This could account for the profile of VOCs roughly matching that of the TPH. Had the ketones been added from the surface, one would expect to see higher concentrations near the surface than at depths of 200 ft bgs. The volatility of acetone, in particular, is so

high that it would not be expected to have persisted to show high concentrations at depth, unless very high volumes of material had been introduced, no record of which activity exists. If fermentation of the oil produced the ketones, however, the concentration profile of the VOCs would reasonably be expected to approximate that of the oil, which is illustrated in Figures 8-3 and 8-4.

The low concentrations of xylenes are not readily explicable by either the site history or mineral oil formulation. Regardless of the origin of the VOCs beneath HERMES, none of them exceeds its respective proposed RCRA Subpart S soil action level (Table 8-3).

Table 8-3
Comparison of Maximum Constituents of Concern Concentrations to Proposed RCRA Subpart S Soil Action Levels

Analyte	Maximum Concentration (mg/kg)	Proposed RCRA Subpart S Soil Action Level (mg/kg)	Exceeds Proposed RCRA Subpart S Soil Action Level?
2-Butanone	2.9	50,000	No
2-Hexanone	1.6	NA[a]	NA
Acetone	12.0	8,000	No
Toluene	0.016	20,000	No
Xylene	0.044	200,000	No
TPH	36,000	100[b]	Yes

[a]NA = Not applicable. No proposed RCRA Subpart S soil action level is currently promulgated for this constituent.
[b]NMUSTR Standard.

8.5 Summary and Conclusions

The vertical and horizontal extent of contamination at the HERMES Oil Spill site has been defined by the activities undertaken in this RFI. The shallow subsurface has been demonstrated to have had no impact from the oil spilled over the years at the facility. The asphalt at the site slopes away to the northwest from the former location of the USTs, and would be the most likely pathway for the oil to have traveled. None was detected during the shallow subsurface investigation, however. It is probable that the initial UST and soil excavation removed the majority of the shallow soil that was impacted by the mineral oil spills.

Contamination in the deep subsurface has been more closely defined by this investigation. The vertical extent of mineral oil at the site is approximately 220 ft bgs, based on the results from Borehole 36-BH-01. Horizontal extent in the southwest direction was defined by the lack of contamination in Borehole 36-BH-02 and is bracketed (as closely as physically possible) by this borehole and the HERMES-SW borehole drilled during the OSI at the southwest corner of the site immediately next to Building 6596.

The highest levels of oil and VOCs are at a depth of 200 ft bgs, then decrease abruptly below this depth. The origin of the most of VOCs is postulated to be bacterial fermentation of the mineral oil. Furthermore, all are several orders of magnitude below their proposed RCRA Subpart S soil action levels. Because of this, and because the NMED/UST Bureau issued a finding of NFA in April 1995, Site 36 is proposed for NFA in accordance with Criterion 4 listed in Section 4.4 of this RFI report.

9.0 ER SITE 37: PROTO OIL SPILL

Site 37, the PROTO Oil Spill, is a 1-acre site located on the southeast side of TA-V near Building 6597 (Figure 9-1). The PROTO I Facility was used to test the radiation effects on instruments and weapon components between 1978 and 1989. Oil was stored in seven 25,000-gal. USTs adjacent to Building 6597 and was pumped in a closed-loop system between the building and the tanks. Oil spills occurred over the course of operations at the PROTO I Facility. The boundaries of the site are based on the pathway most likely followed by any potential surface spill from the USTs (Figure 9-1).

The site adjoins Site 155, the PROTO UST site. The USTs were excavated and removed in 1993, in accordance with the NMUSTR (NMEIB 1990). Sampling beneath the tanks indicated no soil remained in the excavation that contained TPH in excess of the NMUSTR standard of 100 mg/kg. Based on this information, Site 155 was subsequently deleted from the ER site list following a Class 1 permit modification with prior EPA approval.

Potential COCs include mineral oil and PCBs. Discussions of the investigation activities conducted during the RFI follow.

9.1 Field Investigation Protocols

Field investigations at the site included aerial photograph interpretation and shallow subsurface soil sampling. A discussion of each follows.

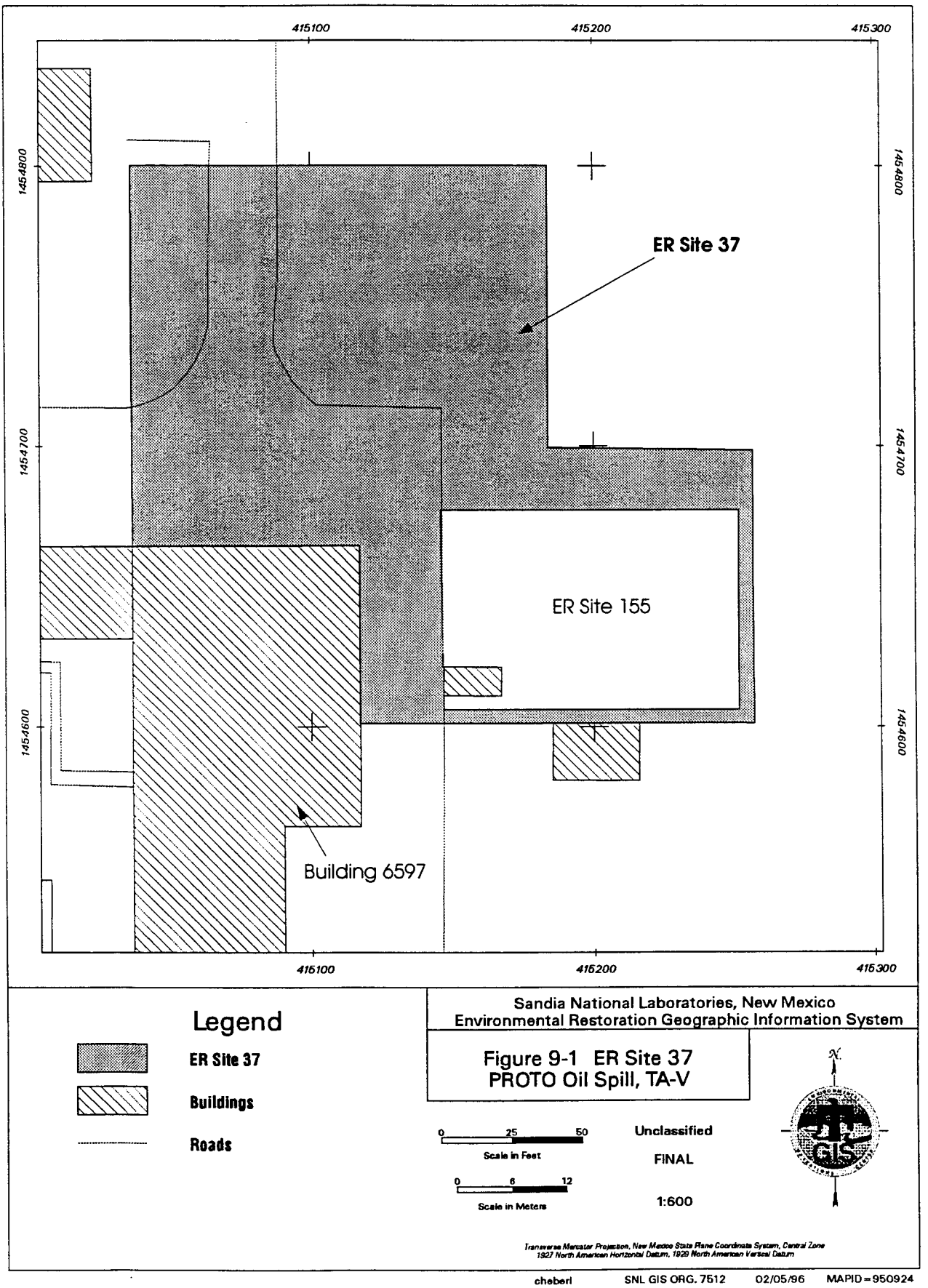
9.1.1 Aerial Photograph Analysis

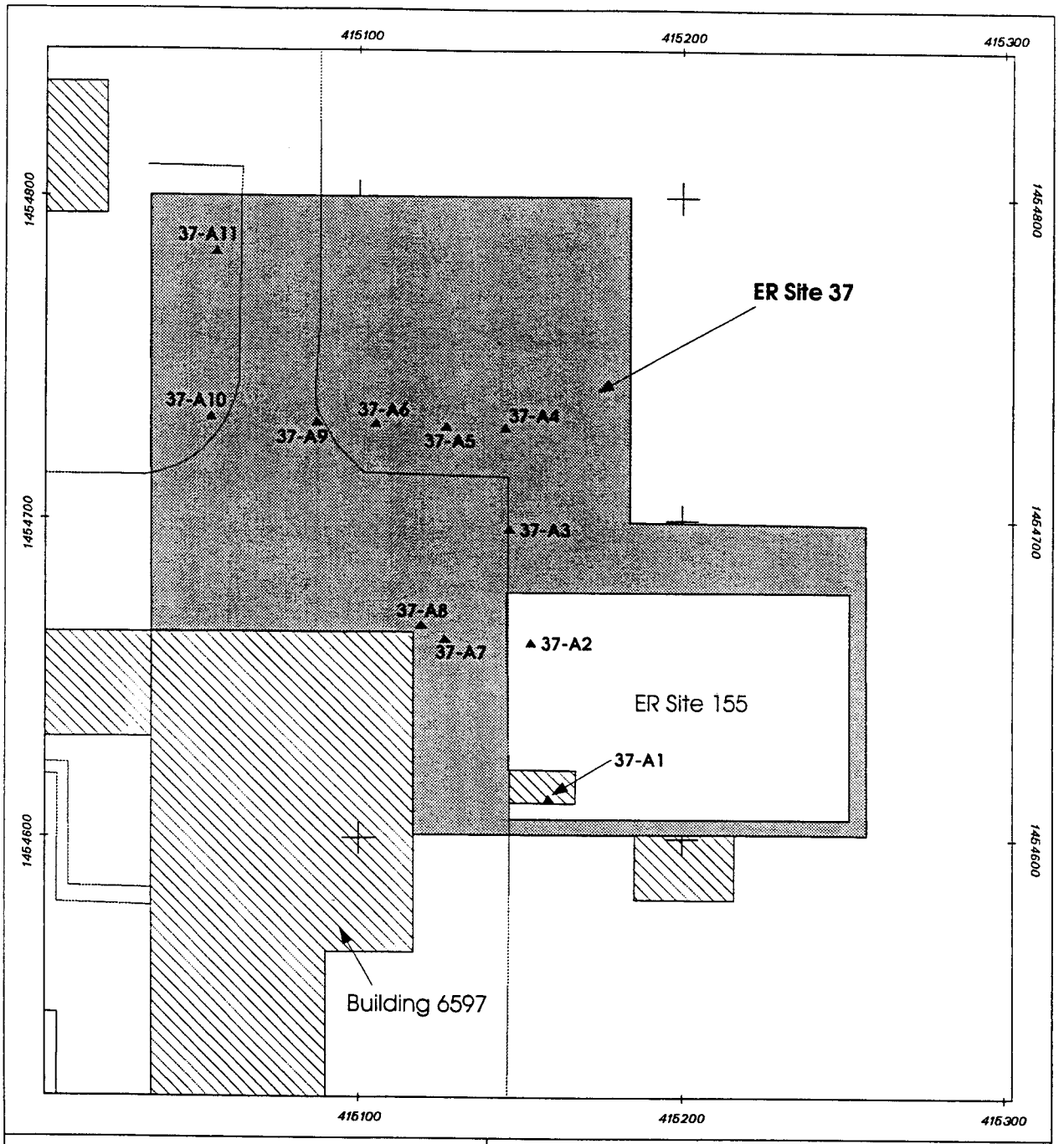
Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features in succeeding years at the PROTO Oil Spill site. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

9.1.2 Sampling Strategies

Subsurface soil sampling was conducted without modification from the RFI Work Plan (SNL/NM 1993a, 1993b). Eleven auger holes were advanced in the vicinity of the former USTs (Figure 9-2). Soil samples were collected following appropriate FOPs from depths of 1 and 5 ft bgs using a hand auger, for a total of 22 samples. Surveyed sample coordinates are provided in Appendix A.

Field screening of soil samples included immunoassay tests for PCBs and PID screening for VOCs. Based on field screening, seven samples (including a duplicate) were submitted for off-site laboratory analysis of TPH, and three samples were selected for analysis of PCBs and VOCs in accordance with the EPA methods listed in Table 2-2.


415100
415200
415300
1454800
1454700
1454600
ER Site 37
ER Site 155
Building 6597
Legend
ER Site 37
Buildings
Roads
Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System
Figure 9-1 ER Site 37
PROTO Oil Spill, TA-V
0 25 50
Scale in Feet
0 6 12
Scale in Meters
Unclassified
FINAL
1:600
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone
1927 North American Horizontal Datum, 1929 North American Vertical Datum
cheberl
SNL GIS ORG. 7512
02/05/96
MAPID=950924



Legend

- ER Site 37
- Buildings
- Roads
- 37-A1 Auger Soil Sample

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 9-2 ER Site 37
Location of
Near-Surface Soil Samples, TA-V

0 25 50 Scale in Feet

0 6 12 Scale in Meters

Unclassified

FINAL

1:600

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

cheberl SNL GIS ORG. 7512 02/05/96 MAPID=950925

9.2 Field Investigation Results

9.2.1 Aerial Photograph Interpretation

There were no surface features within 1,000 ft of the site in the 1973, 1975, 1978, or 1979 photographs (Plate I). A discussion of the subsequent years follows in chronological order.

- 1982: Two features appeared in 1982. A pile was located approximately 1,000 ft southwest and a cleared or disturbed surface existed approximately 950 ft to the southeast of the site.
- 1983: No surface features appeared within 1,000 ft of the site in 1983.
- 1984: The same features appeared as in the 1982 photograph.
- 1990: There were no surface features within 1,000 ft of Site 37 in 1990. The pile and excavation found in 1982 and 1984 were probably related to construction or equipment storage.

Additional aerial photographs of TA-V from the same period (but at a lower altitude) showed many areas of stained soil adjacent to the PROTO USTs. However, as discussed above, the sampling conducted during the excavation and removal of the tanks at Site 155 indicated no soil TPH concentrations in excess of the NMUSTR standard of 100 mg/kg remained in the excavation.

9.2.2 Nature and Extent of Contamination

Field screening results are provided in Appendix B, soil sample analytical results are provided in detail in electronic format in Appendix C, and QA/QC data are provided in electronic format in Appendix D. Analyses results indicate that TPH was not detected above the MDL (20 mg/kg). For VOCs, only 1,2-dichloroethane was detected above the MDL in auger hole 37-A4 at a depth of 2 ft bgs (6.3 μg/kg), but the concentration was not above the proposed RCRA Subpart S soil action level for this constituent (8 mg/kg). No PCBs were detected above the method MDL (33 μg/kg). None of the QA/QC samples contained any COCs above their respective MDLs.

9.3 Summary and Conclusions

Based on the results cited above, the COCs clearly are not elevated, and no additional sampling or remediation appears to be warranted. This site is proposed for NFA in accordance with Criterion 3 listed in Section 4.4 of this RFI report.

10.0 ER SITE 51: BUILDING 6924 PAD, TANK, AND PIT

ER Site 51 is a 0.5-acre site located in the southeast corner of TA-III, near the Site 241 Storage Yard (Figure 10-1) and includes Building 6924, a conventional metal stock holding tank, and a pit. Building 6924 was used for the synthesis of HEs and rocket propellant research from 1969 to 1971. The associated disposal system, consisting of a drainage trough and holding tank behind the building, was used to burn solvents contaminated with HEs.

Potential COCs include HEs and VOCs. Discussions of the field investigation protocols and results follow.

10.1 Field Investigation Protocols

10.1.1 Aerial Photograph Analysis

Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features in succeeding years at Site 51. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

10.1.2 Sampling Strategies

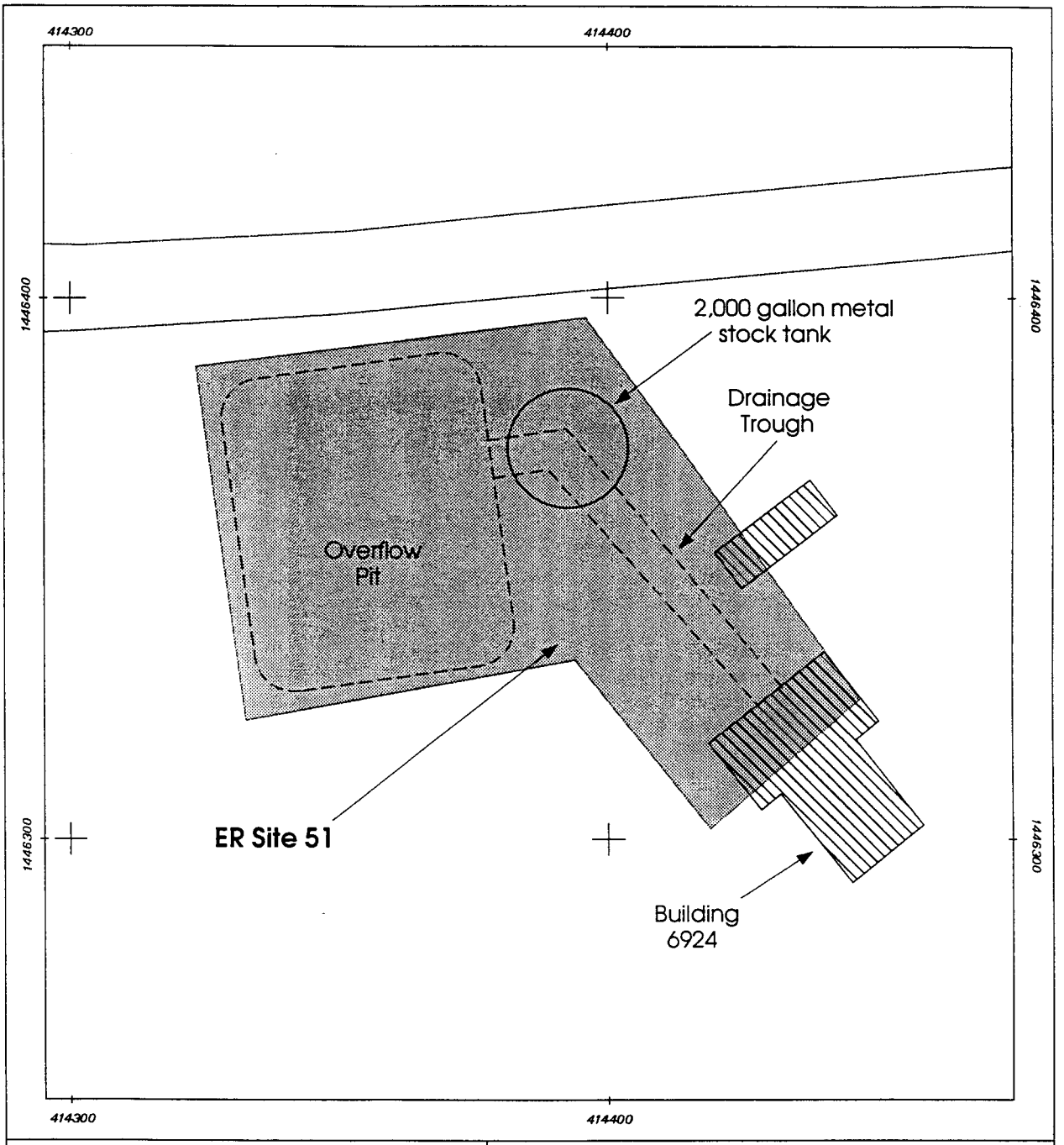
The 2,000-gal. metal stock tank was inspected, and no cracks, holes, or visible contamination were noted in the tank or surrounding soil. The stock tank drain line leading to the overflow pit was excavated using a backhoe; the pipe was intact, and no visible contamination was noted in the soils surrounding the pipe. A PID was used to monitor soils and the breathing zone for VOCs during all activities.

Four soil samples (plus a duplicate) were collected from a point adjacent to the concrete drainage trough (2 ft bgs), from beneath the center of the stock tank (3 ft below the tank bottom or 6 ft bgs), adjacent to the stock tank drain line (1 ft below the drain line or 4 ft bgs), and from the center of the overflow pit (2 ft below pit bottom or 7 ft bgs) (locations are illustrated in Figure 10-2; sample location coordinates are provided in Appendix A). Field screening of soil samples was performed using a colorimetric test for HEs and by PID screening for VOCs; no VOC contamination of the soils was identified using the PID, and no HEs were detected with the colorimetric tests. The soil samples also were analyzed at an off-site laboratory for VOCs, semivolatile organic compounds (SVOCs), HEs, and RCRA metals in accordance with the EPA methods listed in Table 2-2.

10.2 Field Investigation Results

10.2.1 Aerial Photograph Interpretation

A review of photographs for Site 51 indicated that there were no surface features within the site boundaries. The only year that anything was noted within 1,000 ft of this site was 1986, when a cleared or disturbed surface appeared approximately 600 ft to the southwest of the site boundary. An on-ground investigation failed to locate the feature because of revegetation of the area. It did not appear to have impacted ER Site 51 in any way.



Legend

ER Site 51

Buildings

Roads

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 10-1
ER Site 51 Building 6924
Pad, Tank and Pit, TA-III

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

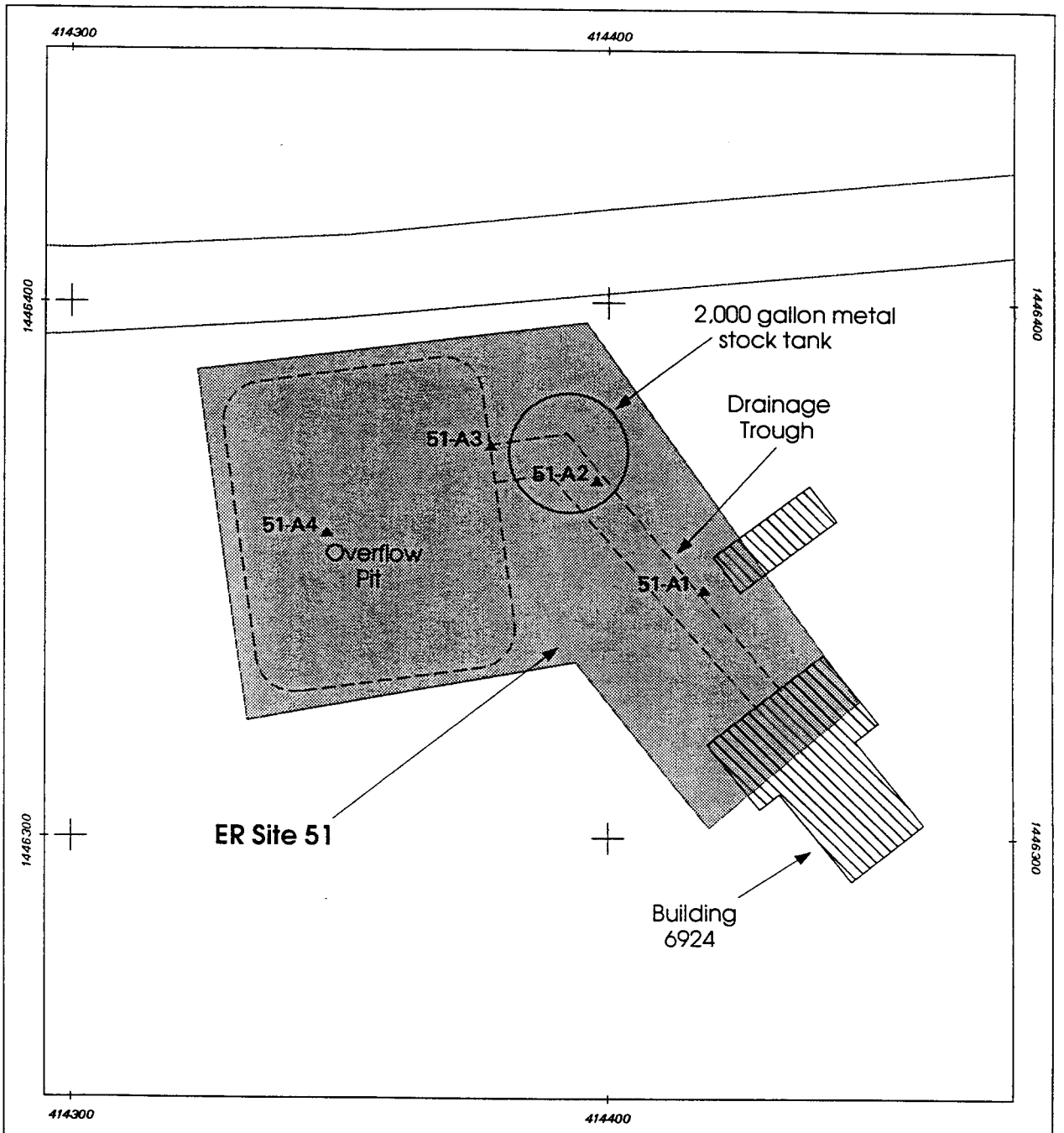
Unclassified

FINAL

1:360

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

cheberl SNL GIS ORG. 7512 02/08/96 MAPID=950926



Legend

- ER Site 51
- Buildings
- Roads
- 51-A1 Soil Sample

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 10-2
ER Site 51 Location of Soil Samples in Excavation, TA-III

0 15 30 Scale in Feet

0 3.6 7.2 Scale in Meters

Unclassified

FINAL

1:360

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

cheberl SNL GIS ORG. 7512 02/08/96 MAPID=950926

10.2.2 Nature and Extent of Contamination

Table 10-1 summarizes the soil sample analytical results for those COCs detected above the corresponding MDL. Field screening results are provided in Appendix B. Soil sampling results and QA/QC data are presented in electronic format in Appendices C and D, respectively. No VOCs or HEs were detected above their corresponding MDLs.

Table 10-1
Summary of Soil Sample Analytical Results - Site 51 Excavation

Analyte	Minimum/ Maximum	Sample ID	Result	Units	Detection Limit
Arsenic	Minimum	TA3/5-51-A3	1.8	mg/kg	1
	Maximum	TA3/5-51-A2	4.7		
Barium	Minimum	TA3/5-51-A1	83.8	mg/kg	1
	Maximum	TA3/5-51-A3	170		
Bis (2-Ethylhexyl) Phthalate	Minimum	TA3/5-51-A3	840	µg/kg	330
	Maximum	TA3/5-51-A2	1,400		
Chromium	Minimum	TA3/5-51-A3	2.4	mg/kg	1
	Maximum	TA3/5-51-A2	6.9		
Lead	Minimum	TA3/5-51-A1	5.6	mg/kg	5
	Maximum	TA3/5-51-A2	23		
Selenium	Single[a]	TA3/5-51-A2	1.8	mg/kg	0.57

[a]Single = Only one sample contained an analyte in excess of the MDL.

Arsenic, barium, bis (2-ethylhexyl) phthalate, chromium, lead, and selenium were detected in concentrations above their respective MDLs (Table 10-1).

Table 10-2 summarizes the comparison of background levels to concentrations of metals detected at Site 51, and Table 10-3 compares the COCs to their respective proposed RCRA Subpart S soil action levels. No metals were determined to be site contaminants based on the statistical analysis conducted for Site 51. A comparison of the central tendency for barium to that of the TA-III/V background data set resulted in failure for three of the tests (Table 10-3), indicating that the mean and median for the barium sample set might have exceeded those for the background set. However, the maximum barium concentration is below the UTL for the background set, and barium passes the Quantile test (considered more powerful for detecting discrete contamination), so it is not considered a site contaminant.

No similar statistical analyses were conducted for arsenic or selenium using the TA-III/V subset of site-wide background data, because no such data existed at the time that the statistics were run for this report. A comparison to data in the latest draft site-wide background report (IT 1996) indicates that both arsenic and selenium are within the ranges detected in the background study, and only selenium exceeds the UTL (0.5 mg/kg); however, the MDL for selenium (0.57 mg/kg) also exceeds the UTL. As indicated in Table 10-3, neither arsenic nor selenium exceeds its applicable proposed RCRA Subpart S soil action level. None of the other trace metals was above TA-III/V background levels, and no metal concentration from Site 51 exceeded the relevant proposed RCRA Subpart S soil action level.

Table 10-2
Comparison of Site 51 Subsurface Soil Results to Technical Areas III and V Background Data

Parameter	Population Distribution	Statistical Test Applied					Maximum Concentration at Site 51 (mg/kg)	Site Contaminant[b]
		Student's t-test		Wilcoxon	Quantile	UTL[a] or 95th Percentile (mg/kg)		
		Equal Variance	Unequal Variance					
Barium	Lognormal	Fail[c]	Fail	Fail	Pass[d]	341.0	170.0	No
Chromium	Lognormal	Pass	Pass	Pass	Pass	26.2	6.9	No
Lead	Lognormal	Pass	Pass	Pass	Pass	24.8	23.0	No

[a]UTL = Upper tolerance limit.
[b]Assessment of a site contaminant is based upon a qualitative evaluation of each statistical test applied to the data. For example: If all tests "fail," the highest concentration is statistically "greater" than background. If one or more tests "pass," other criteria may indicate that the highest concentration is not obviously, or statistically, greater than background. Other criteria include (1) the power of the individual statistical test, and (2) whether the maximum concentration exceeds the UTL or 95th percentile.
[c]Fail = Reject the null hypothesis that test statistics are equal.
[d]Pass = Accept the null hypothesis that test statistics are equal.

Table 10-3
Comparison of Site 51 Soil Analytical Results to Proposed RCRA Subpart S Soil Action Levels

Parameter	Maximum Concentration at Site 51 (mg/kg)	Proposed RCRA Subpart S Soil Action Level (mg/kg)	Exceeds Proposed RCRA Subpart S Soil Action Level?
Arsenic	4.7	20	No
Barium	170.0	6,000	No
Chromium	6.9	400	No
Lead	23.0	2,000[a]	No
Selenium	1.8	400	No
Bis (2-ethylhexyl) Phthalate	1.4	50	No

[a]Proposed lead action level (EPA 1996).

Bis (2-ethylhexyl) phthalate was also detected above its MDL; but again, no statistical analysis was possible because there were no site-wide background data available for comparison. Bis (2-ethylhexyl) phthalate is recognized by the EPA as a common laboratory contaminant because it is a breakdown product of polyethylene labware; therefore, this constituent is not considered a site contaminant. Even if it were, the maximum concentration is well below its proposed RCRA Subpart S soil action level.

10.3 Summary and Conclusions

Based on the review of sampling data and the statistical comparison of site analytical data to background and to proposed RCRA Subpart S soil action levels, this site is proposed for NFA in accordance with Criterion 3 listed in Section 4.4 of this RFI report.

11.0 ER SITE 78: GAS CYLINDER DISPOSAL PIT

11.1 Introduction

The Gas Cylinder Disposal Pit (GCDP) is an 80-ft by 180-ft site in TA-III east of the CWL (Figure 11-1). The pit was used from 1963 to 1984 to dispose of reactive chemicals and metals as well as flammable, oxidizing, toxic, and reactive gases.

Sampling at the GCDP, originally scheduled in the conventional RFI Work Plan for TA-III/V (SNL 1993a), was to consist of collecting near-surface soil samples and drilling shallow boreholes into areas likely to have aggregations of gas bottles or chemicals. Upon further evaluation, the proposed drilling program was considered too dangerous to worker safety. Hazardous wastes were believed to be present in unstable storage containers that could pose a threat of spontaneous release, resulting in a possible explosion and/or the potential for exposure of personnel to toxic compounds as a result of a container failure. In addition, it was deemed unlikely to adequately define the extent of contamination, since waste was assumed to be distributed in discrete and widely dispersed pockets (i.e., as individual gas cylinders). Therefore, an accelerated remediation, or VCM, was planned to mitigate hazards immediately, and the EPA was notified of this modified course of action on August 31, 1994.

Remediation activities were conducted on the assumptions that (1) there were unruptured gas cylinders that could leak or rupture spontaneously, (2) an intrusive investigation could cause catastrophic failures of pressurized and intact cylinders, and (3) any uncontrolled activities could result in an off-site release of hazardous or toxic chemicals. In addition to gas cylinders, other suspected contaminants in the GCDP included HE residues, hazardous and toxic gases, other chemicals, DU, and debris, as shown in Table 11-1.

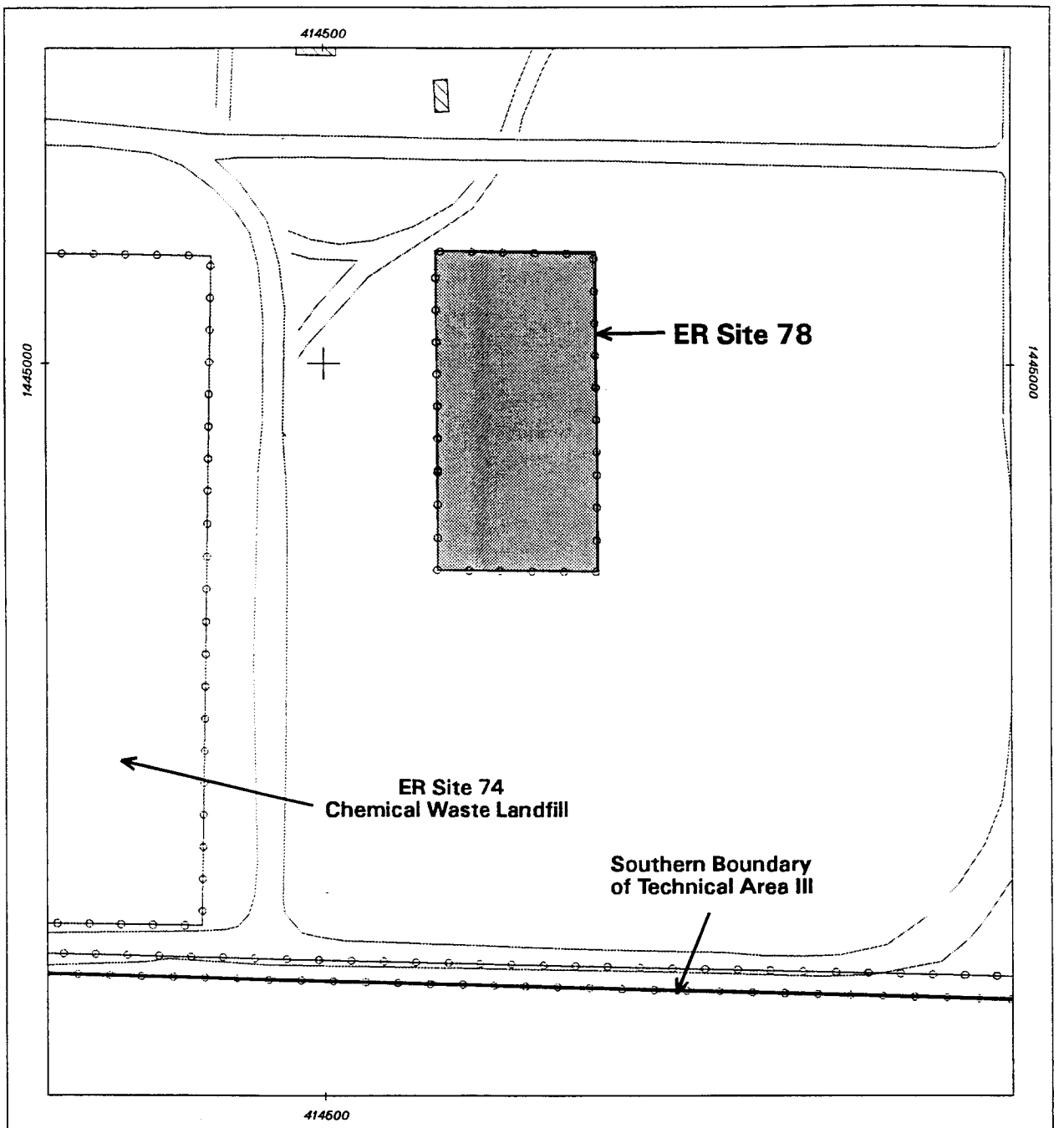
11.2 Objective of the Gas Cylinder Disposal Pit Remediation

The objective of the remediation of the GCDP was to mitigate the immediate hazard posed by Site 78 to human health and the environment. This action involved (1) removal and examination of the entire contents of the GCDP, (2) identification of contaminants, and (3) disposal of hazardous, radioactive, and solid wastes. This action was voluntary and was accelerated from the original schedule of site assessment, remedy selection, and full-scale remediation.

11.2.1 Project Summary

The GCDP remediation project was conducted in three phases.

- Phase 1—Preliminary health and safety survey to determine hazards and initially map the GCDP, a nonintrusive geophysical survey, a radiological survey, and limited intrusive soil sampling in areas considered to be uncontaminated outside the GCDP boundaries. The limited soil sampling was conducted in part to determine background constituent levels in the immediate vicinity of the GCDP and to identify COCs. Information collected during Phase 1 was used to develop a health and safety plan, and to focus and direct all subsequent intrusive activities in subdivisions of the GCDP.



Legend

ER Site 78

Buildings

Roads

Fences

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 11-1 ER Site 78
Gas Cylinder Disposal Pit, TA-III

0 50 100
Scale in Feet

0 12 24
Scale in Meters

Unclassified

FINAL

1:1200

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

cheberl SNL GIS ORG. 7612 03/11/96 MAPID=950928

Table 11-1
Chemical Inventory at the Gas Cylinder Disposal Pit (1963 to 1984)

Gases	Liquids	Solids
Anhydrous ammonia	Acetone	Halocarbon
Allene	Battery acid	Depleted uranium
Boron trifluoride	Epoxy resin floor sealer	
Butadiene	Fluorochemical	
Butene	Freon™	
Carbon dioxide	Laser scribe protective coating	
Chlorine	Nophenol	
Chlorotrifluoromethane	Oil	
Cyclopropane	Photoresist	
Deuterium	2-propanol	
Dichloroethylene (dichloroethene)	Sulfur compounds	
	Ethers	
Ethane	Picric acid	
Ethylene		
Fluorotrichloromethane		
Helium		
Hexafluoropropylene (hexafluoropropene)		
Hexafluoroacetone		
Isobutane		
Isobutylene (isobutene)		
Krypton		
Nitric oxide		
Nitrogen dioxide		
Pentafluorobutene		
Propane		
Propylene (propene)		
Sulfur dioxide		
Vinyl methyl ether		
Unknown gases		

- Phase 2—Excavation and artifact removal from subdivisions of the GCDP based on significant magnetic or radiological anomalies. Removal activities were designed differently in distinct subdivisions of the GCDP. Materials that were removed were segregated into the following:

  - Clean soil;
  - Stained, discolored, or otherwise suspect soils, including radioactively contaminated soils;
  - Intact (unbreached) and breached gas cylinders;
  - Container debris, including wood, metal and glass, and shrapnel;
  - Thermal batteries; and
  - Intact chemical containers.

  Magnetic surveys were conducted periodically (during and at the end of Phase 2) to ensure that metal and cylinders had been removed. A postexcavation radiation survey was conducted in the GCDP to ensure that all radioactively contaminated soils had been removed.

  Cylinders were structurally evaluated according to U.S. Department of Transportation (DOT) and Compressed Gas Association regulations and guidelines. Cylinder contents were transferred whenever necessary. Characterization of the contents of unbreached gas cylinders as well as characterization of other potentially hazardous and reactive chemicals was conducted. White light inspections of liquids were performed to identify picrate of peroxide crystal formation. Inspections of suspected HE materials were performed using the Exspray™ screening kit in the field. All scrap was surveyed for radioactive materials using pancake GM, alpha scintillometer, and 2-in. by 2-in. NaI gamma detectors. All thermal batteries were tested to determine whether they were live.

- Phase 3—After soil and gas cylinder chemical characterization, gas cylinders were either recycled with their contents, or the cylinders and contents were treated and properly disposed. Verification soil samples were collected from the GCDP to ensure all contaminants were removed.

11.3 Phase 1: Preliminary Work

The following subsections provide further details of the activities performed to accomplish Phase I.

11.3.1 Aerial Photograph Analysis

Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features during successive years at the GCDP. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction. There were no surface features noted in the 1973 through 1990 photographs within 1,000 ft of the boundaries of Site 78 (Plate I).

11.3.2 Health and Safety Survey

Field screening activities were conducted between March 4 and 5, 1994 using a Foxboro OVA 128 FID, a Mine Safety Appliances (MSA) photon PID, and a pancake GM radiation (beta/gamma) detector. The GCDP was marked off in 10-ft-square grids, and each grid was raked to a depth of 1 in. to break open the soil. The FID and PID were then placed in each area for a period of time sufficient to draw in an air sample for analysis. Neither the FID nor the PID indicated the presence of soil gas vapor anywhere at the site. Low-level radiation was detected at the southern end of the GCDP; radiation areas were marked with numbered flags, and the readings were recorded in the field. As suspect artifacts were encountered during the surveys, they were marked with numbered flags, and information regarding each was recorded.

The GCDP contained numerous glass and steel artifacts throughout. Many of the glass fragments presented the potential for injury to personnel working in the area. Several intact metal and glass chemical containers and gas cylinders were identified, and thermal batteries were noted in one area. The vegetation and uneven walking surface presented a high potential for injury from slips/trips/falls. Signs of active biological life were found throughout the GCDP, and the walls appeared to be stable. Preliminary subdivisions of the GCDP were made at this time.

11.3.3 Geophysical Surveys

Geophysical surveys were conducted between April 7 and 8, 1994 using a Geometrics G-856-AX proton precession magnetometer and a Geonics EM-61 high-precision metal detector deployed in the trailer mode. Plate III depicts the results of the preliminary EM geophysical survey and the areas delineating metallic burials (Lamb 1994). Based on the health and safety survey and the subsequent geophysical survey, the GCDP was subdivided into five sectors for planning purposes during Phase 2: A, the Thermal Battery Mound; B, the Cylinder Mound; C, the Suspect Burn Area; D, the Thorium-Contaminated Surface Soil Area (the Radioactive Materials Management Area [RMMA]); and E, Other (possibly uncontaminated) Areas.

11.3.4 Characterization of Radioactive Materials

After the initial health and safety survey identified an area of elevated radiation in the GCDP, SNL/NM Radiation Protection Operation health physicists conducted an additional radiation survey in the southern part of the GCDP between July 19 through 21, 1994. Surface soil samples were collected from three locations within the GCDP in areas suspected of being contaminated with radionuclides. The samples were collected with a stainless-steel trowel from a depth of 0 to 6 in. in accordance with SNL/NM FOPs (Table 2-1). Soil samples were analyzed for radionuclides at the SNL/NM Radiation Protection Measurements laboratory using gamma spectroscopy. Samples also were analyzed at an off-site laboratory for VOCs, SVOCs, and metals in accordance with the EPA methods discussed in Table 2-2.

Surveys also were conducted in the area immediately surrounding the GCDP and in an undisturbed region approximately 0.3 mi to the west of the site where natural background levels were measured. The radiological instruments used for all of these surveys included a Ludlum M-19 micro-R meter and a Ludlum M-44-10 2-in. by 2-in. NaI probe coupled to a Ludlum M-2221 rate meter/scaler. These instruments were both calibrated, and the functions checked, using a cesium-137 source.

Elevated radiological materials were identified as a gray, cement-like material, located on the surface of the soils toward the south end of the GCDP (Area D) (Figure 11-2). The preliminary radiation survey was used to determine that the southern area of the GCDP would be designated as a RMMA. A RMMA is a DOE designation of an area where reasonable potential exists for contamination of hazardous waste because of the presence of unencapsulated or unconfined radioactive material. This area did not extend into the Thermal Battery Mound (subdivision A), the Cylinder Mound (subdivision B), or the Suspect Burn Area (subdivision C) in the GCDP.

11.4 Phase 2: Excavation

The remediation of the GCDP was planned from the perspective of waste minimization and waste management, as well as careful attention to aspects of safety and construction.

11.4.1 Initial Planning and Design

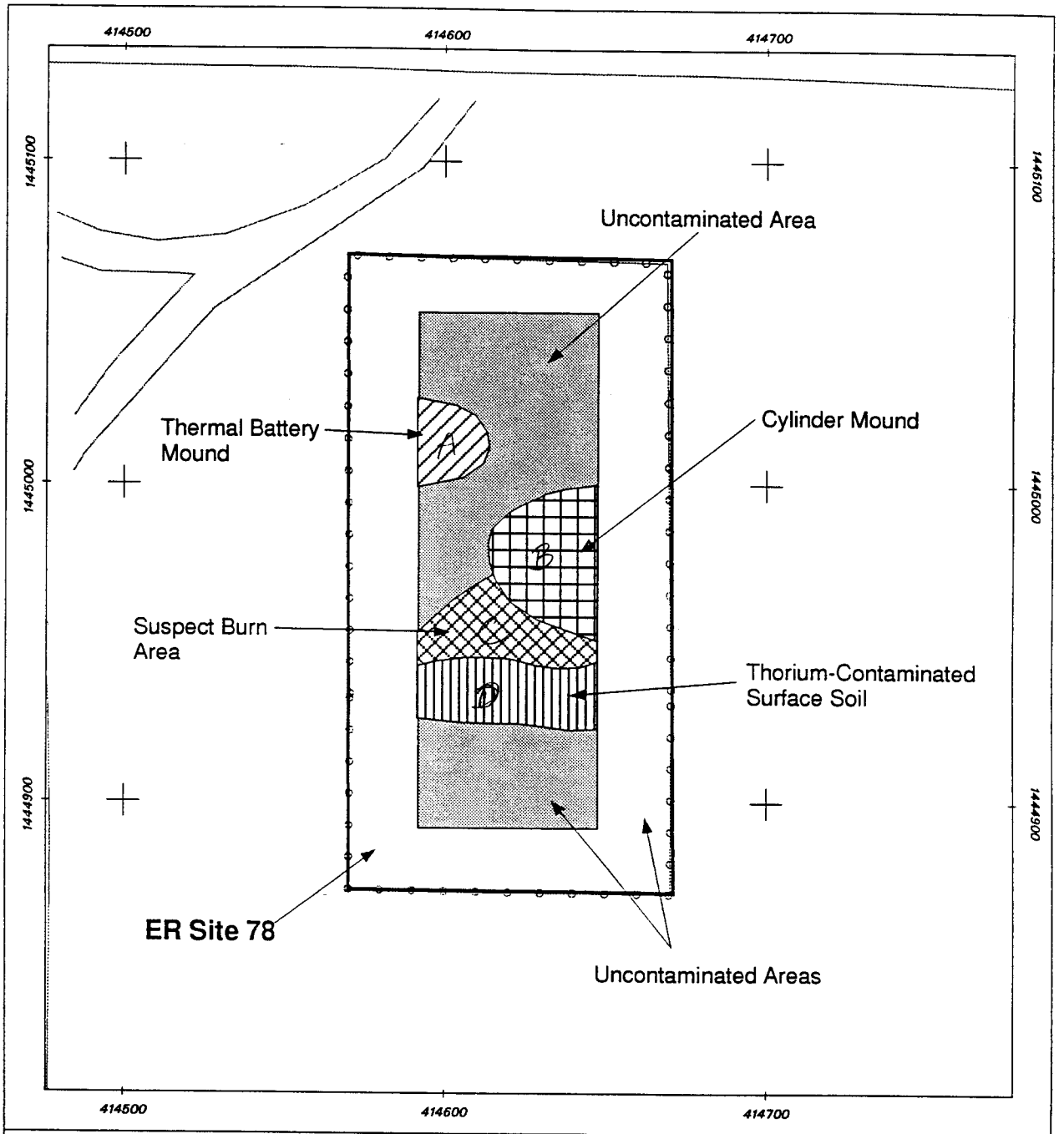
Various inspections and field screening tests were required during excavation and material segregation. The field inspections typically required a pass/fail decision (Figure 11-3). These decisions included (1) identification of GCDP materials, (2) removal and segregation of clean and suspect soils, (3) removal and segregation of breached and unbreached material containers, and (4) evaluation of container contents. Following surface debris removal, excavation proceeded from north to south. After an area was cleared, iterative magnetic surveys were performed to verify that all materials had been removed.

Soil and debris, decontamination water, personal protective equipment (PPE), ordinary trash, gases, and solid or liquid chemicals were the only anticipated wastes, and were likely contaminated with metals, chemicals, pressurized gases, HE residues, and radionuclides. Anticipated waste categories included nonregulated, hazardous, radioactive, and mixed (radioactive plus hazardous). The majority of waste by volume was expected to be nonregulated (clean soil). The layout of the site in relation to supporting construction and waste management areas was carefully prepared (Figure 11-4).

11.4.2 Field Screening and Analytical Methodologies

Field screening in Phase 2 was performed during all soil excavation activities to facilitate segregation. Both real-time instrumentation and field test kits were used to screen for diverse constituents. Metals in soils were screened XRF; VOCs were evaluated using Dräger tubes and a PID or FID; HEs were screened using Exspray™; and radiological constituents were evaluated using a pancake GM, an alpha scintillometer, and a NaI gamma spectrometer. Screening for thorium and DU also was performed using gamma spectroscopy. Action levels for field screening included mean background plus two standard deviations for XRF and radioactivity, and any positive reading for volatile organics and HEs. Detection of constituents above the action levels triggered material segregation and resulted in possible additional sampling.

Before soil placement in the staging area (Figure 11-4), composite grab samples of up to five aliquots of representative material were collected randomly from the bucket of the front-end loader. These soils were submitted for gamma spectroscopy and off-site laboratory analysis for HEs, VOCs, SVOCs, metals, and isotopic uranium, thorium, and plutonium in accordance with the methods discussed in Table 2-2.



Legend

ER Site 78

Roads

Fences

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 11-2 ER Site 78
Location of Select Pit Features, TA-III

0 25 50
Scale in Feet

0 6 12
Scale in Meters

Unclassified

FINAL

1:600

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

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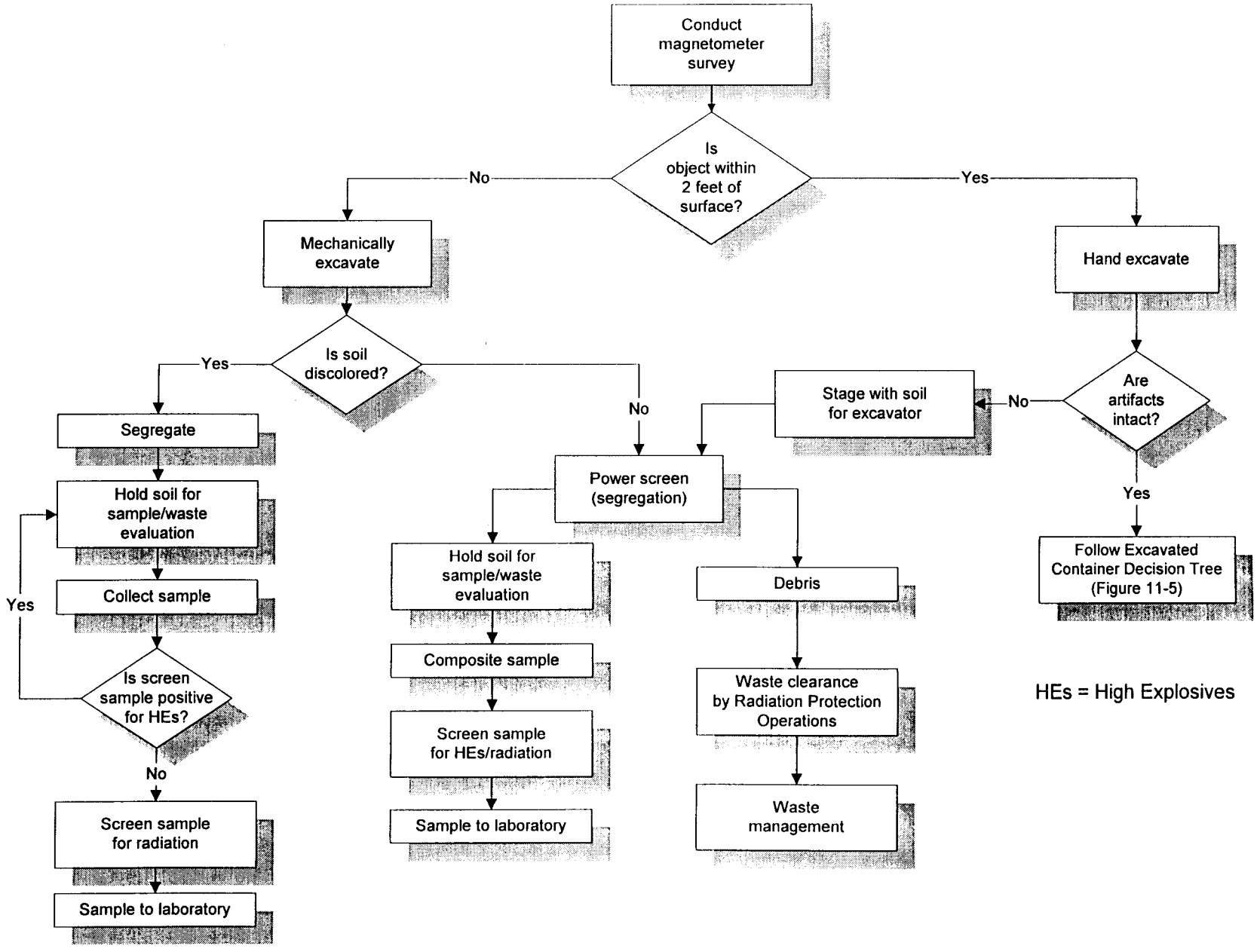


Figure 11-3. Excavated Materials and Soils Decision Tree - ER Site 78, Gas Cylinder Disposal Pit

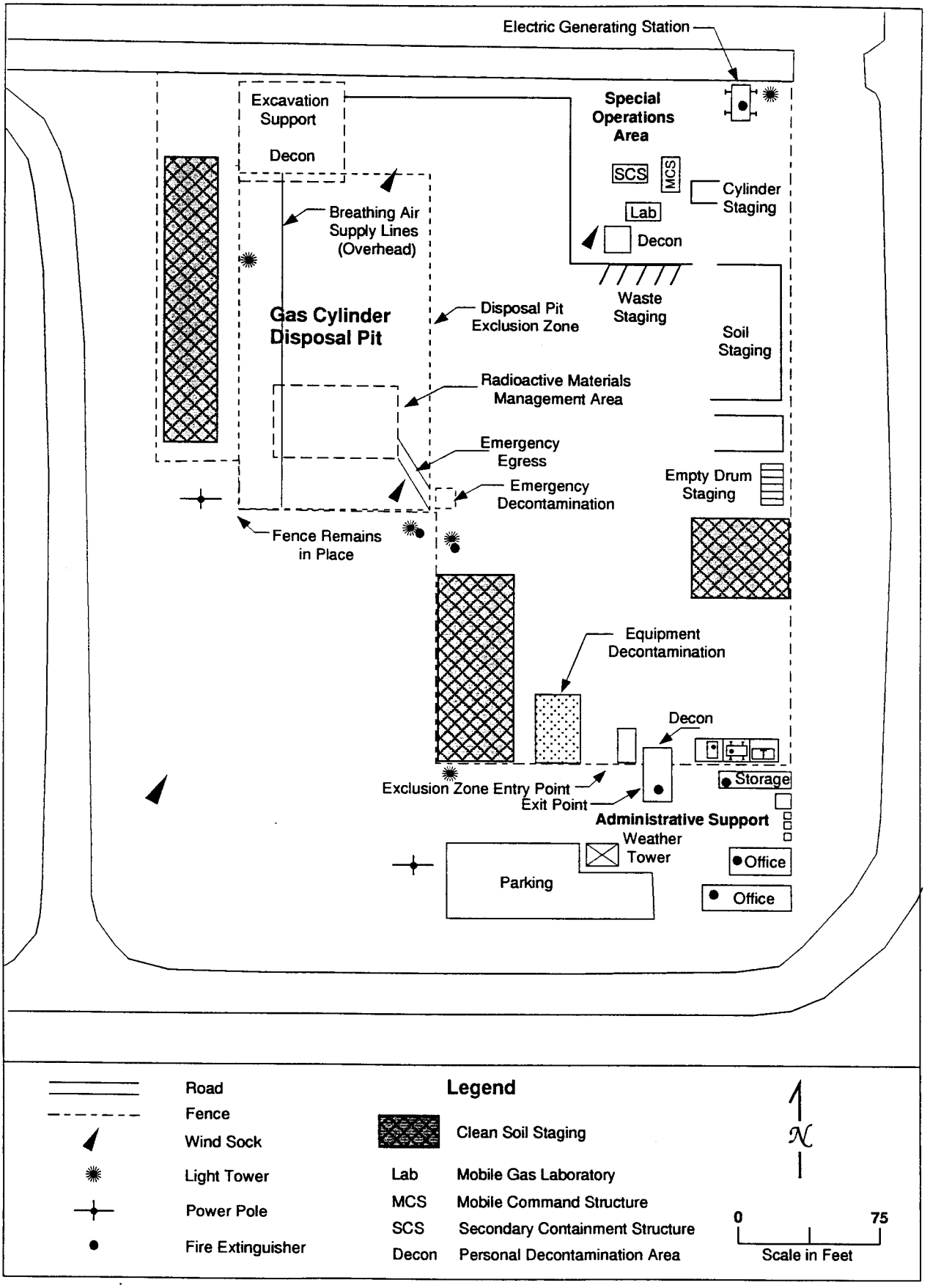


Figure 11-4. Site Layout - ER Site 78 Gas Cylinder Disposal Pit Remediation Project

11.4.3 Excavation Procedures

Excavation was a tightly controlled activity using experienced construction crews and gas cylinder specialists. All field crews had specialized training in waste management and waste minimization in addition to their DOE Radiological Worker II training. Remediation proceeded from north to south in the GCDP, following the slope contour. A trackhoe was used for coarse excavation during nonhazardous phases of removal. The trackhoe was positioned in the GCDP itself. Soils were collected in the bucket of a front-end loader and placed directly into drums or directly into 40-yd rolloff bins. All soils were passed through a 2-in. mesh screen before removal or containerization. Archaeological-type hand excavation of gas cylinders, reactive chemicals, and thermal batteries was conducted using nonsparking shovels after the trackhoe could not continue. Level A or B PPE was used during excavation activities, including hand excavation and work requiring the trackhoe or backhoe.

Thorium-contaminated soil was drummed directly in the GCDP and subsequently staged on site. Chromium-contaminated soil (associated with a group of ruptured and intact thermal batteries) was removed from the GCDP. Suspect soil was removed and staged until waste characterization was completed (this soil was to be placed back into the GCDP). Thermal batteries, lithium metal, rubidium metal, unknown chemicals, and gas cylinders approximately a quarter of which contained inert, flammable, toxic, corrosive, or oxidizing gases, were removed and managed to minimize waste. Table 11-2 summarizes these waste streams and the quantities of materials removed from the GCDP.

11.4.4 Waste Management

Soils and debris were staged in specific engineered locations east of the GCDP (Figure 11-4) until results of laboratory analyses were available and the waste types were determined. Soils were staged in large areas or placed directly in rolloff bins for immediate disposal. Debris (wood, metal scrap [including breached cylinders], thermal batteries, glass, and bulk chemicals) from the GCDP was staged in five smaller engineered staging areas. Pressurized gas cylinders and intact chemical containers recovered from the excavation were staged separately from all other materials. Before packaging, all debris and scrap removed from the GCDP was screened for radioactive contamination using a NaI radiation detector, and swiped and counted using a gas proportional counting system.

The RMMA was sectioned into quadrants approximately 30 ft by 40 ft. Each quadrant was investigated and excavated separately to facilitate waste minimization. Every trackhoe excavator bucket of soil and debris was screened before it left the GCDP using a NaI radiation detector, and radioactive soil was segregated and drummed in the GCDP itself. All containers and staging areas were marked with appropriate labels.

11.5 Phase 3: Characterization and Verification Activities

Thermal batteries were rendered inert and disposed of as hazardous waste. Lithium metal was repackaged and disposed. Rubidium metal was transferred to the SNL/NM Metals Reapplication Program, but was ultimately disposed. Based on evaluation, SNL/NM staff found none of the intact cylinders met DOT shippable criteria because of corrosion, nonfunctional valving, dents, or other

Table 11-2
Summary of Waste Streams and Quantities

Waste Stream	Quantity	Waste Components	Disposition
Thermal batteries	1,120 lb	Chromium and HEs	Disposed of through SNL/NM hazardous waste facility.
Lithium metal	5 lb	Pure lithium	Disposed of through SNL/NM hazardous waste facility.
Rubidium metal	6.5 lb	Pure rubidium	Recycled of through SNL/NM metals reapplication program.
Unknown chemical	100 lb	Unknown	Disposed of through SNL/NM hazardous waste facility upon determination of hazard category (i.e., reactive, toxic, flammable, or corrosive).
Scrap metal	8,618 lb	Iron	Disposed of through SNL/NM hazardous waste facility.
Thorium-contaminated soil	140 yd^3	Thorium	Final disposition not determined at present. Still on site.
Chromium-contaminated soil	270 yd^3	Chromium	Disposed of through SNL/NM hazardous waste facility.
Inert gases	100 ft^3	Carbon dioxide, helium, and argon	Vented to atmosphere.
Hazardous/toxic gases	<100 ft^3	Numerous materials[a]	Treatment.[b]
Used PPE	4,168 lb	Used garments, gloves, and cartridges	Disposed of through SNL/NM hazardous waste facility.
Decontamination water	15,510 lb	Water	Disposed of through SNL/NM hazardous waste facility.
Glass	5 lb	Broken glass	Disposed of through SNL/NM hazardous waste facility.
Scrap wood	560 lb	Pallets and miscellaneous scrap	Disposed of through SNL/NM hazardous waste facility.
Visqueen	2,203 lb	Tarpaulins and decontamination pad	Disposed of through SNL/NM hazardous waste facility.
Clean soil	1,200 yd^3	None	Returned to the GCDP.

[a]Chlorodifluoromethane, sulfur dioxide, nitric oxide, ammonia (anhydrous), benzene (liquid under nitrogen), hydrogen sulfide, ethane , propanethiol, methyl fluoride, silicon tetrafluoride, tetrafluoroethylene, ethane/methane (mixture), butane, allene (propadiene), nitric/nitrous oxide (mixture), phosphine, diborane/pentaborane, boron trifluoride, carbonyl sulfide, dimethyl ether, nitrosyl chloride, and hydrogen chloride.

[b]Treatments included flaring (burning using a propane-fed combustion unit), neutralization, oxidation/neutralization, and hydrolysis/neutralization, depending on the material.

miscellaneous damage; these cylinders were deemed unstable and unsafe by SNL/NM Safety Engineering (Organization 7732), and the contents had to be rendered safe at the GCDP site.

11.5.1 Cylinder Evaluation

Cylinder evaluation was a multistep process (Figure 11-5). Initially, when cylinders were excavated, each underwent a visual inspection; breached cylinders were discarded as scrap metal, and those that appeared to be intact were subjected to closer inspection. This inspection included a survey using common field-portable direct reading instruments (including a GOW-MAC® gas leak detector, and a Gastech Model 1314 in the milligrams per kilogram combustibles mode), and a soap film test to determine whether leaks were present. Cylinders were stored in a special containment building outfitted with air scrubbing equipment; the building was visually checked and monitored daily using a PID, FID, and Dräger tubes.

The next step in cylinder evaluation was similar to the initial inspection, but was performed under controlled conditions. Cylinder cleaning was included as an initial step, each container was given a unique identification number, and all leak testing was repeated. Each container was examined in detail; physical measurements, including specific defects, the wall thickness, color codes, special construction or special metal alloys, and the type and construction of the valve were recorded on preprinted forms. Cylinders were photographed using a Polaroid® camera, and most evaluations were videotaped. Color copies of the photographs and copies of all field data were mailed from the field to the contractor's main office and laboratory for review and consultation on possible courses of action.

11.5.2 Cylinder Analysis

Cylinder content analysis was performed in an on-site mobile laboratory containing a Nicolet 205 Fourier transform infrared spectrophotometer and a Hewlett Packard 5972 mass spectrometer. Cylinders were connected directly to the instruments by a vacuum manifold, using either their existing valving or a new valve installed on the cylinder sidewall using a proprietary "hot tapping" method referred to as high pressure container access (HPCA). The HPCA installation was somewhat analogous to installing an in-line saddle and new valve or piping on an existing conventional plumbing system. Small quantities of gases were allowed to bleed through the vacuum manifold system if it was still pressurized; alternatively, helium gas was used to purge the cylinder if the pressure in the cylinder was at 0 pounds per square inch, gauge (psig). Instrumentation was operated in accordance with manufacturer's instructions and EPA protocols.

11.5.3 Cylinder Stabilization

On-site stabilization of reactive gases from unstable cylinders was performed after registration with the city of Albuquerque Air Quality Division. Registration with the city was required because of the hazardous and reactive nature of the contents of certain cylinders and because of the small quantities (less than 40 lb or 100 ft^3 total) of materials found. (A permit would have been required if the city had determined that a significant amount of hazardous air pollutants would be emitted [on a case-by-case basis, with no emission limit set] or if the precontrolled emission rate exceeded 10 lb per hour or 25 tons per year.) This course of action also was consistent with SNL/NM's existing agreement with the NMED

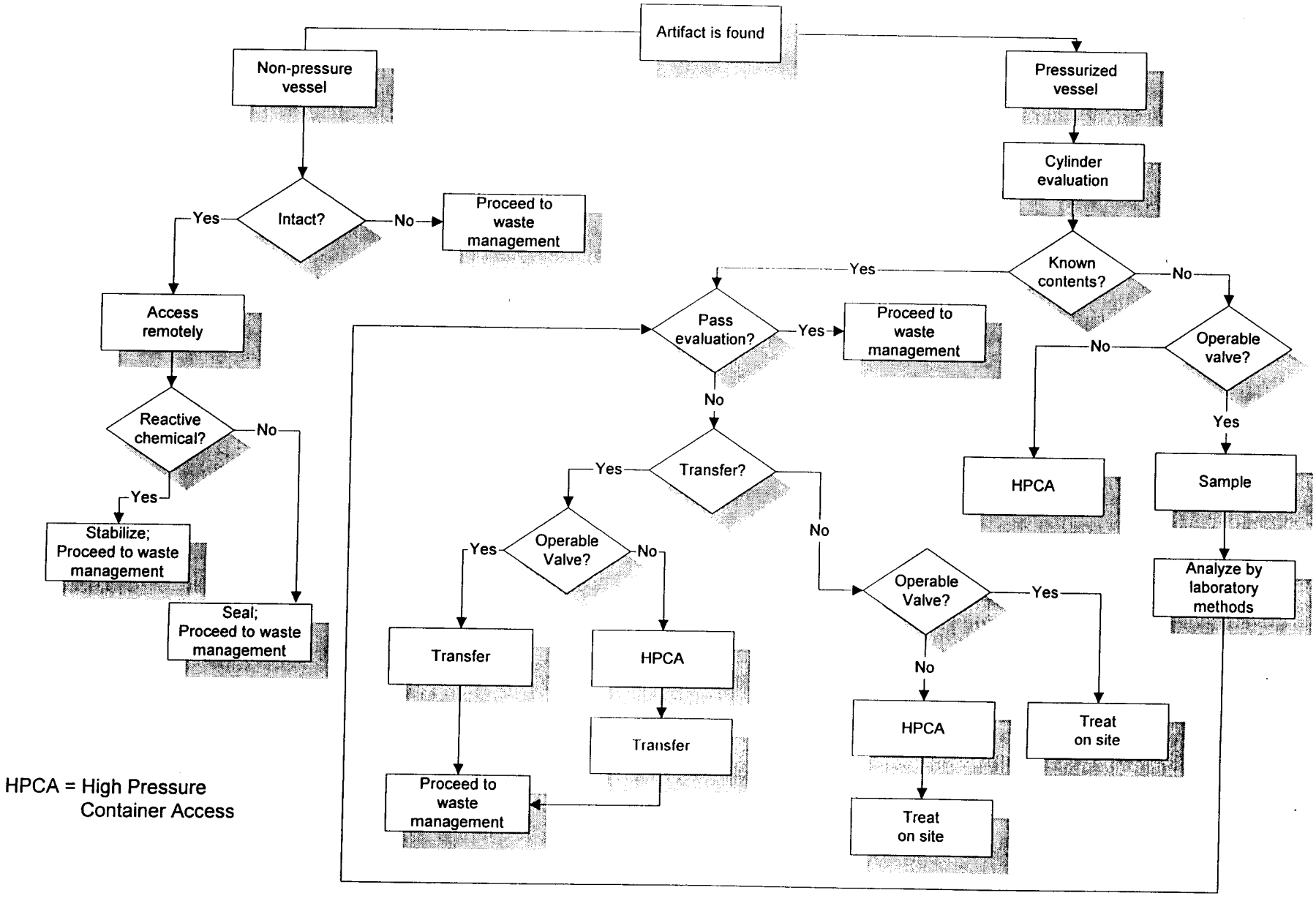


Figure 11-5. Excavated Container Decision Tree - ER Site 78, Gas Cylinder Disposal Pit

regarding permitting of potentially explosive and unstable chemicals. In that agreement, NMED determined that the treatment of potentially explosive and unstable chemicals to render them nonhazardous was exempt from the permitting and from the substantive requirements that are outlined in the New Mexico Hazardous Waste Management Regulations. All treatment process residue was disposed through the permitted Hazardous Waste Management Facility (HWMF) at SNL/NM.

Management of any specific gas from a cylinder depended on the gas identified. A multiple decision pathway on the management and disposition of contents of each group of cylinders was initially compiled. A decision on the best option for the management of gas from a particular cylinder was then determined, although contingencies also were retained. The option of making an immediate decision to protect human health and the environment if a toxic release, explosion, or fire occurred during handling was retained for all cylinders.

If the original cylinder contained a sufficient quantity of gas, the preferred option for flammable, toxic, corrosive, or oxidizing gases was transfer of the gas to a DOT-shippable container (Table 11-3). The remaining options for some reactive or toxic gases included neutralization, oxidation, or hydrolysis. Certain very toxic materials required special handling or transfer of contents to a new package without treatment. For nontoxic or halogenated flammable gases, the option was flaring (i.e., burning using a propane-fed combustion unit). For inert gases, the preferred option was release to the atmosphere. Descriptions of management methods for pressurized gases are detailed in Annex I.

11.6 Verification Activities

11.6.1 Sampling Strategies

Verification sampling was conducted to confirm cleanup of contamination at the site and was modified from the original RFI TA-III/V Work Plan for Site 78 (SNL/NM 1993a), with some additional sampling verbally requested by NMED DOE Oversight Bureau personnel (SNL/NM 1995c). During the course of the VCM, it became clear that five distinct disposal areas were present in the GCDP and that the sampling proposed in the Work Plan would not provide verification that these areas were sufficiently remediated.

Verification sampling was conducted after completion of the excavation when field screening indicated very low to nondetectable concentrations of contaminants. The five distinct areas (identified in Figure 11-6) were then sampled individually using a small-diameter hydraulic probe.

A total of seven boreholes were advanced in the GCDP for verification sampling (Figure 11-6). Appendix A provides the borehole location coordinates. One borehole was probed in each of the five areas; two each were probed in the chromium-impacted thermal battery mound and thorium-contaminated areas as duplicate boreholes. The boreholes were advanced to a depth of 5 ft below the pit bottom (which itself was approximately 15 ft bgs), and soil samples were collected at depths of 1 ft and 5 ft (for a total of 14 samples). The samples were analyzed at an off-site laboratory for VOCs, SVOCs, HEs, RCRA metals, and isotopic uranium, thorium, and plutonium.

Table 11-3
Proposed Management of Cylinder Contents

Compound Identified	Regulatory Status[a]	Number of Containers[b]	Management
1,1-difluoroethene	Ozone-depleting substance	1	Transfer
Air/empty	Not regulated by RCRA	36	Release untreated
Alkylfluorosilane (dimethyl difluorosilane)	D003	4	Ship to off-site treatment facility
Allene (propadiene)	D001, D003	1	Flare
Ammonia (anhydrous)	Not regulated by RCRA	1	Neutralize
Argon	Not regulated by RCRA	3	Release untreated
Benzene (liquid under N_2)	U019	3	Transfer
Boron trifluoride	D003	1	Hydrolyze/neutralize
Butane	D001	1	Flare
Carbon dioxide	Not regulated by RCRA	1	Release untreated
Carbon monoxide	Not regulated by RCRA	1	Release untreated
Carbonyl sulfide	D001, D003	1	Oxidize/neutralize
Chlorodifluoromethane	Ozone-depleting substance	1	Transfer
Chlorofluorocarbons (other)	Ozone-depleting substance	1	Transfer
Diborane/pentaborane	D001, D003	1	Oxidize/neutralize
Dimethyl ether	D001	3	Flare
Ethane	D001	1	Flare
Ethane/methane (mixture)	D001	1	Flare
Hydrogen sulfide/Carbonyl sulfide/Carbon disulfide	D001, D003	1	Oxidize/neutralize
Hydrogen sulfide/Nitrogen/ Carbon disulfide	D001, D003	1	Oxidize/neutralize
Helium	Not regulated by RCRA	1	Release untreated
Hydrogen chloride	Not regulated by RCRA	2	Neutralize
Hydrogen sulfide	U135	5	Oxidize/neutralize
Methane	D001	1	Flare
Methyl fluoride	D001	1	Transfer
Nitric oxide	P076	1	Neutralize
Nitric/nitrous oxide (mixture)	D003	2	Oxidize/neutralize

[a]NA = Not applicable.

[b]After evaluation, the container holding rubidium was not considered to be a gas cylinder and is not included in the total count of 97 cylinders. Out of 96 intact cylinders, 36 contained air or were empty and had last contained air. Other forms of management were performed on the remaining 60 cylinders.

Table 11-3
Proposed Management of Cylinder Contents (Concluded)

Compound Identified	Regulatory Status[a]	Number of Containers[b]	Management
Nitrogen	Not regulated by RCRA	4	Release untreated
Nitrosyl chloride	D003	1	Hydrolyze/neutralize
Phosphine	P096	1	Oxidize/neutralize
Propanethiol	D001	1	Oxidize/neutralize
Rubidium	NA	1	Special handling
Silicon tetrafluoride	D003	3	Hydrolyze/neutralize
Sulfur dioxide	Not regulated by RCRA	3	Neutralize
Tetrafluoroethylene	D001, D003	3	Transfer
Trace hydride	Not regulated by RCRA	1	Rinse with alcohol
Unknown (possibly lithium/rubidium)	NA	1	Special handling

[a]NA = Not applicable.

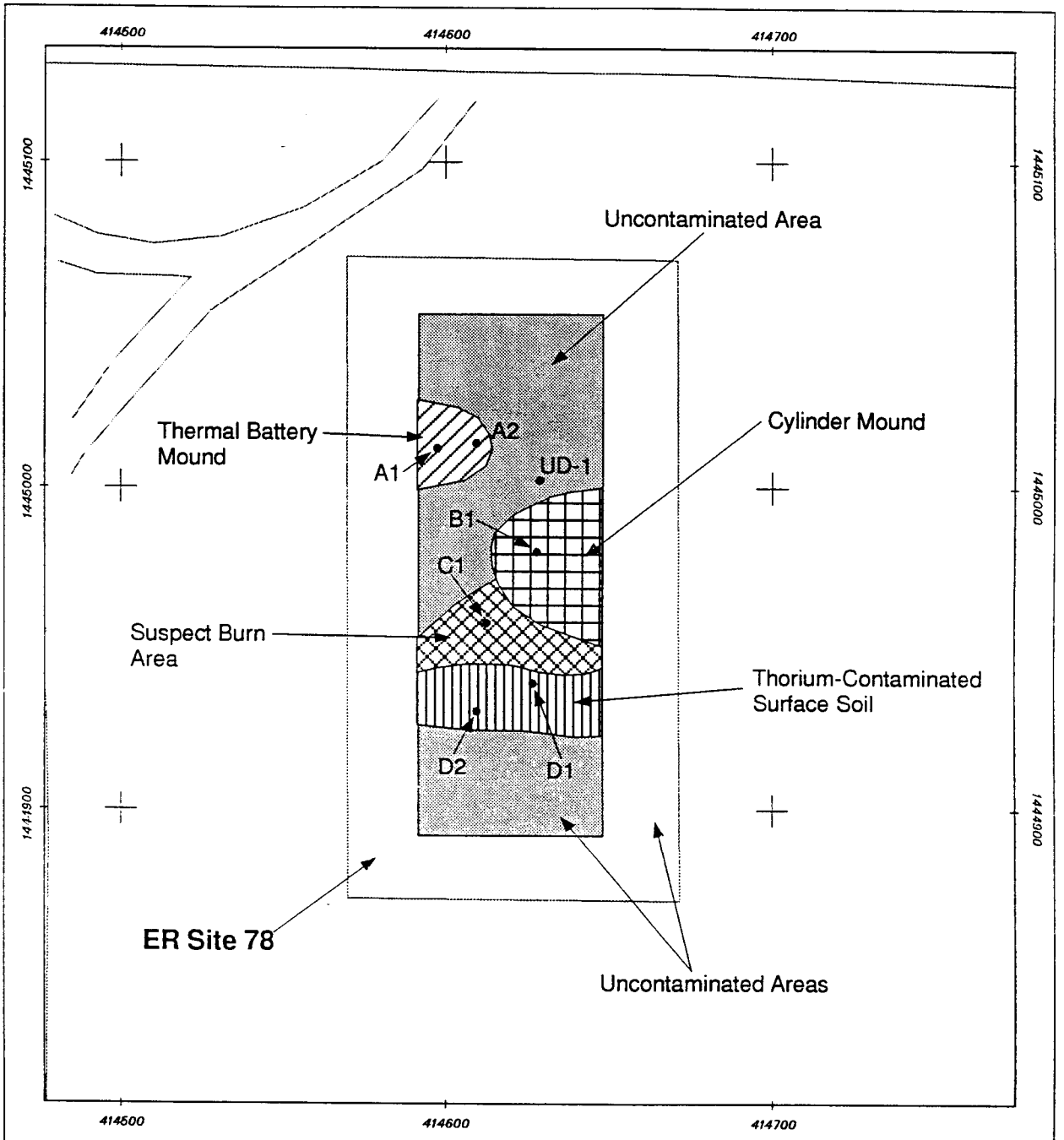
[b]After evaluation, the container holding rubidium was not considered to be a gas cylinder and is not included in the total count of 97 cylinders. Out of 96 intact cylinders, 36 contained air or were empty and had last contained air. Other forms of management were performed on the remaining 60 cylinders.

11.6.2 Field Investigation Results

Table 11-4 summarizes all constituents that were detected in concentrations greater than the MDLs for the soil samples collected during the post-VCM confirmatory subsurface investigation. Detailed soil sampling and QA/QC data results are provided in electronic format in Appendices C and D, respectively. No concentrations of VOCs, SVOCs, HEs, or radionuclides were detected above their respective MDLs.

Only chromium exceeded the statistical background (UTL of 26.2 mg/kg) (Table 11-5). It was detected at a concentration of 39.7 mg/kg total chromium in a sample from the 1-ft level in a borehole from the uncontaminated portion of the GCDP; the total chromium concentration was 5.2 mg/kg in the sample from the 5-ft level in the same borehole. Both of these concentrations were below the most conservative proposed RCRA Subpart S soil action level for chromium (i.e., chromium-VI, 400 mg/kg).

A statistical comparison of the arsenic population to the TA-III/V background level was not possible because no site-wide background data for arsenic had been collected at the time the statistical analyses were completed. The recently revised site-wide background report (IT 1996) indicates that the maximum concentration at the site (7.4 mg/kg) exceeds the site-wide background UTL for arsenic (5.6 mg/kg); however, it does not exceed the proposed RCRA Subpart S soil action level of 20 mg/kg.



Legend

ER Site 78

Roads

A1 Confirmatory Soil Boring

0 25 50 Scale in Feet

0 6 12 Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 11-6 ER Site 78 Location of Confirmatory Soil Borings, TA-III

Unclassified

FINAL

1:600

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

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Table 11-4
Summary of Detected Constituents of Concern in Site 78 Verification Soil Samples

Analyte	Range (mg/kg)	Detection Limit (mg/kg)	Total Samples	Mean (mg/kg)	Number of Non-Detects	Samples ≤ Mean	Samples > Mean
Arsenic	2.9-7.4	1	13	3.9	0	8	5
Barium	52.3-170	1	13	97.6	0	6	7
Chromium	3.3-39.7	1	13	6.3	0	9	4
Lead	4-21.3	5	13	7.1	6	9	4
Silver	0.46-2.7	1	13	1.1	10	10	3

Table 11-5
Comparison of Site 78 Soil Analytical Results to Technical Areas III and V Background and Proposed RCRA Subpart S Soil Action Levels

Parameter	Maximum at Site 78 (mg/kg)	UTL or 95th Percentile (mg/kg)	Proposed RCRA Subpart S Soil Action Level (mg/kg)	Exceeds Proposed RCRA Subpart S Soil Action Level?
Arsenic	7.4	5.6[a]	20	No
Barium	170	341.0	6,000	No
Chromium	39.7	26.2	400	No
Lead	21.3	24.8	2,000	No
Silver	2.7	4[b]	400	No

[a]Site-wide background UTL. No TA-III/V UTL was calculated for this constituent because of the lack of background data when statistical analyses were completed.
[b]Silver data were nonparametric; 4 mg/kg is the 95th percentile.

11.7 Summary and Conclusions

Results of the confirmatory sampling conducted after completion of the VCM performed at the GCDP indicated that the VCM was successful in removing the sources of chemical and radiological contamination at the site. Because the VCM at the GCDP involved a complete exhumation of the GCDP, including soil contaminated with thorium and chromium, and because no subsurface soil samples exhibited any contamination in excess of the applicable proposed RCRA Subpart S soil action levels, no additional sampling or remediation is warranted at this site. The site is proposed for NFA in accordance with Criterion ~~4~~ 5 in Section 4.4 of this RFI report.

ANNEX I
DESCRIPTION OF MANAGEMENT METHODS FOR PRESSURIZED GASES

FLARE. The material is mixed with propane and burned in an external flame. Typical susceptible materials are hydrocarbon gases and hydrogen. No material classified as a poison gas or containing halogen is acceptable for flaring. Feed rates are controlled to keep any visible emissions to less than five percent.

Chemistry: example, methane (CH_4)

$$\mathbf{CH_4 + 2O_2 \Rightarrow CO_2 + 2H_2O}$$

SIMPLE NEUTRALIZATION. The material is mixed in a chemical reactor with an aqueous solution of an appropriate neutralization reagent. This type of reaction is normally associated with acid/base chemistry.

Chemistry: example, anhydrous hydrogen chloride (HCl), and anhydrous ammonia (NH_3)

$$\mathbf{HCl + NaOH \Rightarrow NaCl + H_2O}$$

$$\mathbf{2NH_3 + H_2SO_4 \Rightarrow (NH_4)_2SO_4}$$

HYDROLYSIS/NEUTRALIZATION. The chemical is first hydrolyzed by water into two or more products. These products are then neutralized by a reagent in the aqueous solution.

Chemistry: example, boron trifluoride (BF_3)

Hydrolysis step:

$$\mathbf{BF_3 + 3H_2O \Rightarrow H_3BO_3 + 3HF}$$

Neutralization step:

$$\mathbf{HF + NaOH \Rightarrow NaF + H_2O}$$
$$\mathbf{H_3BO_3 + 3NaOH \Rightarrow Na_3BO_3 + 3H_2O}$$

RELEASE UNTREATED. This is applicable to only a very small group of gases. These are carbon monoxide, carbon dioxide, nitrogen, oxygen, nitrous oxide, helium, neon, argon, and xenon. All are nontoxic, nonregulated, and represent no hazard to the surrounding environment.

TRANSFER. The contents are transferred from the unstable/leaking/nonspecification container into a new container meeting all of the applicable requirements and specifications for the material. For containers in this size range (less than 5 pounds of net contents), it is not practical to transfer the contents without leaving a significant residue in the old container. The method employed for small containers is based on the physical properties of the individual material. This transfer method requires that the chemical's vapor pressure at -20 degrees Celsius (°C) must be less than 380 millimeters (mm) mercury

(Hg). The transfer is accomplished by connecting both cylinders to a manifold. The manifold and receiver are purged with inert gas and then evacuated to about 1 to 3 millimeters (mm) Hg pressure. The receiver is cooled to -20°C (the lower limit of artificial cooling for carbon steel containers). The valves are actuated and the product flows from the full container to the empty container. The donor (unstable container) will contain a residue, but will be empty according to RCRA standards.

CHEMICAL OXIDATION. This method destroys the chemical by an oxidation reaction. The chemical is mixed into an aqueous solution containing one or more reagents to chemically oxidize the chemical into a less toxic or nontoxic product.

Chemistry: examples, arsine (AsH_3), methyl mercaptan (CH_3SH), and nitric oxide (NO)

Arsine:

$$\mathbf{10AsH_3 + 12KMnO_4 + 18H_2SO_4 \Rightarrow 5As_2O_3 + 12MnSO_4 + 6K_2SO_4 + 33H_2O}$$

Methyl mercaptan:

$$\mathbf{2CH_3SH + NaOCl \Rightarrow (CH_3)_2S_2 + NaCl + H_2O}$$

Nitric oxide:

$$\mathbf{NO + KMnO_4 \Rightarrow KNO_3 + MnO_2}$$

SPECIAL HANDLING REQUIRED. Two compounds requiring special handling were identified either administratively or analytically. Each has a different specific method for management. Each method takes into consideration the significant additional hazards associated with the management of that compound.

12.0 ER SITE 83: LONG SLED TRACK

The Long Sled Track, located in the western half of TA-III (Figure 12-1), was constructed in 1966 as a 5,000-ft track, then lengthened another 5,000 ft to the north in 1985. Tests performed at the track include propelling test vehicles down the track with rocket motors from the north (launch) end to the south (impact) end of the track. The track is still in use and will continue to be used for testing in the foreseeable future.

Potential COCs include DU, HEs, and heavy metals. Because the sled track is still in use, the site is considered active, and a full investigation will be completed upon site decommissioning. Activities completed in concert with ER-wide projects are discussed below.

12.1 Field Investigation Protocols

Field activities completed at the site included aerial photograph interpretation and a surface radiation survey and removal VCM. Each is discussed in the following sections.

12.1.1 Aerial Photograph Analysis

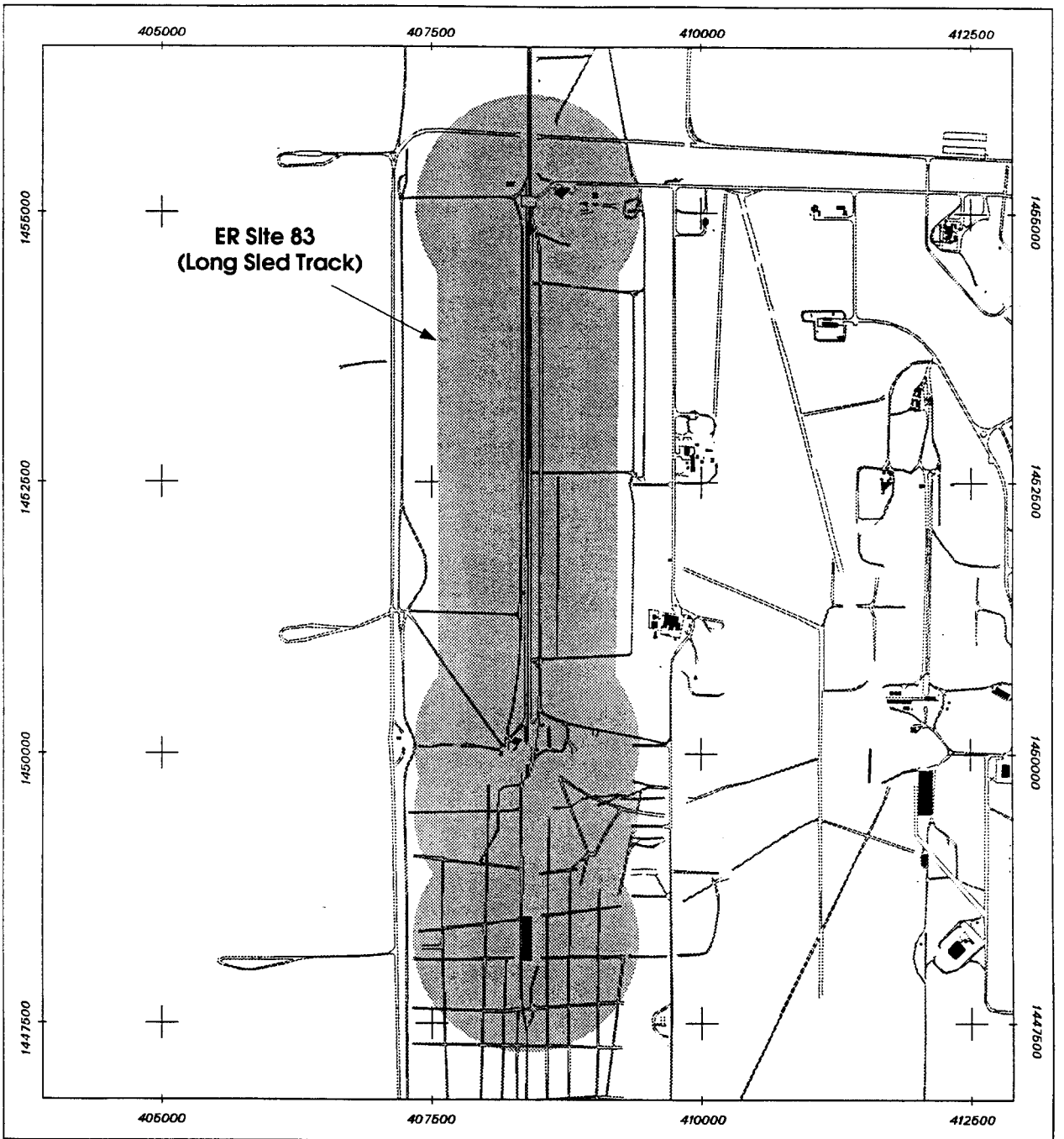
Because Site 83 overlaps Site 26 (Section 4.0), the discussion of aerial photograph analysis is the same.

12.1.2 Surface Radiation Survey

A surface radioactive material survey and removal VCM (discussed in Section 24.0) was performed at six TA-III sites (including Site 83) to remove known surficial radioactive contamination, primarily DU. The survey detected radioactive material to a maximum depth of 6 in.; the follow-on cleanup removed material to a maximum depth of 18 in. (i.e., where necessary, cleanup continued beyond a depth of 6 in. to a maximum of 18 in. bgs). The VCM was one of the steps taken to ensure worker safety during subsequent assessment, remediation, or facility activities.

The survey at Site 83 consisted of approximately 175 acres and included the southern portion of the sled track and surrounding flat to slightly uneven terrain, which is covered by low grasses, cacti, and brush (Figure 12-2). The original survey boundaries were extended to the north and east during the VCM until the vast majority of anomalies were included in the survey. Because of the large area to be covered, a gamma scan survey was performed on 10-ft centers (i.e., 60 percent coverage) over the surface area of the site.

Following the radiation survey, the point-source radiation anomalies were removed and collected in 55-gal. closed-top steel drums. One large area source was identified that will require more extensive excavation, which was beyond the scope of manual operations at the time of the VCM. This activity has not been scheduled at this time.



Legend

ER Site 83

Buildings

Roads

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 12-1 ER Site 83
Long Sled Track, TA-III

0 750 1500
Scale in Feet

0 180 360
Scale in Meters

Unclassified

FINAL

1:18000

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

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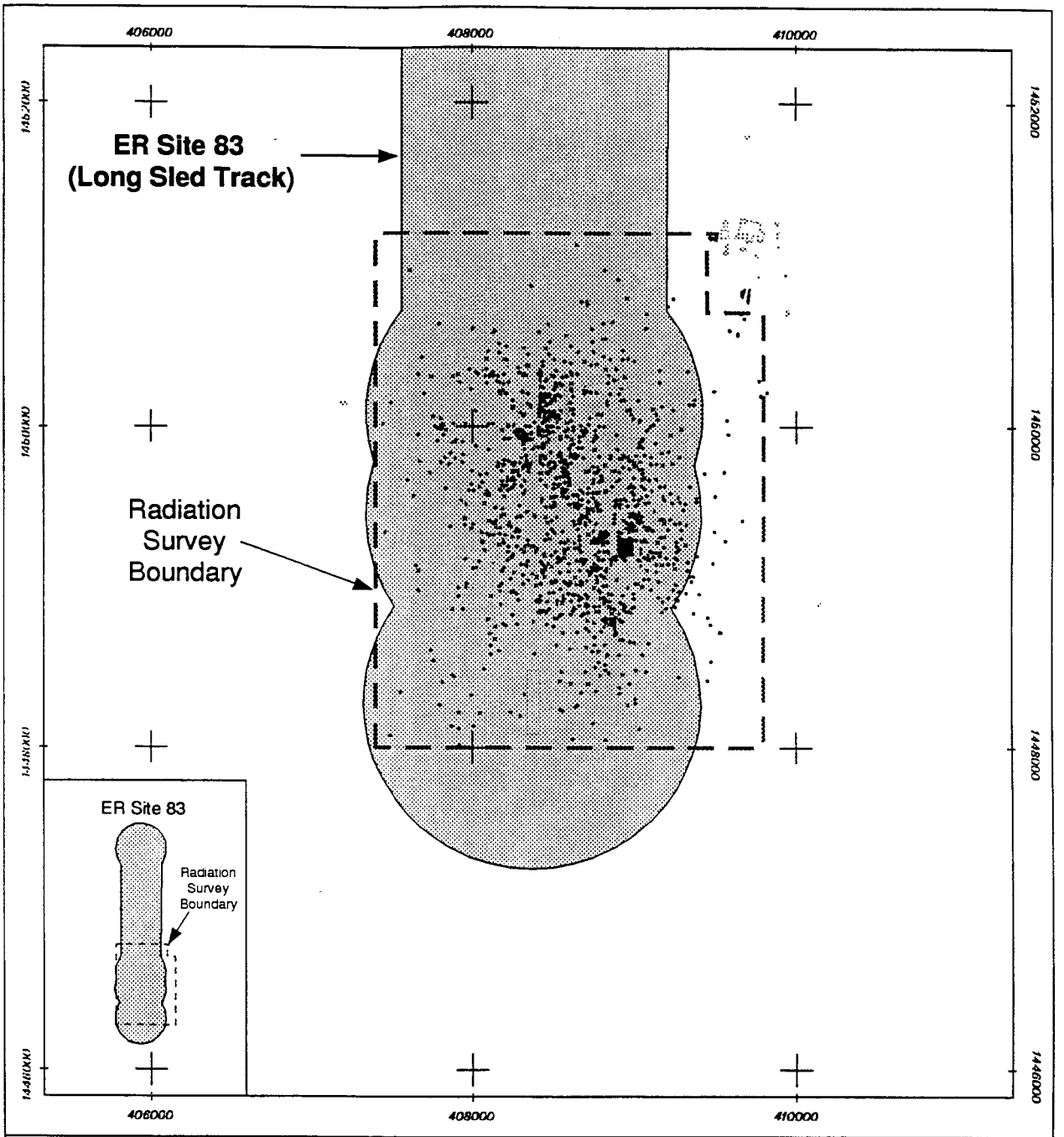

Legend

- ER Site 83
- Buildings/Concrete Slabs
- Surface Radiation Anomalies
  - Area Sources
  - Point Sources
- Rad Survey Boundary

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 12-2 ER Site 83 Location of Surface Radiation Anomalies, TA-III

0 500 1000
Scale in Feet

0 120 240
Scale in Meters

Unclassified

FINAL

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

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After the removal action was completed, soil samples were collected to verify cleanup levels (actual soil concentrations or activity) at 10 percent of the site anomalies (i.e., 141 confirmatory soil samples were collected from 1,411 anomalies). The soil samples were analyzed using standard laboratory gamma spectroscopy methods; the results are provided in Appendix G. A uranium equilibrium analysis of the ratios of activities for uranium-234 and uranium-238 and the ratio of the activities of both radioisotopes to uranium-235 activity was completed. The results of the analysis indicated that no DU remained at the anomalies after cleanup. No additional radionuclides were identified as potential COCs by the broad spectrum covered by gamma spectroscopy (Appendix G).

12.2 Field Investigation Results

12.2.1 Aerial Photograph Interpretation

Because of the overlap with Site 26, the discussion of aerial photograph interpretation results for Site 83 mirrors that for Site 26 (Section 4.2.1) and will not be repeated here.

12.2.2 Radiation Survey

A summary of surface radiation anomalies is provided in Table 12-1, and the locations of all anomalies are depicted in Figure 12-2. Tables detailing all the anomalies detected at the site during the survey are included in the final report on the radiation survey (Rust Geotech Inc. 1994). Radioactive materials identified within the survey boundary included metallic fragments of various shapes, colors, and sizes; uranium oxide; and component parts composed of wood and Bakelite (an insulating material). In addition, some areas that did not have visible evidence of radioactive materials were inferred to contain finely dispersed or buried material.

Table 12-1
Types of Gamma Activity Identified by Surface Radiation Survey at Site 83

Anomaly Type	Quantity	Gamma Radiation Activity Range (μR/hr)	Description
Soil Point Source	1,070	13 to 390	Located throughout the survey area.
Fragment Point Source	291	14 to >1,103[a]	Located throughout the survey area.
Soil Area Source	23	12 to 116	Located throughout the southern three-quarters of the survey area.
Fragment Area Source	10	13 to 335	Located west of the impact area and in the southeastern portion of the survey area.

[a]The upper range of the instrument was 1,103 μR/hr.

The majority of the DU detected at the site was distributed in a radial pattern at the south end of the track, with a slight eastward skew. The eastern side of the survey area contained the largest fragment and soil anomaly areas. This correlates well to the blast and fragmentation pattern that originates from a target at the south end of the track. All but one large soil area (located southeast of the impact area) were removed in the course of the VCM at this site.

12.3 Summary and Conclusions

All but one of the surface radioactive hazards associated with the testing conducted at the Long Sled Track have been addressed and removed to date. The remaining large area anomaly will be removed in the future. A more thorough investigation of the site will be conducted when the facility is decommissioned in the future; however, this preliminary information will help focus the investigation at that time.

13.0 ER SITE 84: GUN FACILITIES

The Gun Facilities, constructed in 1965, encompass 2 acres in the west-central portion of TA-III near Building 6750 (Figure 13-1). Impact tests were conducted at the facility using lead and DU as both projectile and target materials.

Potential COCs include lead, DU, and HEs. Because the facility is still in use the site is considered active, so a full investigation will be completed upon site decommissioning. Activities completed in concert with ER-wide projects are discussed below.

13.1 Field Investigation Protocols

Field investigation activities completed at the site included aerial photograph interpretation and surface radiation survey and removal VCMs. Each activity is discussed in the following sections.

13.1.1 Aerial Photograph Analysis

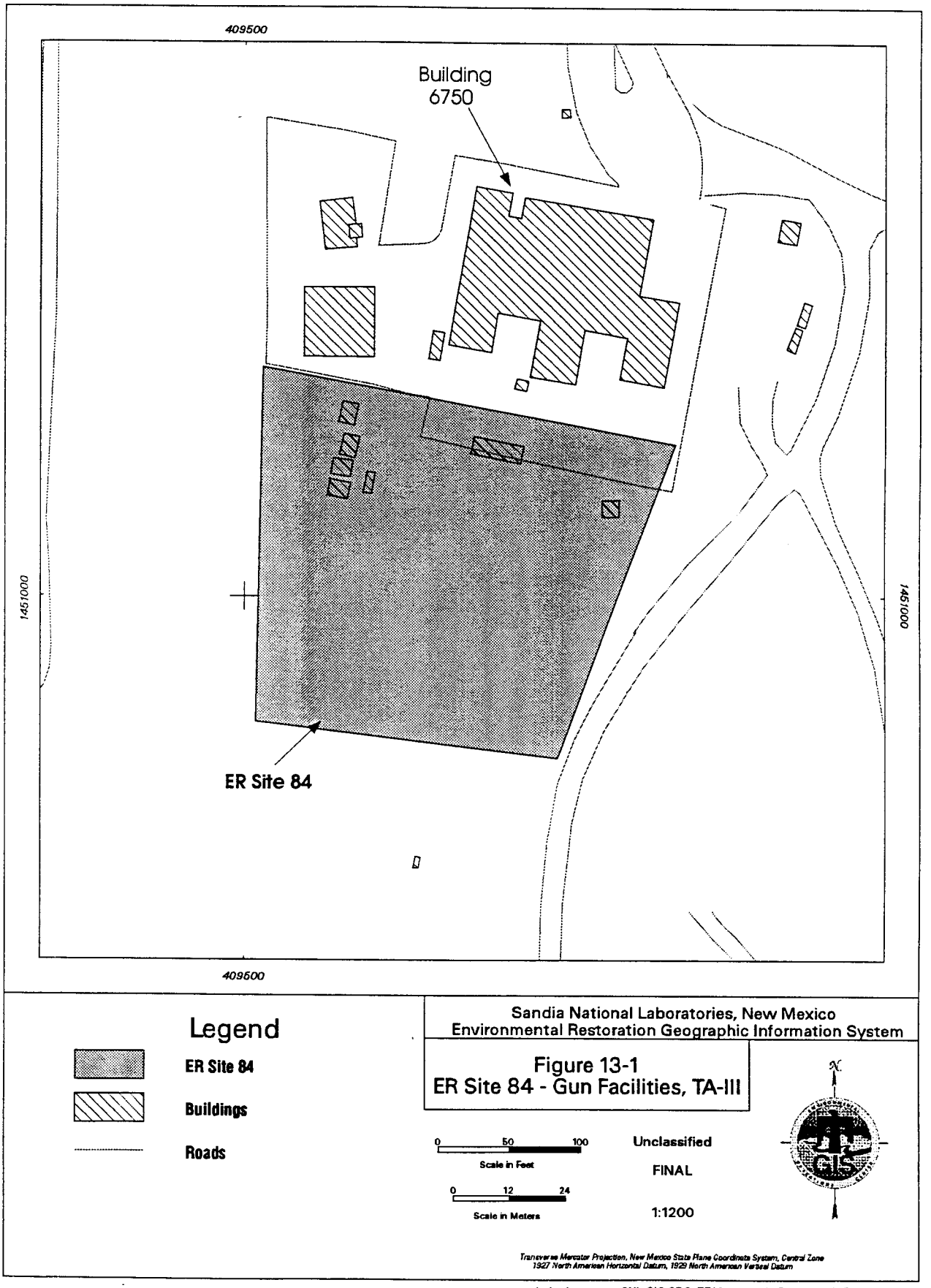
Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features during successive years at the Gun Facilities. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

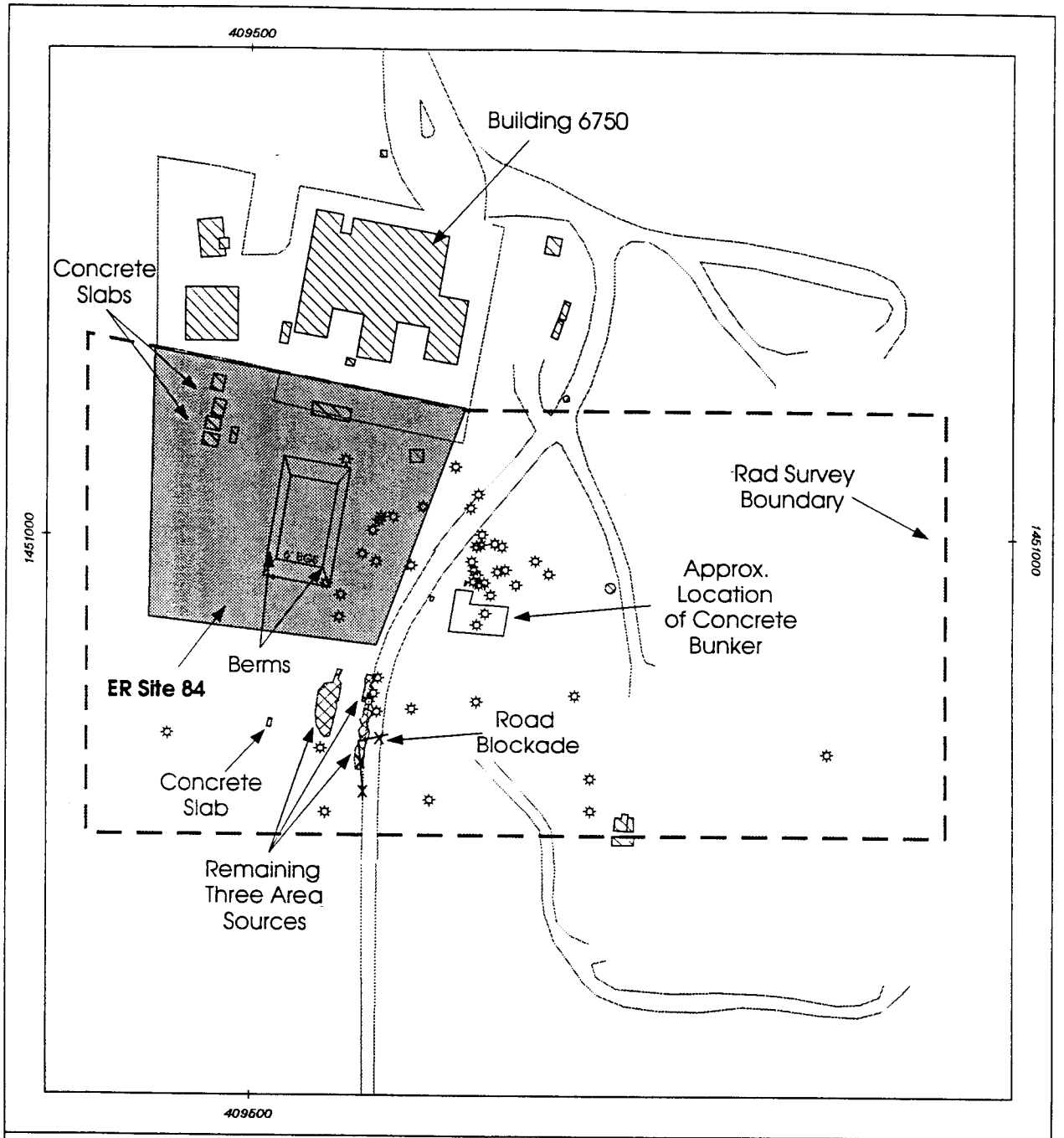
13.1.2 Surface Radiation Survey

Site 84 was surveyed during 1994 as part of the ER Project-wide surface radiation survey and removal VCM, which is discussed in greater detail in Section 24.0. The survey of approximately 7 acres included the bermed area outside of Building 6750 and the surrounding terrain, which is covered by low grasses and brush (Figure 13-2). A gamma scan survey was performed at 6-ft centers (i.e., 100 percent coverage) over the surface area of the site, extending beyond the site boundaries. Inaccessible areas beneath permanent structures and temporary structures that could not be easily moved were excluded from the survey.

Following the radiation survey, the point source radiation anomalies were removed and collected in 55-gal. closed-top steel drums. All but three area anomalies were removed; these anomalies, which were too large to remove easily using available manual labor, will be removed in the spring of 1996 in a follow-up to the VCM.

After the removal action was completed, soil samples were collected to verify cleanup levels (actual soil concentrations or activity) at 10 percent of the site anomalies (i.e., six confirmatory samples were collected for 59 anomalies). The soil samples were analyzed using standard laboratory gamma spectroscopy methods; the results are provided in Appendix G.


409500
Building
6750
1451000
1451000
ER Site 84
409500
Legend
ER Site 84
Buildings
Roads
Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System
Figure 13-1
ER Site 84 - Gun Facilities, TA-III
0 50 100
Scale in Feet
0 12 24
Scale in Meters
Unclassified
FINAL
1:1200
N
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone
1927 North American Horizontal Datum, 1929 North American Vertical Datum
cheberl SNL GIS ORG. 7512 04/15/96 MAPID=950935



Legend

- ER Site 84
- Buildings/Concrete Slabs
- Surface Radiation Anomalies
  - Area Sources
  - Point Sources
- Roads
- Rad Survey Boundary

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 13-2
Location of Surface Radiation Anomalies - ER Site 84, TA-III

0 75 150
Scale in Feet

0 18 36
Scale in Meters

Unclassified

FINAL

1:1800

N

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

cheberl SNL GIS ORG. 7512 02/27/96 MAPID=950936

13.1.3 Geophysical Investigation

A geophysical survey of Site 84 was conducted during 1994 and 1995 and encompassed approximately 11 acres (Figure 13-3). An initial survey extended 500 ft to the south of Building 6750. A second survey was conducted based on the indications in the first survey that buried objects extended farther south, concentrated around an impact berm; this survey doubled the area of investigation and included the impact berm.

These surveys were conducted to locate buried material and any large DU and lead fragments related to earth penetrator and other impact testing conducted at the Gun Facilities. The surveys were designed to detect any fragments larger than 3 in. by 3 in. buried to a depth of approximately 1.5 ft; significant burials were defined as anything the size of a 5-gal. bucket buried to a depth of 3 ft. The survey grid for both surveys was 3 ft by 3 ft.; data were acquired every 8 in.

A Geonics EM-61 high-precision metal detector was used to collect the EM data. The data were reduced using the DAT61 program (Geonics Ltd. 1992), then processed and imaged using the Geosoft Mapping and Processing System (Geosoft Inc.).

13.2 Field Investigation Results

13.2.1 Aerial Photograph Interpretation

Based on review of aerial photographs for Site 84, several clear or disturbed surfaces, probably associated with brush fires, are identified through the years at Site 84 (Plate I). The aerial photograph interpretation of Site 84 is listed below in chronological order from 1973 to 1990.

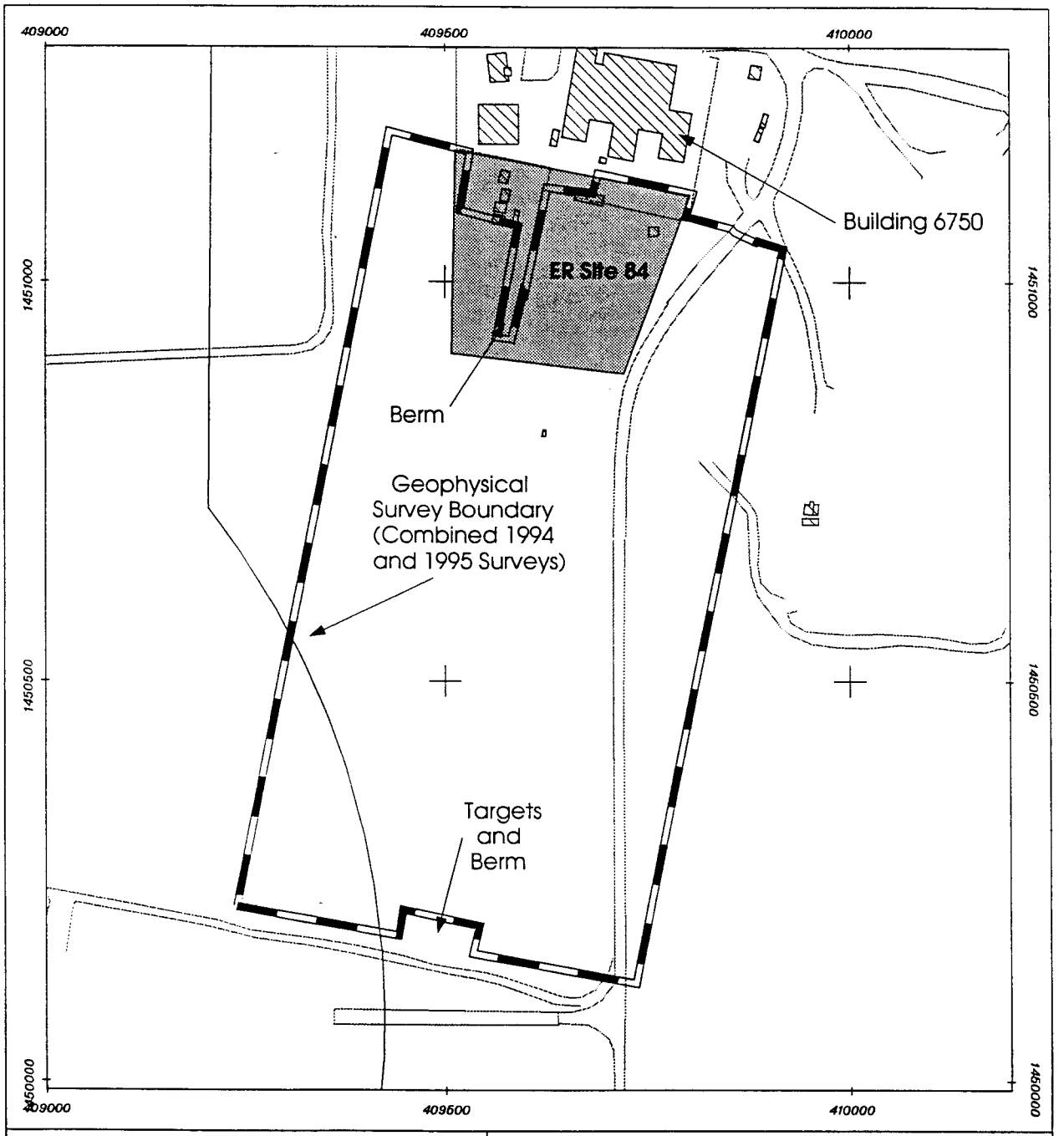
- 1973: Two major features were identified in the 1973 photograph. Both features were cleared or disturbed surfaces and were located about 250 ft to the north of Site 84. Neither feature was associated with any buildings or with Site 84, but the road that leads to the site from the north divided these features, which were likely one large, burned area.

- 1975: The same two cleared or disturbed surfaces to the north existed in the 1975 photograph, but two additional features were present. One feature was a long, narrow cleared or disturbed surface that extended 500 ft to the south from a point approximately 100 ft south of the site; the feature was about 200 ft wide at its widest point. The second feature was located about 800 ft to the southeast of the site.

- 1978: The same disturbances were present in the 1978 photograph, but with minor shape changes.

- 1979: The features in the 1979 photograph appeared identical to the 1975 photograph.

- 1982: The same features found in the 1975 photograph appeared in the one for 1982, but a new feature appeared parallel to and 150 ft west of the first new feature identified in 1975. It was approximately the same size as the older disturbance and was classified as a cleared or disturbed surface.



Legend

- ER Site 84
- Buildings
- Roads
- Geophysical Survey Boundary

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 13-3 ER Site 84
Location of Geophysical
Survey Boundaries, TA-III

0 100 200
Scale in Feet

0 24 48
Scale in Meters

Unclassified

FINAL

1:1200

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

cheberl SNL GIS ORG. 7512 02/29/96 MAPID=950935

- 1983: The features in the 1983 photograph appeared identical to the 1982 photograph.
- 1986: A new cleared or disturbed surface feature was present in the 1986 photograph; this feature might have been a large burned area about 300 ft to the southeast of Site 84.
- 1990: The same features as the 1986 image were present in the 1990 photograph.

On-ground investigations of the features identified in the aerial photograph analysis verified several features as burned areas. Other features were not easily verified because revegetation obliterated their traces. None of the features are thought to be related to Site 84.

13.2.2 Surface Radiation Survey

A summary of surface radiation anomalies is provided in Table 13-1, and the locations of all anomalies are depicted in Figure 13-2. Tables detailing all the anomalies detected at the site during the survey are included in the final report for the radiation survey (Geotech 1994).

Table 13-1
Areas of Gamma Activity at Site 84

Anomaly Type	Quantity	Gamma Radiation Activity (μR/hr)[a]	Description
Soil Point Source	47	14 to 335	Yellow soil suggesting uranium oxide was present in several of the anomalies.
Soil Area Source	9	11 to 72	Multiple hot spots in soil area sources with visible uranium oxide.
Fragment Point Source	3	50 to greater than 1103	Black and gray fragments with visible uranium oxide.

The majority of anomalies appeared to be located in the center of the survey area, near the concrete bunker. Anomalies extended in all directions outward from the concrete bunker but were not as concentrated as those near the bunker. The majority of anomalies were soil point sources, with no visible evidence of DU. The nine soil area sources had multiple "hot spots" within their boundaries; three of these exhibited visible yellow uranium oxide.

Subsequent to the radiation survey, the anomalies identified were picked up and placed in 55-gal. drums as part of the removal VCM. All radiation anomalies, except three area sources, were removed at Site 84. No residual radioactive material was detected at the anomalies addressed during the removal action (Appendix G). The three remaining area sources were too large to remove with the available manual labor at the time of the original cleanup action and will be addressed in spring of 1996.

13.2.3 Geophysical Survey

During the geophysical surveys, several surface objects were identified that generated a significant response. The objects included the western boundary fence; electrical utilities, a culvert, concrete bunker, a concrete pad, and debris located in the north-central portion of the site; metal target frames in the northeastern corner of the site; a concrete bunker with an earthen berm in the northeastern area; a road blockade; a large metal plate; several concrete pads in the central portion of the site; and artillery shells in the impact area.

In addition to the surface expressions of material, numerous subsurface anomalies were noted. Three prominent anomalies were located at the center of the survey, just west of the road blockade, and were postulated to be earth penetrators or large accumulations of metal. Large buried objects (possibly penetrators) also were identified in the north-central portion of the survey, between two large earthen berms.

Two linear patterns of unidentified buried objects were coincident with the firing lane in the center of the survey and with the access road to the east. These are possibly related to spoil piles from grading activities. It appears possible that some anomalies extend to the southeast and were not fully covered by the additional survey.

Plate IV illustrates the correlation between the geophysical and radiation anomaly patterns at Site 84. Not all of the radiation anomalies correspond to geophysical anomalies, and vice versa. However, there is some overlap of the two patterns, particularly in relation to the three remaining radiation area sources, suggesting that perhaps some of the buried materials have a radioactive component.

13.3 Nature and Extent of Contamination

Because all but three of the radiation anomalies were removed, the surface expression of radioactively contaminated materials has been addressed for the most part.

The geophysical data collected indicate the presence of numerous buried objects. It is possible that not all of the geophysical anomalies have been completely identified because the patterns continue beyond the southeast portion of the site.

13.4 Summary and Conclusions

All but three of the surface radioactive hazards associated with the testing conducted at the Gun Facilities have been addressed and removed to date. The remaining area anomalies will be removed in spring 1996. The geophysical data indicate numerous large buried objects. These also will be addressed in future work, after site decommissioning.

A more thorough investigation of the site will be conducted when the facility is decommissioned in the future. This preliminary information will help focus the investigation at that time.

14.0 ER SITE 100: BUILDING 6620 DRAIN/SUMP

Site 100 is a 25-ft by 60-ft area located in the central part of TA-III near Building 6620 and is considered to be the drain and sump for this facility (Figure 14-1). The facility was constructed in 1958 for the assembly and disassembly of small HE test units. According to engineering (not as-built) drawings, a 3-in. drain emptied into a ditch north of the building but no drain was found by ER personnel.

Potential COCs include HEs. The investigation protocols and results follow.

14.1 Field Investigation Protocols

Field investigation protocols included aerial photograph analysis and exploratory trenching. Each is discussed below.

14.1.1 Aerial Photograph Analysis

Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features in succeeding years at the site. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

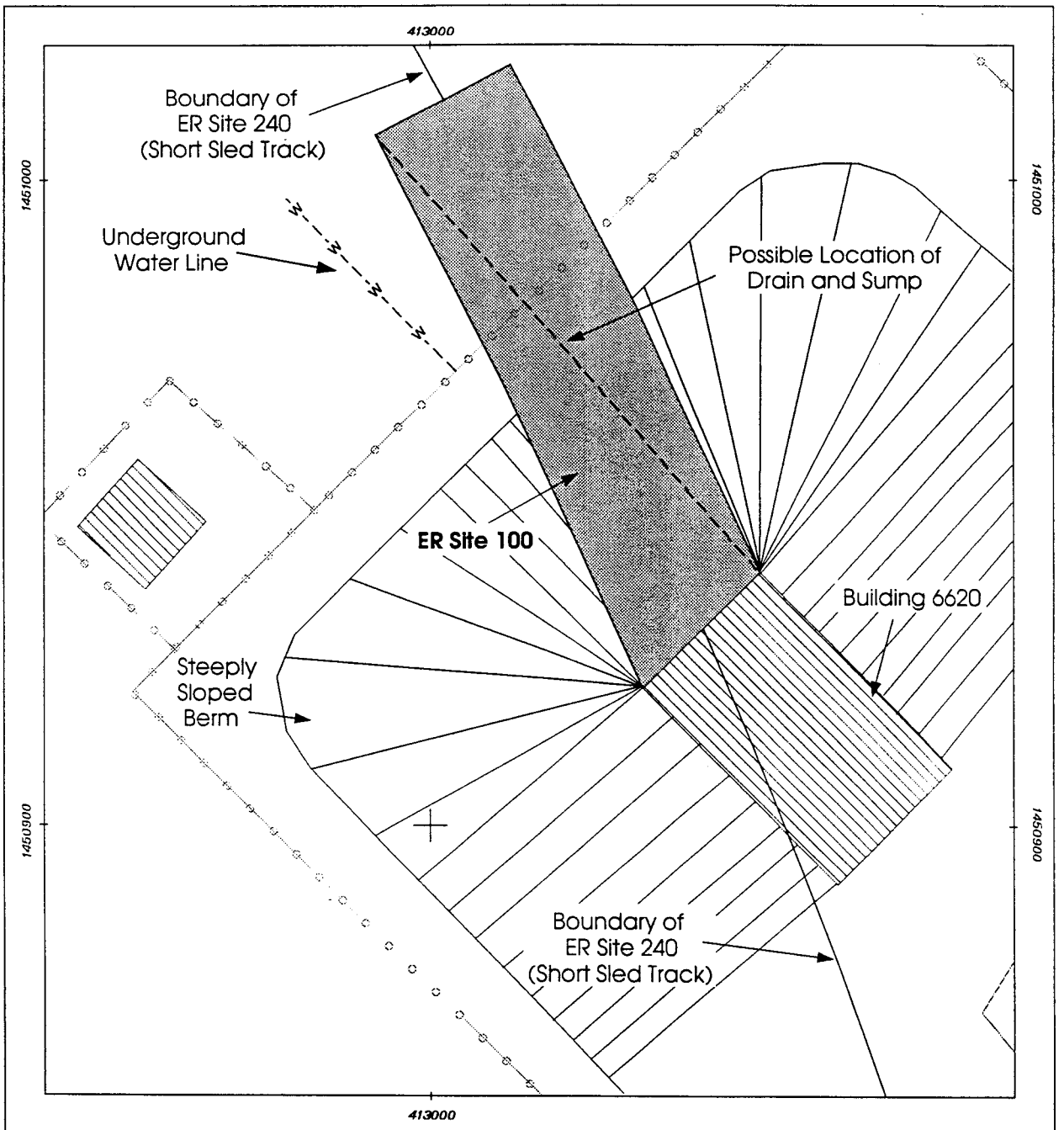
14.1.2 Exploratory Trenching Activities

A reconnaissance survey to visually locate the ditch and drain line was conducted in the area where the drain line was reported to be; no evidence of either was found. In accordance with the RFI Work Plan (SNL/NM 1993a, 1993b), a backhoe was used to dig an exploratory trench to the northwest of Building 6620 to determine whether a drain line ever existed in the vicinity of the building. A 22-ft-long trench (3 ft wide by 3 ft deep) was dug from the northeast corner of the building (outside the Building 6620 fence) toward the southwest (Figure 14-2). The trench was placed as close as possible to the fence; it was not possible to trench inside the fenced area closer to Building 6620 because a large berm surrounds the building, extending to within 3 ft of the fence. Additionally, a water line runs from the northwest corner of the building to a point beyond the fence. Thus, it was not possible to trench any farther to the southwest (Figure 14-2).

14.2 Field Investigation Results

14.2.1 Aerial Photograph Interpretation

No surface features were found within 1,000 ft of the boundaries of Site 100 in any of the 1973 to 1990 photographs (Plate I).



Legend

- ER Site 100
- Buildings
- Roads
- Fences

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 14-1 ER Site 100
Building 6620 Drain/Sump, TA-III

0 12.5 25
Scale in Feet

0 3 6
Scale in Meters

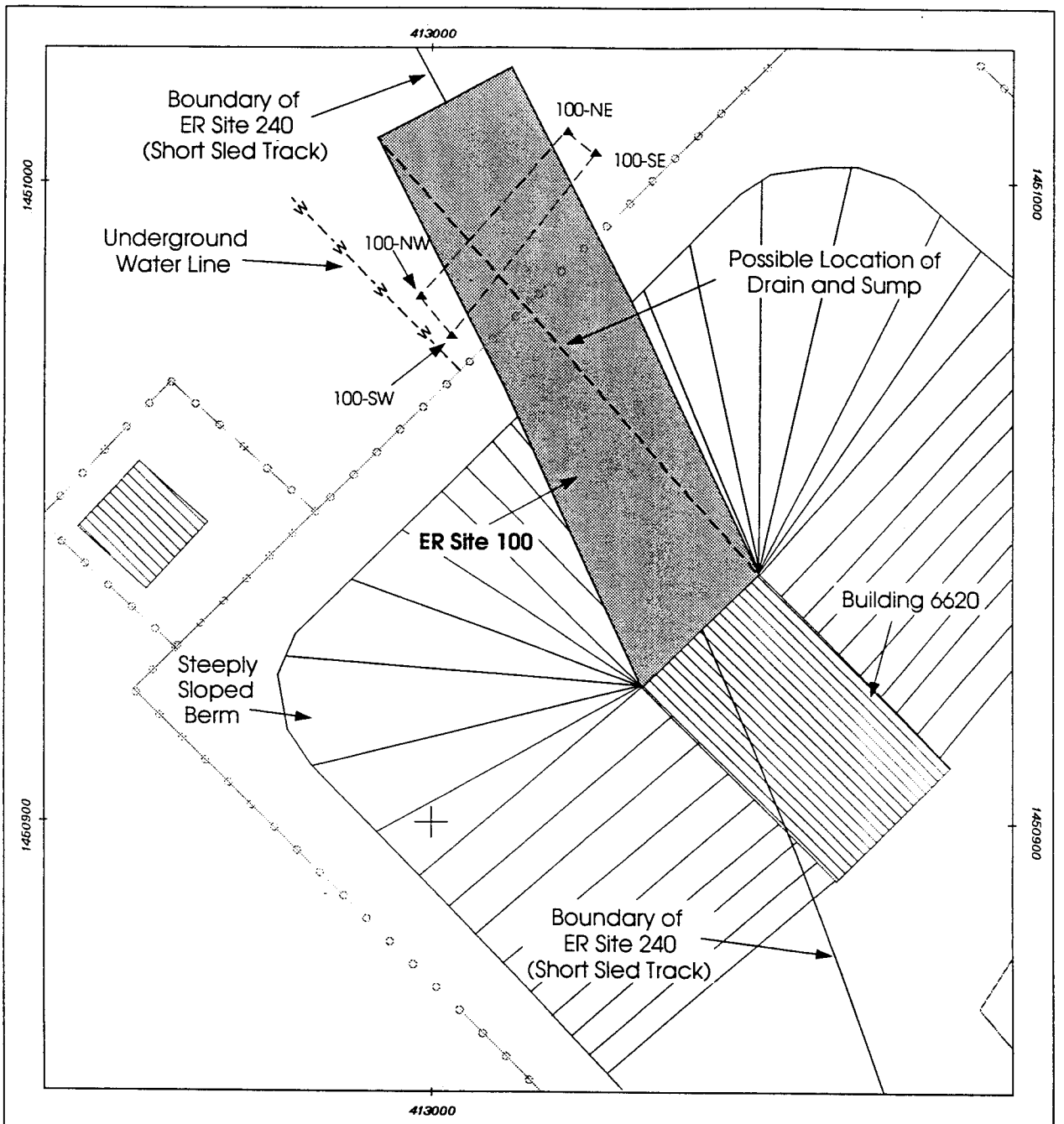
Unclassified

FINAL

1:300

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

cheberl SNL GIS ORG. 7512 02/08/96 MAPID=950938



Legend

- ER Site 100
- Buildings
- Roads
- Fences
- 100-NW Exploratory Trench Corners

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 14-2
ER Site 100 Location of
Exploratory Trench, TA-III

0 12.5 25
Scale in Feet

0 3 6
Scale in Meters

Unclassified
FINAL
1:300

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

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14.2.2 Excavation Results

The reconnaissance survey conducted during preliminary site scoping activities did not reveal any evidence of the drain in the northeast corner of Building 6620, nor any evidence of the drain line or drainage ditch outside the building. During exploratory excavation activities, a close inspection of the exposed trench revealed no evidence of ceramic tiles, stained soils, or any other indications of a drain line. This site probably never existed.

14.3 Summary and Conclusions

Because the field investigation failed to locate a drain inside Building 6620, a drain line exiting the building, or a drainage ditch to the northwest of the building, the site is no longer suspect and probably never existed. No contamination is suspected. Therefore, the site is proposed for NFA in accordance with Criterion 1 listed in Section 4.4 of this RFI report.

15.0 ER SITE 102: RADIOACTIVE DISPOSAL AREA

Site 102, the Radioactive Disposal Area, is a D-shaped area located east of the TA-V boundary (Figure 15-1). Originally, the site had been identified by an interviewee as potentially contaminated. The interviewee said that radioactive disposal had occurred in a fenced-in area east of TA-III (DOE 1985). The interviewee later said it was in the "southeast corner of TA-III," and that it contained a lot of "smelly" chemicals. It was later interpreted that he was referring to the CWL (Site 74). The site remained on the list. Therefore, Site 102 was investigated as part of this RFI. A description of the investigation protocols and results follows.

15.1 Field Investigation Protocols

Investigative activities conducted at Site 102 (Figure 15-1) included aerial photograph analysis, geophysical and radiation surveys, excavation, tank removal, and soil sampling. Each activity is discussed below.

15.1.1 Aerial Photograph Analysis

Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features in succeeding years at Site 102. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction. Based on the identification of an area of disturbed soil within the site (Figure 15-1), a geophysical survey was conducted and is discussed below.

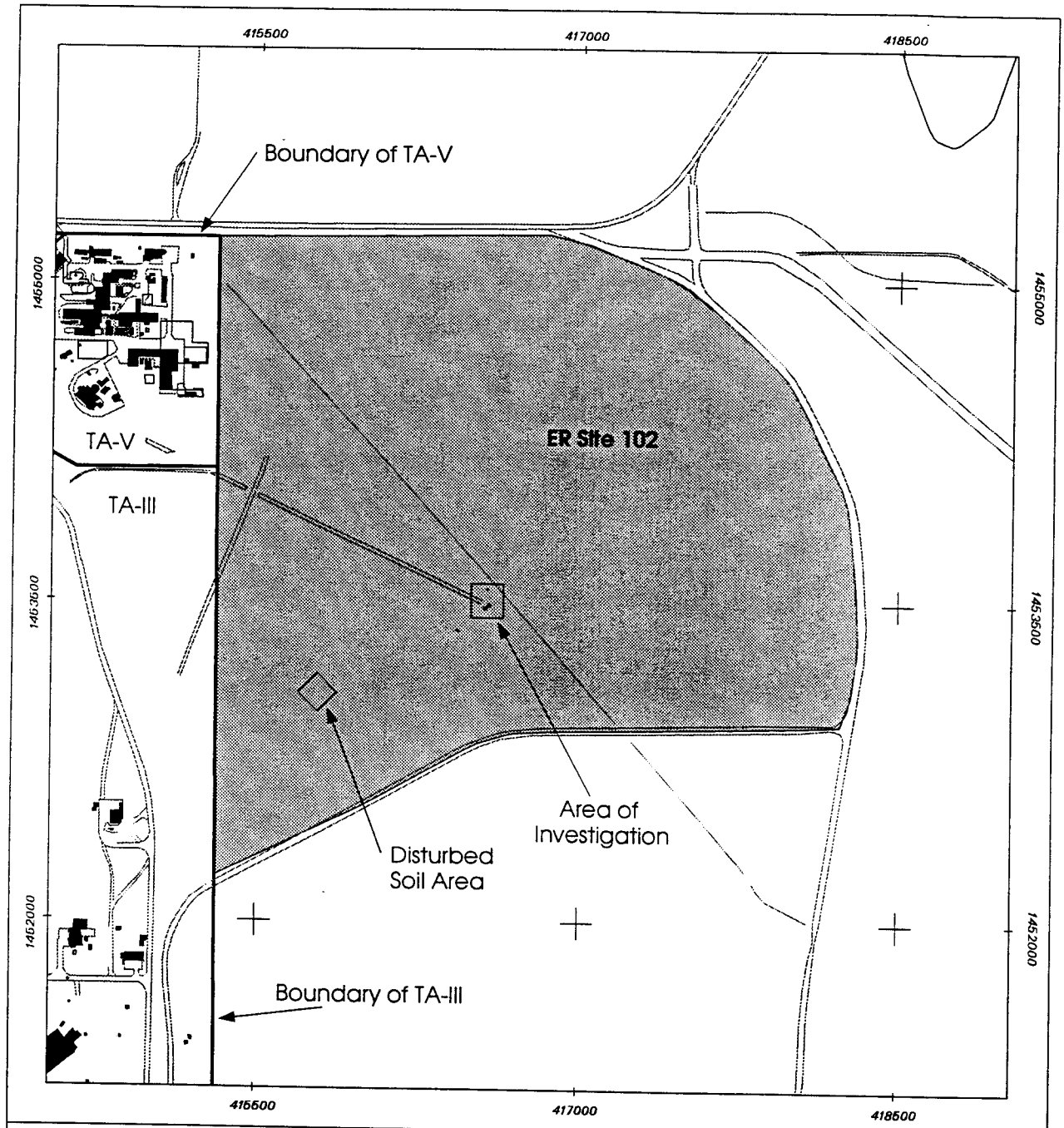
15.1.2 Initial Survey Activities

A geophysical survey of the area of disturbed soil (identified in aerial photographs) was conducted using a magnetometer to locate possible buried metal or radioactive material. A radiation survey of 4.4 acres covering the disturbed soil area and the vicinity of Building 6599 was conducted on 10-ft centers to locate surface expressions of any potential burials. The survey excluded the interior of Building 6599.

A site reconnaissance also was conducted to detect any surface evidence of burials or excavated soils. The site reconnaissance revealed the presence of a small sink waste tank (connected to a small slop sink) just north of Building 6599 (Figure 15-2). Building 6599 is used as a storage shed, and no evidence of any hazardous material processing or industrial solvent use was found. An attempt was made to sample the contents of the tank, but it was dry. The decision was then made to remove the tank and sample the soil underneath.

15.1.3 Sampling Strategies

In June 1994, a backhoe was used to dig out and remove the sink waste tank at Site 102. The approximate dimensions of the tank were 2 ft (diameter) by 5 ft (length), with a capacity of



Legend

- ER Site 102
- Buildings
- Roads
- Technical Area Boundaries

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Environmental Restoration Geographic Information System

Figure 15-1 ER Site 102 Radioactive Disposal Area, East of TA-III/V

0 375 750
Scale in Feet

0 90 180
Scale in Meters

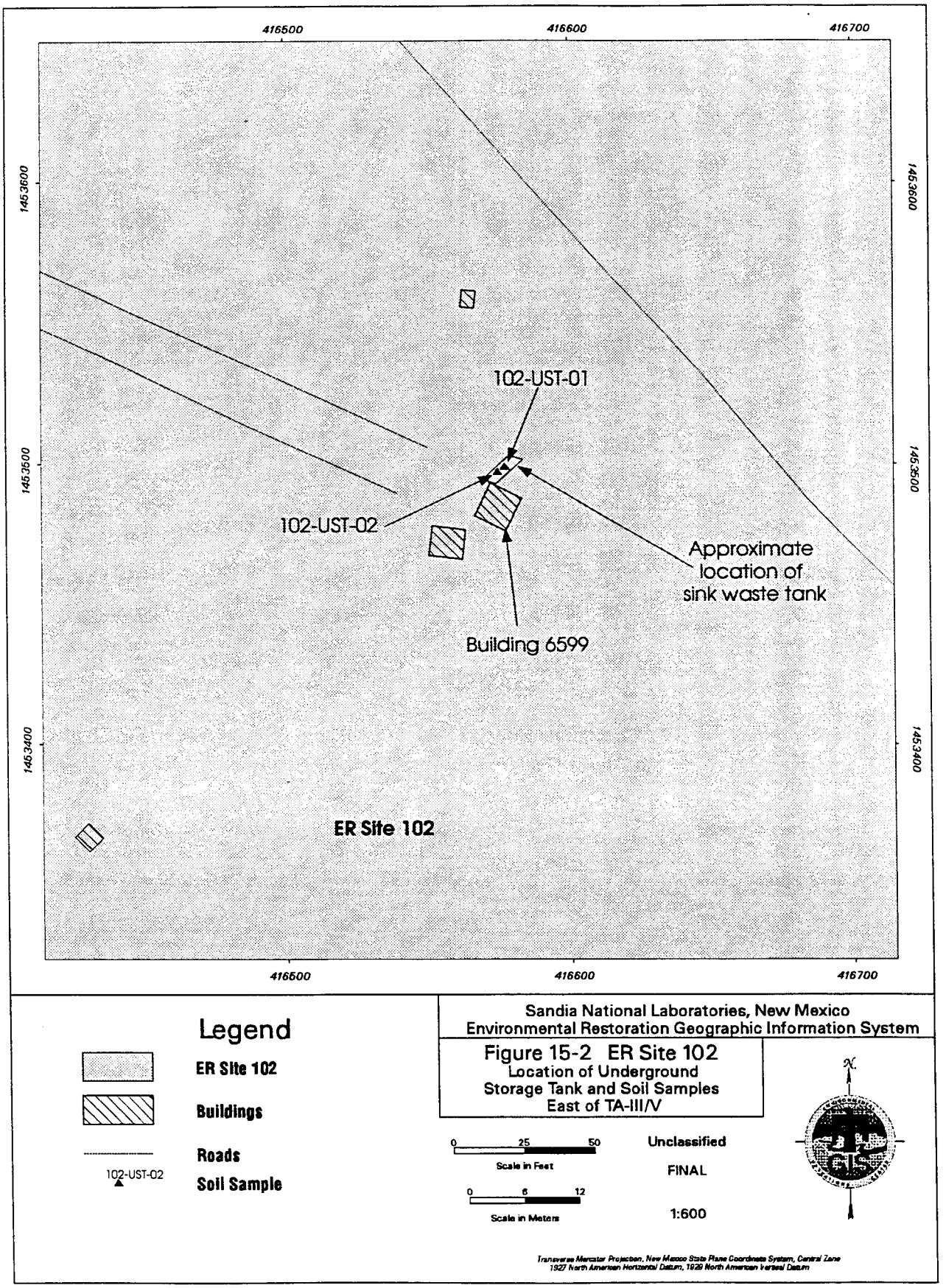
Unclassified

FINAL

1:9000

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

cheberl SNL GIS ORG. 7512 02/08/69 MAPID=950940


416500
416600
416700
1453600
1453500
1453400
102-UST-01
102-UST-02
Approximate location of sink waste tank
Building 6599
ER Site 102
Legend
ER Site 102
Buildings
Roads
102-UST-02
Soil Sample
Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System
Figure 15-2 ER Site 102
Location of Underground Storage Tank and Soil Samples East of TA-III/V
0 25 50
Scale in Feet
0 6 12
Scale in Meters
Unclassified
FINAL
1:600
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone
1927 North American Horizontal Datum, 1929 North American Vertical Datum
cheberl
SNL GIS ORG. 7512
02/05/96
MAPID=950941

approximately 100 gal. After removal from the excavation, the tank, piping, backhoe, and sampling equipment were swiped for radiological analysis. All swipe samples were below the counting limits. The drain line leading from the building to the sink waste tank was blocked to prevent future introduction of waste material to the environment.

Because no evidence was available to determine the activities that occurred historically in Building 6599, a full suite of analyses was conducted. Four soil samples were collected from beneath the drain line and the tank in accordance with the FOPs. Two of the soil samples were analyzed for Toxicity Characteristic Leaching Procedure (TCLP) RCRA metals, VOCs, and SVOCs; one was analyzed for VOCs, SVOCs, and total RCRA metals; the fourth sample was collected for gamma spectroscopy. All chemical analyses were conducted in accordance with EPA methods cited in Table 2-2.

After receipt of analytical results, the tank was removed from the site and disposed of as nonregulated waste.

15.2 Field Investigation Results

15.2.1 Aerial Photograph Interpretation

Examination of aerial photographs indicated that there were no surface features within 1,000 ft of the boundaries of Site 102 until 1982 (Plate I). Features found in 1982 and subsequent photographs are listed chronologically as indicated below.

- 1982: The disturbed soil feature was identified as a small cleared or disturbed surface (Figure 15-1) in the 1982 photograph 700 ft east of the western edge of the site, and a separate feature, classified as a pile, appeared in TA-V approximately 750 ft west of the western boundary of Site 102. No excavations appeared to be associated with this feature, and it was not directly associated with the site.

- 1983: No features were found in the 1983 photograph.

- 1986: The same features that were found in the 1982 photograph are identified in the 1986 photograph.

- 1990: No features were found in the 1990 photograph.

On-ground investigations of the indicated features revealed no additional information. They appear to have been unrelated to activities at Site 102.

15.2.2 Geophysical and Radiation Survey Results

The geophysical survey detected no magnetic anomalies indicating possible burials. No radiation anomalies were noted during the surface radiation survey of the site.

15.2.3 Nature and Extent of Contamination

Table 15-1 summarizes all constituents that were detected in concentrations greater than the MDLs for the soil samples collected during the investigation at Site 102. Soil sample analytical results and QA/QC data are presented in electronic format in Appendices C and D, respectively. Table 15-2 presents the comparison of the constituents in Table 15-1 to their respective UTLs and proposed RCRA Subpart S soil action levels. No COC was detected above statistical background or the corresponding proposed RCRA Subpart S soil action level in the soil sample collected from the tank excavation.

Table 15-1
Summary of Soil Sample Analytical Results - Site 102

Analyte	Minimum/ Maximum	Sample ID	Result (mg/kg)	Detection Limit
Arsenic	Single[a]	TA-3/5-102-UST-02	1.9	1
Barium	Single	TA-3/5-102-UST-02	93.1	1
Chromium	Single	TA-3/5-102-UST-02	5.3	1
Lead	Single	TA-3/5-102-UST-02	9.1	5

[a]Single = Only one sample contained an analyte in excess of the MDL.

Table 15-2
Comparison of Site 102 Soil Analytical Results to Background and Proposed RCRA Subpart S Soil Action Levels

Parameter	Result (mg/kg)	UTL (mg/kg)	Proposed RCRA Subpart S Soil Action Level (mg/kg)	Exceeds Proposed RCRA Subpart S Soil Action Level?
Arsenic	1.9	5.6[a]	20	No
Barium	93.1	341.0	6,000	No
Chromium	5.3	26.2	80	No
Lead	9.1	24.8	2,000[b]	No

[a]UTL is derived from latest draft site-wide background study (IT 1996). All others calculated as per Section 2.5.
[b]Proposed lead action level (EPA 1996).

15.3 Summary and Conclusions

Because these constituents clearly are not elevated, no additional activities were conducted at this site, and no additional sampling or remediation appears to be warranted. This site is proposed for NFA in accordance with Criteria 2 and 3 listed in Section 4.4 of this RFI report.

16.0 ER SITE 105: MERCURY SPILL AT BUILDING 6536

SNL/NM proposed an administrative NFA decision for Site 105, Mercury Spill at Building 6536 in May 1995. The EPA approved the proposal in July 1995.

In requesting an administrative NFA decision for ER Site 105, SNL/NM used existing administrative/ archival information. Site 105 was proposed for NFA in accordance with Criterion 3 listed in Section 4.4 of this RFI report.

The site was originally identified as a potential ER site because interviewees had indicated that a few mercury spills had occurred over the course of time. However, because the mercury spills were restricted to the confines of Building 6536, they were cleaned up quickly, and surveys using industrial hygiene (IH) mercury detection instruments did not detect any residual mercury. No verbal or written corroboration of a report that a spill occurred outside Building 6536 was located. It is unlikely, therefore, that any mercury was released to the environment.

Based on the above information, EPA approved the proposal for NFA for Site 105.

17.0 ER SITE 107: EXPLOSIVES TEST AREA

Site 107 is a triangular-shaped area located to the west of the CWL near Building 6920 along the southern boundary of TA-III (Figure 17-1). The site was used for shock wave HE testing from the 1950s until 1972. Metal-clad explosives containing silver or lead might have been used during the tests.

Potential COCs include DU, HEs, and heavy metals. The investigation protocols and results are discussed below.

17.1 Field Investigation Protocols

Field investigation protocols at Site 107 included aerial photograph analysis and surface soil sampling. Each is discussed below.

17.1.1 Aerial Photograph Analysis

Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features during successive years at the Explosives Test Area. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

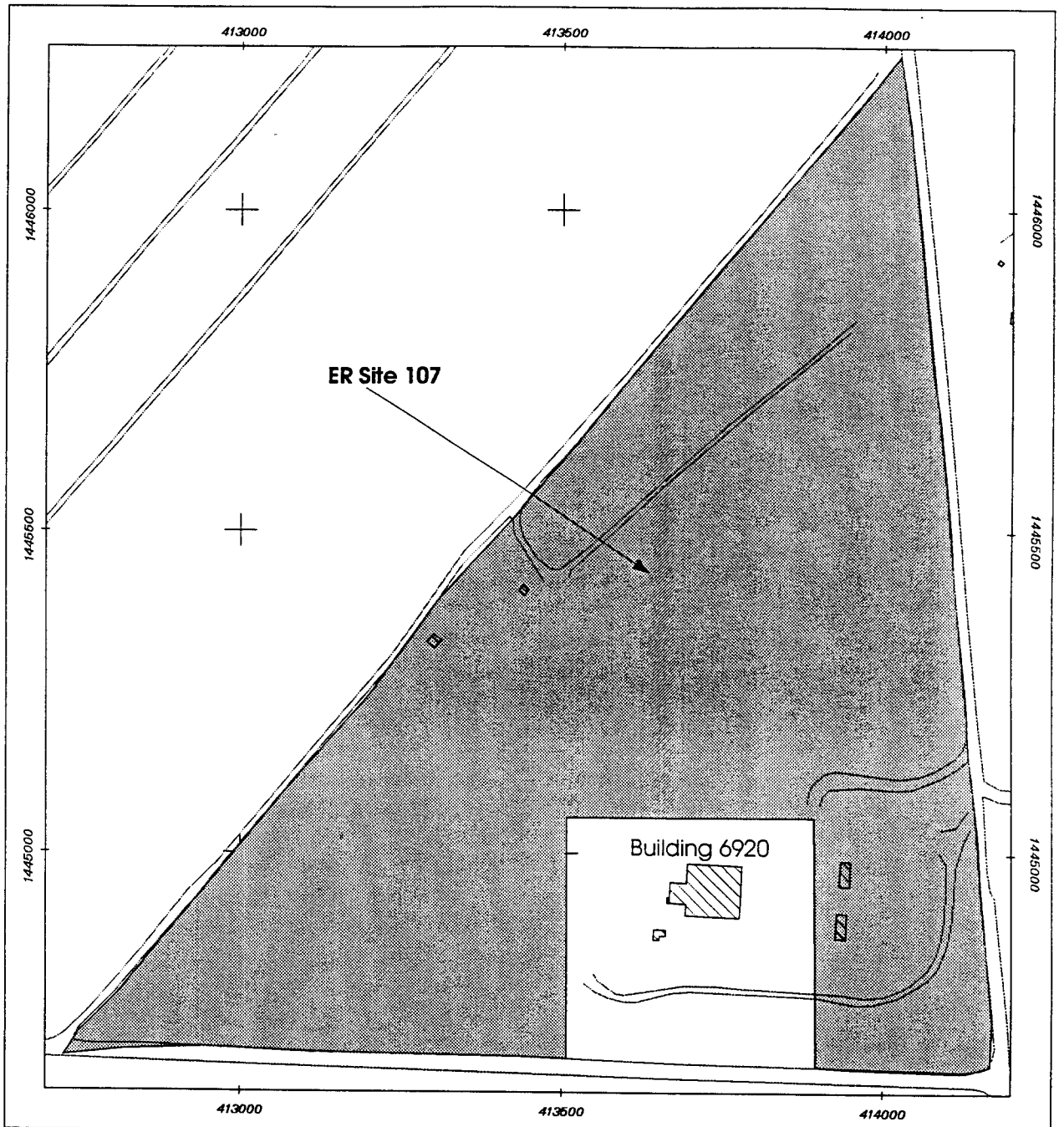
17.1.2 Sampling Strategies

The sampling and analysis plan was modified slightly from that proposed in the RFI Work Plan (SNL/NM 1993a, 1993b). To cover a wider potentially contaminated area, and because the sampling was conducted to verify earlier grid sampling, the grid length was increased from the proposed spacing of 200 ft to a spacing of 350 to 400 ft. The site was gridded on 400-ft centers in the north-south direction and 350-ft centers in the east-west direction, then subdivided into 10 sampling sections (Figure 17-2). Composite surface soil samples (10 plus one duplicate) were collected from the site in May 1994. Within each section, four to eight soil samples were collected from a depth of approximately 0.25 ft and mixed into a single composite sample using a trowel and stainless-steel bowl in accordance with the appropriate FOPs. Each sample was split for field screening of HEs by immunoassay, metals by XRF analysis, and radionuclides by gamma spectroscopy. Rather than only the two samples identified in the RFI Work Plan for off-site analysis (SNL 1993b), all 10 composite samples (and one for duplicate analysis) were submitted for laboratory analysis of HEs, nitrates and nitrites, metals, and gamma spectroscopy in accordance with the EPA methods identified in Table 2-2.

17.2 Field Investigation Results

17.2.1 Aerial Photograph Interpretation

A variety of cleared or disturbed surfaces was noted during the time period covered by the photographs for Site 107 (Plate I). There were no surface features found within 1,000 ft of the boundaries of Site 107 until 1986.



Legend

- ER Site 107
- Buildings
- Roads

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 17-1 ER Site 107
Explosives Test Area, TA-III

0 125 250
Scale in Feet

0 30 60
Scale in Meters

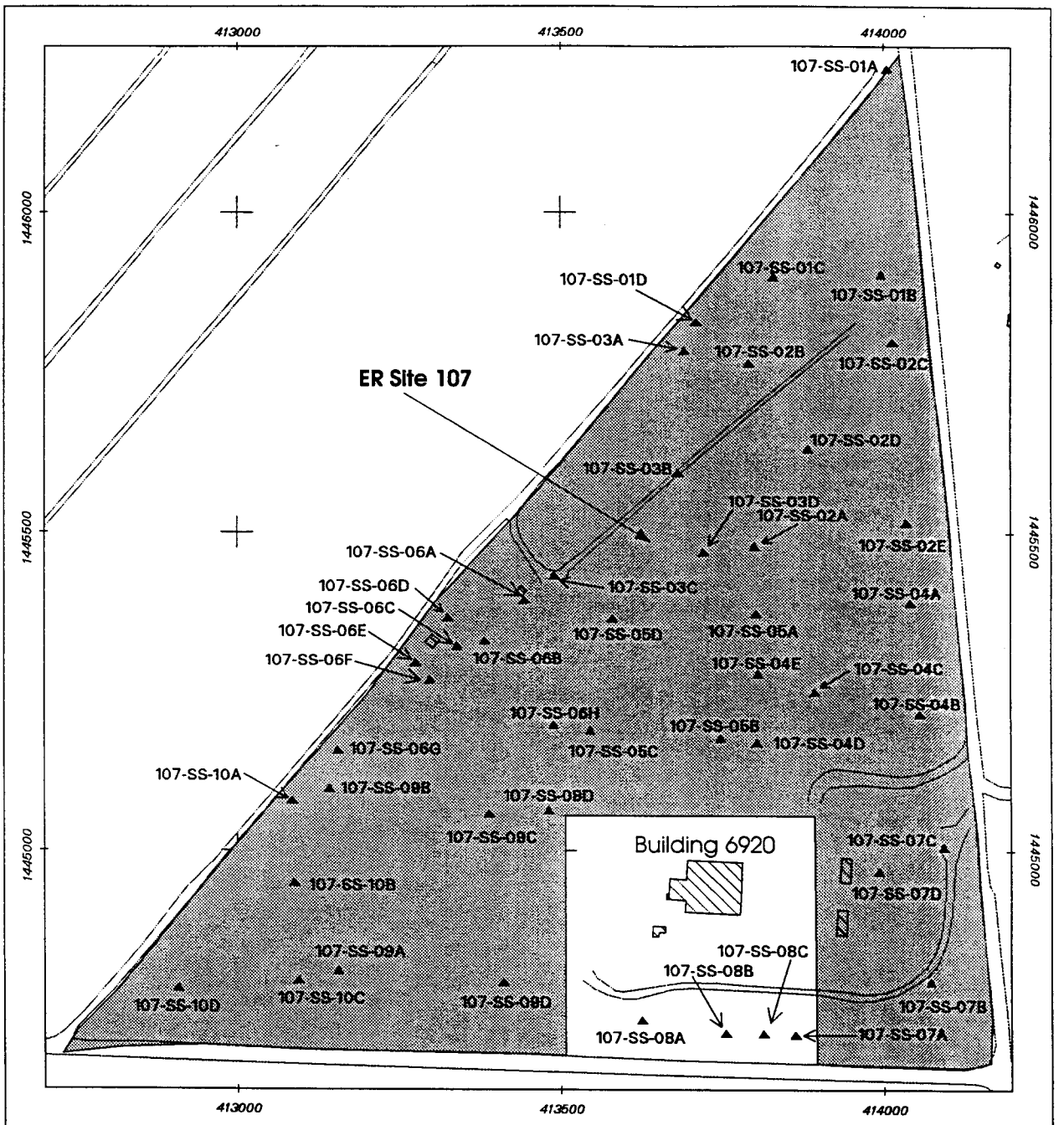
Unclassified

FINAL

1:3000

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

cheberl SNL GIS ORG. 7512 02/08/69 MAPID=950942



Legend

- ER Site 107
- Buildings
- Roads
- 107-SS-01A — Surface Soil Samples

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 17-2 ER Site 107

Location of Surface Soil Samples, TA-III

0 125 250 Scale in Feet

0 30 60 Scale in Meters

Unclassified

FINAL

1:3000

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

cheberl SNL GIS ORG. 7512 02/08/69 MAPID=950943

- 1986: A cleared or disturbed surface appeared in the 1986 photograph immediately to the west of the site, running along the diagonal northeast-trending site boundary. The feature was approximately 1,700 ft long and 400 ft wide at its widest point.

- 1990: In 1990, the southwestern half of the feature identified in 1986 was visible.

On-ground investigations of the areas identified in the aerial photographs as being of possible concern revealed no evidence of potential contamination or impact to Site 107.

17.2.2 Nature and Extent of Contamination

Table 17-1 summarizes all chemical constituents that were detected in concentrations greater than the MDL for the soil samples collected during the surface investigation. Detailed field screening data are provided in Appendix B; soil sampling and QA/QC results are provided in electronic format in Appendices C and D, respectively.

Table 17-1
Summary of Detected Constituents of Concern in Surface Soil Sample Analytical Results, Site 107

Analyte	Range (mg/kg)	Detection Limit (mg/kg)	Total Samples	Mean (mg/kg)	Number of Non-Detects	Samples ≤ Mean	Samples > Mean
Aluminum	4,000-6,290	10	11	4,905	0	6	5
Arsenic	1.9-4	1	11	2.8	0	5	6
Barium	60.3-93.6	1	11	70.2	0	6	5
Beryllium	0.3-0.6	0.2	11	0.4	0	9	2
Cadmium	<0.5-1.3	0.5	11	0.6	8	10	1
Calcium	2,450-26,100	20	11	6,405	0	5	6
Chromium	5.2-7.9	1	11	6.1	0	6	5
Cobalt	2.9-3.7	1	11	3.2	0	8	3
Copper	5.9-10.6	2	11	7.1	0	8	3
Iron	6,380-9,180	10	11	7,343	0	6	5
Lead	8.2-11.2	0.3	11	9.4	0	6	5
Magnesium	1,660-3,420	20	11	2,158	0	6	5
Manganese	133-228	1	11	176	0	4	7
Nickel	5.1-7.8	4	11	6.2	0	6	5
Potassium	1,430-2,450	500	11	1,738	0	7	4
Vanadium	11.1-15.7	1	11	13.3	0	7	4
Zinc	18.2-34.5	2	11	22.6	0	7	4
Nitrate/nitrite	0.8-2.4	0.5	11	1.3	0	6	5

No HEs were detected above the MDL. Nitrate/nitrites ranged from 0.76 to 2.4 mg/kg, well below the proposed RCRA Subpart S soil action level of 100,000/8,000 mg/kg, respectively, noted in Section 2.5. Several metals were detected above their respective MDLs. Because several metals are essential nutrients or are geologically prevalent (i.e., the soil-forming Sandia granite naturally contains high concentrations of aluminum, calcium, iron, magnesium, manganese, and potassium), these metals were removed from further consideration. Furthermore, no proposed RCRA Subpart S soil action levels are currently promulgated for any of these constituents. Table 17-2 summarizes the comparison of background levels to concentrations of RCRA metals detected at Site 107. No metals were determined to be site contaminants based on the statistical analysis conducted for Site 107. A few metals (arsenic, cobalt, and vanadium) were compared to the revised site-wide report (IT 1996) because there were no TA-III/V site-wide background data available at the time the statistical analyses were completed; these comparisons are provided in Table 17-3. None of the metals exceeded site-wide UTLs.

The gamma spectroscopy results were examined to determine whether any enriched uranium or DU existed at the site. A uranium equilibrium analysis of the ratios of activities for uranium-234 and uranium-238 and the ratio of the activities of both radioisotopes to uranium-235 activity was completed. The results of the analysis indicated that no enriched uranium or DU exists at the site. Also, no additional radionuclides were identified as potential COCs by the broad spectrum covered by gamma spectroscopy.

17.3 Summary and Conclusions

No chemical or radionuclide was detected in any of the surface soil samples at a level considered to be statistically in excess of background. No additional sampling or remediation appears to be warranted; however, Site 107 has been identified as the preferred site for a future temporary unit and corrective action management unit (TU/CAMU) for the ER Project. Therefore, further activities related to its TU/CAMU status, but unrelated to the RFI, will be conducted at the site. Summaries of these activities will be provided under the reporting requirements for the TU/CAMU waste management program. At such time as the TU/CAMU activities no longer affect Site 107, it will be proposed for NFA in accordance with Criterion 3 listed in Section 4.4 of this RFI report.

Table 17-2
Comparison of Site 107 Surface Soil Results to Technical Areas III and V Background Data

Parameter	Population Distribution	Statistical Test Applied					Maximum Concentration at Site 107 (mg/kg)	Site Contaminant[b]
		Student's t-test		Wilcoxon	Quantile	UTL[a] or 95th Percentile (mg/kg)		
		Equal Variance	Unequal Variance					
Barium	Lognormal	Pass[c]	Fail[d]	Pass	Pass	341.0	93.6	No
Beryllium	Lognormal	Pass	Fail	Fail	Pass	0.7	0.64	No
Cadmium	Lognormal	Pass	Pass	Pass	Pass	2.6	1.3	No
Chromium	Lognormal	Pass	Pass	Pass	Pass	26.2	7.9	No
Copper	Lognormal	Pass	Fail	Pass	Pass	14.5	10.6	No
Lead	Lognormal	Pass	Fail	Fail	Pass	24.8	11.2	No
Nickel	Lognormal	Pass	Pass	Pass	Pass	12.9	7.8	No
Zinc	Lognormal	Pass	Pass	Pass	Pass	41.8	34.5	No

[a]UTL = upper tolerance limit.
[b]Assessment of site contaminant based upon a qualitative evaluation of each statistical test applied to the data. For example: If all tests "fail," the highest concentration is statistically "greater " than background. If one or more tests "pass," other criteria may indicate that the highest concentration is not obviously, or statistically, greater than background. Other criteria include (1) the power of the individual statistical test and (2) whether the maximum concentration exceeds the UTL or 95th percentile.
[c]Pass = Accept the null hypothesis that test statistics are equal.
[d]Fail = Reject the null hypothesis that test statistics are equal.

Table 17-3
Comparison of Site 107 Data to Site-Wide Background

Parameter	Maximum Concentration (mg/kg)	Site-Wide UTL (IT 1996) (mg/kg)
Arsenic	4	5.6
Cobalt	3.7	5.2
Vanadium	15.7	20.4

18.0 ER SITE 111: BUILDING 6715 SUMP/DRAIN

Building 6715, located in the northern portion of TA-III (Figure 18-1), was constructed in 1971 and is used for conducting structural response experiments with HEs. Until 1988, wastes were discharged to a 4-ft by 8-ft stainless-steel tank, from which overflow was discharged through a polyvinyl chloride (PVC) pipe to a gravel and sand-filled pit. Although VOCs were reported to have been added to the waste water at one time, sampling of the waste water revealed no organic compounds (SNL/NM 1993a). In 1988, the tank, PVC pipe, and pit were excavated to a depth of 6 ft and removed.

Potential COCs include silver, HEs, and VOCs. Discussions of the field investigation protocols and results follow.

18.1 Field Investigation Protocols

Field investigation protocols at Site 111 included aerial photograph analysis and subsurface soil sampling. Each is discussed below.

18.1.1 Aerial Photograph Analysis

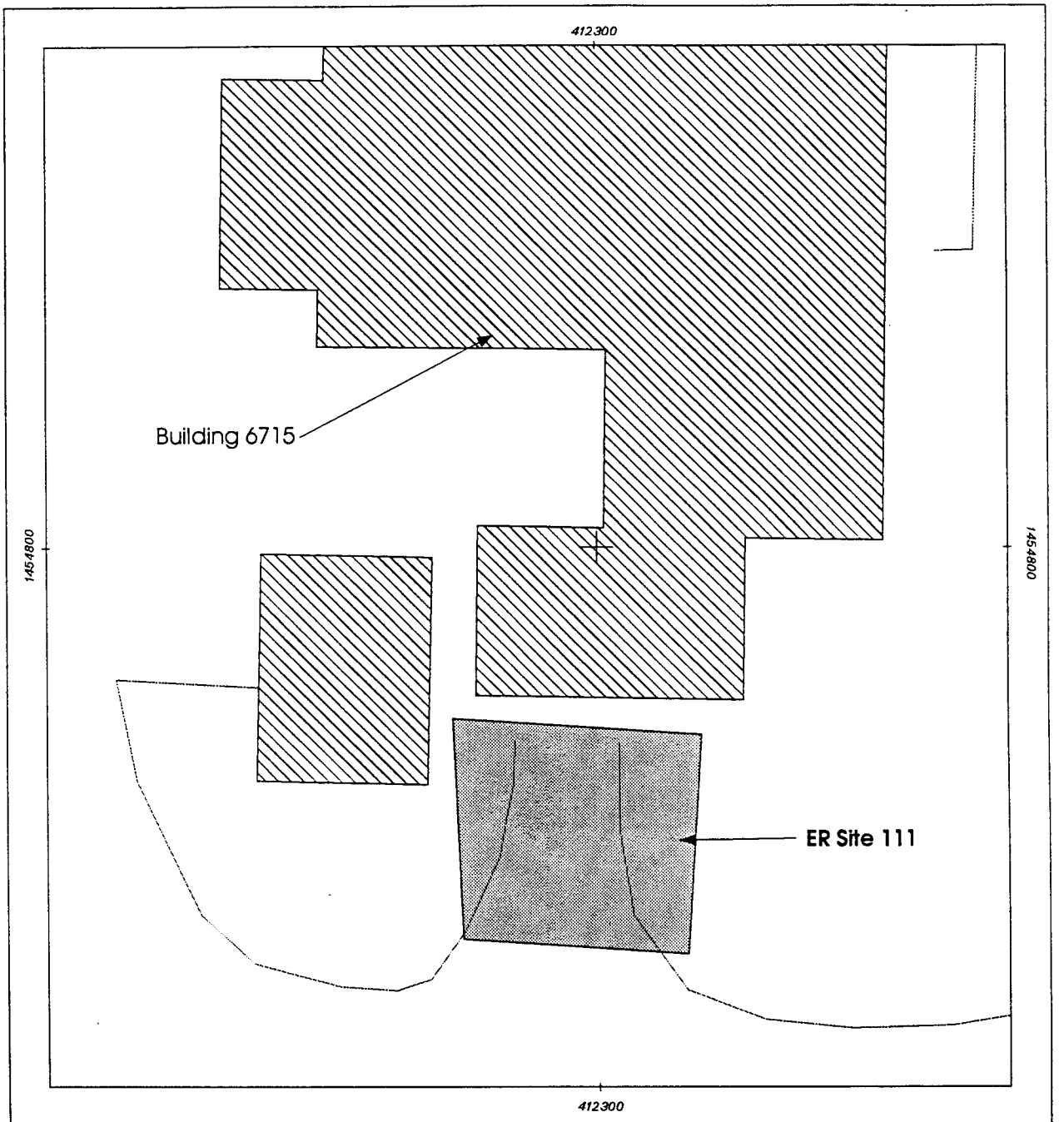
Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features during successive years at the site. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

18.1.2 Previous Investigations

In 1988, the existing sump system at Building 6715 was removed and a new system was installed. The stainless-steel tank, PVC discharge pipe, and the gravel and sand from the drain pit were removed during this action. The stainless-steel tank, discharge pipe, and drain pit were excavated to a depth of approximately 6 ft and removed. Results for confirmatory soil samples analyzed for silver indicated that all samples taken after the system was removed were well below the 400-mg/kg action level for silver, with most samples at or below background concentrations (see RFI Work Plan, SNL/NM 1993a).

18.1.3 Sampling Strategies

In June 1994, three boreholes were advanced in the vicinity of the former drain pit using a vehicle-mounted, small-diameter hydraulic probe (Figure 18-2; sample location coordinates provided in Appendix A). Underground utilities dictated the actual locations where the probe could be placed; thus, a slight variation from the work plan was necessary but Boreholes 111-B1 and 111-B2 were moved only an approximate 5 ft from their proposed locations. Soil samples were collected at depths of 8, 12, and 15 ft bgs in accordance with the appropriate FOPs. Field screening of HEs (by immunoassay) and silver (by DCP analysis) was conducted on all samples. Off-site laboratory analysis of VOCs, SVOCs, HEs, and silver was conducted in accordance with the RFI Work Plan (SNL/NM 1993a, 1993b) and with EPA methods cited in Table 2-2.



Legend

ER Site 111

Buildings

Roads

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 18-1 ER Site 111
Building 6715 Drain/Sump, TA-III

0 7.5 15
Scale in Feet

0 1.8 3.6
Scale in Meters

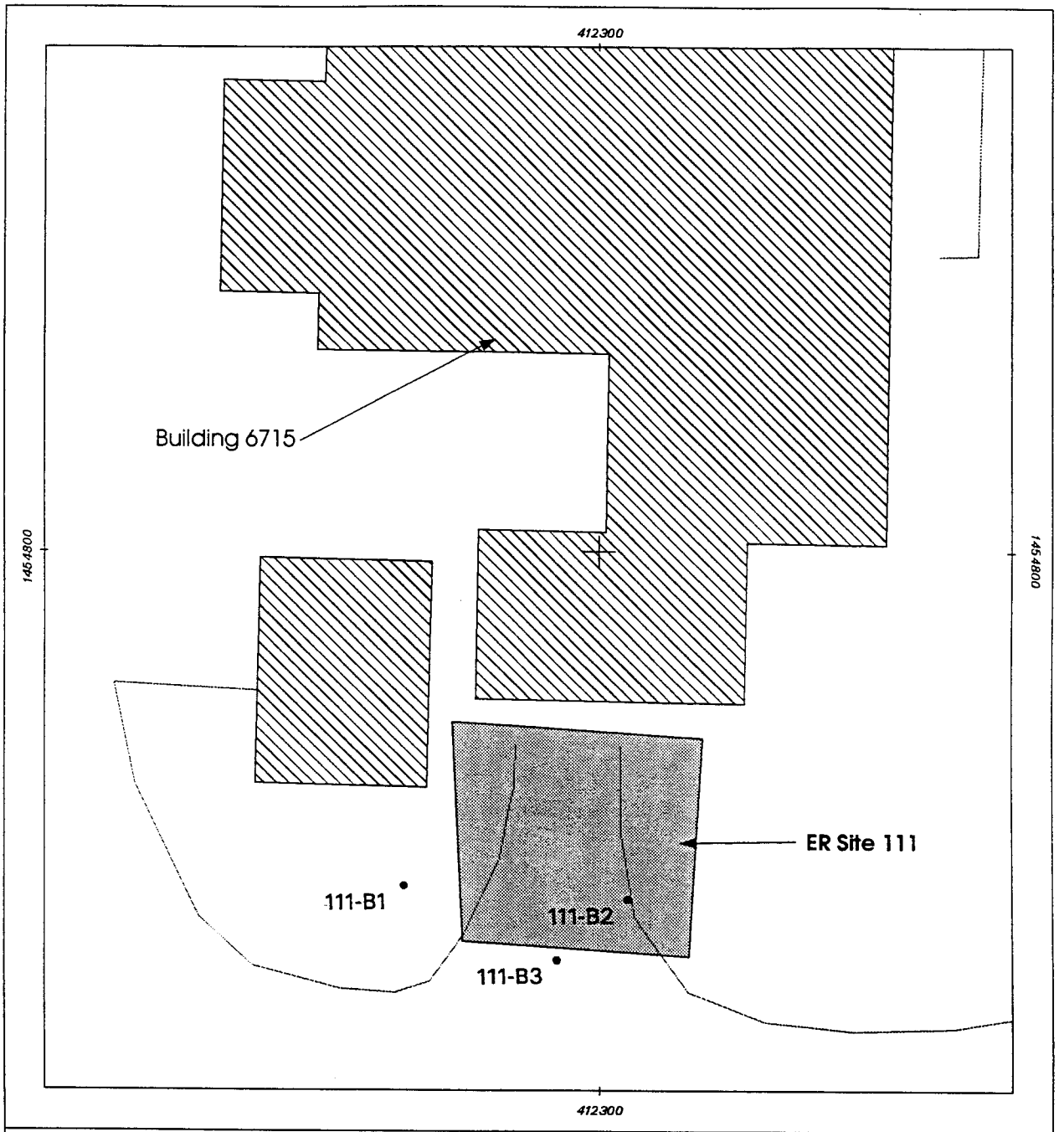
Unclassified

FINAL

1:180

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

cheberl SNL GIS ORG. 7512 02/05/96 MAPID=960944



Legend

ER Site 111

Buildings

Roads

111-B1 Soil Boring

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 18-2 - ER Site 111
Location of Soil Borings, TA-III

0 7.5 15
Scale in Feet

0 1.8 3.6
Scale in Meters

Unclassified

FINAL

1:180

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

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18.2 Field Investigation Results

18.2.1 Aerial Photograph Interpretation

Examination of the aerial photographs available for Site 111 indicated a large (approximately 1.5-acre) excavation might have been present approximately 500 ft west of Site 111 in 1973. In 1978 and all subsequent years, the same feature as in the 1973 photograph is identified, but with only minor shape changes from year to year. An on-ground investigation of the area confirmed the presence of the excavation, but no indications of contamination were noted (i.e., no staining or obvious problems) and there was no evidence to suggest the excavation was connected to Site 111.

18.2.2 Nature and Extent of Contamination

Field screening results are provided in electronic format in Appendix B. Soil sample analytical results are summarized in Table 18-1 and are included in greater detail in Appendices C and D (electronic versions of sampling and QA/QC data). No VOCs or HEs were detected in any of the samples above their respective MDLs. The highest concentration of silver detected was 2.1 mg/kg at a depth of 8 ft; its duplicate contained 1.9 mg/kg silver. One sample exhibited a concentration of bis (2-ethylhexyl) phthalate slightly above the MDL. This compound is recognized by the EPA as a common laboratory contaminant because it is a breakdown product of polyethylene labware. It is therefore not considered a site contaminant at Site 111.

Table 18-1
Summary of Subsurface Soil Sample Analytical Results - Site 111

Analyte	Minimum/ Maximum	Sample ID	Result (mg/kg)	Detection Limit
Silver	Minimum	TA3/5-111-B2-8D	1.9	1
	Maximum	TA3/5-111-B2-8	2.1	1
Bis (2-Ethylhexyl) Phthalate	Single[a]	TA3/5-111-B3-15	0.350	0.330

[a]Single = Only one sample contained an analyte in excess of the MDL.

Table 18-2 summarizes the comparison of background levels to concentrations of silver detected at Site 111. Silver was determined not to be a site contaminant based on the statistical analysis conducted for Site 111. Table 18-3 compares the two potential contaminants (silver and bis [2-ethylhexyl] phthalate) with their corresponding proposed RCRA Subpart S soil action levels; neither exists at a concentration above its action level.

Table 18-2
Comparison of Site 111 Subsurface Soil Results to Technical Areas III and V Background Data

Parameter	Population Distribution	Statistical Test Applied					Maximum Concentration at Site 111 (mg/kg)	Site Contaminant[b]
		Student's t-test		Wilcoxon	Quantile	UTL[a] or 95th Percentile (mg/kg)		
		Equal Variance	Unequal Variance					
Silver	Nonparametric	NA[c]	NA	Pass[d]	Pass	4.0	2.1	No

[a]UTL = Upper Tolerance Limit.
[b]Assessment of site contaminant is based upon a qualitative evaluation of each statistical test applied to the data. For example: If all tests "fail," the highest concentration is statistically "greater" than background. If one or more tests "pass," other criteria may indicate that the highest concentration is not obviously, or statistically, greater than background. Other criteria include (1) the power of the individual statistical test, and (2) whether the maximum concentration exceeds the UTL or 95th percentile.
[c]NA = Not applicable because the constituent was distributed nonparametrically.
[d]Pass = Accept the null hypothesis that test statistics are equal.

Table 18-3
Comparison of Site 111 Soil Analytical Data to Proposed RCRA Subpart S Soil Action Levels

Parameter	Maximum Concentration at Site 111 (mg/kg)	Proposed RCRA Subpart S Soil Action Level (mg/kg)	Exceeds Proposed RCRA Subpart S Soil Action Level?
Silver	2.1	400	No
Bis (2-Ethylhexyl) Phthalate	0.35	50	No

18.3 Summary and Conclusions

Because the constituents noted above clearly were not elevated, nor carry human health or environmental consequences, no additional activities were conducted at this site, and no additional sampling or remediation appears to be warranted. This site is proposed for NFA in accordance with Criterion 3 listed in Section 4.4 of this RFI report.

19.0 ER SITE 188: BUILDING 6597 ABOVE-GROUND SPILL CONTAINMENT TANK

SNL/NM proposed a confirmatory sampling NFA decision for Site 188, Building 6597 Above-Ground Containment Spill Tank in May 1995. The EPA approved the proposal in July 1995. A brief description follows.

In requesting a confirmatory sampling NFA decision for Site 188, SNL/NM used existing administrative/ archival information and confirmatory sampling. Site 188 was proposed for NFA in accordance with Criterion 2 listed in Section 4.4 of this RFI report.

Interviewees had originally stated that the potential site consisted of a 17,000-gal. above-ground storage tank that presumably held waste oil. However, subsequent investigations of aerial photographs and engineering drawings indicated that two above-ground tanks existed, and that they had held water, rather than any potentially hazardous substance. On this basis, and on the basis of shallow subsurface sampling at nearby Sites 37 and 155, it was determined that no hazardous material had been released to the environment.

Based on the above information, the EPA approved the proposal for NFA for Site 188.

20.0 ER SITE 195: EXPERIMENTAL TEST PIT

SNL/NM proposed an administrative NFA decision for Site 195, Experimental Test Pit in May 1995. The EPA approved the proposal in July 1995. A brief description follows.

In requesting an administrative NFA decision for ER Site 195, SNL/NM used existing administrative/archival information. Site 195 was proposed for NFA in accordance with Criterion 3 listed in Section 4.4 of this RFI report.

In 1951, test items were placed in the bottom of the pit. A sealed cobalt-60 source was then lowered into the pit, exposing the test items for six months. After completion of the experiment, the cobalt-60 source was resealed and removed from the test pit. Examination of available aerial photographs revealed no evidence that the experimental test pit still exists near the drop towers. Two site reconnaissance walk-over surveys conducted around the drop towers failed to locate the pit.

No sampling of this site has been conducted. Because the cobalt-60 source was removed from the pit, the half-life of cobalt-60 is 5.3 years (yr), and the experiment took place approximately 40 yr ago, it is unlikely that there is any residual radioactive material in the area (i.e., even if a small amount of residual material remained after the conclusion of the experiment, it would have decayed since 1955). In addition, all existing evidence indicates that the cobalt-60 source remained sealed and intact during the experiment and was removed as a single entity at the conclusion of the test. Thus, it is clear that the site has not released any hazardous or radioactive waste or constituents into the surrounding soils.

Based on the above information, the EPA approved the proposal for NFA for Site 195.

21.0 ER SITE 196: BUILDING 6597 CISTERN

The Building 6597 Cistern is a 20-ft-deep, 25-ft-diameter concrete-lined tank located approximately 30 ft west of Building 6597 in central TA-V (Figure 21-1). Transformer oil contaminated with water and possibly Freon™ was occasionally discharged into the Cistern in small quantities. About 5 gal. of contaminated waste oil per week was discharged into the Cistern, but was routinely removed from the site until 1989, when the PROTO Facility (ER Site 37) was closed. Some residual sludge remains at the bottom of the Cistern.

Although oil was the only COC (based on historical knowledge), sampling for VOCs, PCBs, and metals was conducted to determine whether they were present from undocumented disposals. A discussion of the field investigation protocols and results follows.

21.1 Field Investigation Protocols

The RFI Work Plan identified the following plan of action for investigating the Cistern. An initial "sludge" sample was to be collected for chemical analysis. The sludge would then be removed and the Cistern's concrete based scrubbed and examined for cracks indicating possible contaminant pathways. If no cracks were found, a single auger hole would be advanced in the center of the Cistern to sample for confirmatory soil analyses. If cracks were observed, angle drilling would commence to delineate any possible migrating contamination. As indicated in the succeeding sections, field conditions necessitated modifying this plan.

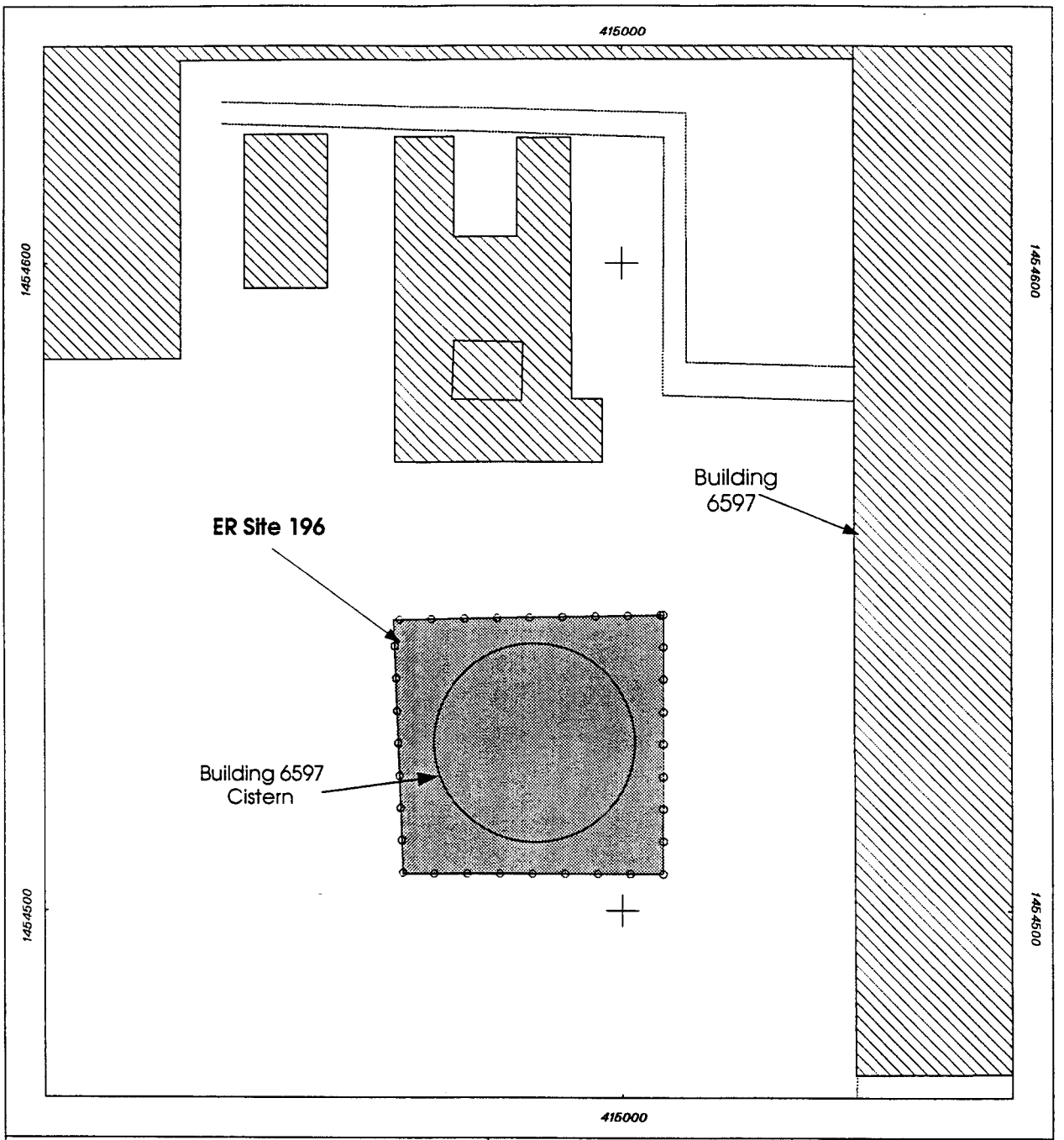
21.1.1 Aerial Photograph Analysis

Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features during successive years at the Cistern. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

21.1.2 Sampling Strategies

21.1.2.1 Initial Grab Sample

Preliminary sampling was conducted at Site 196 in June 1994. A grab sample of soil was collected from the bottom of the Cistern using remote sampling methods (Figure 21-2). The sample was analyzed at an off-site laboratory for VOCs, PCBs, TPH, and metals in accordance with the EPA methods cited in Table 2-2. This grab sample exhibited elevated levels of TPH, copper, lead, and zinc. Additional samples (B1 and B2) were collected in October 1994 for on-site gamma spectroscopic analysis for waste characterization.



Legend

- ER Site 196
- Buildings
- Roads
- Fences

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 21-1 ER Site 196
Building 6597 Cistern, TA-V

0 12.5 25
Scale in Feet

0 3 6
Scale in Meters

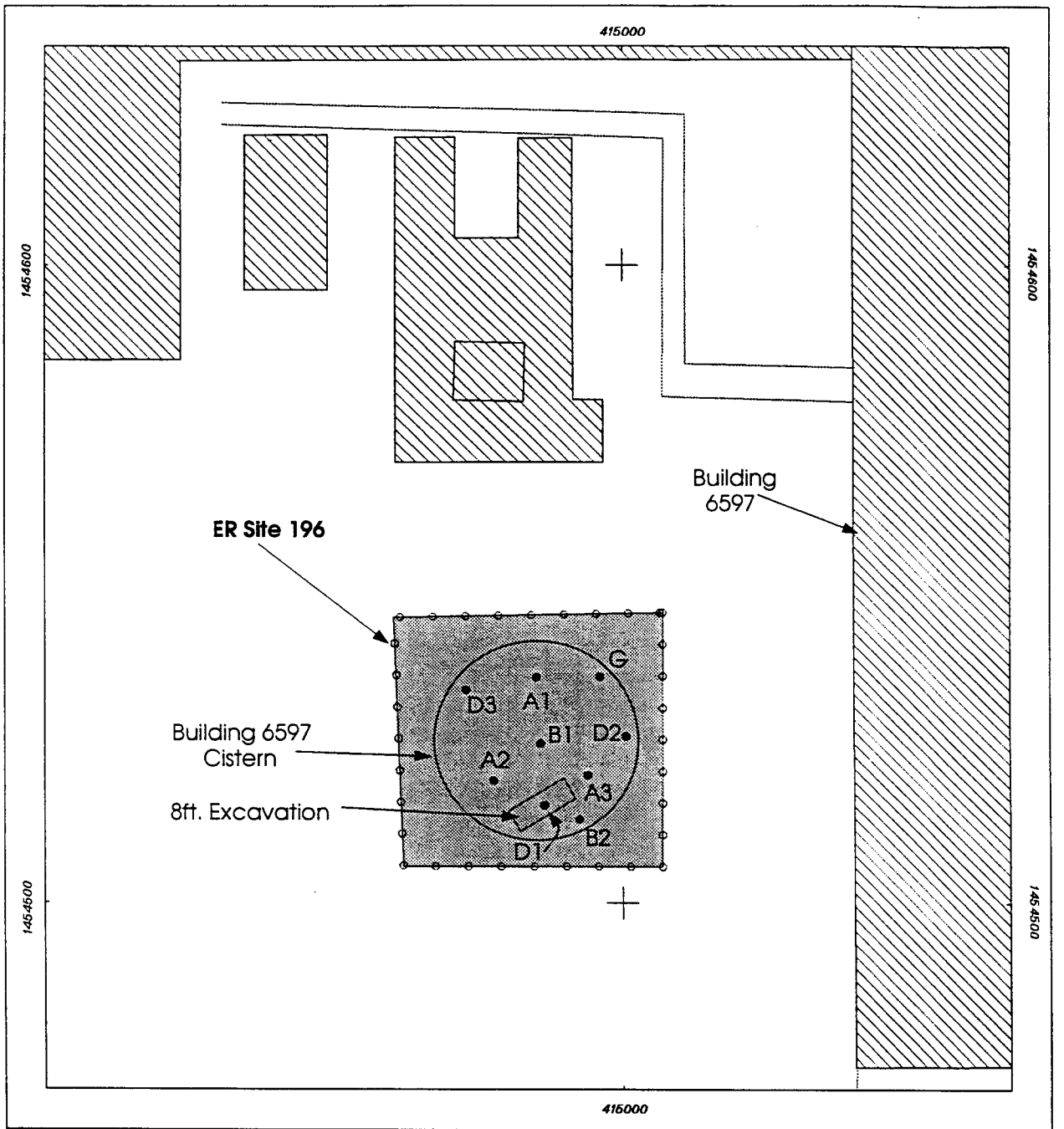
Unclassified

FINAL

1:300

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

cheberl SNL GIS ORG. 7612 04/15/96 MAPID=950946



Legend

- ER Site 196
- Buildings
- Roads
- Fences

Auger Hole Locations

- G — Grab Sample
- A1 — Metals Profile Sample
- B1 — Gamma Spec Sample
- D1 — TPH/VOC Profile Sample

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 21-2 ER Site 196
Location of Soil Borings, TA-V

0 12.5 25
Scale in Feet

0 3 6
Scale in Meters

Unclassified

FINAL

1:300

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

cheberl SNL GIS ORG. 7512 04/15/96 MAPID=950947

21.1.2.2 Sludge Thickness Determination

Subsequent to receipt of the chemical analyses, three auger holes were advanced in the Cistern to determine the thickness of the sludge layer and to ascertain whether the Cistern had a concrete base. The auger holes encountered refusal at depths of 2 1/2 to 4 ft below the top of the soil. This refusal was attributed to the concrete base then believed to exist.

21.1.2.3 Excavation Activity

Based on the results of the augering, the decision was made to remove the top 4 ft of the soil down to the concrete base, in accordance with the RFI Work Plan. Upon removing the soil, the concrete base would be scrubbed and examined for cracks and signs of leaking. Operations commenced in May 1995 using a clamshell excavator. During excavation activities, it was determined, upon reaching a depth of 8 ft in one portion of the Cistern, that no concrete base apparently ever had existed. Subsequent investigations indicated that the concrete extended to a depth of only 6 in. below the surface of the contaminated soil and debris in the bottom of the Cistern (Figure 21-3). At this point in the investigation, following the original plan and completely excavating the Cistern became unfeasible. A vertical contamination profile was required to guide future activities.

21.1.2.4 Metals Profile Activity

Because the initial chemical analyses of the single grab sample of soil had indicated elevated levels of copper, lead, and zinc in the upper few inches of material, three additional auger holes (A1, A2, and A3) were advanced to collect soil samples for metals analyses. Soil samples were collected from the surface at 6-in. intervals to a total depth of 3 ft in each of the three boreholes (Figure 21-2). The samples were submitted for screening to the SNL/NM on-site analytical laboratory and analyzed for total copper, lead, and zinc using XRF techniques.

21.1.2.5 Activity to Profile Total Petroleum Hydrocarbons and Volatile Organic Compounds

A vertical contamination profile was conducted to determine the extent of TPH and the presence, if any, of VOCs in the subsurface. Three auger holes (D1 through D3, Figure 21-2) were advanced to refusal in the bottom of the Cistern using an electric impact hammer. Auger hole D1 was advanced in the bottom of the 8-ft-deep trench to a depth of 5 ft (for a total of 13 ft below the Cistern floor). Auger hole D2, located beneath the drainlines, was driven to a total depth of 13 ft below the Cistern floor. The third auger hole (D3) was located in the northwestern section of the Cistern and was advanced to a total depth of 5 ft. Soil samples were collected from each borehole at approximately 2-ft intervals and were submitted for on-site analysis of TPH by TD/GC and for VOCs by EPA Method 8260; samples were split for off-site analysis of TPH by EPA Method 418.1 and for VOCs by EPA Method 8240/8260. In addition, a soil vapor sample was collected at the total depth of each borehole and analyzed on site for VOCs.

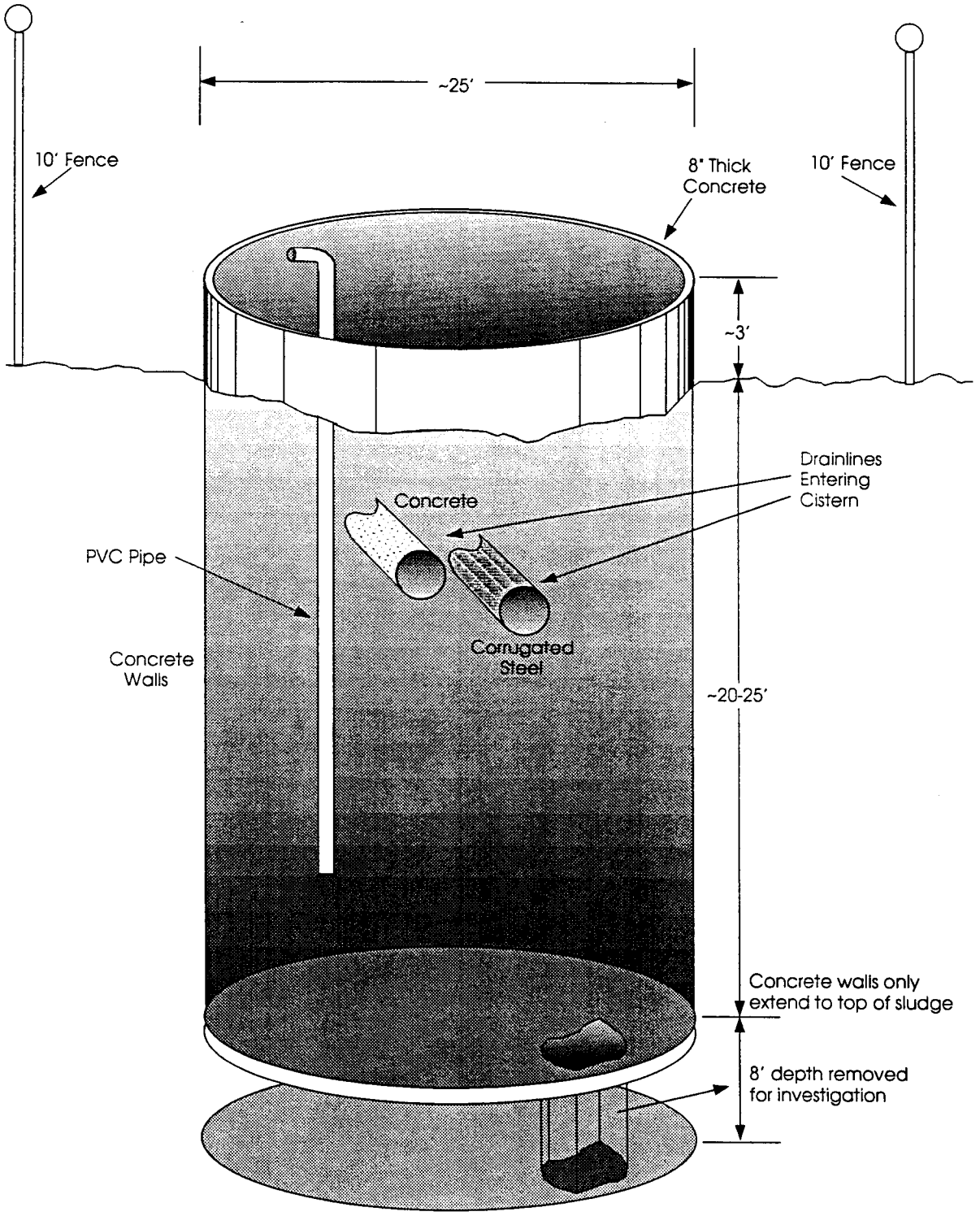


Figure 21-3. Schematic Cross Section of Site 196, Building 6597 Cistern (TA-V)

21.2 Field Investigation Results

21.2.1 Aerial Photograph Interpretation

There were no surface features noted in the 1973 to 1990 aerial photographs within 1,000 ft of the boundaries of ER Site 196 (Plate I). Photographs of TA-V from the same time showed indications of oil spilled in the vicinity of the high-energy radiation megavolt electron source (HERMES) (Site 36) and PROTO (Site 37) facilities.

21.2.2 Nature and Extent of Contamination

Results of each phase of sampling at the Cistern are summarized in Table 21-1 and are presented in greater detail in electronic format in Appendices B (field screening) and C (off-site laboratory data). As shown in Table 21-1, results of initial grab sampling indicated elevated levels of TPH, copper, lead, and zinc. Gamma spectroscopic analyses revealed no elevated DU or other radionuclides in the soil. No VOCs or PCBs were detected above their respective MDLs.

The results of Phase III of the investigation, during which the top 3 ft of material was profiled for metals content, indicated the majority of the metals impact occurred only in the upper 6 in. of material.

On-site TPH concentrations in Borehole D1 ranged from 4,500 to 13,000 mg/kg; off-site results ranged from 4,300 to 29,000 mg/kg (Table 21-1; Appendices B and C). The vertical extent of TPH was not ascertained in Boreholes D1 and D2 before refusal was encountered.

Minor VOC concentrations (<50 µg/kg total VOCs) were noted by the on-site analytical laboratory in the soil samples from Boreholes D1 and D3, but all were several orders of magnitude below their respective proposed RCRA Subpart S soil action levels. No VOCs were detected by the off-site laboratory in the soil samples (Table 21-1).

Minor VOC concentrations were noted in the vapor samples by the on-site laboratory. Borehole D1 contained minor TCE and methylene chloride. No VOC concentrations were detected in the soil vapor samples from Borehole D2. Borehole D3 contained minor vapor concentrations of TCE, 1,1,1-trichloroethane (TCA), benzene, and toluene (the latter two compounds were in "J" value concentrations, i.e., below the practical quantitation limit).

All of the constituents noted in Table 21-1 were detected at levels above their corresponding UTL (where one existed); none were above their respective proposed RCRA Subpart S soil action level, with the exception of the first TPH sample, which clearly exceeded the NMUSTR standard of 100 mg/kg. The vertical extent of TPH contamination was not adequately determined in Boreholes D1 or D2.

21.3 Evaluation of Data

The chemical analyses of the samples collected during Phases I and III of work at the site are in general agreement, even though the analytical techniques differed. It appears that on-site XRF analysis of metals approximates off-site analyses of metals by ICP and is thus a good screening tool.

Table 21-1
Summary of Off-Site Soil Sample Analytical Results, Site 196

Analyte	Sample ID	Sample Depth (ft)	Result (mg/kg)	Detection Limit (mg/kg)	UTL (mg/kg)	Proposed RCRA Subpart S Soil Action Level (mg/kg)
TPH	196-Cistern	Surface (Initial grab)	60,500	20	NA[a]	100 (NMUSTR)[b]
	D1 D2 D3	8-13 1-12 2-4	4,300-29,000 7,200-40,000 ND-35			
VOCs	196-Cistern	Surface (Initial grab)	ND	0.5-1.0	NA	Various
	D1 D2 D3	8-13 1-12 2-4	ND ND ND			
Copper	196-Cistern	Surface (Initial grab)	213	2.0	14.5	NA
	A1, A2, A3	Surface 0.5	380-680 ND-23	20 (XRF)		
Lead	196-Cistern	Surface (Initial grab)	180	0.3	24.8	2,000
	A1, A2, A3	Surface 0.5	53-309 21-23	15 (XRF)		
Zinc	196-Cistern	Surface (Initial grab)	458	2.0	41.8	20,000
	A1, A2, A3	Surface 0.5 1.0 1.5	842-1,414 ND-51 ND-62 ND-32	25 (XRF)		

Note: Results for metals shown for those samples that exceeded the UTLs. Samples collected from deeper than 1.5 ft bgs were below the UTLs for all metals. XRF screens conducted on site for samples A1, A2, and A3.

[a]NA = Not applicable.
[b]TPH action level of 100 mg/kg was derived from New Mexico Underground Storage Tank Regulations (NMUSTR) standards.

The presence of the metals in the soil was not expected, based on available site history. Interviews with facility personnel suggested that lead bricks might have been stored in the PROTO facility, but the mechanism for their having come in contact with the oil has not been explained. However, because copper, lead, and zinc concentrations decreased by one or more orders of magnitude in the upper 6 in. of soil, they are not anticipated to have reached ground water. Furthermore, all are below their proposed RCRA Subpart S soil action levels. Copper does not currently have an associated action level, but because it is an essential nutrient, its action level would likely be on the order of that for zinc (i.e., 20,000 mg/kg).

No VOCs were noted in the initial sludge sample collected from a depth of 6 in. or in any of the subsequent samples collected to profile TPH and VOCs.

Although the full extent of TPH beneath the Cistern was not defined, some parallels can be drawn to the nearby HERMES Site (ER Site 36, Section 8.0), which is approximately 100 yd from the Cistern and received greater quantities of a similar contaminant oil. Similar lithologies and depth to ground water (approximately 500 ft) are assumed for both sites. Thus, distribution patterns comparable to those seen at Site 36 are anticipated for the Cistern oil. The vertical extent of TPH is assumed to be less than that at Site 36 where it extends to a depth of approximately 220 ft, several hundred feet above the water table. Based on this and the lack of elevated concentrations of hazardous constituents detected during the site investigation, Site 196 is not believed to have impacted the ground water.

21.4 Summary and Conclusions

Investigations at the Cistern revealed the absence of a concrete base, which might imply that any contamination present would have a clear pathway to reach ground water; however, the soil profiling that was conducted demonstrated that metals contamination was restricted to the upper 0.5 to 1.0 ft of soil. None of the metals were present in a concentration that exceeded its respective proposed RCRA Subpart S soil action level. Only TPH exceeded the NMUSTR action level of 100 mg/kg; however, as manufactured, the oil is considered nonhazardous, and none of the metals associated with the soil is in a concentration that would render the oil hazardous.

Because no hazardous constituents were detected during the site investigation and the mineral oil is not anticipated to have impacted the water table, the site is proposed for NFA in accordance with Criterion 5 listed in Section 4.4 of this RFI report.

22.0 ER SITE 240: SHORT SLED TRACK

The Short Sled Track was built in 1951 in central TA-III (Figure 22-1). The track was operational until 1961 when the Long Sled Track (Site 83) was constructed. Tests using rocket motors propelled test vehicles from the north (launch) end of the track toward the south (impact) end into a concrete or water target.

Potential COCs identified in the RFI Work Plan (SNL/NM 1993a) include DU, selected metals (beryllium, lead, lithium, mercury, niobium, and uranium), and HEs. These contaminants (except lead) potentially were released from the impact debris remaining after sled track tests; lead was contained in the rocket exhaust and would have been released during launching. Discussions of field investigation protocols and results follow.

22.1 Field Investigation Protocols

Activities conducted at Site 240 included aerial photograph analysis, surface radiation survey and removal, and surface soil sampling. Each is discussed below.

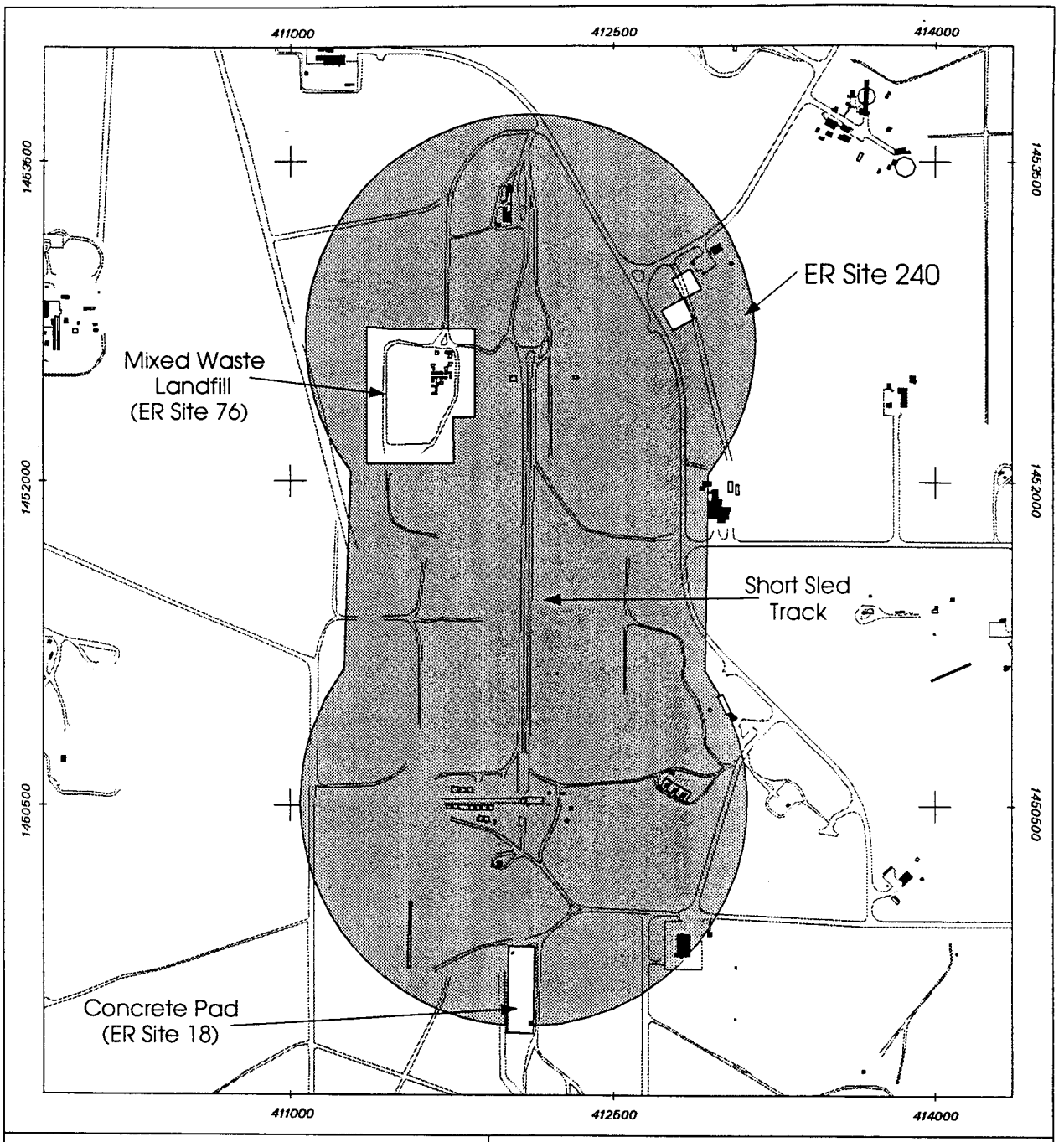
22.1.1 Aerial Photograph Analysis

Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features during successive years at the Short Sled Track. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

22.1.2 Surface Radiation Survey

Site 240 was surveyed during 1994 as part of the ER Project-wide surface radiation survey and removal VCM, which is discussed in greater detail in Section 24.0. The survey area for Site 240 consisted of approximately 83 acres of flat terrain covered by low grasses and brush and encompassed the impact area and various buildings, bunkers, and equipment storage areas, including the northern half of the Concrete Pad (Site 18). A gamma scan survey was performed on 10-ft centers over the surface area of the site. The interiors of the bunkers and buildings, the transformer substation areas, and inaccessible areas beneath permanent structures and temporary structures that could not be easily moved were excluded from the survey.

Following the radiation survey, the point source radiation anomalies were removed and deposited in 55-gal. closed-top steel drums. Two large area sources were identified that required more extensive excavation than was scoped at the time; they were removed in May 1996.



Legend

- ER Site 240
- Buildings
- Roads

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 22-1 ER Site 240
Short Sled Track, TA-III

0 375 750
Scale in Feet

0 90 180
Scale in Meters

Unclassified

FINAL

1:9000

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

cheberl SNL GIS ORG. 7512 03/11/96 MAPID=950948

After the removal action was completed, soil samples were collected to verify cleanup levels (actual soil concentrations or activity) at 10 percent of the anomaly locations at the site. The soil samples were analyzed using standard laboratory gamma spectroscopy methods; the results are provided in Appendix G.

22.1.3 Sampling Strategies

Surface soil samples were collected on a grid (Figure 22-2) in accordance with the sampling and analysis plan identified in the RFI Work Plan (SNL/NM 1993a) with a minor modification: the samples were composited as discussed below.

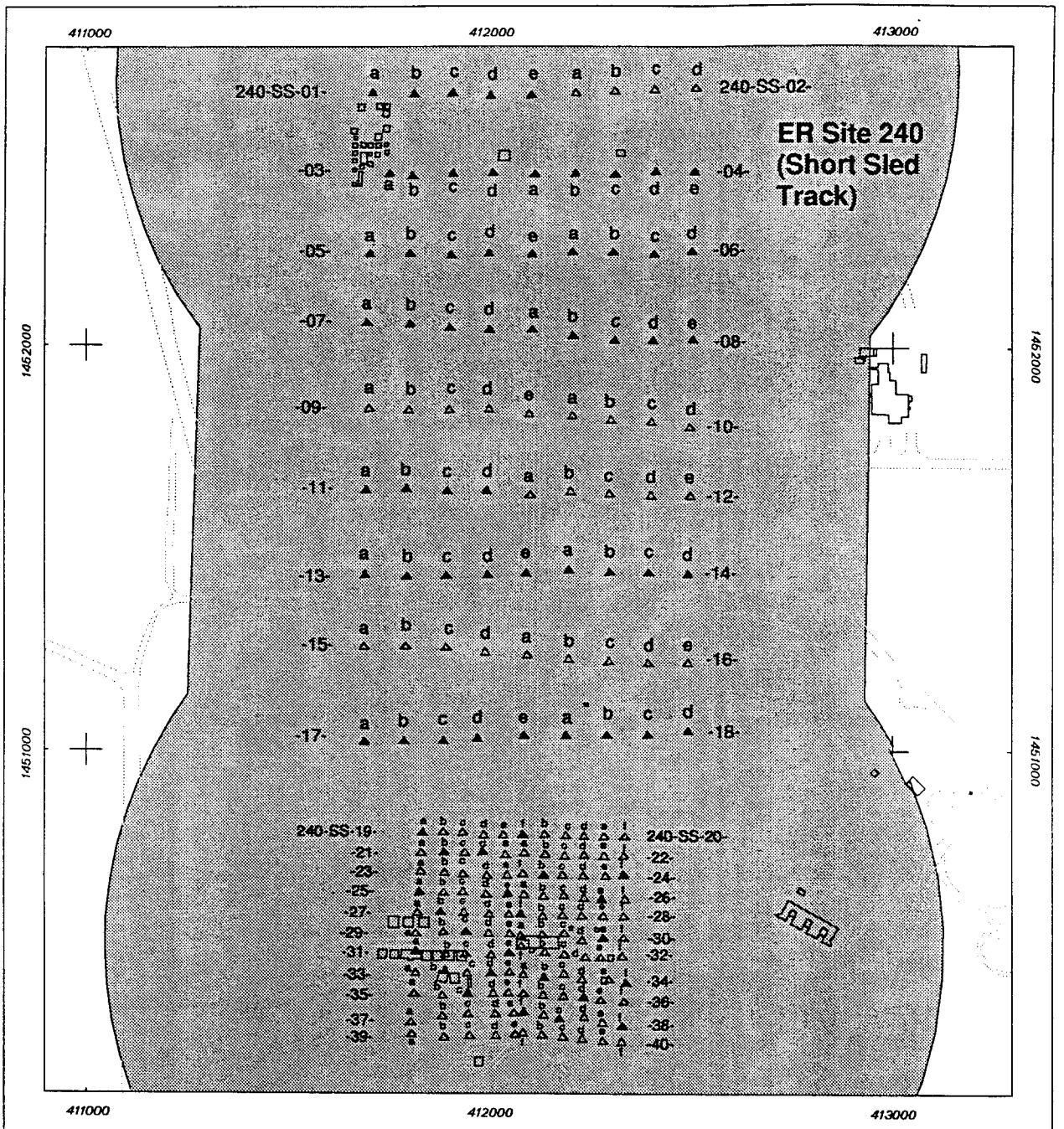
A total of 201 samples were collected from 0 to 1 ft depth bgs using a trowel and stainless-steel bowl and following appropriate FOPs (Table 2-1); sampling coordinates are included in Appendix A. The first of two sampling phases was conducted to collect soil samples for field screening of metals by XRF and of HEs using immunoassay kits. Every four to five samples were composited for screening. Based on the results of the field screening, the second phase of sampling was conducted to collect individual component samples (i.e., those that made up the composite sample) for laboratory analysis. Samples were analyzed for selected metals (beryllium, lead, lithium, mercury, niobium, and uranium), HEs, and gamma spectroscopy according to the EPA methods identified in Table 2-2. Those samples submitted for off-site laboratory analysis are identified as such on Figure 22-2.

22.2 Field Investigation Results

22.2.1 Aerial Photograph Interpretation

Several large burned areas were identified during the examination of aerial photographs for successive years at the Short Sled Track (Plate I). Many areas actively associated with the Mixed Waste Landfill (MWL) (ER Site 76) were noted during the analysis, as were activities associated with the track itself. The aerial photograph interpretation of Site 240 is listed below in chronological order from 1973 to 1990.

- 1973: There was a disturbance at the MWL within the landfill boundary itself noted in the 1973 photograph. This feature was a trench and probably one of the actual excavations in the landfill. A small pile feature northeast of the MWL was also present, and two separate piles were seen in the northeast corner of Site 240. No excavation was associated with these piles. There was a long, narrow possible excavation about 300 ft to the northwest of the site. A cleared or disturbed surface was also present about 250 ft east of the site boundary.



Legend

- ER Site 240
- Buildings
- Roads
- 240-SS-02-a △ Field Screened Sample
- 240-SS-03-a ▲ Off-Site Lab Sample

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 22-2
ER Site 240 Short Sled Track
Location of Surface Soil Samples, TA-III

0 200 400 Scale in Feet

0 48 96 Scale in Meters

Unclassified

FINAL

1:4800

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

cheberl SNL GIS ORG. 7512 04/26/96 MAPID=950950

- 1975: There was one new surface feature, a large cleared or disturbed surface approximately 500 ft southwest of the site, in the 1975 photograph. However, the photograph is cropped at the eastern edge and does not show the full extent of the feature or of Site 240.

- 1978: A new cleared or disturbed surface east-southeast of the MWL was identified in the 1978 photograph and measured about 300 ft wide and 900 ft long. A second small feature northwest of a previously identified feature was found in the northwest corner of Site 240.

- 1979: Four new features were identified in the 1979 photograph. The first was the Concrete Pad (ER Site 18, discussed in Section 3.0). The second new feature, south of the Concrete Pad and classified as a cleared or disturbed surface, was about 600 ft long and was the construction area for the Concrete Pad. The third feature was a very large cleared or disturbed surface in the southwest portion of Site 240 and included about 38 acres; it appeared to be an extension of the large cropped feature noted in 1975 and was interpreted to be a large burned area. A fourth feature, a cleared or disturbed surface, was noted just west of the western site boundary approximately 800 ft south of the Site 76 boundary.

- 1982: Two new features were identified in the 1982 photograph. The first was a small pile located about 20 ft south of the Site 76 boundary, and was about 200 ft long and 150 ft wide. The second was a cleared or disturbed surface about 200 ft east of the sled track, approximately even with the MWL.

- 1983: Previously identified smaller features were not found in the 1983 photograph, and the pile near the south end of MWL was enlarged. The cleared or disturbed surface south of Site 18 was not noticeable. One new feature was noted in the northwest portion of the site: a long, narrow, cleared or disturbed surface (approximately 900 ft by 150 ft) appeared to the northwest of the Site 76 boundary.

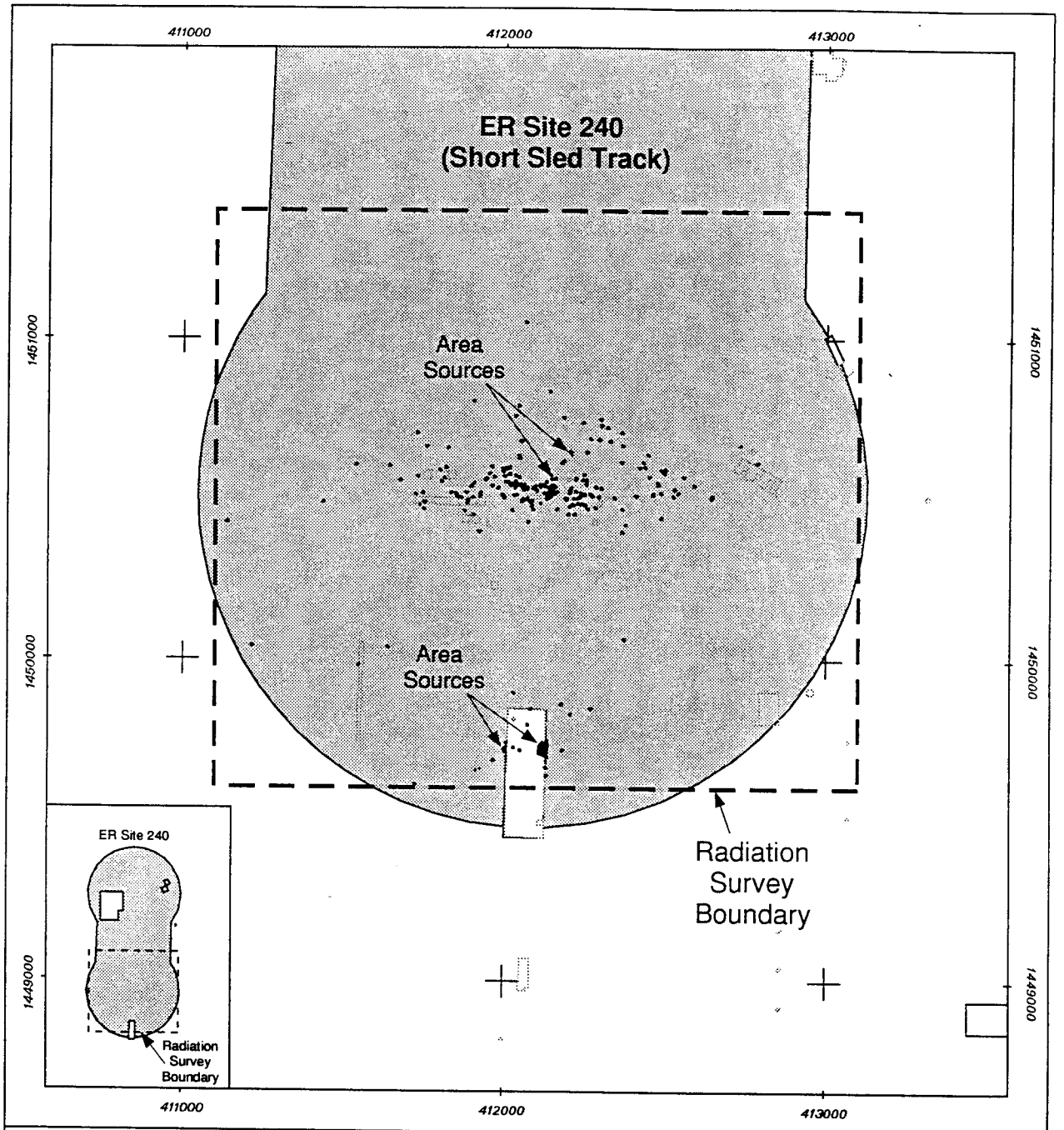
- 1986: No new features were identified in the 1986 photograph.

- 1990: Most features in the 1990 photograph were the same as in previous years, except that a large cleared or disturbed surface on the west side of Site 240 was found. This feature was 2,100 ft long from the southwest corner to the northeast corner. This feature might have been a remnant of a vegetation burn.

On-ground verification of the features identified in the aerial photographs was conducted. The features near the MWL were confirmed as being related to activities at that site. Burned areas were similarly confirmed.

22.2.2 Surface Radiation Survey Results

The surface radiation survey identified 260 anomalies that exhibited count rates in excess of normal background for Site 240. The background gamma exposure rates ranged from 10 to 12 μR/hr. Areas of gamma activity that were 30 percent or greater than the natural background are shown in Figure 22-3 and are summarized in Table 22-1. A detailed summary of the anomalies found within the survey boundaries of Site 240 is presented in the final report on the surface radiation survey (Geotech 1994).



Legend

- ER Site 240
- Buildings/Concrete Slabs
- Surface Radiation Anomalies
  - Area Sources
  - Point Sources
- Rad Survey Boundary

0 250 500 Scale in Feet

0 60 120 Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 22-3 ER Site 240 Location of Surface Radiation Anomalies, TA-III

Unclassified

FINAL

1:500

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

ddrizor SNL GIS ORG. 7512 03/14/96 MAPID=960626

Table 22-1
Areas of Gamma Activity at Site 240

Anomaly Type	Quantity	Gamma Radiation Activity Range (μR/hr)	Description
Fragment Point Source	133	14 to 198	Gray metal alloy-type fragments centrally located around impact site
Soil Point Source	118	14 to 225	Located around impact site and Concrete Pad (Site 18) area
Soil Area Source	8	12 to 308	Located around impact site and Concrete Pad (Site 18) area
Fragment Area Source	1	24 to 50	Located near impact site

The anomalies identified were concentrated around two areas: the sled track impact area and the area approximately 300 ft south of the impact zone, including the Concrete Pad (Site 18). This pattern correlates well with the dispersion pattern of an impact of a sled test payload with a large stationary target; the spread of debris to either side of the target, and the grouping of highly energetic debris flying over the target at a great distance are also evident.

Anomalies in the impact area consisted of fragment and soil point sources, as well as four soil area sources. The fragments appeared to be a form of metal alloy (silver and gray in color), many of which had colored markings (orange, red, white, and green). The response of the survey instruments to the soil point sources (i.e., no visible DU) suggested the presence of subsurface fragments. The soil area sources appeared to contain finely dispersed oxidized DU on or just beneath the surface. The pattern of distribution appeared to be elliptical in an east-west direction concentrated around the impact site and correlated well with the dispersion of material resulting from high-energy impacts of payloads with immovable objects.

Anomalies near the Concrete Pad consisted of several soil point sources and four soil area sources; the pattern of distribution appeared to be circular and concentrated around the north half of the pad. One location appeared to be "shine" from five contaminated jet engines located in the center of the anomaly and not associated with soil or concrete contamination.

All radiation anomalies were removed at Site 240. A detailed summary of the analytical results for the soil samples collected for confirmation subsequent to the removal of the radiation anomalies is presented in Appendix G.

Only one sample contained uranium-238 and thorium-234 above the site-wide UTLs at activities of 9.4 pCi/g and 9.1 pCi/g, respectively. Two anomalies west of the Concrete Pad exhibited cobalt-60 at activities of 0.1 pCi/g and 1.1 pCi/g. Five anomalies contained radium-228 and thorium-232 at activities slightly above the site-wide UTLs (each 1.01 pCi/g). The single anomaly that exhibited uranium-238 and thorium-234 was field checked during the spring 1996 follow-up radiation anomaly cleanup action;

no radiation was detectable by field instruments (i.e., greater than 30% above background), so the cleanup was considered complete.

22.2.3 Nature and Extent of Contamination

Table 22-2 summarizes all constituents that were detected in concentrations greater than the detection limit for the soil samples collected during the surface investigation. Detailed field screening results are provided in Appendix B; off-site laboratory soil sampling results are provided in Appendix C; and QA/QC data are presented in Appendix D. (All results are in electronic format.)

Table 22-2
Summary of Detected Constituents of Concern in Site 240 Surface Soils

Analyte	Range (mg/kg)	Detection Limit (mg/kg)	Total Samples	Mean (mg/kg)	Number of Non-Detects	Samples ≤ Mean	Samples > Mean
Beryllium	0.3-0.6	0.2	27	0.5	0	9	18
Lead	3.7-104	5	40	10.6	2	23	17
Lithium	<5-8.2	5	27	5.7	11	17	10
Niobium	0.2-0.4	0.02	27	0.28	0	16	11
Uranium	0.2-0.8	0.005	27	0.37	0	14	13

No HEs were detected above their respective MDLs. No mercury was detected above its MDL. No beryllium samples were above TA-III/V background. Niobium and lithium were found only in very low concentrations (0.2 to 0.4 mg/kg for niobium and 5 to 8 mg/kg for lithium). Because no background samples were collected for these constituents, no comparison to background of niobium or lithium was possible; however, no spatial correlation was noted for either constituent, and both are commonly incorporated into granite (Zoltai and Stout 1984), which is the major soil-forming rock type at SNL/NM.

Table 22-3 summarizes the comparison of background levels to concentrations of metals detected at Site 240. Lead was the only metal determined to be a site contaminant based on the statistical analysis conducted for Site 240. The highest concentration of lead (one sample with a concentration of 104 mg/kg) was found at the north end of the track, which was the launching point for test vehicles and payloads. This concentration is well below its proposed RCRA Subpart S soil action level (2,000 mg/kg).

Comparisons of beryllium's central tendency to that of the TA-III/V background data set resulted in failures for three of the tests (Table 22-3), indicating that the mean and median for the sample set exceeded those for the background set. However, the maximum beryllium concentration was below the UTL for the background set, the concentrations showed no spatial correlation, and beryllium passed the most powerful Quantile test, so beryllium is not considered a site contaminant.

Table 22-3
Comparison of Site 240 Surface Soil Results to Technical Areas III and V Background Data

Parameter	Population Distribution	Statistical Test Applied: Student's t-test: Equal Variance	Student's t-test: Unequal Variance	Wilcoxon	Quantile	UTL[a] or 95th Percentile (mg/kg)	Maximum Concentration at Site 240 (mg/kg)	Site Contaminant[b]	No. of Samples Greater than UTL
Beryllium	Lognormal	Fail[c]	Fail	Fail	Pass[d]	0.7	0.62	No	0
Lead	Lognormal	Fail	Fail	Fail	Fail	24.8	104	Yes	1
Uranium (total)	Normal	Pass	Pass	Pass	Pass	4.0	0.81	No	0

[a]UTL = Upper tolerance limit.
[b]Assessment of site contaminant based upon a qualitative evaluation of each statistical test applied to the data. For example: If all tests "fail," the highest concentration is statistically "greater" than background. If one or more tests "pass," other criteria may indicate that the highest concentration is not obviously, or statistically, greater than background. Other criteria include (1) the power of the individual statistical test, and (2) whether the maximum concentration exceeds the UTL or 95th percentile.
[c]Fail = Reject the null hypothesis that test statistics are equal.
[d]Pass = Accept the null hypothesis that test statistics are equal.

22.3 Evaluation of Data

The surface soil data collected from the Short Sled Track indicate that no total uranium or metals (except lead) exist in concentrations in excess of the TA-III/V background or the corresponding proposed RCRA Subpart S soil action level. A single anomaly detected during the surface radiation VCM contained U-238 and Th-234 above the site-wide UTLs. As indicated earlier, this anomaly was revisited during the spring 1996 radiation removal action, and no additional cleanup was deemed necessary.

Review of the QA/QC data indicated two problems with the off-site laboratory's analytical methods. One sample (240-SS-19F) and its duplicate (240-SS-19F-D) were analyzed for lead, and the results differed by two orders of magnitude: the original sample result was 132 mg/kg lead; the duplicate result was 9 mg/kg. Reanalysis of both samples indicated results of 10 mg/kg and 12 mg/kg, respectively. In addition, the laboratory's method blank showed levels of niobium, and the matrix spike/matrix spike duplicate data indicated high niobium recovery (still within acceptable limits). Thus, the niobium results might be biased toward the high end. The remaining QA/QC data indicated accurate analyses were performed, and the data appear to be an accurate representation of the existing conditions at the site.

The remaining metals are not considered site contaminants. Niobium occurs naturally in the earth's crust at concentrations of 20 mg/kg (Krauskopf 1979), which is 100 times that detected at Site 240; the average niobium concentration in western U.S. soils is 8.7 mg/kg (Shaklette and Boerngen 1984). No proposed RCRA Subpart S soil action level is currently promulgated for niobium. Similarly, lithium occurs naturally in the earth's crust at a concentration of 20 mg/kg, and the average lithium concentration in western U.S. soils is 22 mg/kg (Shaklette and Boerngen 1984).

22.4 Summary and Conclusions

The surface radioactive hazards associated with the testing conducted at the Short Sled Track have been addressed and removed. It is important to note that the surface radiation survey was not intended to locate deeply buried radioactive materials at the sites. It is quite possible that, because of the nature of the penetration and impact tests conducted at the sled track, other radioactive materials are located at depths greater than the 6 to 18 in. investigated during the survey, and a geophysical survey of the southern part of the track will be necessary to fully characterize the area. During the course of the RFI, the Short Sled Track was reactivated for testing. Thus, geophysical surveys to locate more deeply buried radioactive materials will be postponed until final site decommissioning.

The single point of elevated lead at the site does not appear to warrant any remediation because it is well below the proposed RCRA Subpart S soil action level; therefore, no removal action of the single area of lead identified in the surface soil sampling events is planned.

23.0 ER SITE 241: STORAGE YARD

The Storage Yard is located in the southeastern portion of TA-III (Figure 23-1). The site includes a fenced area (180 ft x 230 ft) and areas to the west and south where scrap materials and equipment from TA-V were stored. Based on the types of materials stored at the site, potential COCs include metals, radioisotopes, HEs, and transformer oil. The field investigation and protocols are discussed below.

23.1 Field Investigation Protocols

Activities conducted at Site 241 in support of the RFI included aerial photograph analysis, surface radiation surveys, and surface soil sampling. Each is discussed in the following sections.

23.1.1 Aerial Photograph Analysis

Aerial photographs from 1973 to 1990 were assembled, digitized, and compared for changes in surface features during successive years at the Storage Yard. The area within 1,000 ft of the site boundaries was studied for signs of soil disturbance, vegetation changes, or new construction.

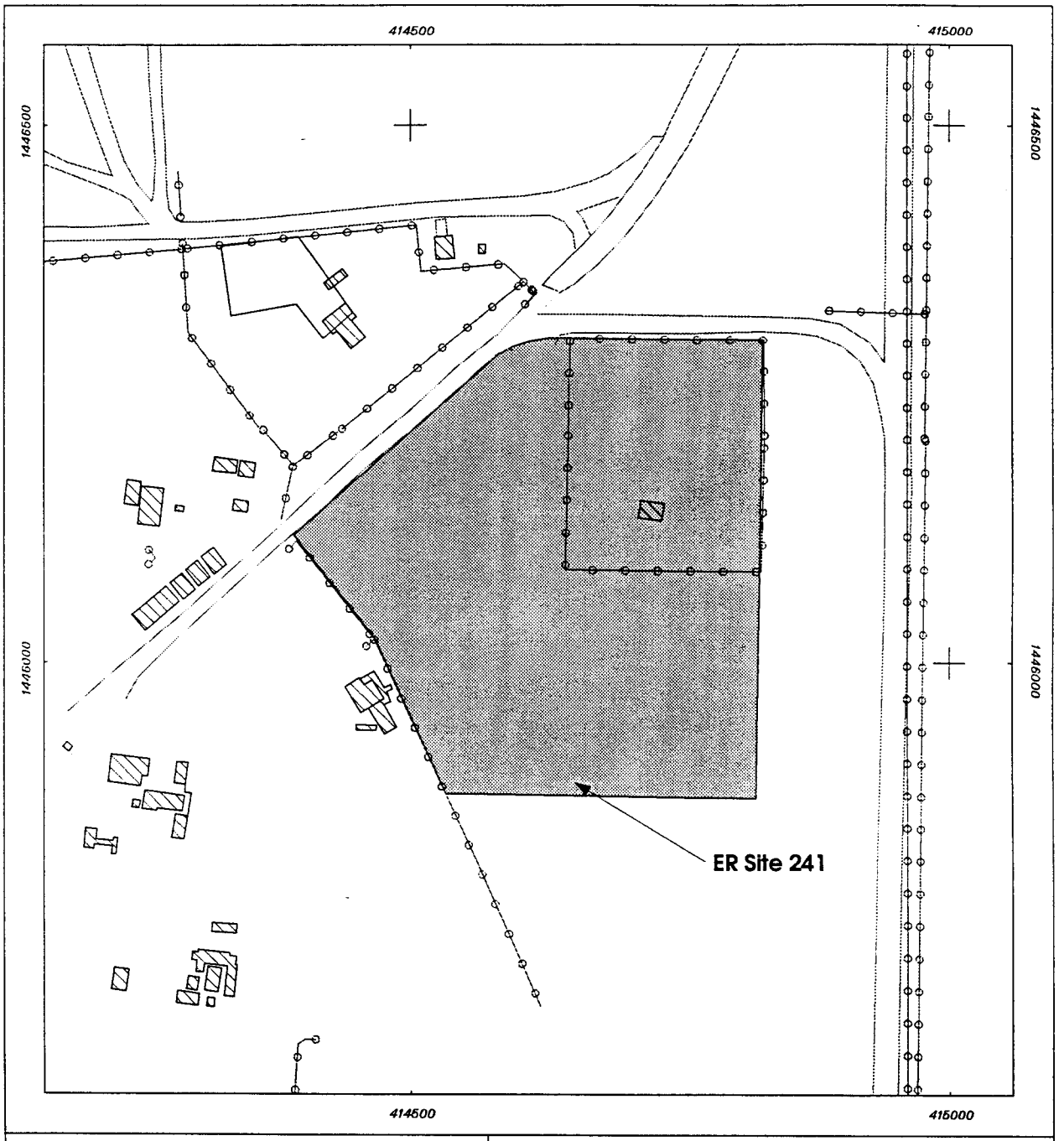
23.1.2 Equipment Removal Radiological Surveys

As part of the ER Project-wide surface radioactive materials survey conducted during April 1994, the Storage Yard was screened for radioactive materials. The radiological survey covered 1.8 acres of flat terrain with little or no vegetation (Figure 23-2). The northern half of the survey area is enclosed by a fence; the southern half is not enclosed. A gamma scan survey was performed on 6-ft centers over the exterior surface area of the site.

Site 241 was used to store materials and equipment removed from a reactor and associated laboratories in TA-V. Most of the stored materials were arranged in rows running east-west along the northern survey boundary; other equipment was distributed across the areas to the west and south of the fenced area. The TA-V equipment was removed, and a second radiological survey of the area was conducted; no residual radioactive material was found during the follow-up survey.

23.1.3 Surface Soil Sampling

In accordance with the RFI Work Plan (SNL/NM 1993a), soil samples were collected in May 1994 from a depth of 0 to 1 ft bgs from the locations shown in Figure 23-3; the locations were chosen using a random number generator, supplemented by additional samples near stored equipment. Sample coordinates are included in Appendix A. Field screening for metals was conducted using XRF techniques, and colorimetric kits were used to screen for HEs. Off-site laboratory analysis was performed for TPH, metals, HEs, and gamma spectroscopy in accordance with the EPA methods cited in



Legend

- ER Site 241
- Buildings
- Roads
- Fences

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 23-1 ER Site 241
Storage Yard, TA-III

0 75 150
Scale in Feet

0 18 36
Scale in Meters

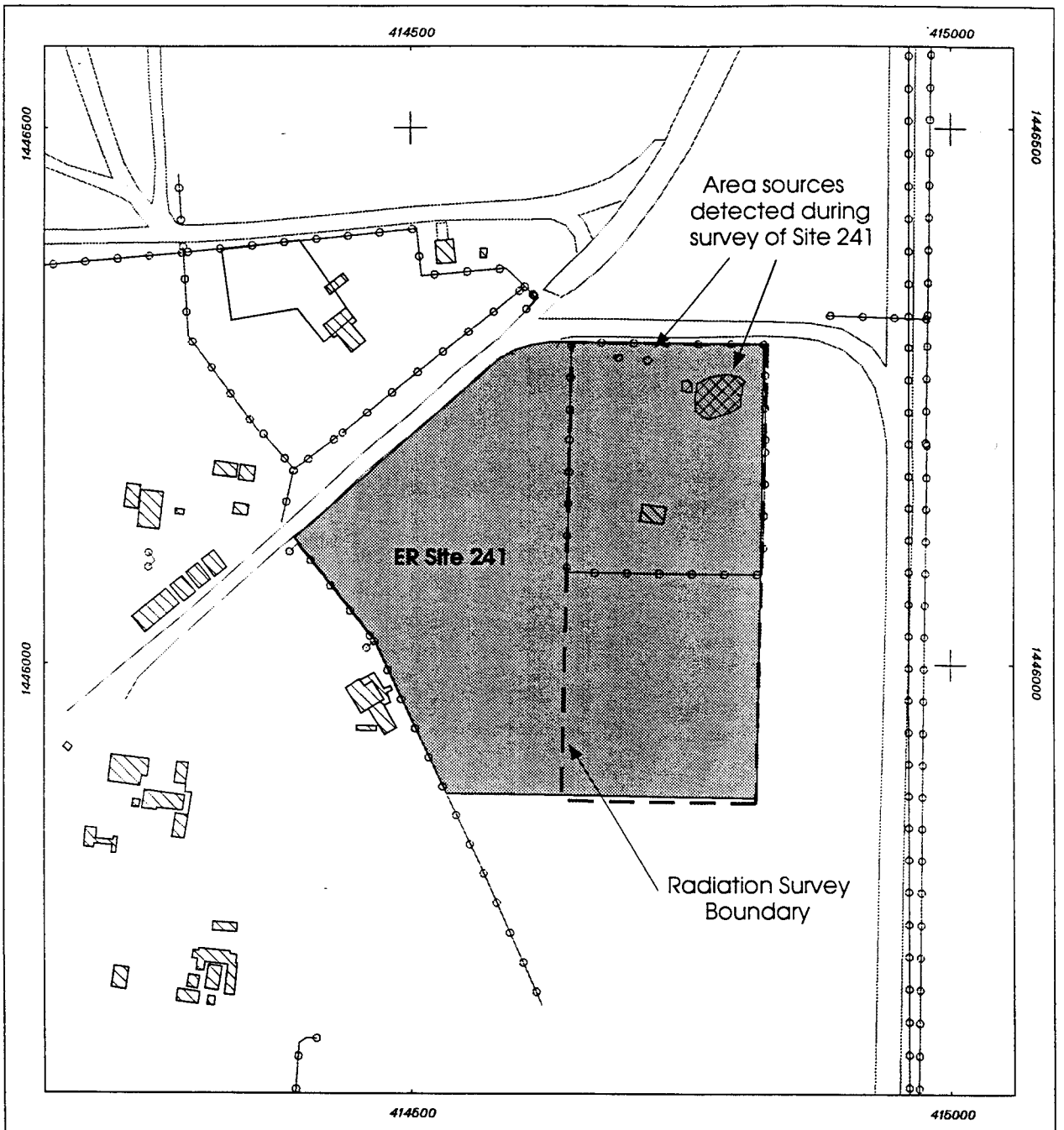
Unclassified

FINAL

1:1800

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

cheberl SNL GIS ORG. 7512 04/15/96 MAPID=950951



Legend

- ER Site 241
- Buildings
- Surface Radiation Anomalies (Area Sources)
- Roads
- Fences
- Radiation Survey Boundary

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 23-2 ER Site 241 Location of Surface Radiation Anomalies, TA-III

0 75 150 Scale in Feet

0 18 36 Scale in Meters

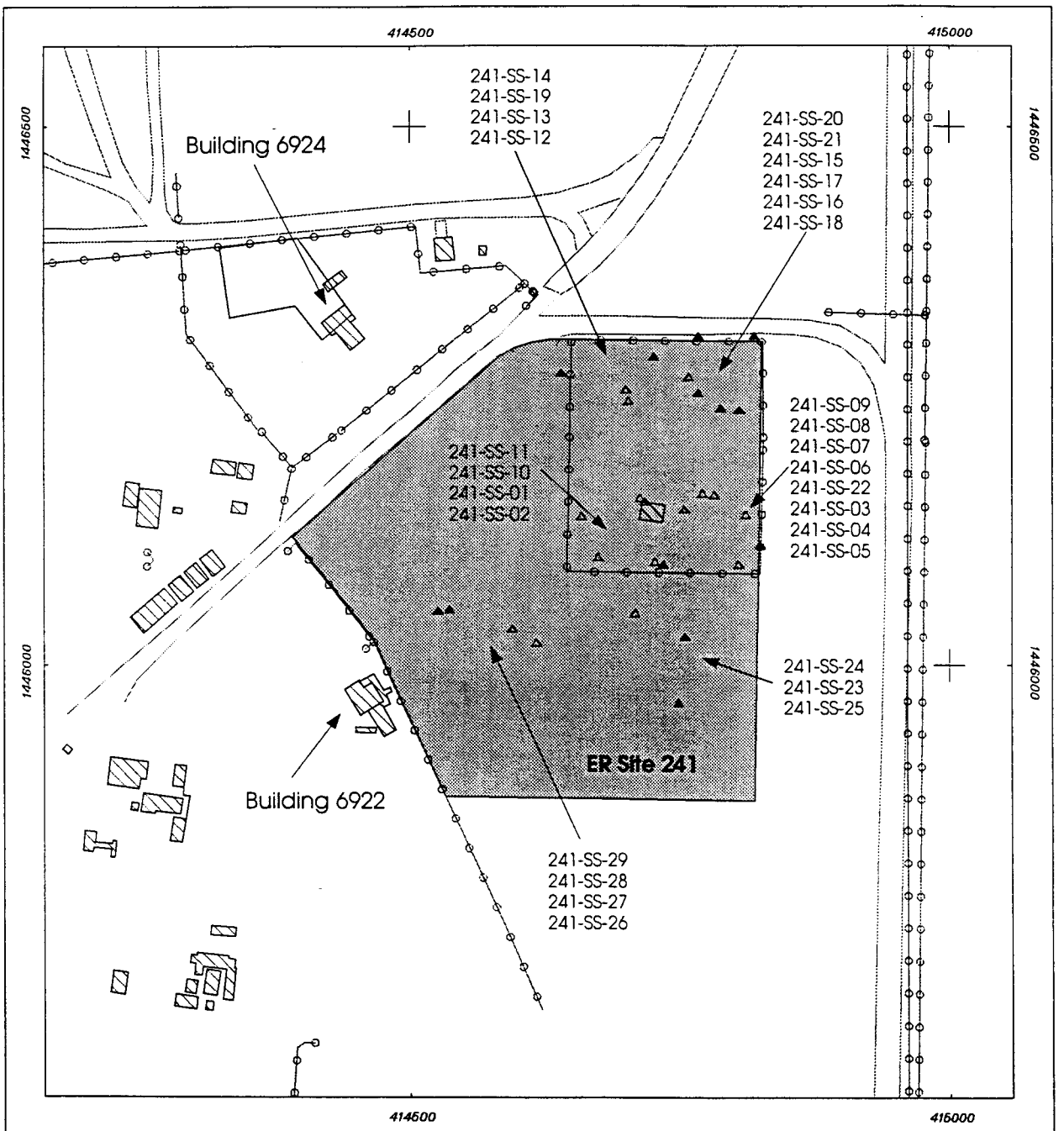
Unclassified

FINAL

1:1800

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

cheberl SNL GIS ORG. 7512 04/26/96 MAPID=950952



Legend

- ER Site 241
- Buildings
- Roads
- Fences
- 241-SS-01 Field Screened Sample
- 241-SS-04 Off-Site Lab Sample

Note: All samples were field screened.

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 23-3 ER Site 241 Location of Surface Soil Samples TA-III

0 75 150 Scale in Feet

0 18 36 Scale in Meters

Unclassified

FINAL

1:1800

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

cheberl SNL GIS ORG. 7512 04/26/96 MAPID=950953

Table 2-2. Based on field observations, SNL/NM collected a separate sample from a piece of piping and analyzed it for asbestos; in addition, one sample was collected from the soil next to a transformer and analyzed for PCBs.

23.2 Field Investigation Results

23.2.1 Aerial Photograph Interpretation

The only feature found at this site was in 1986 (Plate I). A cleared or disturbed surface was found 600 ft west of Site 241 and extended 1,700 ft to the southwest. On-ground investigation confirmed this as a burned area.

23.2.2 Radiation Survey

The only anomalies detected during the first radiation survey of Site 241 were those associated with "shine" from the rows of activated equipment that had been stored on site (Figure 23-2; Table 23-1). They were not associated with soil contamination. No radiation anomalies were detected during the second site survey, conducted subsequent to the removal of equipment and materials.

Table 23-1
Areas of Gamma Activity Detected in First Radiation Survey of Site 241

Anomaly Type	Quantity	Gamma Radiation Activity (μR/hr)	Description
Soil Area Source	4	13 to >1,103[a]	Area sources appeared to be "shine" fields associated with possible activated materials stored within Site 241 boundaries. Not detected in second survey.

[a]The upper range of the instrument is 1,103 μR/hr.

23.2.3 Surface Soil Sampling

Table 23-2 summarizes all constituents that were detected in concentrations greater than the detection limit for the soil samples collected during the surface investigation. Detailed field screening results are provided in Appendix B. Soil sampling and QA/QC results are provided in electronic format in Appendices C and D.

Table 23-2
Summary of Detected Constituents of Concern in Site 241 Surface Soils

Analyte	Range (mg/kg)	Detection Limit (mg/kg)	Total Samples	Mean (mg/kg)	Number of Non-Detects	Samples ≤ Mean	Samples > Mean
Aluminum	3,300-5,690	10	15	4,612	0	8	7
Antimony	<6-29.6[a]	6	15	6.2	13	13	2
Aroclor-1248	0.060 (single)	0.033	1	NA[b]	NA	NA	NA
Arsenic	2.2-3.4	0.5	15	2.7	0	8	7
Barium	47.2-79.7	1	15	63	0	9	6
Beryllium	0.44-0.66	0.2	15	0.6	0	10	5
Cadmium	<0.5-1.6	0.5	15	0.7	6	12	3
Calcium	2,650-9,180	20	15	5,083	0	9	6
Chromium	5-7.5	1	15	6.4	0	8	7
Cobalt	2.3-3.8	1	15	2.8	0	10	5
Copper	5.4-34.4	2	15	8.2	0	11	4
Iron	6,140-12,300	10	15	7,632	0	8	7
Lead	6.8-685	0.5	15	18.8	0	12	3
Magnesium	1,300-2,090	20	15	1,673	0	8	7
Manganese	111-171	1	15	138	0	9	6
Mercury	<0.1-0.19	0.1	15	0.1	14	14	1
Nickel	<4-5.3	4	15	4	8	10	5
Potassium	1,100-1,920	500	15	1,542	0	8	7
Vanadium	10.1-16.8	1	15	12.8	0	7	8
Zinc	19.5-75.8	2	15	36	0	7	8

[a]Antimony results shown are from original, anomalous sampling. Resampling indicated no detectable antimony. Thus, all 15 samples were nondetects.
[b]NA = Not applicable.

No HEs were detected above their respective MDLs. No asbestos was detected in the sample submitted. PCBs (Aroclor-1248) were detected at a concentration of 60 µg/kg in the sample submitted (Table 23-2).

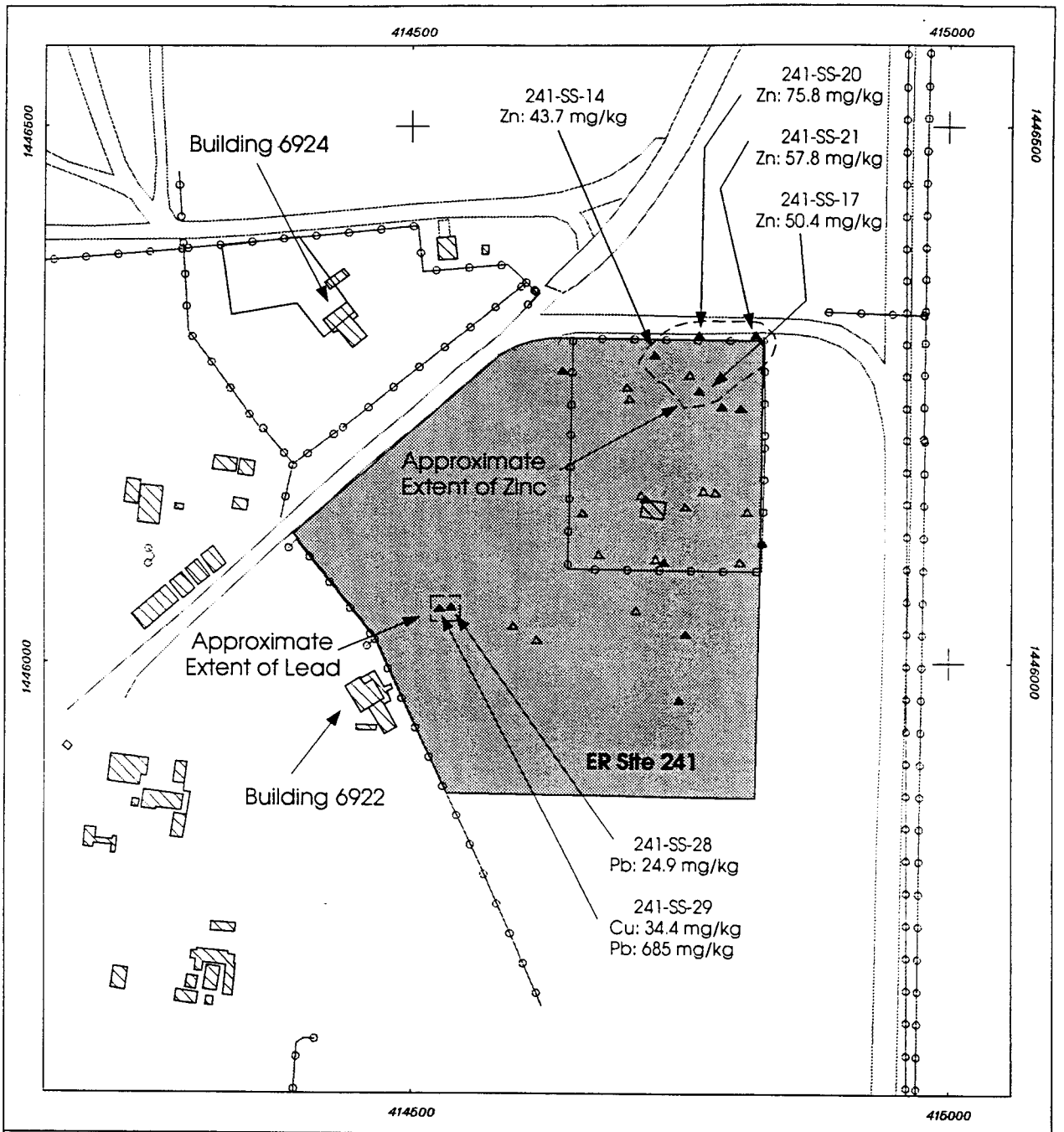
The gamma spectroscopy results were examined to determine whether any enriched or DU existed at the site. A uranium equilibrium analysis of the ratios of activities for U-234 to U-238 and the ratio of both radioisotopes to U-235 activity was completed. No uranium, or any other radionuclides covered by the broad gamma spectrum, were detected at an activity level to indicate contamination at the site; all were below their respective IT (1996) site-wide background UTLs (Appendix C).

Several metals were detected above their respective MDLs, but only copper, lead, and zinc were detected in excess of the calculated TA-III/V background UTLs (Table 23-3 and Figure 23-4). Only one sample contained copper above its UTL (14.5 mg/kg). Sample 241-SS-29 contained 34.4 mg/kg of copper; however, the duplicate of this sample, 241-SS-29D, contained only 6.6 mg/kg of copper. It is not, therefore, considered a site contaminant.

Table 23-3
Comparison of Site 241 Surface Soil Results to Technical Areas III and V Background Data

Parameter	Population Distribution	Statistical Test Applied					Maximum Concentration at Site 241 (mg/kg)	Site Contaminant[b]	Number of Samples that Exceed UTL
		Student's t-test		Wilcoxon	Quantile	UTL[a] or 95th Percentile (mg/kg)			
		Equal Variance	Unequal Variance						
Barium	Lognormal	Pass[c]	Fail[d]	Pass	Pass	341.0	79.7	No	0
Beryllium	Lognormal	Fail	Fail	Fail	Pass	0.7	0.66	No	0
Cadmium	Lognormal	Pass	Pass	Pass	Pass	2.6	1.6	No	0
Chromium	Lognormal	Pass	Pass	Pass	Pass	26.2	7.5	No	0
Copper	Lognormal	Fail	Fail	Fail	Pass	14.5	34.4	No	1[e]
Lead	Lognormal	Fail	Fail	Fail	Fail	24.8	685	Yes	3
Nickel	Lognormal	Pass	Pass	Pass	Pass	12.9	5.3	No	0
Zinc	Lognormal	Fail	Fail	Fail	Fail	41.8	75.8	Yes	4

[a]UTL.
[b]Assessment of site contaminant based upon a qualitative evaluation of each statistical test applied to the data. For example: If all tests "fail," the highest concentration is statistically "greater" than background. If one or more tests "pass," other criteria may indicate that the highest concentration is not obviously, or statistically, greater than background. Other criteria include (1) the power of the individual statistical test, and (2) whether the maximum concentration exceeds the UTL or 95th percentile.
[c]Pass = Accept the null hypothesis that test statistics are equal.
[d]Fail = Reject the null hypothesis that test statistics are equal.
[e]Only one sample (241-SS-29 with a concentration of 34.4 mg/kg of copper) exceeded its UTL; its duplicate (241-SS-29D with a concentration of 6.6 mg/kg of copper) did not.



Legend

- ER Site 241
- Buildings
- Roads
- Fences
- 241-SS-01 Field Screened Sample
- 241-SS-04 Off-Site Lab Sample
- Cu: 34.4 mg/kg Concentration of Copper
- Pb: 685 mg/kg Concentration of Lead
- Zn: 75.8 mg/kg Concentration of Zinc

Note: Only those samples with concentrations of metals exceeding the UTLs are shown. All samples were field screened.

Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 23-4 ER Site 241
Extent of Select Metals in Soil
TA-III

0 75 150 Scale in Feet

0 18 36 Scale in Meters

Unclassified

FINAL

1:1800

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

cheberl SNL GIS ORG. 7512 04/26/96 MAPID=960172

Two samples contained anomalously elevated levels of antimony (11.2 and 29.6 mg/kg). Because the laboratory indicated problems with the matrix spike data for antimony, the locations were resampled and contained no detectable levels of antimony.

Because several metals are essential nutrients or are geologically prevalent (i.e., the soil-forming Sandia granite contains high concentrations of aluminum, calcium, iron, magnesium, manganese, and potassium), these metals were removed from further consideration. Furthermore, no proposed RCRA Subpart S soil action levels are currently promulgated for any of these constituents.

A statistical comparison of the arsenic, cobalt, mercury, and vanadium to TA-III/V background was not possible because there were no TA-III/V background data available for these constituents at the time the statistical analyses were completed. A comparison of these metals to the revised site-wide report (IT 1996) is shown in Table 23-4. None of these metals exceeded the site-wide UTLs.

Table 23-4
Comparison of Site 241 Data to Site-Wide Background

Parameter	Maximum Concentration (mg/kg)	Site-Wide UTL (IT 1996)
Arsenic	3.4	5.6
Cobalt	3.8	5.2
Mercury	0.19	0.31
Vanadium	16.8	20.4

Table 23-5 compares the maximum concentrations of the metals detected in concentrations above either TA-III/V or site-wide background to their respective proposed RCRA Subpart S soil action levels.

Table 23-5
Comparison of Site 241 Soil Analytical Results to Proposed RCRA Subpart S Soil Action Levels

Parameter	Maximum Concentration at Site 241 (mg/kg)	Proposed RCRA Subpart S Soil Action Level (mg/kg)	Exceeds Proposed RCRA Subpart S Soil Action Level?
Lead	685	2,000	No
PCBs	0.06	10	No
Zinc	75.8	20,000	No

23.3 Evaluation of Data

Neither of the two metals (lead and zinc) detected in excess of the TA-III/V UTLs exceeded its proposed RCRA Subpart S soil action level. The comparative action levels are those developed for residential land-use scenarios, rather than the industrial land-use assumed for TA-III/V; the action levels are therefore more conservative. Similarly, the concentration of PCBs in one sample did not exceed the proposed RCRA Subpart S soil action level.

23.4 Summary and Conclusions

Radiation surveys conducted at Site 241 indicated only "shine" from nearby activated equipment. No radioactive soil contamination was detected during the survey or in the subsequent confirmation gamma spectroscopic analyses.

Two metals (lead and zinc) were identified as site contaminants, but neither was above its proposed RCRA Subpart S soil action level. The site is therefore proposed for NFA.

24.0 SURFACE RADIOACTIVE MATERIAL SURVEY AND REMOVAL VOLUNTARY CORRECTIVE MEASURE

24.1 Introduction

A surface radioactive material survey and removal VCM was performed at 64 SNL/NM ER sites covering approximately 831 acres. The main purpose of the VCM was to remove known surficial (0 to 6 in. bgs) radioactive contamination, primarily DU, from uncontrolled hazardous waste sites. The survey and removal did not address deep contamination (greater than 6 in. bgs), which would be associated with penetration of DU as a result of highly energetic tests in some areas. The survey detected radioactive material to a maximum depth of 6 in.; the follow-on cleanup removed material to a maximum depth of 18 in. (i.e., if necessary, cleanup continued beyond a depth of 6 in. to a maximum of 18 in. bgs).

The VCM was one of the steps taken to ensure worker safety during any subsequent assessment, remediation, or facility activities, and was conducted to help restore the site to a condition that would allow unrestricted use of the formerly contaminated sites. DOE Grand Junction Projects Office (GJPO), through its prime contractor, Geotech, performed the work (Geotech 1994). The ER sites within TA-III/V that were surveyed included Sites 18, 83, 84, 102, 240, and 241. Those sites identified during the survey that exhibited radioactive soil anomalies (including point and fragment anomalies) will be retained in the SNL/NM RMMA program.

24.2 Trial Survey

A trial survey was conducted at Site 83 (Long Sled Track) to determine the effectiveness of instrument response to DU for the site-specific conditions at SNL/NM and to evaluate instrument detection limits qualitatively. Optimum scanning speed, grid spacing, and determination of natural background range also were established during the trial survey. All procedures and methods used in the trial and subsequent surveys complied with Nuclear Regulatory Commission (NRC) regulations and DOE guidelines (DOE 1983, 1992, 1994).

A "crutch" scintillometer was the instrument of choice during the trial survey for use during the Phase I surveys. The crutch scintillometer consisted of a conventional NaI detector mounted on a medical crutch to enable technicians to walk upright while surveying by sweeping the instruments in 6-ft-diameter arcs close (3 to 4 in.) to the ground. The instruments measured gross gamma activity in counts per second. The crutch scintillometer was effective in identifying small anomalies associated with DU contamination. The scintillometer readings (in counts per second) were converted to an exposure reading in microroentgens per hour (μR/hr) using a conversion factor derived specifically for DU from cross-correlation data collected with a pressurized ionization chamber (PIC) during the trial survey. The calculated minimum detectable activity (MDA) was 1.8 μR/hr above background for a 1-in.-diameter point source at a depth of 6 in. The scintillometers were able to detect DU fragments and oxides in soil at depths down to 6 in. The optimum survey speed was 0.5 mile per hour, and the only parameter that was changed from site to site was the instrument grid spacing.

24.3 Phase I Surface Radiation Surveys Within TA-III

Phase I surface radiation surveys throughout SNL/NM were conducted between October 1993 and May 1994; the six sites within TA-III were surveyed between February and April 1994 (Table 24-1). Variability in natural background radiation was determined to be a function of geologic rock type and, therefore, threshold values were determined at each individual ER Project site. Background levels were determined by taking several readings in the vicinity of the site, outside the area believed to be affected. Background levels at the TA-III sites ranged from 10 to 13 μR/hr. After background was determined, a reading that exceeded the upper background reading by 30 percent was designated an anomaly. All anomalies were marked in the field and identified on site maps; the locations of each were surveyed at a later time.

Table 24-1
Technical Area III Surface Radiation Surveys

ER Site Number	Site Name	Grid Size/ Actual Acreage Covered	Number of Anomalies		Site-Specific Background Range (μR/hr)	Highest Value (μR/hr)
			Point Source	Area Source		
18	Concrete Pad	6-ft centers; 1.9 acres	1	0	10 to 12	17
83	Long Sled Track	10-ft centers; 176.3 acres	1,361	33	10 to 13	>1,103[a]
84	Gun Facilities	6-ft centers; 7.4 acres	50	9	10 to 12	>1,103
102	Radioactive Disposal	10-ft centers; 4.4 acres	0	0	10 to 13	0
240	Short Sled Track	10-ft centers; 82.6 acres	251	9	10 to 12	308
241	Storage Yard	6-ft centers; 1.8 acres	0	4	11 to 12	>1,103
		TOTAL	1,663	55		

[a]The amount 1,103 μR/hr represents the maximum value that the scintillometers were capable of detecting (converted from counts per second).

A total of 1,718 anomalies were detected during the surface radiation surveys at the TA-III sites (Table 24-1). Among the anomalies detected, 1,663 were determined to be point sources and 55 were considered area sources. Point sources were discrete and typically associated with metallic fragments or a small area within the soil. Area sources included associations of metallic fragments or more dispersed soil contamination, gamma radiation fields associated with radioactive materials storage areas, and gamma radiation associated with natural geologic outcrops.

The majority of the point source anomalies ranged from approximately 15 to 100 μR/hr. Elevated area source values ranged from 11 to 1,103 μR/hr, which is the upper range of the scintillometer (converted from counts per second).

In some cases, anomalies with readings higher than the localized upper range of background were related to unique geologic features exhibiting naturally occurring elevated gamma readings. If the area of the unique geological feature was extensive, the range was adjusted and the area was not mapped as an anomaly. In cases where the geological features were more localized, the areas were mapped as "outcrop" anomalies for follow-up verification and were suspected of being anthropogenic anomalies. If any uncertainty existed about the correlation of elevated readings to geologic features, the areas were mapped as anomalies.

24.4 Results of the Surface Radiation Surveys

Visible uranium contamination occurred in the field as very hard metallic fragments of DU test components or as oxidized coatings on silt or sand-size soil particles. DU in metal alloy form or as the oxidized coatings was not found to be migrating significantly into the subsurface from near surface locations where it was detected.

Discussions of the surveyed areas and the survey results for each of the TA-III sites are provided in the individual site sections (Sites 18, 83, 84, 102, 240, and 241). Further details can be found in the final report issued on the radiation survey (Geotech 1994).

24.5 Radioactive Material Removal

Upon completion of the radiation survey, the radiation anomalies detected at the sites in TA-III were removed. Reasonable attempts were made to clean up the soil to site-specific background levels. Discussions of site-specific removal activities are included in the individual site sections.

Gamma scintillometers and GM pancake probes (beta-gamma detectors) were used together to verify anomaly locations and to screen both the soil and fragments for residual elevated radioactivity (above background). Field instrument alarms were set to the minimum detectable count rate above background (i.e., approximately 1.3 times the site-specific background) per DOE and NRC guidance. Sampling and analysis were conducted at selected anomalies at each site (approximately 10 percent by site) to determine the effectiveness of the removal action. Laboratory gamma-spectroscopy soil analyses were performed to quantitatively determine the remaining activity in the soil; the results of the confirmation analyses are provided in Appendix G.

24.5.1 Radioactive Material Removal Procedures

To prepare the sites for radioactive materials removal, all survey areas were flagged and identified on a base map for each site. The points were land surveyed for future retrieval. Upon returning to the field to remove the anomalies, it was discovered that not all were easily located. In these cases, the anomaly coordinates were entered into a Global Positioning System (GPS) and relocated using the GPS navigational system. The locations were verified with a NaI scintillometer.

The following removal procedures were used:

- Selected anomaly;
- Scanned anomaly with NaI detector;
- Removed anomaly and placed in a 55-gal. open-head steel drum;
- Screened the immediate area using a GM pancake probe and a NaI detector, and compared instrument reading to site-specific background levels;
- If measurements exceeded background levels, attempted to locate the source of the radioactivity by removing soil in small amounts up to 18 in. bgs and spreading the soil on a plastic sheet next to the anomaly to scan and segregate the contaminated soil;
- When readings were less than 1.3 times background levels, removal action was considered complete;
- Recorded final soil measurement and highest reading prior to removal; and
- Collected soil samples from cleaned areas to verify cleanup at a rate of 10 percent of the anomaly locations by site for analysis using standard laboratory gamma-spectroscopy methods.

24.6 Migration and Transport of Depleted Uranium

Both the metallic and oxidized forms of DU are insoluble in rain and surface water, although direct exposure to fast-running water could have resulted in physical transport of the oxide material. Thus, the processes most likely to affect the Phase I data within the ER Project characterization and cleanup timeframe would be physical processes, such as those related to construction, earth-moving, and grading activities. Erosion by wind and water should not significantly impact transport because the high density of DU metal and the density of the uranium oxide, produced by uranium corrosion, typically are higher than most of the naturally occurring fine-grained materials that make up the soil.

24.7 Summary and Conclusions

The surface radioactive material survey and removal VCM at six ER sites within TA-III identified 1,718 radiation anomalies in soil. The majority of the anomalies were related to metal fragments coated with DU and to soil containing oxidized uranium. All but four area sources were completely removed, and verification sampling and analysis indicated little to no residual radioactive material. The majority of the remaining radiation anomalies will be removed in spring 1996.

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APPENDIX A
SAMPLE LOCATION COORDINATES

TA-III/V RFI Sample Location Coordinates

Sample ID	Northing	Easting
18-A1	1449788	411999
18-A2	1449845	412006
18-A3	1449859	412123
18-A4	1449804	412134
18-SS-01	1449806	412010
18-SS-02	1449821	412009
18-SS-03	1449821	412011
18-SS-04	1449824	412012
18-SS-05	1449827	412012
18-SS-06	1449831	412012
18-SS-07	1449838	412011
18-SS-08	1449840	412011
18-SS-09	1449846	412011
18-SS-10	1449850	412010
18-SS-11	1449852	412016
18-SS-12	1449854	412021
18-SS-13	1449853	412025
18-SS-14	1449852	412115
18-SS-15	1449851	412120
18-SS-16	1449852	412124
18-SS-17	1449851	412129
18-SS-18	1449849	412133
18-SS-19	1449844	412134
18-SS-20	1449840	412134
18-SS-21	1449835	412134
18-SS-22	1449830	412135
18-SS-23	1449827	412137
18-SS-24	1449821	412135
18-SS-25	1449788	412134
18-SS-26	1449780	412136
18-SS-27	1449747	412135
18-SS-28	1449652	412131
18-SS-29	1449643	412135
18-SS-30	1449472	412130
18-SS-31	1449447	412102
18-SS-32	1449447	412084
18-SS-33	1449448	412078
18-SS-34	1449446	412073
18-SS-35	1449448	412066
18-SS-36	1449528	412004
18-SS-37	1449571	412005
18-SS-38	1449659	412005
18-SS-39	1449778	412009
18-SS-40	1449852	412036
18-SS-41	1449854	412053
18-SS-42	1449851	412109
18-240E219	1449703	412132

Sample ID	Northing	Easting
31-SS-01	1453636	413515
31-SS-02	1453639	413516
31-SS-03	1453636	413505
31-SS-04	1453645	413504
31-SS-05	1453640	413499
31-SS-06	1453634	413496
31-SS-07	1453634	413495
31-SS-08	1453634	413493
31-SS-09	1453622	413494
31-SS-10	1453624	413496
31-SS-11	1453617	413502
34-G1	1453501	413871
34-G2	1453485	413872
34-G3	1453467	413871
35-B1	1451973	413049
35-B2	1451991	413048
35-B3	1452005	413048
35-B4	1451979	413029
35-SS-01	1451990	413043
35-SS-02	1451981	413044
35-SS-03	1451990	413039
36-BH-01	1454899	414978
36-BH-02	1454764	414835
36-G1	1454959	414992
36-G2	1454967	414940
36-G3	1455010	414939
36-G4	1454947	414949
36-G5	1454946	414943
36-G6	1454927	414901
36-G7	1454998	414922
37-A1	1454613	415159
37-A2	1454662	415153
37-A3	1454697	415147
37-A4	1454729	415146
37-A5	1454729	415127
37-A6	1454730	415105
37-A7	1454663	415127
37-A8	1454667	415120
37-A9	1454731	415087
37-A10	1454732	415055
37-A11	1454783	415056

TA-III/V RFI Sample Location Coordinates

Sample ID	Northing	Easting
51-A1	1446347	414418
51-A2	1446367	414398
51-A3	1446373	414378
51-A4	1446357	414348
78-A1	1445012	414598
78-A2	1445014	414609
78-B1	1444980	414628
78-C1	1444958	414613
78-D1	1444931	414610
78-D2	1444940	414627
78-UD	1445002	414629
83-SS-RRG	1455279	409723
83-SS-TB71	1459678	408507
83-SS-TB73	1457745	408515
83-SS-TB79	1455060	408500
83-SS-TB83	1452567	408481
100-NE	413021	1451008
100-NW	412998	1450982
100-SW	413003	1450976
100-SE	413025	1451005
102-UST-01	416577	1453499
102-UST-02	416575	1453497
107-SS-01A	414005	1446223
107-SS-01B	413997	1445905
107-SS-01C	413830	1445902
107-SS-01D	413712	1445831
107-SS-02A	413801	1445479
107-SS-02B	413792	1445766
107-SS-02C	414015	1445799
107-SS-02D	413884	1445633
107-SS-02E	414036	1445517
107-SS-03A	413694	1445785
107-SS-03B	413684	1445595
107-SS-03C	413491	1445433
107-SS-03D	413723	1445470
107-SS-04A	414042	1445391
107-SS-04B	414057	1445216
107-SS-04C	413894	1445251
107-SS-04D	413804	1445171
107-SS-04E	413807	1445279
107-SS-05A	413804	1445374
107-SS-05B	413749	1445178
107-SS-05C	413547	1445190
107-SS-05D	413582	1445366

Sample ID	Northing	Easting
107-SS-06A	413444	1445395
107-SS-06B	413383	1445331
107-SS-06C	413340	1445322
107-SS-06D	413326	1445367
107-SS-06E	413276	1445297
107-SS-06F	413298	1445270
107-SS-06G	413156	1445158
107-SS-06H	413489	1445198
107-SS-07A	413864	1444716
107-SS-07B	414074	1444797
107-SS-07C	414095	1445006
107-SS-07D	413993	1444968
107-SS-08A	413628	1444739
107-SS-08B	413756	1444719
107-SS-08C	413815	1444718
107-SS-08D	413481	1445064
107-SS-09A	413157	1444815
107-SS-09B	413142	1445098
107-SS-09C	413390	1445058
107-SS-09D	413412	1444797
107-SS-10A	413085	1445080
107-SS-10B	413088	1444950
107-SS-10C	413094	1444800
107-SS-10D	412908	1444788
111-B1	412282	1454769
111-B2	412303	1454767
111-B3	412296	1454762
240-SS-01-A	1452637	411709
240-SS-01-B	1452635	411812
240-SS-01-C	1452637	411908
240-SS-01-D	1452631	412001
240-SS-01-E	1452633	412103
240-SS-02-A	1452638	412214
240-SS-02-B	1452643	412311
240-SS-02-C	1452647	412411
240-SS-02-D	1452651	412513
240-SS-03-A	1452436	411752
240-SS-03-B	1452430	411809
240-SS-03-C	1452436	411908
240-SS-03-D	1452437	412007
240-SS-04-A	1452435	412113
240-SS-04-B	1452437	412213
240-SS-04-C	1452436	412313
240-SS-04-D	1452442	412414
240-SS-04-E	1452442	412512

TA-III/V RFI Sample Location Coordinates

Sample ID	Northing	Easting
240-SS-05-A	1452234	411704
240-SS-05-B	1452235	411804
240-SS-05-C	1452232	411904
240-SS-05-D	1452236	411998
240-SS-05-E	1452234	412105
240-SS-06-A	1452240	412207
240-SS-06-B	1452240	412308
240-SS-06-C	1452236	412412
240-SS-06-D	1452243	412505
240-SS-07-A	1452061	411696
240-SS-07-B	1452057	411802
240-SS-07-C	1452048	411900
240-SS-07-D	1452043	411999
240-SS-08-A	1452045	412105
240-SS-08-B	1452028	412207
240-SS-08-C	1452018	412311
240-SS-08-D	1452018	412407
240-SS-08-E	1452020	412507
240-SS-09-A	1451845	411702
240-SS-09-B	1451841	411799
240-SS-09-C	1451843	411899
240-SS-09-D	1451844	411997
240-SS-09-E	1451832	412098
240-SS-10-A	1451828	412206
240-SS-10-B	1451818	412301
240-SS-10-C	1451814	412403
240-SS-10-D	1451800	412499
240-SS-11-A	1451642	411694
240-SS-11-B	1451646	411794
240-SS-11-C	1451640	411895
240-SS-11-D	1451641	411992
240-SS-12-A	1451631	412101
240-SS-12-B	1451639	412202
240-SS-12-C	1451634	412298
240-SS-12-D	1451629	412402
240-SS-12-E	1451630	412501
240-SS-13-A	1451435	411692
240-SS-13-B	1451430	411795
240-SS-13-C	1451433	411892
240-SS-13-D	1451434	411995
240-SS-13-E	1451438	412091
240-SS-14-A	1451446	412198
240-SS-14-B	1451441	412300
240-SS-14-C	1451440	412397
240-SS-14-D	1451437	412494
240-SS-15-A	1451258	411690
240-SS-15-B	1451259	411793
240-SS-15-C	1451256	411893
240-SS-15-D	1451245	411990

Sample ID	Northing	Easting
240-SS-16-A	1451236	412094
240-SS-16-B	1451227	412198
240-SS-16-C	1451221	412297
240-SS-16-D	1451218	412397
240-SS-16-E	1451218	412496
240-SS-17-A	1451023	411691
240-SS-17-B	1451026	411789
240-SS-17-C	1451026	411886
240-SS-17-D	1451033	411970
240-SS-17-E	1451039	412087
240-SS-18-A	1451039	412193
240-SS-18-B	1451040	412293
240-SS-18-C	1451041	412395
240-SS-18-D	1451050	412496
240-SS-19-A	1450798	411835
240-SS-19-B	1450799	411886
240-SS-19-C	1450797	411934
240-SS-19-D	1450791	411986
240-SS-19-E	1450791	412035
240-SS-19-F	1450793	412083
240-SS-20-B	1450793	412138
240-SS-20-C	1450789	412192
240-SS-20-D	1450789	412236
240-SS-20-E	1450788	412286
240-SS-20-F	1450789	412338
240-SS-21-A	1450747	411831
240-SS-21-B	1450748	411887
240-SS-21-C	1450747	411939
240-SS-21-D	1450749	411983
240-SS-21-E	1450742	412040
240-SS-22-A	1450747	412087
240-SS-22-B	1450743	412139
240-SS-22-C	1450739	412189
240-SS-22-D	1450741	412237
240-SS-22-E	1450739	412286
240-SS-22-F	1450740	412334
240-SS-23-A	1450700	411830
240-SS-23-B	1450697	411888
240-SS-23-C	1450694	411935
240-SS-23-D	1450690	411994
240-SS-23-E	1450691	412044
240-SS-23-F	1450695	412083
240-SS-24-B	1450691	412135
240-SS-24-C	1450691	412183
240-SS-24-D	1450690	412235
240-SS-24-E	1450690	412290
240-SS-24-F	1450692	412334

TA-III/V RFI Sample Location Coordinates

Sample ID	Northing	Easting
240-SS-25-A	1450649	411827
240-SS-25-B	1450648	411886
240-SS-25-C	1450650	411934
240-SS-25-D	1450644	411993
240-SS-25-E	1450645	412045
240-SS-26-A	1450643	412086
240-SS-26-B	1450639	412135
240-SS-26-C	1450641	412185
240-SS-26-D	1450635	412237
240-SS-26-E	1450632	412280
240-SS-26-F	1450633	412337
240-SS-27-A	1450598	411821
240-SS-27-B	1450601	411880
240-SS-27-C	1450599	411936
240-SS-27-D	1450594	411999
240-SS-27-E	1450594	412048
240-SS-27-F	1450595	412078
240-SS-28-B	1450589	412132
240-SS-28-C	1450591	412183
240-SS-28-D	1450590	412232
240-SS-28-E	1450590	412283
240-SS-28-F	1450589	412336
240-SS-29-A	1450547	411818
240-SS-29-B	1450550	411885
240-SS-29-C	1450552	411942
240-SS-29-D	1450547	411998
240-SS-29-E	1450546	412051
240-SS-30-A	1450541	412078
240-SS-30-B	1450544	412132
240-SS-30-C	1450547	412187
240-SS-30-D	1450530	412231
240-SS-30-E	1450536	412283
240-SS-30-F	1450536	412334
240-SS-31-A	1450503	411818
240-SS-31-B	1450496	411890
240-SS-31-C	1450497	411941
240-SS-31-D	1450494	412005
240-SS-31-E	1450500	412049
240-SS-31-F	1450516	412079
240-SS-32-B	1450500	412138
240-SS-32-C	1450495	412187
240-SS-32-D	1450488	412239
240-SS-32-E	1450488	412277
240-SS-32-F	1450491	412332

Sample ID	Northing	Easting
240-SS-33-A	1450450	411817
240-SS-33-B	1450455	411889
240-SS-33-C	1450449	411944
240-SS-33-D	1450450	412004
240-SS-33-E	1450452	412050
240-SS-34-A	1450446	412084
240-SS-34-B	1450439	412136
240-SS-34-C	1450447	412186
240-SS-34-D	1450434	412231
240-SS-34-E	1450434	412298
240-SS-34-F	1450426	412340
240-SS-35-A	1450399	411814
240-SS-35-B	1450394	411883
240-SS-35-C	1450399	411946
240-SS-35-D	1450399	412009
240-SS-35-E	1450401	412047
240-SS-35-F	1450399	412084
240-SS-36-B	1450395	412133
240-SS-36-C	1450392	412185
240-SS-36-D	1450390	412235
240-SS-36-E	1450384	412278
240-SS-36-F	1450380	412334
240-SS-37-A	1450328	411806
240-SS-37-B	1450343	411883
240-SS-37-C	1450348	411948
240-SS-37-D	1450348	412015
240-SS-37-E	1450351	412062
240-SS-38-A	1450353	412085
240-SS-38-B	1450345	412135
240-SS-38-C	1450337	412176
240-SS-38-D	1450340	412237
240-SS-38-E	1450328	412281
240-SS-38-F	1450319	412331
240-SS-39-A	1450299	411808
240-SS-39-B	1450291	411887
240-SS-39-C	1450295	411951
240-SS-39-D	1450295	412017
240-SS-39-E	1450298	412064
240-SS-39-F	1450302	412083
240-SS-40-B	1450297	412131
240-SS-40-C	1450293	412184
240-SS-40-D	1450287	412232
240-SS-40-E	1450282	412283
240-SS-40-F	1450280	412330

TA-III/V RFI Sample Location Coordinates

Sample ID	Northing	Easting
241-SS-01	1446138	414657
241-SS-02	1446100	414673
241-SS-03	1446095	414725
241-SS-04	1446093	414733
241-SS-05	1446093	414804
241-SS-06	1446139	414811
241-SS-07	1446157	414782
241-SS-08	1446158	414771
241-SS-09	1446144	414754
241-SS-10	1446151	414716
241-SS-11	1446154	414712
241-SS-12	1446245	414701
241-SS-13	1446255	414698
241-SS-14	1446286	414725
241-SS-15	1446267	414758
Back-1	1455820	414952
Back-2	1455478	414494
Back-3	1456057	413738

Sample ID	Northing	Easting
241-SS-16	1446238	414788
241-SS-17	1446253	414767
241-SS-18	1446237	414805
241-SS-19	1446271	414639
241-SS-20	1446306	414767
241-SS-21	1446305	414819
241-SS-22	1446111	414824
241-SS-23	1446026	414754
241-SS-24	1446048	414707
241-SS-25	1445966	414748
241-SS-26	1446021	414615
241-SS-27	1446034	414593
241-SS-28	1446051	414536
241-SS-29	1446050	414525

APPENDIX B
FIELD SCREENING DATA
(ELECTRONIC)

APPENDIX C
LABORATORY ANALYTICAL DATA
(ELECTRONIC)

APPENDIX D
QUALITY ASSURANCE/QUALITY CONTROL DATA
(ELECTRONIC)

APPENDIX E
EXAMPLE STATISTICAL CALCULATIONS

Appendix E
Example Calculations

Introduction

This appendix presents the statistical approach used to analyze and quantify data collected for ER site characterization activities at SNL/NM. Distribution analyses were determined for two background sample data sets collected at SNL/NM. For comparison purposes, normal and lognormally-transformed data were used in the distribution analyses. Data sets from two hypothetical ER Sites were compared to SNL/NM background data to demonstrate the statistical approach used to evaluate ER site data.

To determine the range of background concentrations, the 95th upper tolerance limit (UTL) or the 95th percentile were calculated for parametric and non-parametric data sets, respectively. The following steps were completed to arrive at a 95th UTL or percentile value: 1) *a priori* screening of the data; 2) determination of the percentage of non-detects in the data sets; 3) distribution analysis of the portion of the data set that exhibited less than 15% non-detects, including calculation of the coefficient of skewness and Shapiro-Wilk Test of Normality and interpretation of histograms and probability plots; 4) a second screening of the data performed by the calculation of the T_n statistic for parametric data; and finally 5) calculation of the 95th UTL for parametric data sets or the 95th percentile for non-parametric data sets.

After the 95 th UTL or 95th percentile was calculated, background data sets were compared to the ER site-specific data sets. This comparison added credence to the UTL by determining if the background and site-specific data were statistically similar. For parametric background data sets, comparison analyses were conducted using the F distribution, the Student's t-test, the Wilcoxon Rank-Sum Test, and the Quantile test. Comparison analyses of non-parametric background data sets were analyzed by the Wilcoxon Rank-Sum Test and the Quantile test.

In some instances, comparison tests were performed to determine whether background samples collected from different depth intervals were similar and therefore could be combined. Probability plots and the Wilcoxon Rank-Sum test were used for comparison analysis.

1. Distribution Analyses

A distribution analysis was performed to determine if a particular data set was parametric or non-parametric. The data first were subjected to an *a priori* screen (Section 1.2). The number of non-detects were then evaluated for the data set (Section 1.3). If greater than 15% non-detects existed, the data set was considered non-parametric and the distribution analysis was concluded. If fewer than 15% non-detects existed, the data were subjected to two numerical and two graphical procedures to help determine the distribution type. The numerical procedures used were the coefficient of skewness (Section 1.4) and the Shapiro-Wilk Test of Normality (Section 1.5). The graphical procedures used were the histogram (Section 1.6) and the probability plot (Section 1.7). The results of the four procedures were compared and the distribution was determined (Section 1.8). The T_n statistic was then calculated for the parametric data sets as a second screening mechanism for outliers (Section 1.9). If a data set contained fewer than 15% non-detects but failed the numerical and graphical procedures for a parametric distribution, the data set was often carried through to the T_n statistic procedure to determine if outliers were present. In some instances, outliers were identified and removed during the T_n statistic procedure. This allowed the data set that had initially failed to pass the parametric numerical and graphical tests. If outliers were identified during the T_n statistical test, the outliers were removed and the mean and standard deviation were recalculated for the data set.

1.1 Background Data Sets

Tables E-1 and E-2 present SNL/NM background data sets for antimony and copper, respectively. The tables provide the raw analytical data, coded values, natural log-transformed data from each sample location, and instrument detection limits. A coded value is identical to the raw data value except when a concentration was reported below the instrument detection limit. The coded value in this case is one half of the instrument detection limit. The coded data set was used for the background antimony distribution analysis because of the presence of a non-detect.

Table E-1. Antimony Data for SNL/NM Background (in mg/kg)

Sample ID	Raw Data	Coded Value	Natural Log of Coded Value	Instrument Detection Limit
T1BS1-BH005-002-SS	0.439	0.439	-0.823	0.0887
T1BS1-BH016-002-SS	0.396	0.396	-0.926	0.0939
T1BS1-BH012-002-SS	0.326	0.326	-1.121	0.0929
T1BS1-BH008-002-SS	0.317	0.317	-1.149	0.0887
T1BS1-BH015-002-SS	0.277	0.277	-1.284	0.0929
T1BS1-BH010-002-SS	0.243	0.243	-1.415	0.0929
T1BS1-BH009-002-SS	0.217	0.217	-1.528	0.0922
T1BS1-BH002-002-SS	0.197	0.197	-1.625	0.0958
T1BS1-BH014-002-SS	0.191	0.191	-1.655	0.0929
T1BS1-BH003-002-SS	0.186	0.186	-1.682	0.0912
T1BS1-BH011-002-SS	0.184	0.184	-1.693	0.0922
T1BS1-BH004-002-SS	0.159	0.159	-1.839	0.0912
T1BS1-BH013-002-SS	0.119	0.119	-2.129	0.0904
T1BS1-BH006-002-SS	0.11	0.11	-2.21	0.0948
T1BS1-BH007-002-SS	0.104	0.104	-2.263	0.0922
T1BS1-BH001-002-SS	U	0.0479	-3.039	0.0958

Basic statistical parameters for the antimony data are:

Raw
Mean (N=15) = 0.23
Standard Deviation = 0.10
Variance = 0.01

Coded
Mean (N=16) = 0.22
Standard Deviation = 0.11
Variance = 0.01

Lognormal (Coded)
Mean (N=16) = -1.65
Standard Deviation = 0.57
Variance = 0.32

U = Concentration was below instrument detection limit

Table E-2. Copper Data for SNL/NM Background (in mg/kg)

Sample ID	Raw Data	Natural Log of Raw Data	Instrument Detection Limit
T1BS1-BH005-002-SS	20.1	3.00	0.0499
T1BS1-BH006-002-SS	10.8	2.38	0.0534
T1BS1-BH008-002-SS	9.71	2.27	0.0499
T1BS1-BH012-002-SS	9.52	2.25	0.0523
T1BS1-BH011-002-SS	9.16	2.21	0.0519
T1BS1-BH003-002-SS	9.13	2.21	0.0513
T1BS1-BH010-002-SS	8.29	2.12	0.0523
T1BS1-BH016-002-SS	7.78	2.05	0.0528
T1BS1-BH001-002-SS	7.72	2.04	0.0539
T1BS1-BH004-002-SS	7.58	2.03	0.0513
T1BS1-BH007-002-SS	7.58	2.03	0.0519
T1BS1-BH002-002-SS	7.35	1.99	0.0539
T1BS1-BH014-002-SS	6.34	1.85	0.0523
T1BS1-BH009-002-SS	5.17	1.64	0.0519
T1BS1-BH015-002-SS	4.87	1.58	0.0523
T1BS1-BH013-002-SS	3.85	1.35	0.0509

Basic statistical parameters for the copper data are:

Normal
Mean (N=16) = 8.43
Standard Deviation = 3.63
Variance = 13.19

Lognormal
Mean = 2.06
Standard Deviation = 0.37
Variance = 0.14

1.2 Rejection of Outliers: *A Priori* Test

The *a priori* test is a screening test used to eliminate outliers before the distribution analysis is performed (EPA 1992a). For the *a priori* test outliers are defined as maximum values greater than three times the next highest value (EPA 1992a). Non-transformed coded data are used for this screening test. If a data value fails the *a priori* test, it is removed from the data set for all following statistical analyses. The data point, however, must be explained as either potential sampling error, laboratory error, an anomalously high value, or some other factor contributing to an unexpectedly large concentration.

Antimony, *a priori*:

Sample ID	Raw Data	Coded Value	Instrument Detection Limit	Rank	Multiplicative Factor*	Outlier ?
T1BS1-BH005-002-SS	0.439	0.439	0.0887	1	1.1	No
T1BS1-BH016-002-SS	0.396	0.396	0.0939	2	1.2	No
T1BS1-BH012-002-SS	0.326	0.326	0.0929	3	1.0	No
T1BS1-BH008-002-SS	0.317	0.317	0.0887	4	1.1	No
T1BS1-BH015-002-SS	0.277	0.277	0.0929	5	1.1	No
T1BS1-BH010-002-SS	0.243	0.243	0.0929	6	1.1	No
T1BS1-BH009-002-SS	0.217	0.217	0.0922	7	1.1	No
T1BS1-BH002-002-SS	0.197	0.197	0.0958	8	1.0	No
T1BS1-BH014-002-SS	0.191	0.191	0.0929	9	1.0	No
T1BS1-BH003-002-SS	0.186	0.186	0.0912	10	1.0	No
T1BS1-BH011-002-SS	0.184	0.184	0.0922	11	1.2	No
T1BS1-BH004-002-SS	0.159	0.159	0.0912	12	1.3	No
T1BS1-BH013-002-SS	0.119	0.119	0.0904	13	1.1	No
T1BS1-BH006-002-SS	0.11	0.11	0.0948	14	1.1	No
T1BS1-BH007-002-SS	0.104	0.104	0.0922	15	2.2	No
T1BS1-BH001-002-SS	U	0.0479	0.0958	16	NA	No

* - multiplicative factor is determined by dividing a value by the next highest ranked value.
NA - Not Applicable

Interpretation: No outliers were eliminated from the antimony data set via the *a priori* screening method.

Copper, *a priori*:

Sample ID	Raw Data	Instrument Detection Limit	Rank	Multiplicative Factor*	Outlier?
TIBSI-BH005-002-SS	20.1	0.0499	1	1.9	No
TIBSI-BH006-002-SS	10.8	0.0534	2	1.1	No
TIBSI-BH008-002-SS	9.71	0.0499	3	1.0	No
TIBSI-BH012-002-SS	9.52	0.0523	4	1.0	No
TIBSI-BH011-002-SS	9.16	0.0519	5	1.0	No
TIBSI-BH003-002-SS	9.13	0.0513	6	1.1	No
TIBSI-BH010-002-SS	8.29	0.0523	7	1.1	No
TIBSI-BH016-002-SS	7.78	0.0528	8	1.0	No
TIBSI-BH001-002-SS	7.72	0.0539	9	1.0	No
TIBSI-BH004-002-SS	7.58	0.0513	10	1.0	No
TIBSI-BH007-002-SS	7.58	0.0519	11	1.0	No
TIBSI-BH002-002-SS	7.35	0.0539	12	1.2	No
TIBSI-BH014-002-SS	6.34	0.0523	13	1.2	No
TIBSI-BH009-002-SS	5.17	0.0519	14	1.1	No
TIBSI-BH015-002-SS	4.87	0.0523	15	1.3	No
TIBSI-BH013-002-SS	3.85	0.0509	16	NA	No

NA - Not Applicable

Interpretation: No outliers were eliminated from the copper data set via the *a priori* screening method.

1.3 Determination of Percent Non-detects

If the percentage of non-detects was less than 15%, a parametric distribution analysis was performed. If the percentage of non-detects was greater than 15%, the distribution was considered non-parametric and a distribution analysis was not performed (EPA 1992a,b).

The SNL/NM background antimony data set had one non-detect out of 16 samples, or 6% non-detects. The SNL/NM background copper data set had zero non-detects. Both data sets were eligible for the parametric distribution analysis.

1.4 Coefficient of Skewness

The coefficient of skewness indicates to what degree a data set is skewed or asymmetric with respect to the mean. Data from a perfectly shaped normal distribution have a coefficient of skewness of zero, while asymmetric data have either positive or negative skewness depending on whether the right- or left-hand tail of the distribution is longer and "skinnier" than the opposite tail. A small degree of skewness (between -1 and +1) is not likely to affect the results of statistical tests based on an assumption of normality. However, if the coefficient of skewness is larger than 1 (in absolute value) and the sample size is small (e.g., n<25), statistical research has shown that standard normal theory-based tests are much less powerful than when the absolute skewness is less than 1 (Gayen, 1949). Therefore, it is considered a failure of the test for normality if the coefficient of skewness exceeds 1. The formula for the coefficient of skewness γ_i is shown below, where n is the number of data points, x_i is an individual sample observation, $\bar{x}$ is the mean of the data set, and σ is the standard deviation.

$$\gamma_i = \frac{\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^3}{\left(\frac{n-1}{n}\right)^{\frac{3}{2}}(\sigma)^3}$$

The Coefficient of Skewness can also be used to evaluate whether the distribution of a data set is more normal or lognormal, based on the closeness of γ_i to zero.

Coefficient of Skewness Calculations for Background Antimony at SNL/NM: Normal

Sample ID	Coded Value	Mean	$(x_i - \bar{x})$	$(x_i - \bar{x})^3$
T1BS1-BH005-002-SS	0.439	0.220	0.219	0.011
T1BS1-BH016-002-SS	0.396	0.220	0.176	0.005
T1BS1-BH012-002-SS	0.326	0.220	0.106	0.001
T1BS1-BH008-002-SS	0.317	0.220	0.097	0.001
T1BS1-BH015-002-SS	0.277	0.220	0.057	0.000
T1BS1-BH010-002-SS	0.243	0.220	0.023	0.000
T1BS1-BH009-002-SS	0.217	0.220	-0.003	0.000
T1BS1-BH002-002-SS	0.197	0.220	-0.023	0.000
T1BS1-BH014-002-SS	0.191	0.220	-0.029	0.000
T1BS1-BH003-002-SS	0.186	0.220	-0.034	0.000
T1BS1-BH011-002-SS	0.184	0.220	-0.036	0.000
T1BS1-BH004-002-SS	0.159	0.220	-0.061	0.000
T1BS1-BH013-002-SS	0.119	0.220	-0.101	-0.001
T1BS1-BH006-002-SS	0.11	0.220	-0.110	-0.001
T1BS1-BH007-002-SS	0.104	0.220	-0.116	-0.002
T1BS1-BH001-002-SS	0.0479	0.220	-0.172	-0.005

Sum = 0.009

thus, for a normal distribution,

$$\gamma_i = \frac{\frac{0.009}{16}}{(0.908)(0.001)}$$

$$\gamma_i = 0.62$$

Coefficient of Skewness Calculations for Background Antimony at SNL/NM: Lognormal

Sample ID	Log (Coded Value)	Mean	$(x_i - \bar{x})$	$(x_i - \bar{x})^3$
T1BS1-BH005-002-SS	-0.823	-1.65	0.827	0.566
T1BS1-BH016-002-SS	-0.926	-1.65	0.724	0.380
T1BS1-BH012-002-SS	-1.121	-1.65	0.529	0.148
T1BS1-BH008-002-SS	-1.149	-1.65	0.501	0.126
T1BS1-BH015-002-SS	-1.284	-1.65	0.366	0.049
T1BS1-BH010-002-SS	-1.415	-1.65	0.235	0.013
T1BS1-BH009-002-SS	-1.528	-1.65	0.122	0.002
T1BS1-BH002-002-SS	-1.625	-1.65	0.025	0.00
T1BS1-BH014-002-SS	-1.655	-1.65	-0.005	0.00
T1BS1-BH003-002-SS	-1.682	-1.65	-0.032	0.00
T1BS1-BH011-002-SS	-1.693	-1.65	-0.044	0.00
T1BS1-BH004-002-SS	-1.839	-1.65	-0.189	-0.007
T1BS1-BH013-002-SS	-2.129	-1.65	-0.479	-0.110
T1BS1-BH006-002-SS	-2.21	-1.65	-0.560	-0.176
T1BS1-BH007-002-SS	-2.263	-1.65	-0.613	-0.230
T1BS1-BH001-002-SS	-3.039	-1.65	-1.389	-2.680

Sum = -1.919

For a lognormal distribution,

$$\gamma_i = \frac{\frac{-1.919}{16}}{(0.908)(0.183)}$$

$$\gamma_i = -0.72$$

Interpretation: The data set more closely represents a normal distribution, because the coefficient of skewness for the normal distribution is closer to zero.

Coefficient of Skewness Calculations for Background Copper at SNL/NM: Normal

Sample ID	Raw Data	Mean	$(x_i - \bar{x})$	$(x_i - \bar{x})^3$
T1BS1-BH005-002-SS	20.1	8.43	11.67	1589.32
T1BS1-BH006-002-SS	10.8	8.43	2.37	13.31
T1BS1-BH008-002-SS	9.71	8.43	1.28	2.10
T1BS1-BH012-002-SS	9.52	8.43	1.09	1.30
T1BS1-BH011-002-SS	9.16	8.43	0.73	0.39
T1BS1-BH003-002-SS	9.13	8.43	0.70	0.34
T1BS1-BH010-002-SS	8.29	8.43	-0.14	0.00
T1BS1-BH016-002-SS	7.78	8.43	-0.65	-0.27
T1BS1-BH001-002-SS	7.72	8.43	-0.71	-0.36
T1BS1-BH004-002-SS	7.58	8.43	-0.85	-0.61
T1BS1-BH007-002-SS	7.58	8.43	-0.85	-0.61
T1BS1-BH002-002-SS	7.35	8.43	-1.08	-1.26
T1BS1-BH014-002-SS	6.34	8.43	-2.09	-9.13
T1BS1-BH009-002-SS	5.17	8.43	-3.26	-34.65
T1BS1-BH015-002-SS	4.87	8.43	-3.56	-45.12
T1BS1-BH013-002-SS	3.85	8.43	-4.58	-96.07

Sum = 1418.67

thus, for a normal distribution,

$$\gamma_i = \frac{\frac{1418.67}{16}}{(0.91)(47.83)}$$

$$\gamma_i = \frac{88.67}{43.53}$$

$$\gamma_i = 2.04$$

Coefficient of Skewness Calculations for Background Copper at SNL/NM: Lognormal

Sample ID	Log (Coded Value)	Mean	$(x_i - \bar{x})$	$(x_i - \bar{x})^3$
T1BS1-BH005-002-SS	3.00	2.06	0.94	0.83
T1BS1-BH006-002-SS	2.38	2.06	0.32	0.03
T1BS1-BH008-002-SS	2.27	2.06	0.21	0.01
T1BS1-BH012-002-SS	2.25	2.06	0.19	0.01
T1BS1-BH011-002-SS	2.21	2.06	0.15	0.00
T1BS1-BH003-002-SS	2.21	2.06	0.15	0.00
T1BS1-BH010-002-SS	2.12	2.06	0.06	0.00
T1BS1-BH016-002-SS	2.05	2.06	-0.01	0.00
T1BS1-BH001-002-SS	2.04	2.06	-0.02	0.00
T1BS1-BH004-002-SS	2.03	2.06	-0.03	0.00
T1BS1-BH007-002-SS	2.03	2.06	-0.03	0.00
T1BS1-BH002-002-SS	1.99	2.06	-0.07	0.00
T1BS1-BH014-002-SS	1.85	2.06	-0.21	-0.01
T1BS1-BH009-002-SS	1.64	2.06	-0.42	-0.07
T1BS1-BH015-002-SS	1.58	2.06	-0.48	-0.11
T1BS1-BH013-002-SS	1.35	2.06	-0.71	-0.36

Sum = 0.33

For a lognormal distribution,

$$\gamma_i = \frac{\frac{0.33}{16}}{(0.91)(0.052)}$$

$$\gamma_i = \frac{.021}{0.047}$$

$$\gamma_i = 0.45$$

Interpretation: The data set more closely represents a lognormal distribution, because the coefficient of skewness for the lognormal distribution is between -1 and 1.

1.5 Shapiro-Wilk Test of Normality

The Shapiro-Wilk Test of Normality is based on the premise that, if a set of data is normally distributed, the ordered values should be highly correlative with corresponding quantiles taken from a normal distribution (Shapiro and Wilk, 1965). In particular, the Shapiro-Wilk Test of Normality gives substantial weight to evidence of non-normality in the tails of a distribution, where the robustness of statistical tests based on the normality assumption is the most severely affected (EPA, 1992a).

The Shapiro-Wilk test statistic (W) will tend to be large (close to 1) when the data is normally distributed. Only when the plotted data show significant bends or curves will the test statistic be small.

The Shapiro-Wilk Test of Normality is considered to be one of the best available tests of normality (Miller, 1986; Madansky, 1988).

The following formula is used to calculate W:

$$W = \left[\frac{b}{\sigma\sqrt{n-1}} \right]^2$$

where,

$$b = \sum_{i=1}^{k} b_i = \sum_{i=1}^{k} a_{n-i+1}\left(x_{(n-i+1)} - x_i\right)$$

and σ = standard deviation,
n = number of data points,
a_{n-i+1} = coefficients determined from Table A-1in EPA (1992a) for $3 \leq n \leq 50$
K = greatest integer less than or equal to n/2

Normality of the data should be rejected if the Shapiro-Wilk statistic is too low when compared to the critical values provided in Table A-2 (EPA, 1992a). Otherwise, the data are assumed to be approximately normal for purposes of further statistical analysis.

Shapiro-Wilk Test of Normality for Background Antimony at SNL/NM: Normal

Sample ID	x_i	$x_{(n-i+1)}$	$x_{(n-i+1)}-x_i$	a_{n-i+1}	b_i
T1BS1-BH001-002-SS	0.0479	0.439	0.3911	0.5056	0.1977401
T1BS1-BH007-002-SS	0.104	0.396	0.292	0.329	0.096068
T1BS1-BH006-002-SS	0.11	0.326	0.216	0.2521	0.0544536
T1BS1-BH013-002-SS	0.119	0.317	0.198	0.1939	0.0383922
T1BS1-BH004-002-SS	0.159	0.277	0.118	0.1447	0.0170746
T1BS1-BH011-002-SS	0.184	0.243	0.059	0.1005	0.0059295
T1BS1-BH003-002-SS	0.186	0.217	0.031	0.0593	0.0018383
T1BS1-BH014-002-SS	0.191	0.197	0.006	0.0196	0.0001176
T1BS1-BH002-002-SS	0.197	0.191	-0.006		
T1BS1-BH009-002-SS	0.217	0.186	-0.031		
T1BS1-BH010-002-SS	0.243	0.184	-0.059		
T1BS1-BH015-002-SS	0.277	0.159	-0.118		
T1BS1-BH008-002-SS	0.317	0.119	-0.198		
T1BS1-BH012-002-SS	0.326	0.11	-0.216		
T1BS1-BH016-002-SS	0.396	0.104	-0.292		
T1BS1-BH005-002-SS	0.439	0.0479	-0.3911		

sum of b_i ($\sum b_i$) = 0.41161396
standard deviation (σ) = 0.10840795
count - 1 (n-1) = 15
W statistic = 0.961
critical value (n = 16) = 0.887
Shapiro-Wilk Test for Normality = Pass

Shapiro-Wilk Test of Normality for Background Antimony at SNL/NM: Log Data

Sample ID	x_i	$x_{(n-i+1)}$	$x_{(n-i+1)}-x_i$	a_{n-i+1}	b_i
T1BS1-BH001-002-SS	-3.03864	-0.82326	2.215383909	0.5056	1.120098
T1BS1-BH007-002-SS	-2.26336	-0.92634	1.337023312	0.329	0.439881
T1BS1-BH006-002-SS	-2.20727	-1.12086	1.086417016	0.2521	0.273886
T1BS1-BH013-002-SS	-2.12863	-1.14885	0.979778281	0.1939	0.189979
T1BS1-BH004-002-SS	-1.83885	-1.28374	0.555113304	0.1447	0.080325
T1BS1-BH011-002-SS	-1.69282	-1.41469	0.278125686	0.1005	0.027952
T1BS1-BH003-002-SS	-1.68201	-1.52786	0.15415068	0.0593	0.009141
T1BS1-BH014-002-SS	-1.65548	-1.62455	0.030930301	0.0196	0.000606
T1BS1-BH002-002-SS	-1.62455	-1.65548	-0.030930301		
T1BS1-BH009-002-SS	-1.52786	-1.68201	-0.15415068		
T1BS1-BH010-002-SS	-1.41469	-1.69282	-0.278125686		
T1BS1-BH015-002-SS	-1.28374	-1.83885	-0.555113304		
T1BS1-BH008-002-SS	-1.14885	-2.12863	-0.979778281		
T1BS1-BH012-002-SS	-1.12086	-2.20727	-1.086417016		
T1BS1-BH016-002-SS	-0.92634	-2.26336	-1.337023312		
T1BS1-BH005-002-SS	-0.82326	-3.03864	-2.215383909		

sum of b_i ($\sum b_i$) = 2.14186741
standard deviation (σ) = 0.56722194
count - 1 (n-1) = 15
W statistic = 0.951
critical value (n = 16) = 0.887
Shapiro-Wilk Test for Normality = Pass

Interpretation: The data set more closely represents a normal distribution because the calculated W statistic for the normal distribution is closer to 1.

Shapiro-Wilk Test of Normality for Background Copper at SNL/NM: Normal

Sample ID	x_i	$x_{(n-i+1)}$	$x_{(n-i+1)}-x_i$	a_{n-i+1}	b_i
T1BS1-BH013-002-SS	3.85	20.1	16.25	0.5056	8.216
T1BS1-BH015-002-SS	4.87	10.8	5.93	0.329	1.95097
T1BS1-BH009-002-SS	5.17	9.71	4.54	0.2521	1.144534
T1BS1-BH014-002-SS	6.34	9.52	3.18	0.1939	0.616602
T1BS1-BH002-002-SS	7.35	9.16	1.81	0.1447	0.261907
T1BS1-BH007-002-SS	7.58	9.13	1.55	0.1005	0.155775
T1BS1-BH004-002-SS	7.58	8.29	0.71	0.0593	0.042103
T1BS1-BH001-002-SS	7.72	7.78	0.06	0.0196	0.001176
T1BS1-BH016-002-SS	7.78	7.72	-0.06		
T1BS1-BH010-002-SS	8.29	7.58	-0.71		
T1BS1-BH003-002-SS	9.13	7.58	-1.55		
T1BS1-BH011-002-SS	9.16	7.35	-1.81		
T1BS1-BH012-002-SS	9.52	6.34	-3.18		
T1BS1-BH008-002-SS	9.71	5.17	-4.54		
T1BS1-BH006-002-SS	10.8	4.87	-5.93		
T1BS1-BH005-002-SS	20.1	3.85	-16.25		

sum of b_i ($\sum b_i$) = 12.39
standard deviation (σ) = 3.63
count - 1 (n-1) = 15
W statistic = 0.776
critical value (n = 16) = 0.887
Shapiro-Wilk Test for Normality = Fail

Shapiro-Wilk Test of Normality for Background Copper at SNL/NM: Lognormal

Sample ID	x_i	$x_{(n-i+1)}$	$x_{(n-i+1)}-x_i$	a_{n-i+1}	b_i
T1BS1-BH013-002-SS	1.35	3	1.65	0.5056	0.83424
T1BS1-BH015-002-SS	1.58	2.38	0.8	0.329	0.2632
T1BS1-BH009-002-SS	1.64	2.27	0.63	0.2521	0.158823
T1BS1-BH014-002-SS	1.85	2.25	0.4	0.1939	0.07756
T1BS1-BH002-002-SS	1.99	2.21	0.22	0.1447	0.031834
T1BS1-BH007-002-SS	2.03	2.21	0.18	0.1005	0.01809
T1BS1-BH004-002-SS	2.03	2.12	0.09	0.0593	0.005337
T1BS1-BH001-002-SS	2.04	2.05	0.01	0.0196	0.000196
T1BS1-BH016-002-SS	2.05	2.04	-0.01		
T1BS1-BH010-002-SS	2.12	2.03	-0.09		
T1BS1-BH003-002-SS	2.21	2.03	-0.18		
T1BS1-BH011-002-SS	2.21	1.99	-0.22		
T1BS1-BH012-002-SS	2.25	1.85	-0.4		
T1BS1-BH008-002-SS	2.27	1.64	-0.63		
T1BS1-BH006-002-SS	2.38	1.58	-0.8		
T1BS1-BH005-002-SS	3	1.35	-1.65		

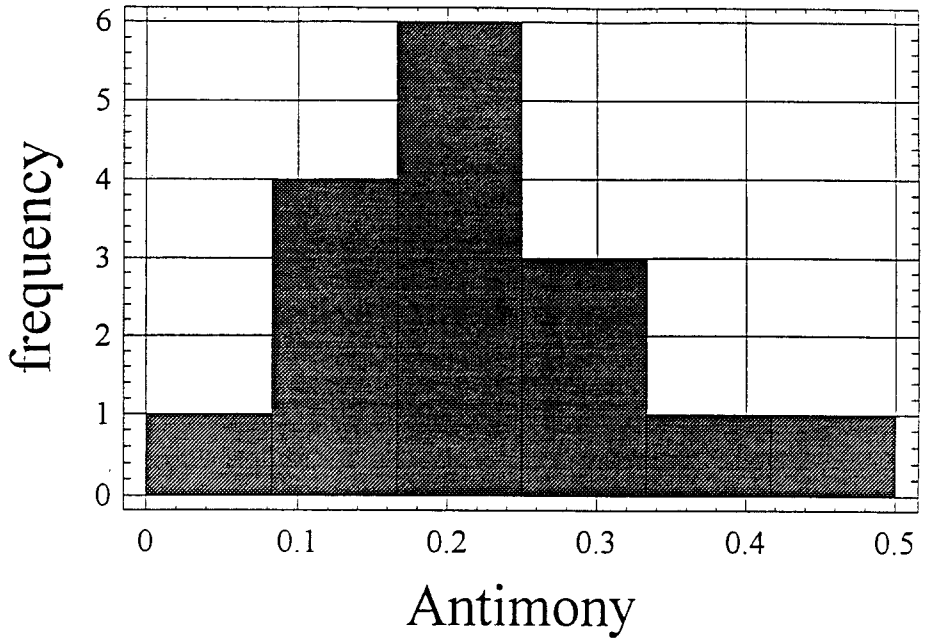
sum of b_i ($\sum b_i$) = 1.39
standard deviation (σ) = 0.37
count - 1 (n-1) = 15
W statistic = 0. 929
critical value (n = 16) = 0.887
Shapiro-Wilk Test for Normality = Pass

Interpretation: The data set more closely represents a lognormal distribution because the calculated W statistic for the lognormal distribution passes the Shapiro-Wilk test.

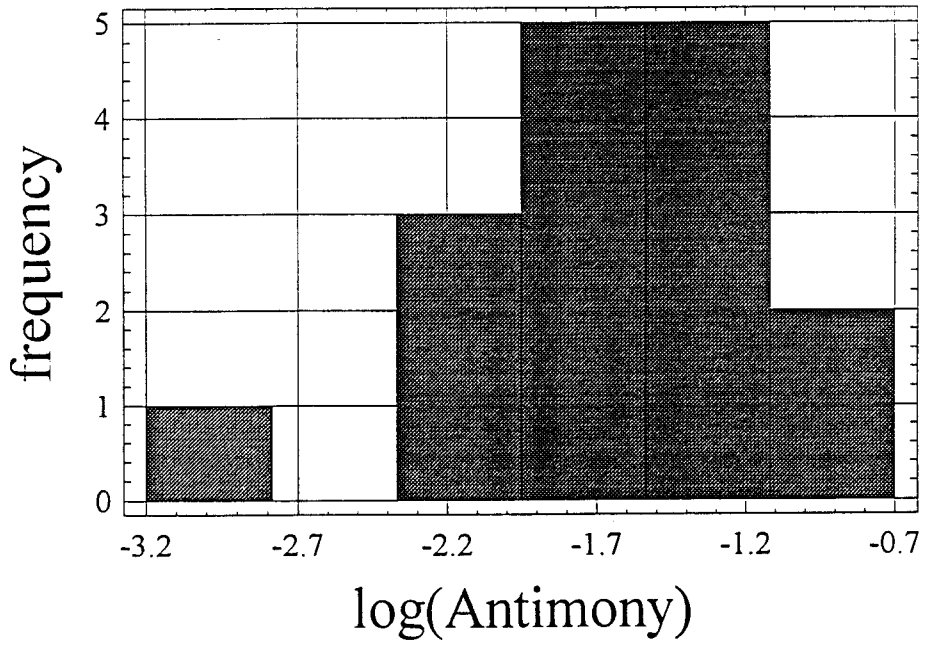
1.6 Histograms

Histograms are useful for visually determining whether the data sets are skewed, and if so, in what direction. Histograms are created by determining the range of sample concentrations, then dividing the concentration range into equal intervals. Samples are then placed into the appropriate concentration intervals. The concentration range forms the x-axis. Calculating the percentage of samples per concentration interval compared to the total number of samples, or simply plotting the number of data values that fall within an interval, provides the y-axis in terms of percent frequency or frequency, respectively, of a particular concentration interval.

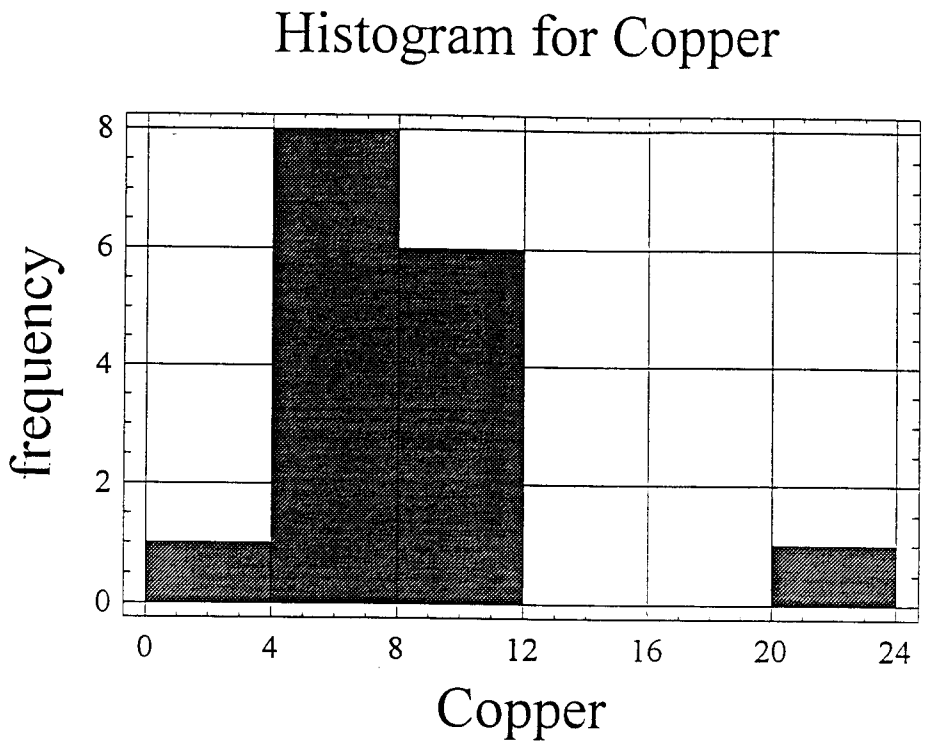
Histogram for Antimony

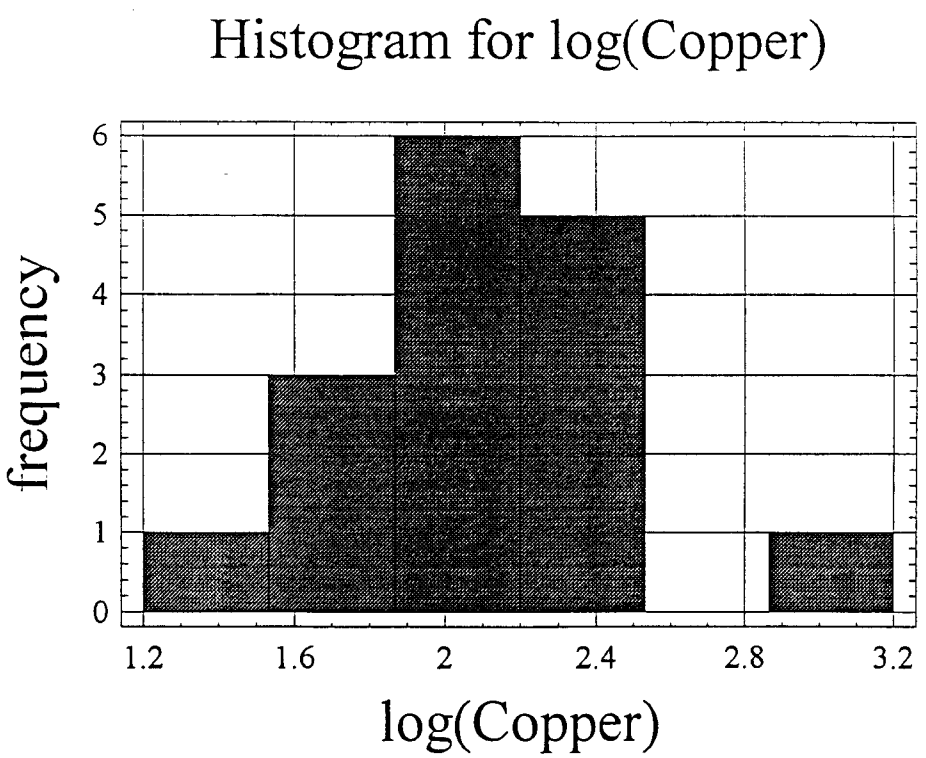


Histogram for log(Antimony)



Interpretation: The data set more closely represents a normal distribution.





Interpretation: The data set more closely represents a lognormal distribution

1.7 Probability Plots

Another simple and useful graphical test for determining normality is to plot the data on probability paper. The y-axis is scaled to represent probabilities according to the normal distribution, and the data are arranged in increasing order. An observed value is plotted on the x-axis, and the proportion of observations less than or equal to each observed value is plotted as the y-coordinate. The scale is constructed so that, if the data are normal, the points when plotted will approximate a straight line. Visually apparent curves or bends indicate that the data do not follow a normal distribution (EPA, 1992a).

Probability plots are particularly useful for spotting irregularities within the data when compared to a specific distributional model such as the normal distribution. It is easy to determine whether departures from normality are occurring more or less in the middle ranges of the data or in the extreme tails. Probability plots can also indicate the presence of possible outlier values that do not follow the basic pattern of the data and can show the presence of significant positive or negative skewness.

The probability for a particular data value x is calculated as

$$\text{Probability} = 100*((i-3/8)/(n+1/4))$$

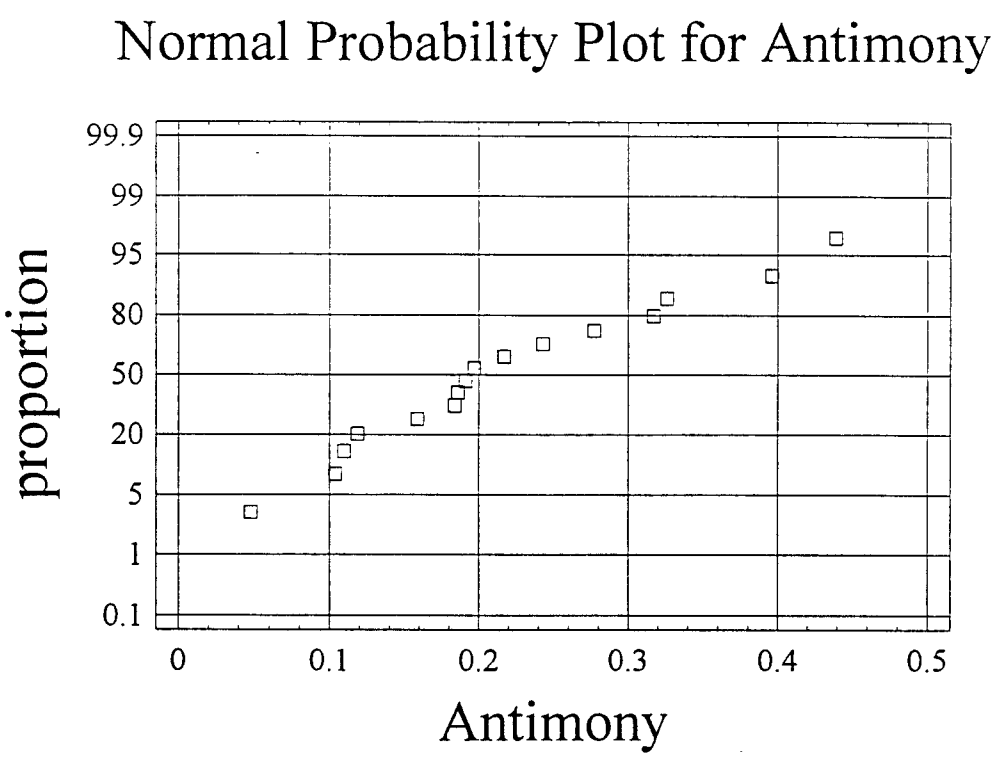
where,

i = ranked order of x_i from i to n
n = number of samples

Probability Plot for Background Antimony at SNL/NM:

Sample ID	Coded Value	Order (i)	Probability 100*((i-3/8)/(n+1/4))
T1BS1-BH001-002-SS	0.0479	1	3.846154
T1BS1-BH007-002-SS	0.104	2	10
T1BS1-BH006-002-SS	0.11	3	16.15385
T1BS1-BH013-002-SS	0.119	4	22.30769
T1BS1-BH004-002-SS	0.159	5	28.46154
T1BS1-BH011-002-SS	0.184	6	34.61538
T1BS1-BH003-002-SS	0.186	7	40.76923
T1BS1-BH014-002-SS	0.191	8	46.92308
T1BS1-BH002-002-SS	0.197	9	53.07692
T1BS1-BH009-002-SS	0.217	10	59.23077
T1BS1-BH010-002-SS	0.243	11	65.38462
T1BS1-BH015-002-SS	0.277	12	71.53846
T1BS1-BH008-002-SS	0.317	13	77.69231
T1BS1-BH012-002-SS	0.326	14	83.84615
T1BS1-BH016-002-SS	0.396	15	90
T1BS1-BH005-002-SS	0.439	16	96.15385

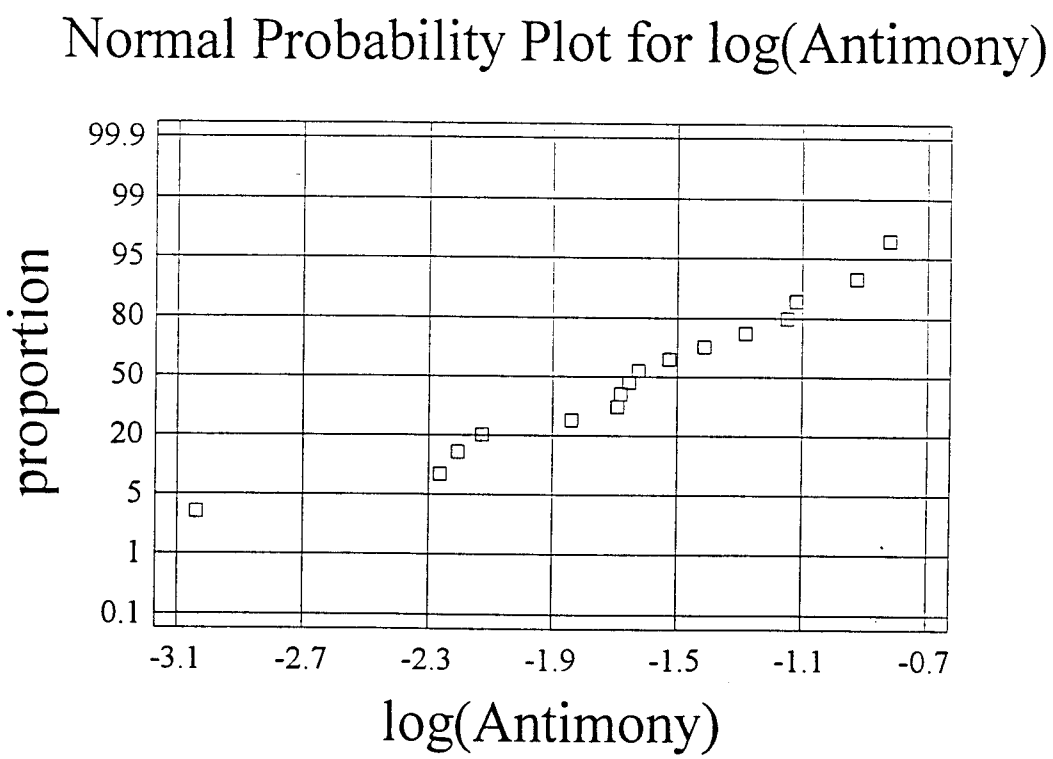
n = 16



Normal Probability Plot for Background Lognormal Antimony at SNL/NM:

Sample ID	Log (Coded Value)	Order (i)	Probability 100*((i-3/8)/(n+1/4))
T1BS1-BH001-002-SS	-3.039	1	3.846154
T1BS1-BH007-002-SS	-2.263	2	10
T1BS1-BH006-002-SS	-2.21	3	16.15385
T1BS1-BH013-002-SS	-2.129	4	22.30769
T1BS1-BH004-002-SS	-1.839	5	28.46154
T1BS1-BH011-002-SS	-1.693	6	34.61538
T1BS1-BH003-002-SS	-1.682	7	40.76923
T1BS1-BH014-002-SS	-1.655	8	46.92308
T1BS1-BH002-002-SS	-1.625	9	53.07692
T1BS1-BH009-002-SS	-1.528	10	59.23077
T1BS1-BH010-002-SS	-1.415	11	65.38462
T1BS1-BH015-002-SS	-1.284	12	71.53846
T1BS1-BH008-002-SS	-1.149	13	77.69231
T1BS1-BH012-002-SS	-1.121	14	83.84615
T1BS1-BH016-002-SS	-0.926	15	90
T1BS1-BH005-002-SS	-0.823	16	96.15385

n = 16

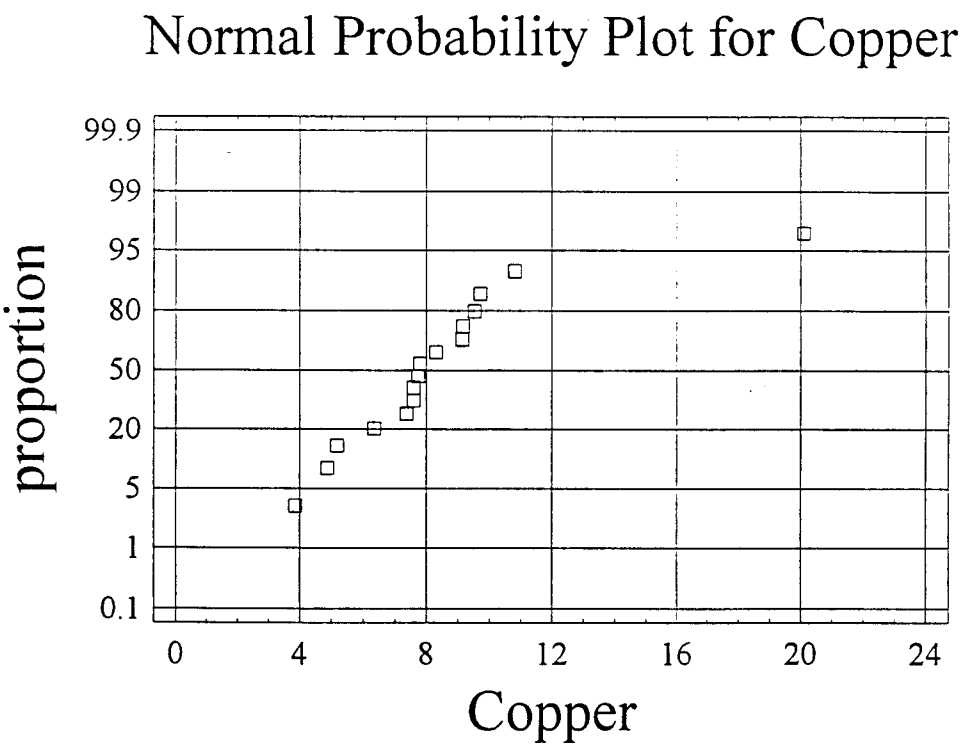


Interpretation: The data set more closely represents a normal distribution because a straight line is more easily fit on the normal distribution plot.

Probability Plot for Background Copper at SNL/NM:

Sample ID	Raw Data	Order (i)	Probability 100*((i-3/8)/(n+1/4))
T1BS1-BH013-002-SS	3.85	1	3.846153846
T1BS1-BH015-002-SS	4.87	2	10
T1BS1-BH009-002-SS	5.17	3	16.15384615
T1BS1-BH014-002-SS	6.34	4	22.30769231
T1BS1-BH002-002-SS	7.35	5	28.46153846
T1BS1-BH007-002-SS	7.58	6	34.61538462
T1BS1-BH004-002-SS	7.58	7	40.76923077
T1BS1-BH001-002-SS	7.72	8	46.92307692
T1BS1-BH016-002-SS	7.78	9	53.07692308
T1BS1-BH010-002-SS	8.29	10	59.23076923
T1BS1-BH003-002-SS	9.13	11	65.38461538
T1BS1-BH011-002-SS	9.16	12	71.53846154
T1BS1-BH012-002-SS	9.52	13	77.69230769
T1BS1-BH008-002-SS	9.71	14	83.84615385
T1BS1-BH006-002-SS	10.8	15	90
T1BS1-BH005-002-SS	20.1	16	96.15384615

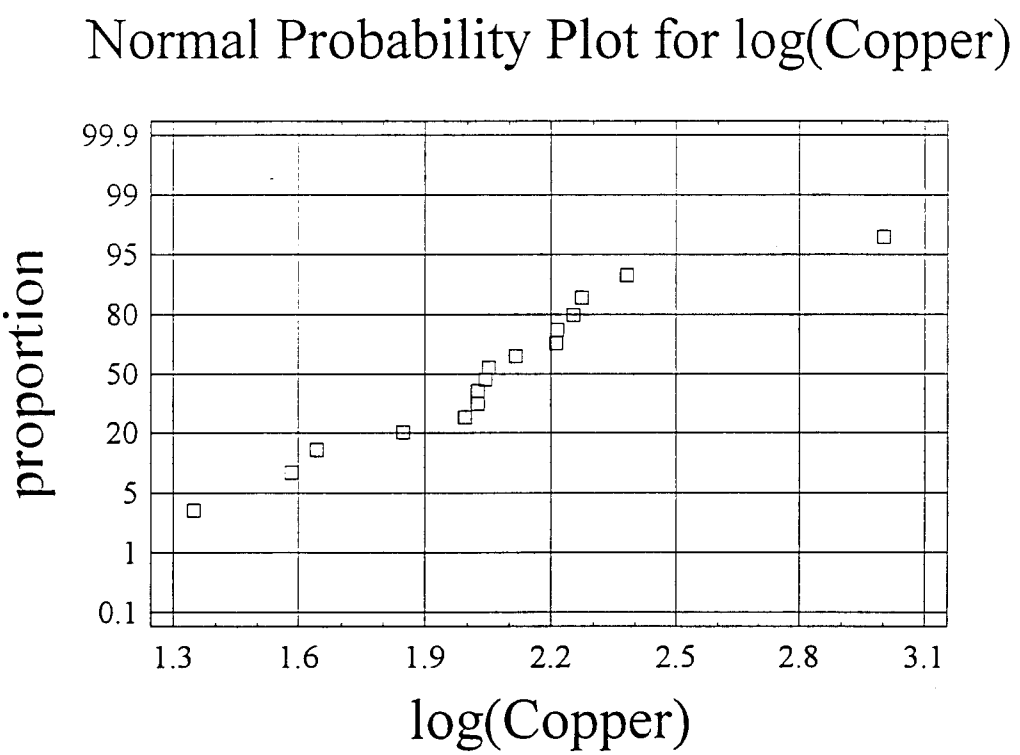
n = 16



Normal Probability Plot for Background Lognormal Copper at SNL/NM:

Sample ID	Log (Raw Data)	Order (i)	Probability 100*((i-3/8)/(n+1/4))
T1BS1-BH013-002-SS	1.348	1	3.846154
T1BS1-BH015-002-SS	1.583	2	10
T1BS1-BH009-002-SS	1.643	3	16.15385
T1BS1-BH014-002-SS	1.847	4	22.30769
T1BS1-BH002-002-SS	1.995	5	28.46154
T1BS1-BH007-002-SS	2.026	6	34.61538
T1BS1-BH004-002-SS	2.026	7	40.76923
T1BS1-BH001-002-SS	2.044	8	46.92308
T1BS1-BH016-002-SS	2.052	9	53.07692
T1BS1-BH010-002-SS	2.115	10	59.23077
T1BS1-BH003-002-SS	2.212	11	65.38462
T1BS1-BH011-002-SS	2.215	12	71.53846
T1BS1-BH012-002-SS	2.253	13	77.69231
T1BS1-BH008-002-SS	2.273	14	83.84615
T1BS1-BH006-002-SS	2.38	15	90
T1BS1-BH005-002-SS	3.001	16	96.15385

n = 16



Interpretation: The data set more closely represents a lognormal distribution because a straight line is more easily fit on the lognormal distribution plot.

1.8 Determination of Distribution

Upon completion of the *a priori* screen, percent non-detect determination, and graphical and numerical distribution analysis, a determination of the distribution was made (EPA, 1992a).

Based on the distribution analysis results, antimony was determined to be normally distributed and copper was determined to be lognormally distributed for the SNL/NM background data set.

Determination of the distribution type is not always as simple as the examples presented above. The Shapiro-Wilk Test of Normality is the most powerful of the distribution tests. If the data fail the Shapiro-Wilk Test, they were considered to be non-parametric. If the data set passed the Shapiro-Wilk test, but failed other tests, the statistician must make a professional judgment concerning the distribution type.

1.9 The T_n Statistic Test

The T_n Statistic test was performed on SNL/NM background data after the *a priori* screen and initial distribution analysis had been completed. The test was run iteratively until the largest remaining value in the data set passed. If a particular data set had fewer than 15% non-detects but failed the parametric distribution tests, it was often carried over to the T_n Statistic and analyzed using the parametric distribution that it most closely resembled. In some instances, identification and removal of outliers during the T_n Statistic procedure allows for the previously failed data set to pass the parametric numerical and graphical tests. If failures were reported during the T_n statistical test, the values were removed and the mean and standard deviation were recalculated on the censored data set. Failures of the T_n Statistic are defined as T_n calculated values that exceed the critical value (EPA, 1989). The censored data set was then used for all additional statistical tests. (Removed data points are considered either potential sampling error, laboratory error, an anomalously high value, or some other factor contributing to an unexpectedly large concentration).

To calculate the T_n statistic, the following formula is used:

$$T_n = \frac{(x_n - \bar{x})}{\sigma}$$

where

T_n = T_n statistic,
X_n = individual sample,
$\bar{x}$ = mean of sample set, and
σ = standard deviation.

T_n statistic for Antimony:

$$T_{16} = \frac{(0.439 - 0.22)}{0.11}$$

$$T_{16} = 1.99$$

According to Table 8 in Appendix B of EPA's guidance document (EPA, 1992a), when the T_n statistic is larger than the Critical Number (C_n), provided in the table for that sample size, then the number should be considered an outlier. In this case, $C_{16} = 2.443$,

$$T_{16}\,(1.99) < C_{16}(2.443),$$

and thus, no data points needed to be removed.

T_n statistic for Copper:

$$T_{16} = \frac{(3.00 - 2.06)}{0.37}$$

$$T_{16} = 2.54$$

$$T_{16}\ (2.54) > C_{16}(2.443)$$

So this data value (3.00) was removed from the data set and the mean and standard deviation were recalculated.

New mean = 2.00
New standard deviation = 0.29

$$T_{15} = \frac{(2.38 - 2.00)}{0.29}$$

$$T_{15} = 1.31$$

$$T_{15}\ (1.31) < C_{15}(2.41)$$

Therefore, no additional data points were removed.

1.10 Determination of Maximum Expected Background Concentration

This section describes two methods, one for parametric data and the other for non-parametric data, that establish the maximum expected background concentration using a 95 percent confidence limit. An upper tolerance limit (Section 1.10.1) is calculated for parametric data sets, while a 95th percentile (Section 1.10.2) is calculated for non-parametric data sets.

1.10.1 Upper Tolerance Limits

A tolerance interval establishes a concentration range that is constructed to contain a specified proportion (P%) of the population with a specified confidence coefficient, Y. The proportion of the population included, P, is referred to as the coverage. The probability with which the tolerance interval includes the proportion P% of the population is referred to as the tolerance coefficient.

A coverage of 95% was used as recommended by EPA (1989). By using this coverage, random observations from the same distribution as the SNL/NM background soil data would exceed the upper tolerance limit less than 5% of the time. Similarly, a tolerance coefficient of 95% was used. This means that there is a confidence level of 95% that the upper 95% tolerance limit would contain at least 95% of the distribution of observations from background soil data. These values were chosen to be consistent with the performance standards described in Section 2 of EPA 1989.

Tolerance intervals were constructed assuming that the data or the transformed data were normally distributed.

The formula for the UTL is as follows:

$$TL = \bar{x} + t_{.05(n-1)} \bullet \sigma$$

where

$\bar{x}$ = the mean of the population,
$t_{.05(n-1)}$ is one-sided tolerance factor for n (Table 5, Appendix B, EPA 1989), and
σ = the standard deviation

For Antimony,

$$UTL = 0.22 + t_{.05}(0.11)$$

$$= 0.22 + 2.523(0.11)$$

$$UTL = 0.50$$

For copper,

$$UTL = e(2.00 + t_{.05}(0.29))$$

$$= e(2.00 + 2.566(0.29))$$

$$UTL = 15.55$$

Note: Since the data values are log-transformed, they must be transformed back to complete the UTL calculation.

1.10.2 95th Percentile

For non-parametric data sets, the 95th percentile value was used for expressing the upper range of background. The 95th percentile indicated that 95 percent of the data would be expected to be below that value, while 5 percent would be above the value. The calculated background was therefore insensitive to the magnitude of the largest 5 percent of the data points.

The 95th percentile value was taken to be the observation point closest to 0.95 (n+1), where p = percentile of interest (95th) and n = number of samples. For data sets with n<20, the 95th percentile was taken to be the maximum data value.

2. Comparison Tests

2.1 Introduction

Comparison tests were performed between SNL/NM background and ER site-specific data to determine if the two data sets were statistically similar. If the data sets were similar, then contamination would assumed to be absent. If the ER site-specific data were not statistically similar to the background data, then contamination might exist.

Comparison tests are of two basic types: parametric and non-parametric. The parametric tests are only applied to data sets in which the background data set was shown to be parametric. Parametric tests include the F distribution and the Student's t-test for equal and non-equal variances. Non-parametric tests are applied to all data sets. Non-parametric tests include the Wilcoxon Rank-sum test and the Quantile test.

The following sections provide example calculations for parametric and non-parametric comparison tests. The normally distributed antimony data presented in Section 1 serves as the background data set. Two imaginary data sets (ER Site A and ER Site B) were used to represent sites at which contamination may exist. The data set for ER Site A is designed to be statistically similar to background, while that for ER Site B is designed to be statistically dissimilar from background.

2.2 Parametric Comparison Tests

The following sections provide example calculations of the F distribution and the Student's t-test (with both equal and non-equal variances).

2.2.1 F Distribution

The F distribution is a parametric statistical method for comparing population variances. The determination of like variances is important in terms of identifying which Student's t-test method is appropriate for evaluation. If the variances of two data sets were found to be statistically similar, the Student's t-test for equal variances was used. If the variances of the data set were not statistically similar, then the Student's t-test for unequal variances was used.

The F distribution is calculated as follows:

$$F = \frac{S_1^{\,2}}{S_2^{\,2}}$$

where

F = F distribution calculated value,
S_1^2 = sample variance of population 1, and
S_2^2 = sample variance of population 2.

Note: Always place the larger sample variance in the numerator of the equation.

<u>F Distribution Comparing SNL/NM Background to ER Site A</u>:

Background variance = 0.011
ER Site A variance = 0.010

$$\text{So} \quad F = \frac{0.011}{0.010}$$

$$F = 1.10$$

The critical value was determined from Table 6 in Appendix 11 in Mendenhall (1975). Because it was a two-sided test, the confidence level was reduced from 95% to 90%. The critical value for 15 degrees of freedom for both background and ER Site B was 2.40.

<u>Interpretation</u>: Since F(1.09) < critical value (2.40), there was insufficient statistical evidence to indicate a difference in the population variances.

F Distribution Comparing SNL/NM Background to ER Site B:

Background variance = 0.011
ER Site B variance = 0.014

$$\text{So} \quad F = \frac{0.014}{0.011}$$

$$F = 1.27$$

The critical value was determined from Table 6 in Appendix 11 in Mendenhall (1975). Because it was a two-sided test, the confidence level was reduced from 95% to 90%. The critical value for 15 degrees of freedom for both background and ER Site B was 2.40.

Interpretation: Since F(1.25) < critical value (2.40), there was insufficient statistical evidence to indicate a difference in the population variances.

2.2.2 Student's t-test

The t-test is a parametric test that compares the means of two samples. To use the t statistic, both sampled populations must be approximately the same normally or lognormally distributed, and the random samples must be selected independently of each other (Steel and Torrie, 1980). Methods are provided for calculating the t-test with both equal and non-equal variances.

Student's t-test with equal variances

SNL/NM Background versus ER Site A:

BK*	$(BK)^2$	ER-A**	$(ER\text{-}A)^2$
0.439	0.192721	0.426	0.181476
0.396	0.156816	0.401	0.160801
0.326	0.106276	0.318	0.101124
0.317	0.100489	0.302	0.091204
0.277	0.076729	0.284	0.080656
0.243	0.059049	0.279	0.077841
0.217	0.047089	0.216	0.046656
0.197	0.038809	0.182	0.033124
0.191	0.036481	0.181	0.032761
0.186	0.034596	0.176	0.030976
0.184	0.033856	0.174	0.030276
0.159	0.025281	0.160	0.025600
0.119	0.014161	0.130	0.016900
0.110	0.0121	0.118	0.013924
0.104	0.010816	0.100	0.010000
0.0479	0.00229441	0.090	0.008100

* BK = Background Concentration
** ER-A = ER Site A Concentration

Mean =	0.22		0.221	
Variance =	0.011		0.010	
Count (n) =	16		16	
Sum of BK =	3.513	Sum of $(BK)^2 = 0.948$	3.537	Sum of $(ER\text{-}A)^2 = 0.941$

where

$n_1=n_2=n$ (this equality is not a requirement of the test),
S^2 = sample variance, and
df = degrees of freedom.

$$\sum Y_1^2 - \frac{(\sum Y_1)^2}{n} = 0.948 - \frac{(3.513)^2}{16} = 0.177$$

$$\sum Y_2^2 - \frac{(\sum Y_2)^2}{n} = 0.941 - \frac{(3.537)^2}{16} = 0.159$$

$$S^2 = \frac{\sum Y_1^2 - \frac{(\sum Y_1)^2}{n} + \sum Y_2^2 - \frac{(\sum Y_2)^2}{n}}{2(n-1)}$$

$$S^2 = \frac{0.177 + 0.159}{2(16-1)} = \frac{0.336}{30} = 0.0112$$

which is an estimate of the common σ^2. The degrees of freedom, df, are calculated as

df = 2(n-1)
df = 2(16-1) = 30.

$$S_{\bar{Y}_1 - \bar{Y}_2} = \sqrt{\frac{2S^2}{n}} = \sqrt{\frac{2(0.0112)}{16}} = \sqrt{0.0014} = 0.037,$$

which is the standard deviation appropriate to the difference between sample means.

$$t = \frac{\bar{Y}_1 - \bar{Y}_2}{S_{\bar{Y}_1 - \bar{Y}_2}} = \frac{0.22 - 0.221}{0.037} = -0.027$$

tabulated t for df = 30 is 2.042 for = 95 percent confidence

To determine if the observed difference between means was significant, the 95 percent confidence interval was calculated. The means were approximately equal if the 95 percent confidence interval spanned zero.

For the 95th percent confidence interval...

$$\bar{Y}_2 - \bar{Y}_1 \pm t_{.025}{}^{*} S_{\bar{Y}_1 - \bar{Y}_2}$$

$$= +.001 \pm 2.042(.037)$$

$$= +.001 \pm .0756$$

$$= .0766 \text{ to } -0.0746$$

* for a two-tailed test

Interpretation: Since the 95 percent confidence interval spanned zero, the means were approximately equal. The calculated t was within the ± range of the tabulated t, also indicating that the means were approximately equal.

Note: if n was not equal between SNL/NM background and the ER Site, a variation of $S_{\bar{Y}_1 - \bar{Y}_2}$ is

$$S_{\bar{Y}_1 - \bar{Y}_2} = \sqrt{S^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)} = \sqrt{S^2\left(\frac{n_1 + n_2}{n_1 n_2}\right)}$$

where S^2 is the weighted average of the sample variances, calculated as

$$S^2 = \frac{(n_1 - 1)S_1{}^2 + (n_2 - 1)S_2{}^2}{(n_1 - 1) + (n_2 - 1)}$$

SNL/NM Background versus ER Site B ($n_1 = n_2 = n$):

BK*	$(BK)^2$	ER-B**	$(ER\text{-}B)^2$
0.439	0.192721	0.632	0.399424
0.396	0.156816	0.610	0.3721
0.326	0.106276	0.589	0.346921
0.317	0.100489	0.562	0.315844
0.277	0.076729	0.545	0.297025
0.243	0.059049	0.519	0.269361
0.217	0.047089	0.501	0.251001
0.197	0.038809	0.491	0.241081
0.191	0.036481	0.461	0.212521
0.186	0.034596	0.421	0.177241
0.184	0.033856	0.383	0.146689
0.159	0.025281	0.361	0.130321
0.119	0.014161	0.312	0.097344
0.110	0.0121	0.300	0.090000
0.104	0.010816	0.296	0.087616
0.0479	0.00229441	0.250	0.0625

* BK = Background Concentration
** ER-B = ER Site B Concentration

Mean =	0.22		0. 452	
Variance =	0.011		0. 014	
Count (n) =	16		16	
Sum of BK =	3.513	Sum of $(BK)^2 = 0.948$	7.233	Sum of $(ER\text{-}B)^2 = 3.497$

where

$n_1=n_2=n$ (this equality is not a requirement of the test),
S^2 = sample variance, and
df = degrees of freedom.

$$\sum Y_1^2 - \frac{(\sum Y_1)^2}{n} = 0.948 - \frac{(3.513)^2}{16} = 0.177$$

$$\sum Y_2^2 - \frac{(\sum Y_2)^2}{n} = 3.497 - \frac{(7.233)^2}{16} = 0.227$$

$$S^2 = \frac{\sum Y_1^2 - \frac{(\sum Y_1)^2}{n} + \sum Y_2^2 - \frac{(\sum Y_2)^2}{n}}{2(n-1)}$$

$$S^2 = \frac{0.177 + 0.227}{2(16-1)} = \frac{0.404}{30} = 0.0135$$

which is an estimate of the common σ^2

df = 2(16-1) = 30

$$S_{\bar{Y}_1 - \bar{Y}_2} = \sqrt{\frac{2S^2}{n}} = \sqrt{\frac{2(0.0135)}{16}} = \sqrt{0.00169} = 0.0411$$

which is the standard deviation appropriate to the difference between sample means.

$$t = \frac{\bar{Y}_1 - \bar{Y}_2}{S_{\bar{Y}_1 - \bar{Y}_2}} = \frac{0.22 - 0.452}{0.0411} = -5.64$$

tabulated t for df = 30 is 2.042 for 95 percent confidence

To determine if the observed difference between means was significant, the 95 percent confidence interval was calculated. The means were approximately equal if the 95 percent confidence interval contained zero.

For the 95th percent confidence interval

$$\bar{Y}_2 - \bar{Y}_1 \pm t_{.025}{}^{*} S_{\bar{Y}_1 - \bar{Y}_2}$$

$$= 0.232 \pm 2.042(.0411)$$

$$= 0.232 \pm .0839$$

$$= .316 \text{ to } 0.148$$

* for a two-tailed test

Interpretation: Since the 95 percent confidence interval did not contain zero, the means were not approximately equal. The calculated t was outside the ± range of the calculated t, also suggesting that the means were not approximately equal.

Student's t-test with non-equal variances (t')

Note: though the variances are shown to be similar in Section 2.2.1, calculation of the Student's t-test was performed assuming non-equal variances for example purposes.

SNL/NM Background versus ER Site A (n_1=n_2=n):

BK*	$(BK)^2$	ER-A**	$(ER\text{-}A)^2$
0.439	0.192721	0.426	0.181476
0.396	0.156816	0.401	0.160801
0.326	0.106276	0.318	0.101124
0.317	0.100489	0.302	0.091204
0.277	0.076729	0.284	0.080656
0.243	0.059049	0.279	0.077841
0.217	0.047089	0.216	0.046656
0.197	0.038809	0.182	0.033124
0.191	0.036481	0.181	0.032761
0.186	0.034596	0.176	0.030976
0.184	0.033856	0.174	0.030276
0.159	0.025281	0.160	0.025600
0.119	0.014161	0.130	0.016900
0.110	0.0121	0.118	0.013924
0.104	0.010816	0.100	0.010000
0.0479	0.00229441	0.090	0.008100

* BK = Background Concentration
** ER-A = ER Site A Concentration

Mean =	0.22		0. 221	
Variance =	0.011		0. 010	
Count (n) =	16		16	
Sum of BK =	3.513	Sum of $(BK)^2$ = 0.948	3.537	Sum of $(ER\text{-}A)^2$ = 0.941

where

$n_1 = n_2 = n$ (this equality is not a requirement of the test),
S^2 = sample variance, and
df = degrees of freedom.

$$\sum(Y_1-\bar{Y}_1)^2 = \sum Y_1^2 - \frac{(\sum Y_1)^2}{n} = 0.948 - \frac{(3.513)^2}{16} = 0.177$$

$$S_1^{\ 2} = \frac{\sum(Y_1-\bar{Y}_1)^2}{n_1-1} = \frac{0.177}{16-1} = 0.0118$$

$$\sum(Y_2-\bar{Y}_2)^2 = \sum Y_2^2 - \frac{(\sum Y_2)^2}{n} = 0.941 - \frac{(3.557)^2}{16} = 0.159$$

$$S_2^{\ 2} = \frac{\sum(Y_2-\bar{Y}_2)^2}{n_2-1} = \frac{0.159}{16-1} = 0.0106$$

$$S_{\bar{Y}_1-\bar{Y}_2} = \sqrt{\frac{S_1^{\ 2}}{n_1}+\frac{S_2^{\ 2}}{n_2}} = \sqrt{\frac{0.0118}{16}+\frac{0.0106}{16}} = \sqrt{0.0014} = 0.037$$

$$t' = \frac{\bar{Y}_1-\bar{Y}_2}{S_{\bar{Y}_1-\bar{Y}_2}} = \frac{0.22-0.221}{0.037} = -0.027$$

$$\text{effective df} = \frac{(\frac{S_1^{\ 2}}{n_1}+\frac{S_2^{\ 2}}{n_2})^2}{\frac{(\frac{S_1^{\ 2}}{n_1})^2}{n_1-1}+\frac{(\frac{S_2^{\ 2}}{n_2})^2}{n_2-1}} = \frac{(\frac{0.0118}{16}+\frac{0.0106}{16})^2}{\frac{(\frac{0.0118}{16})^2}{15}+\frac{(\frac{.0106}{16})^2}{15}}$$

$$= \frac{(0.0014)^2}{0.000000036+0.000000029}$$

$$= \frac{0.00000196}{0.000000065}$$

$$= 30.15$$

$$\approx 30$$

Interpretation: Compare t' with tabulated t for df = 30 of 2.042 for 95 percent confidence. The calculated t' was within the ± range of the tabulated t indicating that the means were approximately equal.

SNL/NM Background versus ER Site B (n_1=n_2=n):

BK*	$(BK)^2$	ER-B**	$(ER-B)^2$
0.439	0.192721	0.632	0.399424
0.396	0.156816	0.610	0.3721
0.326	0.106276	0.589	0.346921
0.317	0.100489	0.562	0.315844
0.277	0.076729	0.545	0.297025
0.243	0.059049	0.519	0.269361
0.217	0.047089	0.501	0.251001
0.197	0.038809	0.491	0.241081
0.191	0.036481	0.461	0.212521
0.186	0.034596	0.421	0.177241
0.184	0.033856	0.383	0.146689
0.159	0.025281	0.361	0.130321
0.119	0.014161	0.312	0.097344
0.110	0.0121	0.300	0.090000
0.104	0.010816	0.296	0.087616
0.0479	0.00229441	0.250	0.0625

* BK = Background Concentration
** ER-B = ER Site B Concentration

Mean =	0.22		0. 452	
Variance =	0.011		0. 014	
Count (n) =	16		16	
Sum of BK =	3.513	Sum of $(BK)^2$ = 0.948	7.233	Sum of $(ER-B)^2$ = 3.497

where

$n_1 = n_2 = n$ (this equality is not a requirement of the test.)
S^2 = sample variance
df = degrees of freedom

$$\sum(Y_1-\bar{Y}_1)^2 = \sum Y_1^2 - \frac{(\sum Y_1)^2}{n} = 0.948 - \frac{(3.513)^2}{16} = 0.177$$

$$S_1^{\,2} = \frac{\sum(Y_1-\bar{Y}_1)^2}{n_1-1} = \frac{0.177}{16-1} = 0.0118$$

$$\sum(Y_2-\bar{Y}_2)^2 = \sum Y_2^2 - \frac{(\sum Y_2)^2}{n} = 3.497 - \frac{(7.233)^2}{16} = 0.227$$

$$S_2^{\,2} = \frac{\sum(Y_2-\bar{Y}_2)^2}{n_2-1} = \frac{0.227}{16-1} = 0.0151$$

$$S_{\bar{Y}_1 - \bar{Y}_2} = \sqrt{\frac{S_1^{\,2}}{n_1} + \frac{S_2^{\,2}}{n_2}} = \sqrt{\frac{0.0118}{16} + \frac{0.0151}{16}} = \sqrt{0.00168125} = 0.041$$

$$t' = \frac{\bar{Y}_1 - \bar{Y}_2}{S_{\bar{Y}_1 - \bar{Y}_2}} = \frac{0.22 - 0.452}{0.041} = -5.66$$

$$\text{effective df} = \frac{\left(\frac{S_1^{\,2}}{n_1} + \frac{S_2^{\,2}}{n_2}\right)^2}{\frac{\left(\frac{S_1^{\,2}}{n_1}\right)^2}{n_1 - 1} + \frac{\left(\frac{S_2^{\,2}}{n_2}\right)^2}{n_2 - 1}} = \frac{\left(\frac{0.0118}{16} + \frac{0.0151}{16}\right)^2}{\frac{\left(\frac{0.0118}{16}\right)^2}{15} + \frac{\left(\frac{.0151}{16}\right)^2}{15}}$$

$$= \frac{(0.00168125)^2}{0.000000036 + 0.000000059}$$

$$= \frac{0.00000283}{0.000000095}$$

$$= 29.8$$

$$\approx 30$$

Interpretation: Compare t' with tabulated t for df = 30 of 2.042 for 95 percent confidence. The calculated t' was not within the $\pm$ range of the tabulated t indicating that the means were not approximately equal.

2.3 Non-parametric Comparison Tests

The following sections provide example calculations for the Wilcoxon-Rank Sum test and the Quantile test.

2.3.1 Wilcoxon Rank Sum Test

The Wilcoxon-Rank Sum (WRS) Test is a nonparametric test more powerful than the Quantile test to detect when the ER site-specific area has concentrations uniformly higher than background (EPA 1992b). However, the WRS test allows for fewer less-than measurements than the Quantile test. As a general rule, the WRS test should be avoided if more than about 40% of the measurements in either the potentially contaminated area or background are non-detects. All data were subjected to the WRS test in this analysis with the knowledge that the test power was greatly reduced when the non-detect percent was greater than 40.

The WRS test was performed by first ordering all observations from SNL/NM background and the ER site from lowest to highest according to their magnitude and ranked. The ranks in the potentially contaminated area were summed and compared to a table of critical values to determine whether the site was potentially contaminated.

Wilcoxon-Rank Sum Calculation for SNL/NM Background and ER Site A:

Background		ER Site A	
Value	Rank	Value	Rank
0.439	32		
		0.426	31
		0.401	30
0.396	29		
0.326	28		
		0.318	27
0.317	26		
		0.302	25
		0.284	24
		0.279	23
0.277	22		
0.243	21		
0.217	20		
		0.216	19
0.197	18		
0.191	17		
0.186	16		
0.184	15		
		0.182	14
		0.181	13
		0.176	12
		0.174	11
		0.16	10
0.159	9		
		0.13	8
0.119	7		
		0.118	6
0.11	5		
0.104	4		
		0.1	3
		0.09	2
0.0479	1		

Sum of Ranks for Site A = 258

$$Zrs = \frac{Wrs - \frac{n(N+1)}{2}}{\left[\frac{mn(N+1)}{12}\right]^{1/2}}$$

where

Wrs = sum of ranks,
m = number of background samples (16),
n = number of ER Site A samples (16), and
N = number of total samples (32).

$$Zrs = \frac{258 - \frac{16(32+1)}{2}}{\left[\frac{(16)(16)(32+1)}{12}\right]^{1/2}} = \frac{-6}{\sqrt{704}}$$

$$Zrs = \frac{258 - 264}{\left[\frac{(256)(33)}{12}\right]^{1/2}} = \frac{-6}{\sqrt{704}}$$

$$Zrs = \frac{-6}{[704]^{1/2}} = \frac{-6}{\sqrt{704}}$$

$$Zrs = \frac{-6}{26.5} = \frac{-6}{\sqrt{704}}$$

$$Zrs = -0.23 = -0.226\ (-0.23)$$

This formula is applicable only when there are no ties in data values between background and ER Site data. If value ties exist, use formula 6.13 on page 6.11 of EPA (1992b).

Critical value $Z_{0.95} = 1.645$, so $-0.23 < 1.645$: $-0.23 < 1.645$

<u>Interpretation</u>: There was no statistical evidence that ER Site A is contaminated.

Wilcoxon-Rank Sum Calculation for SNL/NM Background and ER Site B:

Background		ER Site B	
Value	**Rank**	**Value**	**Rank**
		0.632	32
		0.61	31
		0.589	30
		0.562	29
		0.545	28
		0.519	27
		0.501	26
		0.491	25
		0.461	24
0.439	23		
		0.421	22
0.396	21		
		0.383	20
		0.361	19
0.326	18		
0.317	17		
		0.312	16
		0.3	15
		0.296	14
0.277	13		
		0.25	12
0.243	11		
0.217	10		
0.197	9		
0.191	8		
0.186	7		
0.184	6		
0.159	5		
0.119	4		
0.11	3		
0.104	2		
0.0479	1		

Sum of Ranks for Site B = 370

$$Zrs = \frac{Wrs - \frac{n(N+1)}{2}}{\left[\frac{mn(N+1)}{12}\right]^{1/2}}$$

where...

Wrs = sum of ranks,
m = number of background samples (16),
n = number of ER Site A samples (16), and
N = number of total samples (32).

$$Zrs = \frac{370 - \frac{16(32+1)}{2}}{\left[\frac{(16)(16)(32+1)}{12}\right]^{1/2}}$$

$$Zrs = \frac{370 - 264}{\left[\frac{(256)(33)}{12}\right]^{1/2}}$$

$$Zrs = \frac{106}{[704]^{1/2}}$$

$$Zrs = \frac{106}{26.5}$$

$$Zrs = 4.0$$

This formula is applicable only when there are no ties in data values between background and ER Site data. If value ties exist, use formula 6.13 on page 6.11 of EPA (1992b).

Critical value = $Z_{0.95}$ = 1.645, so 4.0 > 1.645

Interpretation: There was statistical evidence that ER Site B is contaminated.

2.3.2 The Quantile Test

The Quantile Test is statistically more powerful than the WRS test for determining whether a discrete portion of the site is contaminated. Initially, the data values from the background set and from the ER site-specific data set are ranked from highest to lowest. An evaluation was made of the number of measurements among the maximum concentrations within the combined data set that were from the ER site-specific data set. If the count was sufficiently large, then it was concluded that the ER site might actually be contaminated.

After the data values were ranked, Table A.8 (EPA, 1992b) was referenced to evaluate how many of the maximum values must come from the ER site to classify it as being contaminated. The table lists the number of samples from the ER site along the top, and the number of samples from SNL/NM background along the left side. The row and column was followed into the table, and where they met was where the determination was made. The table is segmented into increments of 5; the value was rounded up one level if the number did not fall on a multiple of 5. In our example, there were 16 samples from the ER site data set and 16 samples from the background data set. For the ER site, the number was read from Column 20, and the background reading was read from Row 20, producing the reading 4,4. This indicated that the first four numbers from the ER site must be higher than any numbers from the background data set.

Quantile Test Comparison between SNL/NM Background and ER Site A Antimony Concentrations:

Background	ER Site A
0.439	0.426
0.396	0.401
0.326	0.318
0.317	0.302
0.277	0.284
0.243	0.279
0.217	0.216
0.197	0.182
0.191	0.181
0.186	0.176
0.184	0.174
0.159	0.16
0.119	0.13
0.11	0.118
0.104	0.1
0.0479	0.09

Interpretation: Only 2 of the 4 maximum values came from ER Site A. Therefore, contamination was not indicated.

Quantile Test Comparison between SNL/NM Background and ER Site B Antimony Concentrations:

Background	ER Site B
0.439	0.632
0.396	0.61
0.326	0.589
0.317	0.562
0.277	0.545
0.243	0.519
0.217	0.501
0.197	0.491
0.191	0.461
0.186	0.421
0.184	0.383
0.159	0.361
0.119	0.312
0.11	0.3
0.104	0.296
0.0479	0.25

Interpretation: Since the 4 maximum values were all from ER Site B, contamination was indicated.

2.4 Results of the Comparison Tests

ER Site A was statistically similar to SNL/NM background in all statistically performed calculations. Therefore, there is no statistical evidence to indicate that ER Site A is contaminated.

ER Site B was not statistically similar to SNL/NM background. Failures of the Student's t-test, the Wilcoxon Rank-Sum test and the Quantile test indicated that ER Site B is contaminated.

Commonly, the determination of contamination at ER sites is not as simple as the above examples. EPA (1992b) guidance suggests that all soil data be subjected to the Wilcoxon Rank-Sum test and the Quantile test. Therefore, if either of these tests fail, the ER site is considered to be contaminated. If both of these tests pass, but other applicable tests fail, the statistician must make a professional judgment as to whether contamination exists at the ER site.

When background data sets were collected at different areas within a Technical Area or pertinent region, or when background samples were collected at varying depths, it was sometimes appropriate to determine if the background data sets were statistically similar.

The most powerful of the background statistical tests is the Wilcoxon Rank-Sum test. If the background data sets passed the Wilcoxon Rank-Sum test, the data sets were considered statistically similar. If normality could be assumed, probability plots were also constructed from the combined sets, which provided a second set of comparison tests.

3.0 References

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APPENDIX F
SITE 36 BOREHOLE LITHOLOGY LOGS

BOREHOLE.: 36-BH-01			PAGE 1 of 3
LOCATION: SITE 36	TOTAL DEPTH: 340'		
PROJECT: TA3/5-HERMES	CASING DEPTH: NA	GROUND ELEVATION: NA	
DRILLING METHOD: ARCH	HOLE DIAMETERS: 9"	TOP OF CASING: NA	
DRILLING CONTRACTOR: STEWART BROS		REMARKS: BACKFILLED	
DATE DRILLED: 2-28-95	LOGGED BY: MIKE WADE		
DATE COMPLETED: 3-6-95	REVIEWED BY:		

	WELL CONSTRUCTION	LITHOLOGY	LITHOLOGIC DESCRIPTION AND REMARKS
10			Fill silty sand, yellow-brown, moist, medium dense to dense about 5% subangular to angular pebbles to 2",limestone quartz, vf to m grain sand, locally c grained, 10-20% silt, about 5% clay, oil odor, FILL MATERIAL
20 30			SM 10-15% Subr-subang limestone pebbles to 3", 15-25% silt, generally med grain sand, fuel oil odor gravelly @ 24-29'
40 50			SM gravelly sand to sand(SP), brown, moist, v dense, subang limestone pebbles to 2", quartz, v fine to c grain sand, <10% fines, oil odor, mod. est K, also quartzite, granite, mafic pebbles, volcanics
60			GM sandy gravel, yel-brown, moist, dense to v dense, 20-35% subrd-subang pebbles to 2", mainly LS w/ grnstone, schist, quartzite, feldspar, vf to cg sand, <10% silt, <5% clay, mod to high est K, oil odor
70			SM silty sand, brown, moist, dense, strong odor of oil 10-20% silt, <3% clay, vf to mg sand, <2% subrounded to subangular limestone pebbles to 1", mod est K
80			GM gravelly sand, yel-brn, moist, v dense, 20-25% LS, qtz, schist pebbles to 3", vfg to locally cg sand, micaceous, high est K, <10% fines, strong odor of oil in gravel zones, minor gravel 75-76'
90			SM silty sand, brn, moist, v dense, oil odor, 10-20% silt <1% clay, vfg to mg sand, about 5% LS pebbles to 1.5" high est. K
100 110			GP sandy gravel, yel-brn, moist, strong odor of oil, v dense, 25-35% vf to cg sand, <10% fines, pebbles to 3" high est K
			SM silty sand, yellow-brown, moist, v dense, strong oil odor, 10% silt, <1% clay, vf to mg sand, 3% pebbles to 2", high est K, gravel zone at 116'

BOREHOLE.: 36-BH-01			PAGE 2 of 3
LOCATION: SITE 36	TOTAL DEPTH: 340'		
PROJECT: TA3/5-HERMES	CASING DEPTH: NA	GROUND ELEVATION: NA	
DRILLING METHOD: ARCH	HOLE DIAMETERS: 9"	TOP OF CASING: NA	
DRILLING CONTRACTOR: STEWART BROS		REMARKS: BACKFILLED	
DATE DRILLED: 2-28-95	LOGGED BY: MIKE WADE		
DATE COMPLETED: 3-6-95	REVIEWED BY:		

	WELL CONSTRUCTION	LITHOLOGY	LITHOLOGIC DESCRIPTION AND REMARKS
120 130			GP yel-brn to brn, moist, v dense, strong oil odor, 25-40% vfg to cg sand, micaceous, <10% silt & clay, high est K
140 150 160			SM silty sand, yel-brn, moist, v dense, oil odor, 15-25% silt, 5% clay, 5% subang LS pebbles to 1",mod est K, v fine to med grain sand. Strong odor during drilling at 149'
			SM sandy silt, 20-30% silt, 1% clay, v fine to c grain sand, 10% limestone pebbles to 1.5", strong oil odor
170			SM gravelly sand, yel-brn to brn, v dense, strong oil odor, 15-30% LS and qtz pebbles to 2", vf to mg sand high est. K
180 190			SM silty sand, brn, moist, v dense, 10-20% silt, 1% clay, 10% LS, qtz, schist pebbles to 2", mica, mod est K
200 210			SM gravelly sand, brn, moist, dense to v dense, strong oil odor, 15-25% pebbles to 1.5", vf to cg sand w/ mica, 10-15% silt & clay, low to mod est K, gravel zone 213'-218' to 3" diameter
220 230			GP sandy gravel, brn, moist, strong oil odor, v dense, 25-35% v fine to v coarse grain sand, 10-15% fines limestone pebbles to 2", mod estimated K

BOREHOLE.: 36-BH-01			PAGE 3 of 3
LOCATION: SITE 36	TOTAL DEPTH: 340'		
PROJECT: TA3/5-HERMES	CASING DEPTH: NA	GROUND ELEVATION: NA	
DRILLING METHOD: ARCH	HOLE DIAMETERS: 9"	TOP OF CASING: NA	
DRILLING CONTRACTOR: STEWART BROS		REMARKS: BACKFILLED	
DATE DRILLED: 2-28-95	LOGGED BY: MIKE WADE		
DATE COMPLETED: 3-6-95	REVIEWED BY:		

	WELL CONSTRUCTION	LITHOLOGY	LITHOLOGIC DESCRIPTION AND REMARKS
230			
240			SM silty sand, yellow brown to brown, moist, v dense, 15-30% silt, 5% clay, 5-10% LS pebbles to 2", v fine to medium grained sand, moderate estimated K
250			
260			GP sandy gravel, brn to yel-brn, moist, v dense, oil odor 25-35% v fine to c grain mica sand, <10% fines, pebbles to 2 1/2 ", mod to high estimated K REFUSAL @ 270, large gravel, NO SAMPLE @ 270
270			
280			SM silty sand, brn, dry to moist, v dense, 15-25% silt, 5% clay, v fine to fine grain sand, locally med gr, micaceous, 5% pebbles, LS to 2", low to mod est K
290			GP sandy gravel, brn, dry to moist, v dense, 25-40% vf to med/c grain sand, 10% fines, limestone pebbles to 3", hard sampling, refusal, high estimated K.
300			GP silty gravel, lt brown, dry, v dense, 20-25% silt, 10-25% v fine to c grain sand, 5-10% clay, LS pebs to 2", low estimated K, minor gravel @ 308
310			SM silty sand, yel-brn, dry to locally moist, v dense, no strong odor, 10-20% silt, 5-10% clay, <5% LS pebs to 1.5", fine to v fine grain sand, low-mod est K slight oil odor during drilling 320-330'
320			SC clayey silt, 15% clay, 15-25% silt, v fine to m grain sand, 5% LS pebs to 2", v low to low est K v low est. K at 320'
330			SM silty sand, very fine to fine grained sand, locally medium grained, low estimated K. TOTAL DEPTH 340' on 3/3/95
340			

BOREHOLE.: 36-BH-02			PAGE 1 of 3
LOCATION: SITE 36	TOTAL DEPTH: 320		
PROJECT: TA3/5-HERMES	CASING DEPTH: NA	GROUND ELEVATION: NA	
DRILLING METHOD: ARCH	HOLE DIAMETERS: 9"	TOP OF CASING: NA	
DRILLING CONTRACTOR: STEWART BROS		REMARKS: BACKFILLED	
DATE DRILLED: 3-7-95	LOGGED BY: MIKE WADE		
DATE COMPLETED: 3-10-95	REVIEWED BY:		

	WELL CONSTRUCTION	LITHOLOGY	LITHOLOGIC DESCRIPTION AND REMARKS
10			SM brown, dry to moist, medium dense, 15-25% silt, 5% clay, very fine to medium grained sand, <5% subangular subround limestone pebbles to 1.5" dia, low to moderate estimated K. Gravelly from 8 - 10 ft.
20			SM light brown, dry to locally moist, very dense to moderately dense, 15-25% subround, subangular limestone pebbles to 2" diameter, very fine grained to coarse grained, sand w/ mica, 10-15% fines, mod est K
30			ML dk brown, moist, very stiff, 15-25% clay, 10-15% sand, <1% subangular limestone pebbles to 1/2"dia, low est K, slight plasticity, very fine to fine micaceous sand, gravelly at 27'.
40			GP brown, dry to moist, very dense, 30-40% fine to very coarse grained sand, w/limestone, quartz, schist, mica, <10% fines, subangular limestone, quartz, and schist pebbles to 3"dia, high est K.
50			SP yellow brown, moist to dry, very dense, 5-15% silt, <5% clay, <5% subangular limestone and quartz pebbles to 1" dia, very fine to very coarse grained sand, very high est K. Less sand at 47 ft.
60			SM light brown to brown, dry to locally moist, very dense 20-30% silt, 10-15% clay, <10% subang/subround LS pebbles to 2" dia, very fine to v coarse mic sand, w/ limestone, qtz, schist grains, low est K. Gravel at 58
70			SM brown, dry, very dense, 15-30% subang, subround pebbles to 2" dia, mainly limestone w/ lesser quartz, mafics, green schist, v fine to coarse grained sand, 10-15% fines, low to mod est K.
			SM very coarse grained sand, 20-25% subangular, subround, limestone pebbles, quartz to 1 1/2" dia, 10-20% fines, low est K. Less gravel at 76 ft.
80			SM yel-brn, moist, v. dense, 10-20% silt, 5-10% clay, 5-10% subangular to angular limestone pebbles to 1 1/2" dia, v. fine grained to locally coarse grained sand, low to moderate est. K
90			
100			SC 20-30% silt, about 5-15% clay, <5% angular limestone pebbles to 1/2" diameter, very fine to medium grained sand, low estimated K. Minor gravels at 112 - 118 ft.

BOREHOLE.: 36-BH-02			PAGE 2 of 3
LOCATION: SITE 36	TOTAL DEPTH: 320		
PROJECT: TA3/5-HERMES	CASING DEPTH: NA	GROUND ELEVATION: NA	
DRILLING METHOD: ARCH	HOLE DIAMETERS: 9"	TOP OF CASING: NA	
DRILLING CONTRACTOR: STEWART BROS		REMARKS: BACKFILLED	
DATE DRILLED: 3-7-95	LOGGED BY: MIKE WADE		
DATE COMPLETED: 3-10-95	REVIEWED BY:		

	WELL CONSTRUCTION	LITHOLOGY	LITHOLOGIC DESCRIPTION AND REMARKS
110			
120			
130			
140			
150			
160			SM gravelly sand, brown, moist to dry, very dense, subangular-angular limestone pebbles to 1 3/4" dia. very fine to very coarse grained sands, 15-20% silt, about 5% clay, moderate estimated K.
170			
180			SM silty sand, light brown, moist to dry, very dense, 20-30% silt, about 10% clay, <2% angular limestone pebbles to 3/4" diameter, low estimated K.
190			
200			GP sandy gravel, brown to light brown, moist, very dense, 30-40% very fine to coarse grained sand w/mica, 10-15% fines, subangular to angular limestone pebbles to 2 1/2" diameter, moderate estimated K.
210			SM light brown, dry to moist, very dense to dense, 15-20% silt, about 5% clay, very fine to medium grained sand, locally coarse grained, low estimated K.

BOREHOLE.: 36-BH-02			PAGE 3 of 3
LOCATION: SITE 36	TOTAL DEPTH: 320		
PROJECT: TA3/5-HERMES	CASING DEPTH: NA	GROUND ELEVATION: NA	
DRILLING METHOD: ARCH	HOLE DIAMETERS: 9"	TOP OF CASING: NA	
DRILLING CONTRACTOR: STEWART BROS		REMARKS: BACKFILLED	
DATE DRILLED: 3-7-95	LOGGED BY: MIKE WADE		
DATE COMPLETED: 3-10-95	REVIEWED BY:		

	WELL CONSTRUCTION	LITHOLOGY	LITHOLOGIC DESCRIPTION AND REMARKS
220, 230, 240			GP light brown, dry to locally moist, 25-40% fine grained to very coarse grained sand, 10-15% fines, subangular t angular limestone, quartz, mafic pebbles to 1" dia., hard contact between GP and SM.
250, 260			SM yellow brown, moist, very dense, 10-15% silt, about 5% clay, fine to medium grained micaceous sand, <1% sub-angular limestone pebbles to 1/2" dia., moderate to high estimated K.
270			SM 15-25% silt, 5-10% clay, about 5% subangular to angular limestone pebbles to 1/2" diameter, low estimated K.
280			SM about 3-5% subrounded limestone, granodiorite, pebbles to 1 1/4" diameter, fine to very fine grained sand, locally medium grained, about 5-10% clay.
290			SM gravelly sand, brown, moist, very dense, 20-30% subround, subangular limestone, granite, quartz, mafic pebbles to 1 1/2" diameter, very fine to locally coarse grained sand, moderate estimated K.
300, 310			GP sandy gravel, light brown, dry to moist, very dense, 35-40% fine to very coarse grained sand, micaceous, subround-subangular, limestone, quartz, and mafics, granodiorite grains to 1" diameter, 10-15% fines,
320			SM silty sand, light brown, dry to moist, very dense, 10-15% silt, 5-10% clay, v fine to fine gr sand, locally med grain, about 1% subrnd LS, granite pebs to 1/2"dia, mod est. K, TOTAL DEPTH 320 ft on 3/9/94

APPENDIX G
CONFIRMATORY GAMMA SPECTROSCOPIC ANALYSES FOR RADIATION ANOMALY REMOVAL ACTION (ELECTRONIC)

Plate 1. Aerial Photography Interpretation in Technical Areas III and V.

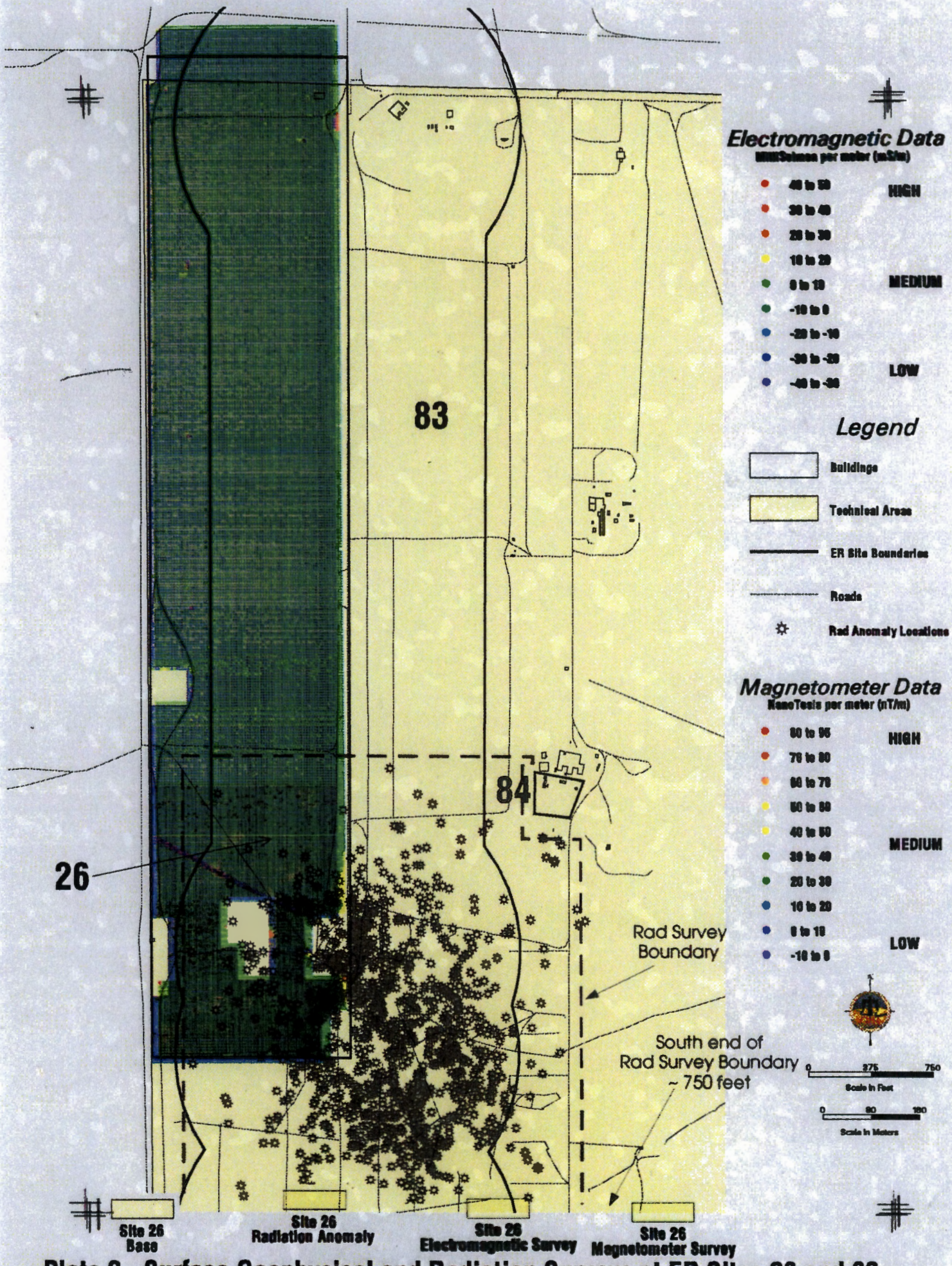
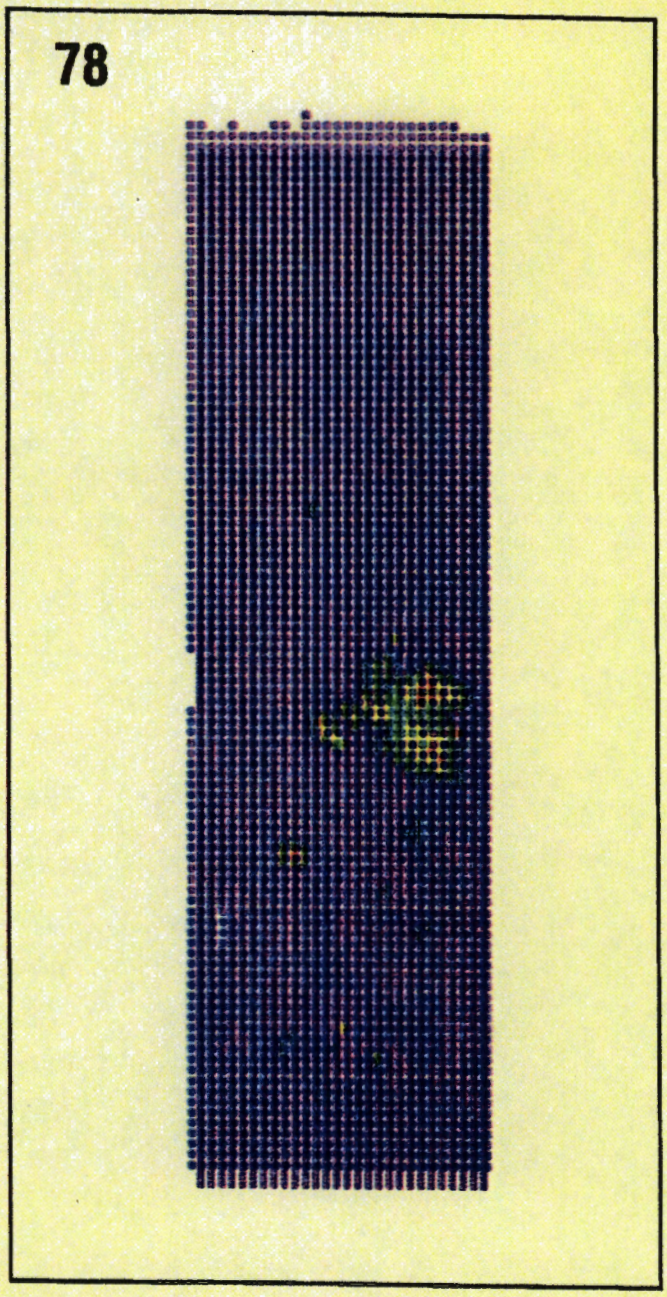


Plate 2. Surface Geophysical and Radiation Surveys at ER Sites 26 and 83, Technical Area III.



Electromagnetic Data

MilliVolts per meter (mV/m)

- 4500 to 5000
- 4000 to 4500
- 3500 to 4000
- 3000 to 3500
- 2500 to 3000
- 2000 to 2500
- 1500 to 2000
- 1000 to 1500
- 500 to 1000
- 0 to 500

HIGH

MEDIUM

LOW

Legend

- Technical Areas
- ER Site Boundaries
- Roads

Magnetometer Data

Gamma per meter (G/m)

- Greater than 4000
- 3500 to 4000
- 3000 to 3500
- 2500 to 3000
- 2000 to 2500
- 1500 to 2000
- 1000 to 1500
- 500 to 1000
- 0 to 500
- Less than 0

HIGH

MEDIUM

LOW

0 15 30

Scale in Feet

0 3.6 7.2

Scale in Meters

Site 78 Base

Site 78 Electromagnetic Survey

Site 78 Magnetometer Survey

Plate 3. Surface Geophysical Surveys at ER Site 78, Technical Area III.

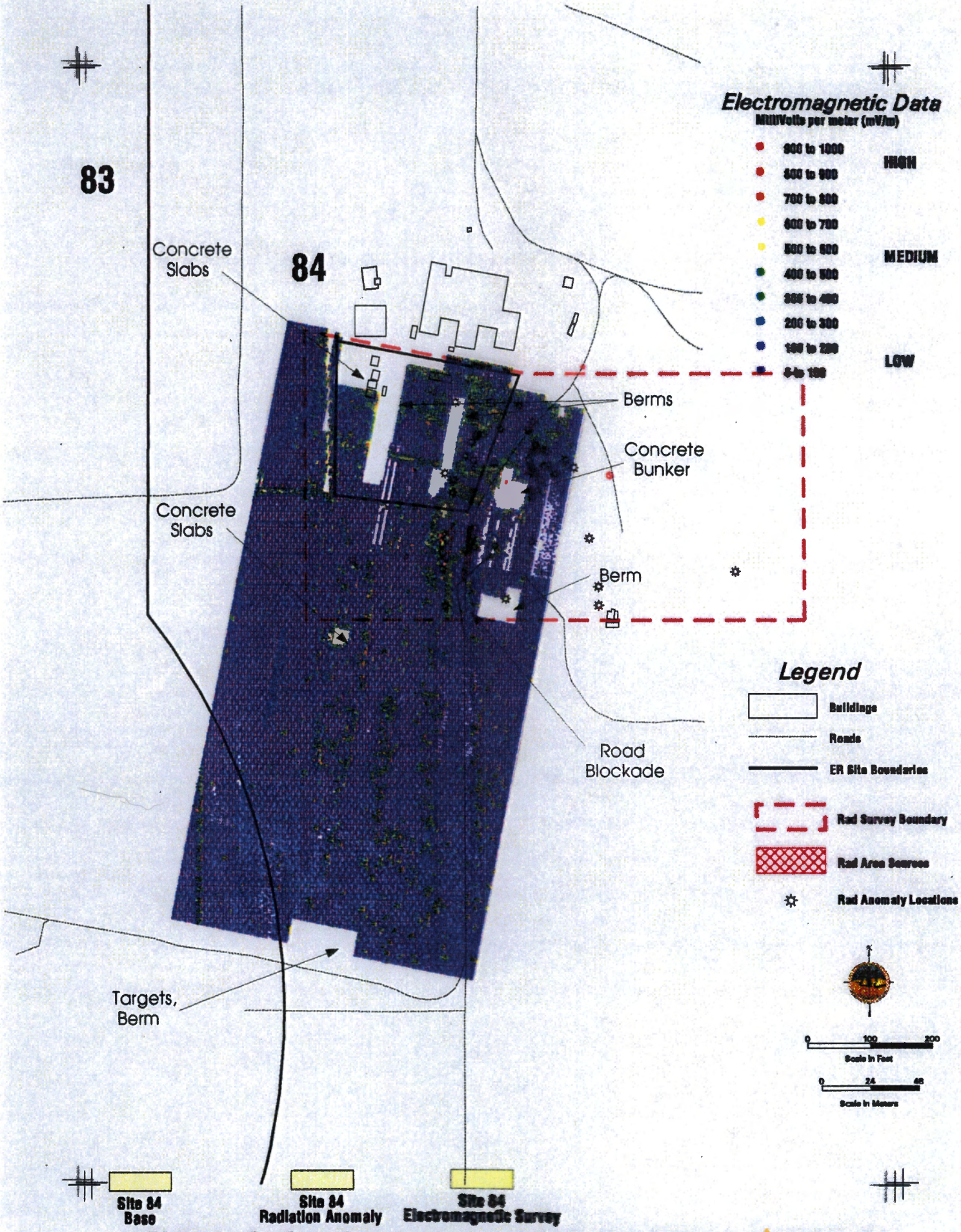


Plate 4. Surface Geophysical and Radiation Surveys at ER Site 84, Technical Area III.

Site 18 - Comparison of Field Screening to Laboratory Analytical Results

APPENDIX B. FIELD SCREENING RESULTS

SITE 18 SOIL SCREENING RESULTS

		METALS			HIGH EXPLOSIVES		PCBs		
Sample Label	Location	Analyte	Field Results (XRF)	Lab Results (6010/7000)	Field Results (Immunoassay)	Lab Results (HPLC)	Field Results (Immunoassay)		Lab Results (8080)
			ppm	ppm	ppm	ppm	>1 ppm	>10 ppm	ppb
15316-1	18-SS-02	Sb	NA	ND	0	ND	YES	YES	36000
		Al	NA	4580	NA	NA	NA	NA	NA
		As	NA	3.1	NA	NA	NA	NA	NA
		Ba	558.51	123	NA	NA	NA	NA	NA
		Be	NA	0.37	NA	NA	NA	NA	NA
		Cd	ND	0.79	NA	NA	NA	NA	NA
		Ca	58610	46600	NA	NA	NA	NA	NA
		Cr	ND	6.6	NA	NA	NA	NA	NA
		Co	ND	3.3	NA	NA	NA	NA	NA
		Cu	ND	10.1	NA	NA	NA	NA	NA
		Fe	15780	6690	NA	NA	NA	NA	NA
		Pb	22.51	16.5	NA	NA	NA	NA	NA
		Mg	NA	3160	NA	NA	NA	NA	NA
		Mn	234.95	146	NA	NA	NA	NA	NA
		Hg	ND	0.066	NA	NA	NA	NA	NA
		Ni	ND	7.1	NA	NA	NA	NA	NA
		K	11480	868	NA	NA	NA	NA	NA
		Se	NA	ND	NA	NA	NA	NA	NA
		Ag	NA	ND	NA	NA	NA	NA	NA
		Na	NA	61.9	NA	NA	NA	NA	NA
		Th	NA	0.47	NA	NA	NA	NA	NA
		Ti	2066.95	NA	NA	NA	NA	NA	NA
		V	ND	11.2	NA	NA	NA	NA	NA
		Zn	30.36	34.3	NA	NA	NA	NA	NA
		U	NA	0.86	NA	NA	NA	NA	NA
15315-1	18-SS-06	Sb	NA	6.2	0.12	ND	YES	NO	780
		Al	NA	4110	NA	NA	NA	NA	NA
		As	NA	2.3	NA	NA	NA	NA	NA
		Ba	659.1	66.6	NA	NA	NA	NA	NA
		Be	NA	0.37	NA	NA	NA	NA	NA
		Cd	ND	2.7	NA	NA	NA	NA	NA
		Ca	68410	24900	NA	NA	NA	NA	NA
		Cr	ND	12	NA	NA	NA	NA	NA
		Co	ND	2.9	NA	NA	NA	NA	NA
		Cu	66.06	29.5	NA	NA	NA	NA	NA
		Fe	16720	6740	NA	NA	NA	NA	NA
		Pb	41.92	34.3	NA	NA	NA	NA	NA
		Mg	NA	2180	NA	NA	NA	NA	NA
		Mn	336.9	141	NA	NA	NA	NA	NA
		Hg	ND	0.11	NA	NA	NA	NA	NA
		Ni	ND	6.2	NA	NA	NA	NA	NA
		K	14320	1130	NA	NA	NA	NA	NA
		Se	NA	ND	NA	NA	NA	NA	NA
		Ag	NA	ND	NA	NA	NA	NA	NA
		Na	NA	548	NA	NA	NA	NA	NA
		Th	NA	ND	NA	NA	NA	NA	NA
		Ti	2628.18	NA	NA	NA	NA	NA	NA
		V	ND	10.5	NA	NA	NA	NA	NA
		Zn	48.09	51.1	NA	NA	NA	NA	NA
		U	NA	0.6	NA	NA	NA	NA	NA
15314-1	18-SS-08	Sb	NA	5.7	0.09	ND	YES	NO	710
		Al	NA	4030	NA	NA	NA	NA	NA
		As	NA	2.6	NA	NA	NA	NA	NA
		Ba	690.97	72.3	NA	NA	NA	NA	NA
		Be	NA	0.37	NA	NA	NA	NA	NA
		Cd	ND	0.89	NA	NA	NA	NA	NA
		Ca	38450	22400	NA	NA	NA	NA	NA
		Cr	ND	66.5	NA	NA	NA	NA	NA
		Co	ND	3.4	NA	NA	NA	NA	NA
		Cu	25.2	12.8	NA	NA	NA	NA	NA
		Fe	11280	6740	NA	NA	NA	NA	NA
		Pb	12.42	22.7	NA	NA	NA	NA	NA
		Mg	NA	2060	NA	NA	NA	NA	NA
		Mn	194.89	136	NA	NA	NA	NA	NA
		Hg	ND	ND	NA	NA	NA	NA	NA
		Ni	ND	35.7	NA	NA	NA	NA	NA
		K	12430	1060	NA	NA	NA	NA	NA
		Se	NA	ND	NA	NA	NA	NA	NA
		Ag	NA	ND	NA	NA	NA	NA	NA
		Na	NA	234	NA	NA	NA	NA	NA
		Th	NA	ND	NA	NA	NA	NA	NA
		Ti	1667.19	NA	NA	NA	NA	NA	NA
		V	ND	10.6	NA	NA	NA	NA	NA
		Zn	37.38	34	NA	NA	NA	NA	NA
		U	NA	0.43	NA	NA	NA	NA	NA
15313-1	18-SS-07	Sb	NA	4.6	1.02	ND	YES	NO	1600
		Al	NA	3810	NA	NA	NA	NA	NA
		As	NA	2.5	NA	NA	NA	NA	NA
		Ba	597.69	89.7	NA	NA	NA	NA	NA
		Be	NA	0.27	NA	NA	NA	NA	NA
		Cd	ND	2.5	NA	NA	NA	NA	NA
		Ca	50100	26600	NA	NA	NA	NA	NA
		Cr	24.82	17.3	NA	NA	NA	NA	NA
		Co	ND	2.9	NA	NA	NA	NA	NA
		Cu	123.65	95.7	NA	NA	NA	NA	NA
		Fe	14180	7430	NA	NA	NA	NA	NA
		Pb	69.3	60.4	NA	NA	NA	NA	NA
		Mg	NA	2080	NA	NA	NA	NA	NA
		Mn	335.17	138	NA	NA	NA	NA	NA
		Hg	0	ND	NA	NA	NA	NA	NA
		Ni	ND	9.5	NA	NA	NA	NA	NA
		K	12750	848	NA	NA	NA	NA	NA
		Se	NA	ND	NA	NA	NA	NA	NA
		Ag	NA	ND	NA	NA	NA	NA	NA
		Na	NA	ND	NA	NA	NA	NA	NA
		Th	NA	ND	NA	NA	NA	NA	NA
		Ti	2534.13	NA	NA	NA	NA	NA	NA
		V	86.37	9.3	NA	NA	NA	NA	NA
		Zn	91.17	63.2	NA	NA	NA	NA	NA
		U	NA	0.77	NA	NA	NA	NA	NA
15312-1	18-SS-14	Sb	NA	2.6	ND	ND	NA	NA	NA
		Al	NA	5650	NA	NA	NA	NA	NA
		As	NA	2.8	NA	NA	NA	NA	NA
		Ba	633.23	94	NA	NA	NA	NA	NA
		Be	NA	0.42	NA	NA	NA	NA	NA
		Cd	15.66	15.2	NA	NA	NA	NA	NA
		Ca	37090	37800	NA	NA	NA	NA	NA
		Cr	39.1	5.4	NA	NA	NA	NA	NA
		Co	ND	3.1	NA	NA	NA	NA	NA
		Cu	ND	7.6	NA	NA	NA	NA	NA
		Fe	16220	6720	NA	NA	NA	NA	NA
		Pb	25.92	8.2	NA	NA	NA	NA	NA
		Mg	NA	2160	NA	NA	NA	NA	NA
		Mn	349.18	120	NA	NA	NA	NA	NA
		Hg	ND	ND	NA	NA	NA	NA	NA
		Ni	ND	5.7	NA	NA	NA	NA	NA
		K	13310	1150	NA	NA	NA	NA	NA
		Se	NA	ND	NA	NA	NA	NA	NA
		Ag	NA	0.38	NA	NA	NA	NA	NA
		Na	NA	64.7	NA	NA	NA	NA	NA
		Th	NA	ND	NA	NA	NA	NA	NA
		Ti	1913.38	NA	NA	NA	NA	NA	NA
		V	ND	10.7	NA	NA	NA	NA	NA
		Zn	40.96	20	NA	NA	NA	NA	NA
		U	NA	0.67	NA	NA	NA	NA	NA
15311-1	18-SS-14D	Sb	NA	8	NA	NA	NA	NA	NA
		As	NA	2.8	NA	NA	NA	NA	NA
		Ba	NA	97.1	NA	NA	NA	NA	NA
		Cd	NA	9.5	NA	NA	NA	NA	NA
		Ca	NA	34200	NA	NA	NA	NA	NA
		Cr	NA	6.2	NA	NA	NA	NA	NA
		Co	NA	3	NA	NA	NA	NA	NA
		Cu	NA	7.4	NA	NA	NA	NA	NA
		Fe	NA	7420	NA	NA	NA	NA	NA
		Pb	NA	7.8	NA	NA	NA	NA	NA
		Mn	NA	120	NA	NA	NA	NA	NA
		Hg	NA	ND	NA	NA	NA	NA	NA
		Ni	NA	6.7	NA	NA	NA	NA	NA
		K	NA	1220	NA	NA	NA	NA	NA
		Ti	NA	NA	NA	NA	NA	NA	NA
		V	NA	10.8	NA	NA	NA	NA	NA
		Zn	NA	21.1	NA	NA	NA	NA	NA
		U	NA	0.8	NA	NA	NA	NA	NA
15310-1	18-SS-15	Sb	NA	ND	1.61	ND	NA	NA	NA
		As	NA	3.1	NA	NA	NA	NA	NA
		Ba	598.27	99.2	NA	NA	NA	NA	NA
		Cd	5.07	17.5	NA	NA	NA	NA	NA
		Ca	27120	9900	NA	NA	NA	NA	NA
		Cr	ND	7.4	NA	NA	NA	NA	NA
		Co	ND	3.5	NA	NA	NA	NA	NA
		Cu	17.1	7.3	NA	NA	NA	NA	NA
		Fe	16230	7820	NA	NA	NA	NA	NA
		Pb	20.49	8.3	NA	NA	NA	NA	NA
		Mn	255	146	NA	NA	NA	NA	NA
		Hg	0	ND	NA	NA	NA	NA	NA
		Ni	ND	6.3	NA	NA	NA	NA	NA
		K	14630	1500	NA	NA	NA	NA	NA
		Ti	2095.02	NA	NA	NA	NA	NA	NA
		V	ND	12.7	NA	NA	NA	NA	NA
		Zn	40.94	21.4	NA	NA	NA	NA	NA
		U	NA	0.55	NA	NA	NA	NA	NA
15309-1	18-SS-16	Sb	NA	ND	2.97	ND	NA	NA	NA
		As	NA	2.9	NA	NA	NA	NA	NA
		Ba	599.19	90.2	NA	NA	NA	NA	NA
		Cd	NA	18.9	NA	NA	NA	NA	NA
		Ca	30420	6130	NA	NA	NA	NA	NA
		Cr	ND	6.7	NA	NA	NA	NA	NA
		Co	5.14	3.1	NA	NA	NA	NA	NA
		Cu	16.28	9.3	NA	NA	NA	NA	NA
		Fe	16660	7700	NA	NA	NA	NA	NA
		Pb	21.71	9.9	NA	NA	NA	NA	NA
		Mn	272.48	151	NA	NA	NA	NA	NA
		Hg	0	ND	NA	NA	NA	NA	NA
		Ni	ND	6.7	NA	NA	NA	NA	NA
		K	14220	1420	NA	NA	NA	NA	NA
		Ti	2514.11	NA	NA	NA	NA	NA	NA
		V	ND	12.5	NA	NA	NA	NA	NA
		Zn	44.64	24.1	NA	NA	NA	NA	NA
		U	NA	0.62	NA	NA	NA	NA	NA
15308-1	18-SS-26	Sb	NA	ND	0.805	ND	NA	NA	NA
		As	NA	3.2	NA	NA	NA	NA	NA
		Ba	541.48	82	NA	NA	NA	NA	NA
		Cd	ND	ND	NA	NA	NA	NA	NA
		Ca	21230	2800	NA	NA	NA	NA	NA
		Cr	38.28	7.5	NA	NA	NA	NA	NA
		Co	ND	4.1	NA	NA	NA	NA	NA
		Cu	ND	6.9	NA	NA	NA	NA	NA
		Fe	20870	8190	NA	NA	NA	NA	NA
		Pb	30.64	6.9	NA	NA	NA	NA	NA
		Mn	629.81	121	NA	NA	NA	NA	NA
		Hg	0	ND	NA	NA	NA	NA	NA
		Ni	ND	7.4	NA	NA	NA	NA	NA
		K	14820	1680	NA	NA	NA	NA	NA
		Ti	2289.77	NA	NA	NA	NA	NA	NA
		V	ND	13.7	NA	NA	NA	NA	NA
		Zn	42.01	22.4	NA	NA	NA	NA	NA
		U	NA	0.52	NA	NA	NA	NA	NA
15307-1	18-SS-27	Sb	NA	3.8	0.774	ND	NA	NA	NA
		As	NA	2.4	NA	NA	NA	NA	NA
		Ba	554.13	64.9	NA	NA	NA	NA	NA
		Cd	6.61	ND	NA	NA	NA	NA	NA
		Ca	29360	3200	NA	NA	NA	NA	NA
		Cr	38.09	6.7	NA	NA	NA	NA	NA
		Co	ND	3.2	NA	NA	NA	NA	NA
		Cu	69.75	7.4	NA	NA	NA	NA	NA
		Fe	16180	7080	NA	NA	NA	NA	NA
		Pb	61.29	6.8	NA	NA	NA	NA	NA
		Mn	389.96	135	NA	NA	NA	NA	NA
		Hg	0	ND	NA	NA	NA	NA	NA
		Ni	ND	6.2	NA	NA	NA	NA	NA
		K	13180	1290	NA	NA	NA	NA	NA
		Ti	2302.25	NA	NA	NA	NA	NA	NA
		V	ND	11.9	NA	NA	NA	NA	NA
		Zn	79.59	24.4	NA	NA	NA	NA	NA
		U	NA	0.43	NA	NA	NA	NA	NA
15306-1	18-240-E219	Sb	NA	4.8	NA	NA	NA	NA	NA
		As	NA	2.9	NA	NA	NA	NA	NA
		Ba	NA	74.5	NA	NA	NA	NA	NA
		Cd	NA	ND	NA	NA	NA	NA	NA
		Ca	NA	9950	NA	NA	NA	NA	NA
		Cr	NA	6.2	NA	NA	NA	NA	NA
		Co	NA	3.1	NA	NA	NA	NA	NA
		Cu	NA	8.7	NA	NA	NA	NA	NA
		Fe	NA	6440	NA	NA	NA	NA	NA
		Pb	NA	8.5	NA	NA	NA	NA	NA
		Mn	NA	135	NA	NA	NA	NA	NA
		Hg	NA	ND	NA	NA	NA	NA	NA
		Ni	NA	6	NA	NA	NA	NA	NA
		K	NA	1280	NA	NA	NA	NA	NA
		Ti	NA	NA	NA	NA	NA	NA	NA
		V	NA	11.7	NA	NA	NA	NA	NA
		Zn	NA	70	NA	NA	NA	NA	NA
		U	NA	0.38	NA	NA	NA	NA	NA
15305-1	18-SS-39	Sb	NA	4.7	ND	ND	NA	NA	NA
		As	NA	2.3	NA	NA	NA	NA	NA
		Ba	599.4	106	NA	NA	NA	NA	NA
		Cd	ND	ND	NA	NA	NA	NA	NA
		Ca	26220	8290	NA	NA	NA	NA	NA
		Cr	ND	6.6	NA	NA	NA	NA	NA
		Co	ND	3.1	NA	NA	NA	NA	NA
		Cu	20.78	9.3	NA	NA	NA	NA	NA
		Fe	15650	7180	NA	NA	NA	NA	NA
		Pb	26.4	10.6	NA	NA	NA	NA	NA
		Mn	244.74	176	NA	NA	NA	NA	NA
		Hg	0	ND	NA	NA	NA	NA	NA
		Ni	ND	6.6	NA	NA	NA	NA	NA
		K	16050	1920	NA	NA	NA	NA	NA
		Ti	2498.54	NA	NA	NA	NA	NA	NA
		V	ND	12.7	NA	NA	NA	NA	NA
		Zn	64.05	28.3	NA	NA	NA	NA	NA
		U	NA	0.36	NA	NA	NA	NA	NA
15304-4	18-SS-FBA	Sb	NA	ND	NA	ND	NA	NA	ND
		As	NA	ND	NA	NA	NA	NA	NA
		Ba	NA	ND	NA	NA	NA	NA	NA
		Cd	NA	ND	NA	NA	NA	NA	NA
		Ca	NA	ND	NA	NA	NA	NA	NA
		Cr	NA	ND	NA	NA	NA	NA	NA
		Co	NA	ND	NA	NA	NA	NA	NA
		Cu	NA	ND	NA	NA	NA	NA	NA
		Fe	NA	ND	NA	NA	NA	NA	NA
		Pb	NA	0.0042	NA	NA	NA	NA	NA
		Mn	NA	ND	NA	NA	NA	NA	NA
		Hg	NA	ND	NA	NA	NA	NA	NA
		Ni	NA	ND	NA	NA	NA	NA	NA
		K	NA	ND	NA	NA	NA	NA	NA
		Ti	NA	NA	NA	NA	NA	NA	NA
		V	NA	ND	NA	NA	NA	NA	NA
		Zn	NA	0.012	NA	NA	NA	NA	NA
15303-4	18-SS-RBA	Sb	NA	ND	NA	ND	NA	NA	ND
		As	NA	ND	NA	NA	NA	NA	NA
		Ba	NA	0.0045	NA	NA	NA	NA	NA
		Cd	NA	ND	NA	NA	NA	NA	NA
		Ca	NA	0.56	NA	NA	NA	NA	NA
		Cr	NA	ND	NA	NA	NA	NA	NA
		Co	NA	ND	NA	NA	NA	NA	NA
		Cu	NA	0.016	NA	NA	NA	NA	NA
		Fe	NA	0.055	NA	NA	NA	NA	NA
		Pb	NA	0.0042	NA	NA	NA	NA	NA
		Mn	NA	ND	NA	NA	NA	NA	NA
		Hg	NA	ND	NA	NA	NA	NA	NA
		Ni	NA	ND	NA	NA	NA	NA	NA
		K	NA	0.42	NA	NA	NA	NA	NA
		Ti	NA	NA	NA	NA	NA	NA	NA
		V	NA	0.0026	NA	NA	NA	NA	NA
		Zn	NA	0.029	NA	NA	NA	NA	NA

Definitions:
- **HPLC-** High Pressure Liquid Chromatography
- **PCBs-** Polychlorinated Biphenyls
- **PPM-** Parts Per Million
- **NA-** Not Applicable
- **ND-** Not Detected
- **XRF-** X-Ray Fluorescence

APPENDIX B. FIELD SCREENING RESULTS

SITE 35 SOIL SCREENING RESULTS

Sample Label	Location	TPH Field Results (TD/GC) ppm	TPH Lab Results ppm
NA	**35-R1-0.5**	ND	NA
NA	**35-R1-1.5**	ND	NA
NA	**35-R2-0.5**	50	NA
NA	**35-R3-0.5**	30J	NA
NA	**35-R4-0.5**	30J	NA
NA	**35-R4-0.5-D**	70	NA
NA	**35-R4-1.5**	170	NA
NA	**35-R5-0.5**	6,000	NA
NA	**35-R5-1.5**	5,300	NA
NA	**35-R6-0.5**	380	NA
NA	**35-R7-0.5**	350	NA
NA	**35-R7-1.0**	190	NA
NA	**35-R7-1.0-D**	120	NA
016481-1	**35-B1-3**	ND	ND
016482-1	**35-B1-8**	ND	NA
016483-1	**35-B1-13**	ND	ND
016484-1	**35-B2-3**	ND	NA
016485-1	**35-B2-8**	ND	NA
016486-1	**35-B2-13**	ND	ND
016488-1	**35-B3-3**	25	ND
016489-1	**35-B3-8**	ND	NA
016490-1	**35-B3-13**	ND	ND
016492-1	**35-B4-2**	ND	NA
016493-1	**35-B4-8**	ND	NA
016494-1	**35-B4-13**	ND	ND
016495-1	**35-B4-13D**	NA	ND

Definitions:

NA - Not Applicable

ND - Not Detected

PPM - Parts Per Million

TPH - Total Petroleum Hydrocarbons

J - The associated value is below the PQL and is therefore an estimated value.

Site 36 - Comparison of Field Screening to Laboratory Analytical Results - Geoprobe

APPENDIX B. FIELD SCREENING RESULTS

SITE 36 SOIL SCREENING RESULTS - PAGE 1 OF 3: SHALLOW SUBSURFACE

		Field Results			Lab Results					
							VOCs (ppm)			
Sample Label	Location	TPH (ppm)	PCBs (ppm)	PID (ppm)	TPH (ppm)	PCBs (ppm)	ACETONE	2-HEXANONE	METHYLENE CHLORIDE	TOLUENE
016511-1	36-G1-01	ND	NA	ND	ND	ND	10 B	ND	ND	2.9 J
016512-1	36-G1-05	ND	ND	ND	ND	NA	NA	NA	NA	NA
016513-1	36-G1-10	ND	NA	ND	ND	NA	NA	NA	NA	NA
016514-1	36-G1-15	ND	NA	ND	ND	NA	NA	NA	NA	NA
016515-1	36-G2-02	ND	NA	ND	ND	NA	NA	NA	NA	NA
016516-1	36-G2-05	ND	ND	ND	ND	NA	NA	NA	NA	NA
016517-1	36-G2-10	ND	NA	ND	ND	NA	NA	NA	NA	NA
016518-1	36-G2-15	5.0	NA	ND	ND	NA	NA	NA	NA	NA
016519-1	36-G2-15D	NA	NA	NA	ND	NA	NA	NA	NA	NA
016520-1	36-G3-01	ND	NA	ND	ND	NA	NA	NA	NA	NA
016521-1	36-G3-05	ND	ND	ND	ND	NA	NA	NA	NA	NA
016522-1	36-G3-10	ND	NA	ND	ND	NA	NA	NA	NA	NA
016523-1	36-G3-15	ND	NA	ND	ND	NA	NA	NA	NA	NA
016526-1	36-G4-01	ND	NA	ND	ND	NA	NA	NA	NA	NA
016527-2	36-G4-05	NA	NA	ND	ND	ND	ND	ND	ND	2.8 J
016528-1	36-G4-10	ND	NA	ND	ND	NA	NA	NA	NA	NA
016529-1	36-G4-15	NA	NA	ND	ND	NA	NA	NA	NA	NA
016530-1	36-G5-01	5-25	NA	ND	2530	NA	NA	NA	NA	NA
016531-1	36-G5-05	ND	NA	ND	ND	NA	NA	NA	NA	NA
016532-1	36-G5-10	ND	NA	ND	ND	NA	NA	NA	NA	NA
016533-1	36-G5-15	NA	NA	ND	ND	NA	NA	NA	NA	NA
016534-1	36-G6-01	25-100	NA	5.4	2270	NA	NA	NA	NA	NA
016535-2	36-G6-05	NA	NA	2.4	ND	ND	9.6 BJ	ND	ND	2.0 J
016536-1	36-G6-10	NA	NA	ND	ND	NA	NA	NA	NA	NA
016537-1,2	36-G6-15	NA	NA	ND	ND	ND	9.4 BJ	2.0 BJ	ND	1.1 J
016539-1	36-G7-01	ND	NA	ND	ND	NA	NA	NA	NA	NA
016540-1	36-G7-05	ND	NA	ND	ND	NA	NA	NA	NA	NA
016541-1	36-G7-10	ND	NA	ND	ND	NA	NA	NA	NA	NA
016542-1	36-G7-15	NA	NA	ND	ND	NA	NA	NA	NA	NA

Definitions:

B - Analyte detected in lab blank.
J - The associated value is either below the PQL or above the highest calibration level and therefore is an estimated value
PCB - Polychlorinated Biphenyls
PID - Photoionization Detector
PPM - Parts Per Million
NA - Not Applicable
ND - Not Detected
TPH - Total Petroleum Hydrocarbons
VOC - Volatile Organic Compounds

APPENDIX B. FIELD SCREENING RESULTS

SITE 36 SOIL SCREENING RESULTS - PAGE 2 OF 3: TPH IN DEEP SUBSURFACE

	Field Results	Lab Results
Location	TPH (by TD/GC) (ppm)	TPH (by 418.1) (ppm)
TA3/5-36-BH-01-20.0	69	NA
TA3/5-36-BH-01-41.0	13,400	NA
TA3/5-36-BH-01-60.0	16,000	NA
TA3/5-36-BH-01-81.0	17,615	22000
TA3/5-36-BH-01-100.50	NA	15,000
TA3/5-36-BH-01-120.00	NA	8,600
TA3/5-36-BH-01-160.5	26,500	NA
TA3/5-36-BH-01-180.0	19,900	NA
TA3/5-36-BH-01-200.50	NA	36,000
TA3/5-36-BH-01-200.75	NA	18,000
TA3/5-36-BH-01-220.75	62	NA
TA3/5-36-BH-01-240.25	NA	NA
TA3/5-36-BH-01-250.0	NA	27
TA3/5-36-BH-01-260.25	NA	27
TA3/5-36-BH-01-281.00	NA	<20
TA3/5-36-BH-01-281.75	38	<20
TA3/5-36-BH-01-300.75	40	33
TA3/5-36-BH-01-310.5	24	<20
TA3/5-36-BH-01-321.0	8	<20
TA3/5-36-BH-01-330.75	12	<20
TA3/5-36-BH-01-341.0	22	27
TA3/5-36-BH-02-10.5	30	NA
TA3/5-36-BH-02-21.25	NA	110
TA3/5-36-BH-02-31.25	3J	NA
TA3/5-36-BH-02-40.25	21	NA
TA3/5-36-BH-02-50.0	3J	NA
TA3/5-36-BH-02-60.0	5J	NA
TA3/5-36-BH-02-70.25	NA	<20
TA3/5-36-BH-02-70.75	15	<20
TA3/5-36-BH-02-80.25	NA	<20
TA3/5-36-BH-02-80.75	13	<20
TA3/5-36-BH-02-90.50	NA	21
TA3/5-36-BH-02-91.0	45	<20
TA3/5-36-BH-02-100.0	21	21
TA3/5-36-BH-02-100.0-D	NA	<20
TA3/5-36-BH-02-100.75	26	NA
TA3/5-36-BH-02-100.75-D	25	NA
TA3/5-36-BH-02-120.25	NA	<20
TA3/5-36-BH-02-120.50	NA	<20
TA3/5-36-BH-02-121.0	35	<20
TA3/5-36-BH-02-121.25	31	<20
TA3/5-36-BH-02-140.25	19	NA
TA3/5-36-BH-02-160.25	23	NA
TA3/5-36-BH-02-160.25	25	NA
TA3/5-36-BH-02-180.0	15	NA
TA3/5-36-BH-02-200.00	18	<20
TA3/5-36-BH-02-200.25	15	<20
TA3/5-36-BH-02-200.50	NA	<20
TA3/5-36-BH-02-200.75	NA	<20
TA3/5-36-BH-02-220.50	50	NA
TA3/5-36-BH-02-240.25	23	<20
TA3/5-36-BH-02-240.50	NA	<20
TA3/5-36-BH-02-260.25	NA	<20
TA3/5-36-BH-02-260.75	13	<20
TA3/5-36-BH-02-280.25	NA	<20
TA3/5-36-BH-02-280.75	10	<20
TA3/5-36-BH-02-300.0	1J	60
TA3/5-36-BH-02-300.50	NA	60
TA3/5-36-BH-02-320.0	35	<20
TA3/5-36-BH-02-320.75	NA	<20

Definitions:

J- The associated value is either below the PQL or above the highest calibration level and therefore is an estimated value.
NA- Not Applicable
ND- Not Detected
PPM- Parts Per Million
TD- Thermal Desorption
TPH- Total Petroleum Hydrocarbons

APPENDIX B. FIELD SCREENING RESULTS

SITE 36 SOIL SCREENING RESULTS - PAGE 3 OF 3: VOCs IN DEEP SUBSURFACE

	6540 LAB SOIL VAPOR RESULTS All results in ppbv					
Sample Location ID	**2-Butanone**	**2-Hexanone**	**Methyl Isobutyl Ketone**	**Toluene**	**p-Xylene**	**Trichloroethene (TCE)**
TA5-36-BH-01-20	ND	ND	ND	ND	ND	ND
TA5-36-BH-01-40	ND	ND	ND	ND	ND	ND
TA5-36-BH-01-60	ND	ND	ND	ND	ND	ND
TA5-36-BH-01-80	5.5	ND	ND	ND	ND	ND
TA5-36-BH-01-100	NA	7.3	6.9	9.1	ND	ND
TA5-36-BH-01-120	53.9	17.0	NA	NA	ND	ND
TA5-36-BH-01-140	71.4	ND	ND	13.2	ND	ND
TA5-36-BH-01-200	169.2	9.1	744.1	ND	ND	ND
TA5-36-BH-01-250	93.0	6.4	ND	ND	ND	ND
TA5-36-BH-01-300	ND	ND	ND	21.2	7.4	251.4
TA5-36-BH-02-10	ND	ND	ND	ND	ND	ND
TA5-36-BH-02-20	ND	ND	ND	ND	ND	ND
TA5-36-BH-02-30	ND	ND	ND	ND	30.2	ND
TA5-36-BH-02-50	ND	ND	ND	ND	ND	ND
TA5-36-BH-02-60	ND	ND	ND	ND	ND	ND
TA5-36-BH-02-70	ND	ND	ND	ND	ND	ND
TA5-36-BH-02-100	ND	ND	ND	ND	ND	ND
TA5-36-BH-02-140	ND	ND	ND	ND	ND	ND
TA5-36-BH-02-200	8.3	ND	ND	ND	ND	ND
TA5-36-BH-02-240	ND	ND	ND	ND	ND	ND
TA5-36-BH-02-320	ND	ND	ND	ND	ND	ND

Definitions:
ppbv - parts per billion by volume
NA - Not applicable.

APPENDIX B. FIELD SCREENING RESULTS

SITE 37 SOIL SCREENING RESULTS

		TPH		PCBs	
Sample Label	**Location**	**Field Results**	**Lab Results**	**Field Results**	**Lab Results**
15226	**37-A2-5**	NA	NA	ND	ND
15229	**37-A4-1**	NA	ND	ND	NA
NA	**37-A4-5**	ND	NA	NA	NA
NA	**37-A5-1**	ND	NA	NA	NA
NA	**37-A5-5**	ND	NA	NA	NA
15235	**37-A6-1**	ND	ND	NA	NA
NA	**37-A6-5**	ND	NA	NA	NA
15237	**37-A7-1**	ND	ND	<10 ppm	ND
15238	**37-A7-5**	ND	ND	NA	ND
15239	**37-A8-1**	ND	ND	<10 ppm	ND
15240	**37-A8-5**	ND	ND	NA	NA
15241	**37-A8-5D**	ND	ND	NA	NA
NA	**37-A9-1**	ND	NA	NA	NA
NA	**37-A9-5**	ND	NA	NA	NA
NA	**37-A10-1**	ND	NA	NA	NA
NA	**37-A10-5**	ND	NA	NA	NA
NA	**37-A11-1**	ND	NA	NA	NA
NA	**37-A11-5**	ND	NA	NA	NA

Definitions:

NA- Not Applicable
ND- Not Detected
PCBs- Polychlorinated Biphenyls
PPM- Parts Per Million
TPH- Total Petroleum Hydrocarbons

APPENDIX B. FIELD SCREENING RESULTS

SITE 51 SOIL SCREENING RESULTS

							High Explosives	
		Analyte	Field Results	Lab Results (HPLC)			Field Results (Immunoassay)	Lab Results (8080)
Sample Label	Location		PID	VOCs (8240)	SVOCs (8270)	RCRA Metals (6010/7000)		
			ppm	ppb	ppb	ppm		
16559	**51-A1**		7.7	NA	NA	NA	ND	ND
		Methyl. chloride	NA	2.1 J	NA	NA	NA	NA
16560	**51-A2**		2.7	NA	NA	NA	ND	ND
		Methyl. chloride	NA	2.0 J	NA	NA	NA	NA
		bis (2-Ethylhexyl) phthalate	NA	NA	1400	NA	NA	NA
16561	**51-A2-D**		NA	NA	NA	NA	ND	ND
		Methyl. chloride	NA	2.2 J	NA	NA	NA	NA
		bis (2-Ethylhexyl) phthalate	NA	NA	200 J	NA	NA	NA
16562	**51-A3**		7.3	NA	NA	NA	ND	ND
		Methyl. chloride	NA	2.4 J	NA	NA	NA	NA
		bis (2-Ethylhexyl) phthalate	NA	NA	840	NA	NA	NA
		Arsenic	NA	NA	NA	1.8	NA	NA
		Barium	NA	NA	NA	170	NA	NA
		Cadmium	NA	NA	NA	ND	NA	NA
		Chromium	NA	NA	NA	2.4	NA	NA
		Lead	NA	NA	NA	4.2	NA	NA
		Mercury	NA	NA	NA	ND	NA	NA
		Selenium	NA	NA	NA	ND	NA	NA
		Silver	NA	NA	NA	ND	NA	NA
16563	**51-A4**		4.2	NA	NA	NA	ND	ND
		Methyl. chloride	NA	2.4 J	NA	NA	NA	NA
		Arsenic	NA	NA	NA	3.4	NA	NA
		Barium	NA	NA	NA	105	NA	NA
		Cadmium	NA	NA	NA	ND	NA	NA
		Chromium	NA	NA	NA	3.3	NA	NA
		Lead	NA	NA	NA	6	NA	NA
		Mercury	NA	NA	NA	ND	NA	NA
		Selenium	NA	NA	NA	ND	NA	NA
		Silver	NA	NA	NA	ND	NA	NA

Definitions:

J- The associated value is either below the PQL or above the highest calibration level and therefore is an estimated value
PID- Photo Ionization Detector
PPB- Parts Per Billion
PPM- Parts Per Million
NA- Not Applicable
ND- Not Detected
RCRA- Resource Conservation and Recovery Act
SVOC- Semi Volatile Organic Compounds
VOC- Volatile Organic Compounds

APPENDIX B. FIELD SCREENING RESULTS

SITE 107 SOIL SCREENING RESULTS

			TOTAL METALS		HIGH EXPLOSIVES	
Sample Label	Location	Analyte	Field Results (XRF) (ppm)	Lab Results (6010/7000) (ppm)	Field Results (Immunoassay) (ppm)	Lab Results (HPLC) (ppm)
0107-1	107-SS-01	NA	ND	ND	ND	ND
		Al	ND	3200	ND	ND
		Sb	ND	8	ND	ND
		As	ND	0.8	ND	ND
		Ba	153.87	61.6	ND	ND
		Be	ND	0.47	ND	ND
		Cd	ND	300	ND	ND
		Ca	1.03%	29200	ND	ND
		Cr	7.32	2.8	ND	ND
		Co	ND	2.8	ND	ND
		Cu	ND	6.3	ND	ND
		Fe	11212	7000	ND	ND
		Pb	18.62	9.6	ND	ND
		Mg	1.01%	1100	ND	ND
		Mn	108.95	160	ND	ND
		Hg	ND	ND	ND	ND
		Ni	ND	7.2	ND	ND
		K	1.59%	1400	ND	ND
		Se	ND	0.8	ND	ND
		Ag	ND	0.6	ND	ND
		Na	ND	ND	ND	ND
		Tl	ND	300	ND	ND
		Sn	2247.57	NA	ND	ND
		V	ND	5.6	ND	ND
		Zn	47.68	23.3	ND	ND
0107-1	107-SS-02	NA	ND	ND	ND	ND
		Al	ND	3600	ND	ND
		Sb	ND	NA	ND	ND
		As	ND	0.8	ND	ND
		Ba	108.16	47.3	ND	ND
		Be	ND	0.47	ND	ND
		Cd	ND	300	ND	ND
		Ca	2.03%	11200	ND	ND
		Cr	ND	3.3	ND	ND
		Co	ND	3.1	ND	ND
		Cu	ND	6.3	ND	ND
		Fe	11212	7000	ND	ND
		Pb	18.62	9.6	ND	ND
		Mg	1.01%	1300	ND	ND
		Mn	108.95	180	ND	ND
		Hg	ND	ND	ND	ND
		Ni	ND	8.2	ND	ND
		K	1.59%	1600	ND	ND
		Se	ND	0.8	ND	ND
		Ag	ND	0.6	ND	ND
		Na	ND	ND	ND	ND
		Tl	ND	300	ND	ND
		Sn	2240.63	NA	ND	ND
		V	ND	6.2	ND	ND
		Zn	38.03	23.3	ND	ND
0107-1	107-SS-03	NA	ND	ND	ND	ND
		Al	ND	6300	ND	ND
		Sb	ND	NA	ND	ND
		As	ND	0.8	ND	ND
		Ba	173.84	45.1	ND	ND
		Be	ND	0.47	ND	ND
		Cd	ND	300	ND	ND
		Ca	1.03%	2800	ND	ND
		Cr	ND	3.3	ND	ND
		Co	ND	3.1	ND	ND
		Cu	ND	6.3	ND	ND
		Fe	11212	7000	ND	ND
		Pb	18.62	10	ND	ND
		Mg	1.01%	2200	ND	ND
		Mn	108.95	190	ND	ND
		Hg	ND	ND	ND	ND
		Ni	ND	7.2	ND	ND
		K	1.59%	2400	ND	ND
		Se	ND	0.8	ND	ND
		Ag	ND	0.6	ND	ND
		Na	ND	ND	ND	ND
		Tl	ND	300	ND	ND
		Sn	2230.63	NA	ND	ND
		V	ND	5.6	ND	ND
		Zn	38.03	23.3	ND	ND
0107-1	107-SS-04	NA	ND	ND	ND	ND
		Al	ND	3100	ND	ND
		Sb	ND	NA	ND	ND
		As	ND	0.8	ND	ND
		Ba	173.84	45.1	ND	ND
		Be	ND	0.47	ND	ND
		Cd	ND	300	ND	ND
		Ca	1.07%	8100	ND	ND
		Cr	ND	3.3	ND	ND
		Co	ND	3.1	ND	ND
		Cu	ND	10.3	ND	ND
		Fe	11212	7000	ND	ND
		Pb	18.62	11.3	ND	ND
		Mg	1.01%	2300	ND	ND
		Mn	108.95	200	ND	ND
		Hg	ND	ND	ND	ND
		Ni	ND	8.2	ND	ND
		K	1.59%	1800	ND	ND
		Se	ND	0.8	ND	ND
		Ag	ND	0.6	ND	ND
		Na	ND	ND	ND	ND
		Tl	ND	300	ND	ND
		Sn	2208.44	NA	ND	ND
		V	ND	5.6	ND	ND
		Zn	47.68	23.3	ND	ND
0107-1	107-SS-05	NA	ND	ND	ND	ND
		Al	ND	4500	ND	ND
		Sb	ND	NA	ND	ND
		As	ND	0.8	ND	ND
		Ba	173.84	53.2	ND	ND
		Be	ND	0.47	ND	ND
		Cd	ND	300	ND	ND
		Ca	1.03%	3600	ND	ND
		Cr	ND	3.3	ND	ND
		Co	ND	3.1	ND	ND
		Cu	ND	6.3	ND	ND
		Fe	11212	8000	ND	ND
		Pb	18.62	9.6	ND	ND
		Mg	1.01%	2300	ND	ND
		Mn	108.95	190	ND	ND
		Hg	ND	ND	ND	ND
		Ni	ND	8.2	ND	ND
		K	1.59%	1700	ND	ND
		Se	ND	0.8	ND	ND
		Ag	ND	0.6	ND	ND
		Na	ND	ND	ND	ND
		Tl	ND	300	ND	ND
		Sn	2201.66	NA	ND	ND
		V	ND	5.6	ND	ND
		Zn	38.03	23.3	ND	ND
0107-1	107-SS-06	NA	ND	ND	ND	ND
		Al	ND	4900	ND	ND
		Sb	ND	NA	ND	ND
		As	ND	0.8	ND	ND
		Ba	173.84	53.2	ND	ND
		Be	ND	0.47	ND	ND
		Cd	ND	300	ND	ND
		Ca	1.03%	3600	ND	ND
		Cr	ND	3.3	ND	ND
		Co	ND	3.1	ND	ND
		Cu	18.76	6.3	ND	ND
		Fe	11212	7000	ND	ND
		Pb	18.62	9.6	ND	ND
		Mg	1.01%	2300	ND	ND
		Mn	108.95	190	ND	ND
		Hg	ND	ND	ND	ND
		Ni	ND	8.2	ND	ND
		K	1.59%	1600	ND	ND
		Se	ND	0.8	ND	ND
		Ag	ND	0.6	ND	ND
		Na	ND	ND	ND	ND
		Tl	ND	300	ND	ND
		Sn	2216.94	NA	ND	ND
		V	ND	5.6	ND	ND
		Zn	38.03	23.3	ND	ND
0107-1	107-SS-07	NA	ND	ND	ND	ND
		Al	ND	4500	ND	ND
		Sb	ND	NA	ND	ND
		As	ND	0.8	ND	ND
		Ba	173.84	45.1	ND	ND
		Be	ND	0.47	ND	ND
		Cd	ND	300	ND	ND
		Ca	2.03%	10400	ND	ND
		Cr	ND	3.3	ND	ND
		Co	ND	3.1	ND	ND
		Cu	ND	6.3	ND	ND
		Fe	11212	8000	ND	ND
		Pb	18.62	9.6	ND	ND
		Mg	1.01%	1800	ND	ND
		Mn	108.95	160	ND	ND
		Hg	ND	ND	ND	ND
		Ni	ND	8.2	ND	ND
		K	1.59%	1400	ND	ND
		Se	ND	0.8	ND	ND
		Ag	ND	0.6	ND	ND
		Na	ND	ND	ND	ND
		Tl	ND	300	ND	ND
		Sn	2208.44	NA	ND	ND
		V	ND	5.6	ND	ND
		Zn	38.03	23.3	ND	ND
0107-1	107-SS-08	NA	ND	ND	ND	ND
		Al	ND	4500	ND	ND
		Sb	ND	NA	ND	ND
		As	ND	0.8	ND	ND
		Ba	302.2	45.1	ND	ND
		Be	ND	0.47	ND	ND
		Cd	ND	300	ND	ND
		Ca	1.03%	8100	ND	ND
		Cr	ND	3.3	ND	ND
		Co	ND	3.1	ND	ND
		Cu	ND	6.3	ND	ND
		Fe	11212	7000	ND	ND
		Pb	32.02	9.6	ND	ND
		Mg	1.01%	1800	ND	ND
		Mn	108.95	160	ND	ND
		Hg	ND	ND	ND	ND
		Ni	ND	8.2	ND	ND
		K	1.59%	1600	ND	ND
		Se	ND	0.8	ND	ND
		Ag	ND	0.6	ND	ND
		Na	ND	ND	ND	ND
		Tl	ND	300	ND	ND
		Sn	2208.44	NA	ND	ND
		V	ND	5.6	ND	ND
		Zn	38.03	23.3	ND	ND
0107-1	107-SS-09	NA	ND	ND	ND	ND
		Al	ND	4500	ND	ND
		Sb	ND	NA	ND	ND
		As	ND	0.8	ND	ND
		Ba	302.2	45.1	ND	ND
		Be	ND	0.47	ND	ND
		Cd	ND	300	ND	ND
		Ca	1.03%	2600	ND	ND
		Cr	ND	3.3	ND	ND
		Co	ND	3.1	ND	ND
		Cu	ND	6.3	ND	ND
		Fe	11212	7000	ND	ND
		Pb	32.02	9.6	ND	ND
		Mg	1.01%	1800	ND	ND
		Mn	108.95	160	ND	ND
		Hg	ND	ND	ND	ND
		Ni	ND	8.2	ND	ND
		K	ND	1700	ND	ND
		Se	ND	0.8	ND	ND
		Ag	ND	0.6	ND	ND
		Na	ND	65.7	ND	ND
		Tl	ND	300	ND	ND
		Sn	2208.44	NA	ND	ND
		V	ND	5.6	ND	ND
		Zn	38.03	23.3	ND	ND
0107-1	107-SS-10	NA	ND	ND	ND	ND
		Al	ND	4500	ND	ND
		Sb	ND	NA	ND	ND
		As	ND	0.8	ND	ND
		Ba	188.02	21.3	ND	ND
		Be	ND	0.47	ND	ND
		Cd	ND	300	ND	ND
		Ca	0.79%	2600	ND	ND
		Cr	ND	3.3	ND	ND
		Co	ND	3.1	ND	ND
		Cu	ND	6.3	ND	ND
		Fe	11212	8000	ND	ND
		Pb	13.41	9.6	ND	ND
		Mg	1.01%	1800	ND	ND
		Mn	108.95	160	ND	ND
		Hg	ND	ND	ND	ND
		Ni	ND	8.2	ND	ND
		K	ND	1700	ND	ND
		Se	ND	0.8	ND	ND
		Ag	ND	0.6	ND	ND
		Na	ND	65.7	ND	ND
		Tl	ND	300	ND	ND
		Sn	2208.44	NA	ND	ND
		V	ND	5.6	ND	ND
		Zn	38.03	18.3	ND	ND

Definitions:
HPLC-High Performance Liquid Chromatography
PPM- Parts Per Million
NA- Not Applicable
ND- Not Detected
XRF- X-Ray Fluorescence

APPENDIX B. FIELD SCREENING RESULTS

SITE 111 SOIL SCREENING RESULTS

		SILVER		HIGH EXPLOSIVES	
Sample Label	**Location**	**Screen Results (DCP) (ppm)**	**Lab Results (6010/7000) (ppm)**	**Field Results (Immunoassay) (ppm)**	**Lab Results (HPLC) (ppm)**
16880	**111-B1-8**	ND	NA	ND	NA
16881	**111-B1-12**	ND	ND	ND	ND
16882	**111-B1-15**	ND	NA	ND	NA
16883	**111-B2-8D**	ND	1.9	ND	ND
16884	**111-B2-8**	ND	2.1	ND	ND
16885	**111-B2-12**	ND	NA	ND	NA
16886	**111-B2-15**	0.142	NA	ND	NA
16887	**111-B3-5**	ND	NA	ND	NA
16888	**111-B3-10**	0.011	NA	ND	NA
16889	**111-B3-15**	0.005	0.54	ND	ND

Definitions:

HPLC- High Pressure Liquid Chromatography
J- The associated value is either below the PQL or above the highest calibration level and therefore is an estimated value
PPM- Parts Per Million
NA- Not Applicable
ND- Not Detected

APPENDIX B. FIELD SCREENING RESULTS

SITE 196 SOIL SCREENING RESULTS

			On-site Lab Results			Off-Site Lab Results	
Location	Sample Date	Analyte	VOCs (8240) (ppb)	METALS XRF (ppm)	TPH (TD/GC) (ppm)	VOCs (8240) (ppb)	TPH (418.1) (ppm)
196A1-0	5-Jun-95	Chromium		36			
		Copper		680			
		Lead		81			
		Zinc		1341			
196A1-0D	5-Jun-95	Chromium		44			
		Copper		460			
		Lead		54			
		Zinc		1177			
196A1-0.5	5-Jun-95	Chromium		31			
		Copper		4			
		Lead		21			
		Zinc		10			
196A1-1.0	2-Jun-95	Chromium		14			
		Copper		20			
		Lead		23			
		Zinc		62			
196A1-1.5	5-Jun-95	Chromium		17			
		Copper		ND			
		Lead		13			
		Zinc		ND			
196A1-2.0	5-Jun-95	Chromium		1			
		Copper		ND			
		Lead		23			
		Zinc		ND			
196A1-2.5	2-Jun-95	Chromium		12			
		Copper		ND			
		Lead		22			
		Zinc		ND			
196A1-3.0	2-Jun-95	Chromium		4			
		Copper		ND			
		Lead		7			
		Zinc		ND			
196A2-0	5-Jun-95	Chromium		32			
		Copper		380			
		Lead		309			
		Zinc		842			
196A2-0.5	5-Jun-95	Chromium		20			
		Copper		4			
		Lead		23			
		Zinc		27			
196A2-1.0	2-Jun-95	Chromium		33			
		Copper		23			
		Lead		23			
		Zinc		61			
196A2-1.5	2-Jun-95	Chromium		51			
		Copper		6			
		Lead		24			
		Zinc		32			
196A2-2.0	5-Jun-95	Chromium		15			
		Copper		ND			
		Lead		7			
		Zinc		ND			
196A2-2.5	5-Jun-95	Chromium		11			
		Copper		2			
		Lead		15			
		Zinc		18			
196A2-3.0	5-Jun-95	Chromium		17			
		Copper		ND			
		Lead		17			
		Zinc		2			
196A3-0	5-Jun-95	Chromium		59			
		Copper		545			
		Lead		54			
		Zinc		1414			
196A3-0.5	5-Jun-95	Chromium		54			
		Copper		23			
		Lead		22			
		Zinc		51			
196A3-1.0	5-Jun-95	Chromium		44			
		Copper		5			
		Lead		9			
		Zinc		4			
196A3-1.5	2-Jun-95	Chromium		7			
		Copper		ND			
		Lead		8			
		Zinc		ND			
196A3-2.0	5-Jun-95	Chromium		18			
		Copper		ND			
		Lead		12			
		Zinc		ND			
Soil Sample Results							
TA3/5-196-D1-008	26-Mar-96	Total VOCs	NA		4,500		29,000
TA3/5-196-D1-009	26-Mar-96	Total VOCs	ND		6,000		15,000
TA3/5-196-D1-13	27-Mar-96	Acetone	40		13,000	ND	4,300
TA3/5-196-D2-000	27-Mar-96	Total VOCs				ND	
TA3/5-196-D2-001	27-Mar-96	TPH, Total VOCs			8,000		19,000
TA3/5-196-D2-004	27-Mar-96	Chlorobenzene	5		NA	ND	
TA3/5-196-D2-005	27-Mar-96	TPH			9,000		7,800
TA3/5-196-D2-006	27-Mar-96	Total VOCs				ND	
TA3/5-196-D2-007	27-Mar-96	TPH			2,300		7,200
TA3/5-196-D2-010	27-Mar-96	Total VOCs				ND	
TA3/5-196-D2-010-DUP	27-Mar-96	Total VOCs				ND	
TA3/5-196-D2-011	27-Mar-96	TPH			3,800	ND	23,000
TA3/5-196-D2-013	27-Mar-96	TPH			6,000		
TA3/5-196-D3-001	27-Mar-96	TPH, Acetone	48		ND	ND	
TA3/5-196-D3-002	27-Mar-96	TPH, Total VOCs				ND	35
TA3/5-196-D3-003	27-Mar-96	Total VOCs				ND	
TA3/5-196-D3-004	27-Mar-96	TPH					ND
TA3/5-196-D3-005	27-Mar-96	TPH, Acetone	42		ND	ND	
		TPH, Chlorobenzene	5		ND		
TA3/5-196-D3-006	27-Mar-96	TPH					
Soil Vapor Results							
TA3/5-196-D1-SV1	27-Mar-96	Methylene chloride	50				
		Trichloroethene	3.6 J				
TA3/5-196-D2-013-SG	27-Mar-96	Total VOCs	ND				
TA3/5-196-D3-006-SG	27-Mar-96	1,1,1-Trichloroethene	28				
		Trichloroethene	32				
		Benzene	16 J				
		Toluene	4.4 J				

APPENDIX B. FIELD SCREENING RESULTS

SITE 240 SOIL SCREENING RESULTS

			METALS			HIGH EXPLOSIVES	
Sample Label – Field Screening	Sample Label – Lab Analysis	Location	Analyte	Field Results (XRF) (ppm)	Lab Results (60107/7000) (ppm)	Field Results (Immunoassay) (ppm)	Lab Results (8080) (ppm)
016370-1	016859-1	240-SS-01-C	Pb	0.51	104	ND	ND
016371-1		240-SS-02-C	Pb	0.03	NA	ND	NA
016372-1	016860-1	240-SS-03-C	Pb	0.08	3.7	ND	ND
016373-1	016861-1	240-SS-04-C	Pb	0.26	14.2	ND	ND
016374-1	016862-1	240-SS-05-C	Pb	0.07	12.8	ND	ND
	016863-1	240-SS-05D-C	Pb	NA	12.2	NA	ND
016735-1	016864-1	240-SS-06-C	Pb	0.05	8.2	ND	NA
016376-1	016865-1	240-SS-07-C	Pb	0.11	6.5	ND	NA
016377-1	016866-1	240-SS-08-C	Pb	0.13	12.4	ND	NA
016378-1		240-SS-09-C	Pb	0.02	NA	ND	NA
016379-1		240-SS-10-C	Pb	0.03	NA	ND	NA
016380-1	016867-1	240-SS-11-C	Pb	0.09	6.7	ND	NA
016381-1		240-SS-12-C	Pb	0.04	NA	ND	NA
016382-1	016868-1	240-SS-13-C	Pb	0.08	8.3	ND	NA
016383-1	016869-1	240-SS-14-C	Pb	NA	9	ND	NA
016384-1		240-SS-15-C	Pb	0.04	NA	ND	NA
016385-1		240-SS-16-C	Pb	0.02	NA	ND	NA
016386-1	016870-1	240-SS-17-C	Pb	0.06	8.8	ND	NA
016387-1	016871-1	240-SS-18-C	Pb	0.06	8.9	ND	NA
016114-1		240-SS-19-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.13	NA	NA	NA
	016908-1	240-SS-19A	Be	NA	62	NA	NA
			Pb	NA	13.2	NA	NA
			Li	NA	6.2	NA	NA
	016909-1	240-SS-19F	Be	NA	0.57	NA	NA
			Pb	NA	132	NA	NA
			Li	NA	5.6	NA	NA
	016910-1	240-SS-19F-D	Be	NA	0.45	NA	NA
			Pb	NA	9.1	NA	NA
			Li	NA	ND	NA	NA
016115-1		240-SS-20-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.04	NA	NA	NA
016116-1		240-SS-21-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.15	NA	NA	NA
	016911-1	240-SS-21B	Be	NA	0.34	NA	NA
			Pb	NA	9.5	NA	NA
			Li	NA	ND	NA	NA
	016912-1	240-SS-21D	Be	NA	0.57	NA	NA
			Pb	NA	9.3	NA	NA
			Li	NA	5.0	NA	NA
016117-1		240-SS-22-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.08	NA	NA	NA
016118-1		240-SS-23-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.07	NA	NA	NA
016119-1		240-SS-24-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.09	NA	ND	ND
	016913-1	240-SS-24B	Be	NA	0.56	NA	NA
			Pb	NA	12.1	NA	NA
			Li	NA	6.8	NA	NA
	016914-1	240-SS-24F	Be	NA	0.56	NA	NA
			Pb	NA	12.1	NA	NA
			Li	NA	5.9	NA	NA
016120-1		240-SS-25-C	Be	0.00	NA	NA	NA
			Pb	NA	NA	NA	NA
			Li	0.03	NA	NA	NA
	016915-1	240-SS-25A	Be	NA	0.56	NA	NA
			Pb	NA	9.0	NA	NA
			Li	NA	6.2	NA	NA
	016916-1	240-SS-25E	Be	NA	0.56	NA	NA
			Pb	NA	10.8	NA	NA
			Li	NA	8.2	NA	NA
016121-1		240-SS-26-C	Be	0.00	NA	NA	NA
			Pb	NA	NA	ND	ND
			Li	0.03	NA	NA	NA
	016917-1	240-SS-26E	Be	NA	0.34	NA	NA
			Pb	NA	8.2	NA	NA
			Li	NA	ND	NA	NA
016122-1		240-SS-27-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.16	NA	NA	NA
	016918-1	240-SS-27B	Be	NA	0.57	NA	NA
			Pb	NA	9.20	NA	NA
			Li	NA	6.70	NA	NA
	016919-1	240-SS-27F	Be	NA	0.35	NA	NA
			Pb	NA	7.90	NA	NA
			Li	NA	ND	NA	NA
016123-1		240-SS-28-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.02	NA	NA	NA
016124-1		240-SS-29-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.11	NA	NA	NA
	016920-1	240-SS-29C	Be	NA	0.5	NA	NA
			Pb	NA	7.9	NA	NA
			Li	NA	7.6	NA	NA
016125-1		240-SS-30-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.11	NA	NA	NA
	016921-1	240-SS-30E	Be	NA	0.34	NA	NA
			Pb	NA	11.60	NA	NA
			Li	NA	5.00	NA	NA
016126-1		240-SS-31-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.29	NA	NA	NA
	016922-1	240-SS-31A	Be	NA	0.39	NA	NA
			Pb	NA	6.30	NA	NA
			Li	NA	5.30	NA	NA
	016923-1	240-SS-31E	Be	NA	0.56	NA	NA
			Pb	NA	4.80	NA	NA
			Li	NA	5.90	NA	NA
016127-1		240-SS-32-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.09	NA	NA	NA
016128-1		240-SS-33-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.13	NA	NA	NA
	016924-1	240-SS-33B	Be	NA	0.34	NA	NA
			Pb	NA	6	NA	NA
			Li	NA	6.4	NA	NA
	016925-1	240-SS-33D	Be	NA	0.56	NA	NA
			Pb	NA	6.3	NA	NA
			Li	NA	5.3	NA	NA
016129-1		240-SS-34-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.09	NA	NA	NA
	016926-1	240-SS-34B	Be	NA	0.56	NA	NA
			Pb	NA	6.3	NA	NA
			Li	NA	6.9	NA	NA
	016927-1	240-SS-34F	Be	NA	0.57	NA	NA
			Pb	NA	14	NA	NA
			Li	NA	ND	NA	NA
	016928-1	240-SS-34F-D	Be	NA	0.57	NA	NA
			Pb	NA	14.3	NA	NA
			Li	NA	ND	NA	NA
016130-1		240-SS-35-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.06	NA	NA	NA
	016929-1	240-SS-35C	Be	NA	0.45	NA	NA
			Pb	NA	10.2	NA	NA
			Li	NA	ND	NA	NA
016131-1		240-SS-36-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.01	NA	NA	NA
	016930-1	240-SS-36D	Be	NA	0.56	NA	NA
			Pb	NA	10.5	NA	NA
			Li	NA	5.7	NA	NA
016132-1		240-SS-37-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	NA	NA	NA	NA
	016931-1	240-SS-37F	Be	NA	0.56	NA	NA
			Pb	NA	6.2	NA	NA
			Li	NA	6.5	NA	NA
016133-1		240-SS-38-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.11	NA	NA	NA
	016932-1	240-SS-38C	Be	NA	0.56	NA	NA
			Pb	NA	10.8	NA	NA
			Li	NA	5.2	NA	NA
	016933-1	240-SS-38C-D	Be	NA	0.56	NA	NA
			Pb	NA	7.1	NA	NA
			Li	NA	ND	NA	NA
	016934-1	240-SS-38F	Be	NA	0.57	NA	NA
			Pb	NA	12	NA	NA
			Li	NA	ND	NA	NA
016134-1		240-SS-39-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.02	NA	NA	NA
016135-1		240-SS-40-C	Be	0.00	NA	ND	ND
			Pb	NA	NA	NA	NA
			Li	0.07	NA	NA	NA

Definitions:
PPM- Parts Per Million
NA- Not Applicable
ND- Not Detected
XRF - X-Ray Flourescence

APPENDIX B. FIELD SCREENING RESULTS

SITE 241 SOIL SCREENING RESULTS - PAGE 1 OF 2

		HIGH EXPLOSIVES	
Sample Label	Location	Field Results (Immunoassay)	Lab Results (HPLC)
16114-4	241-SS-01	ND	NA
16115-4	241-SS-02	ND	ND
16116-4	241-SS-03	ND	NA
16117-4	241-SS-04	ND	ND
16118-4	241-SS-05	ND	NA
16119-4	241-SS-06	ND	NA
16120-4	241-SS-07	ND	NA
16121-4	241-SS-08	ND	NA
16122-4	241-SS-09	ND	NA
16123-4	241-SS-10	ND	ND
16125-4	241-SS-11	ND	NA
16126-4	241-SS-12	ND	NA
16127-4	241-SS-13	ND	NA
16128-4	241-SS-14	ND	ND
16129-4	241-SS-15	ND	ND
16130-4	241-SS-16	ND	ND
16131-4	241-SS-17	ND	ND
16132-4	241-SS-17D	ND	ND
16133-4	241-SS-18	ND	ND
16134-4	241-SS-19	ND	ND
16135-4	241-SS-20	ND	ND
16136-4	241-SS-21	ND	ND
16137-4	241-SS-22	ND	ND
16138-4	241-SS-23	ND	ND
16139-4	241-SS-24	ND	NA
16140-4	241-SS-25	ND	ND
16141-4	241-SS-26	ND	NA
16142-4	241-SS-27	ND	NA
16143-4	241-SS-28	ND	ND
16144-4	241-SS-29	ND	ND
16145-4	241-SS-29D	ND	ND

Definitions:

HPLC- High Pressure Liquid Chromatography
NA- Not Applicable
ND- Not Detected

APPENDIX B - FIELD SCREENING RESULTS

SITE 24b SITE SUMMARY

Sample Location	Contaminant	Field Screening Results (mg/kg)	Laboratory Analytical Results (mg/kg)
24b-SS-01	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-02	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-03	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-04	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-05	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-06	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-07	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-08	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-09	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-10	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-11	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-12	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-13	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-14	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-15	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-16	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-17	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-18	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-19	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-20	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-21	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-22	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-23	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-24	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-25	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-26	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-27	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-28	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-29	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-30	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-31	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-32	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-33	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-34	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-35	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-36	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-37	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-38	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-39	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
24b-SS-40	Arsenic	0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0
		0.0	1.0

Sample Code	Location	Depth	Field Screening Results (mg/kg)	Laboratory Results (mg/kg)
24b-1	24b-1	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0
24b-2	24b-2	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0
24b-3	24b-3	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0
24b-4	24b-4	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0
24b-5	24b-5	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0
24b-6	24b-6	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0
24b-7	24b-7	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0
24b-8	24b-8	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0
24b-9	24b-9	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0
24b-10	24b-10	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0
24b-11	24b-11	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0
24b-12	24b-12	0	0.0	0.0
		0.5	0.0	0.0
		1	0.0	0.0
		1.5	0.0	0.0
		2	0.0	0.0
		2.5	0.0	0.0
		3	0.0	0.0
		3.5	0.0	0.0
		4	0.0	0.0
		4.5	0.0	0.0
		5	0.0	0.0
		5.5	0.0	0.0
		6	0.0	0.0
		6.5	0.0	0.0
		7	0.0	0.0
		7.5	0.0	0.0
		8	0.0	0.0
		8.5	0.0	0.0
		9	0.0	0.0
		9.5	0.0	0.0
		10	0.0	0.0

Abbreviations:
mg/kg = milligrams per kilogram
N/A = Not Applicable
ND = Not Detected
NS = Not Sampled
PQL = Practical Quantitation Limit

APPENDIX C. LABORATORY ANALYTICAL DATA									
ERSITE	Test Method	Analyte	Sample ID	Sample Depth (ft)	Sample Date	Result	Units	Detection Lim	Qualifier
102									
Chemical Data	6010	ARSENIC	TA3/5-102-UST-02	3	25-JUL-94	1.9	mg/kg	1	
		BARIUM	TA3/5-102-UST-01	8	25-JUL-94	2.2	mg/L	0.02	B
			TA3/5-102-UST-01D	8	25-JUL-94	1.8	mg/L	0.02	B
			TA3/5-102-UST-02	3	25-JUL-94	93.1	mg/kg	1	
		CHROMIUM	TA3/5-102-UST-02	3	25-JUL-94	5.3	mg/kg	1	
		LEAD	TA3/5-102-UST-02	3	25-JUL-94	9.1	mg/kg	5	
	8240	METHYLENE CHLORIDE	TA3/5-102-UST-02	3	25-JUL-94	4.6	ug/kg	5	BJ
Radiological Data									
	Gamma Spec	ACTINIUM-228	TA3/5-102-UST-01	8	25-JUL-94	0.474	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	0.553	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.502	pCi/g	No Data	
		BISMUTH-212	TA3/5-102-UST-01	8	25-JUL-94	0.326	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	0.321	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.399	pCi/g	No Data	
		BISMUTH-214	TA3/5-102-UST-01	8	25-JUL-94	0.426	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	0.437	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.396	pCi/g	No Data	
		CESIUM-137	TA3/5-102-UST-01	8	25-JUL-94	0.0391	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.0652	pCi/g	No Data	
		LEAD-210	TA3/5-102-UST-01	8	25-JUL-94	0.686	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	0.475	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	1.12	pCi/g	No Data	
		LEAD-212	TA3/5-102-UST-01	8	25-JUL-94	0.542	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	0.565	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.56	pCi/g	No Data	
		LEAD-214	TA3/5-102-UST-01	8	25-JUL-94	0.536	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	0.508	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.465	pCi/g	No Data	
		POTASSIUM-40	TA3/5-102-UST-01	8	25-JUL-94	14.3	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	13.7	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	13.4	pCi/g	No Data	
		RADIUM-224	TA3/5-102-UST-01	8	25-JUL-94	0.357	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.509	pCi/g	No Data	
		RADIUM-226	TA3/5-102-UST-01	8	25-JUL-94	0.508	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	0.413	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.587	pCi/g	No Data	
		RADIUM-228	TA3/5-102-UST-01	8	25-JUL-94	0.526	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	0.613	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.556	pCi/g	No Data	
		THALLIUM-208	TA3/5-102-UST-01	8	25-JUL-94	0.491	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	0.47	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.463	pCi/g	No Data	
		THORIUM-228	TA3/5-102-UST-01	8	25-JUL-94	0.54	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	0.562	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.558	pCi/g	No Data	
		THORIUM-232	TA3/5-102-UST-01	8	25-JUL-94	0.526	pCi/g	No Data	
			TA3/5-102-UST-01D	8	25-JUL-94	0.613	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.556	pCi/g	No Data	
		THORIUM-234	TA3/5-102-UST-01D	8	25-JUL-94	0.679	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.527	pCi/g	No Data	
		URANIUM-238	TA3/5-102-UST-01D	8	25-JUL-94	0.678	pCi/g	No Data	
			TA3/5-102-UST-02	3	25-JUL-94	0.526	pCi/g	No Data	

APPENDIX C. LABORATORY ANALYTICAL DATA

ERSITE	Test Method	Analyte	Sample ID	Sample Depth (ft)	Sample Date	Result	Units	Detection Lim	Qualifier
107									
Chemical Data	353.2 Mo	NITRATE NITRITE	TA3/5-107-SS-01	0	17-MAY-94	0.77	mg/kg	0.5	
			TA3/5-107-SS-02	0	17-MAY-94	1.8	mg/kg	0.5	
			TA3/5-107-SS-03	0	17-MAY-94	1.1	mg/kg	0.5	
			TA3/5-107-SS-04	0	17-MAY-94	2.4	mg/kg	0.5	
			TA3/5-107-SS-05	0	17-MAY-94	1.5	mg/kg	0.5	
			TA3/5-107-SS-06	0	17-MAY-94	0.76	mg/kg	0.5	
			TA3/5-107-SS-06D	0	17-MAY-94	0.78	mg/kg	0.5	
			TA3/5-107-SS-07	0	17-MAY-94	2.1	mg/kg	0.5	
			TA3/5-107-SS-08	0	17-MAY-94	1.9	mg/kg	0.5	
			TA3/5-107-SS-09	0	17-MAY-94	1.1	mg/kg	0.5	
			TA3/5-107-SS-10	0	17-MAY-94	1.2	mg/kg	0.5	
	6010	ALUMINUM	TA3/5-107-SS-01	0	17-MAY-94	5200	mg/kg	10	
			TA3/5-107-SS-02	0	17-MAY-94	5670	mg/kg	10	
			TA3/5-107-SS-03	0	17-MAY-94	6290	mg/kg	10	
			TA3/5-107-SS-04	0	17-MAY-94	5170	mg/kg	10	
			TA3/5-107-SS-05	0	17-MAY-94	4070	mg/kg	10	
			TA3/5-107-SS-06	0	17-MAY-94	4850	mg/kg	10	
			TA3/5-107-SS-06D	0	17-MAY-94	5250	mg/kg	10	
			TA3/5-107-SS-07	0	17-MAY-94	4000	mg/kg	10	
			TA3/5-107-SS-08	0	17-MAY-94	4810	mg/kg	10	
			TA3/5-107-SS-09	0	17-MAY-94	4900	mg/kg	10	
			TA3/5-107-SS-10	0	17-MAY-94	4220	mg/kg	10	
		ANTIMONY	TA3/5-107-SS-01	0	17-MAY-94	3	mg/kg	6	J
			TA3/5-107-SS-09	0	17-MAY-94	3.2	mg/kg	6	J
		ARSENIC	TA3/5-107-SS-01	0	17-MAY-94	4	mg/kg	1	
			TA3/5-107-SS-02	0	17-MAY-94	3.2	mg/kg	1	
			TA3/5-107-SS-03	0	17-MAY-94	2.9	mg/kg	1	
			TA3/5-107-SS-04	0	17-MAY-94	3.1	mg/kg	1	
			TA3/5-107-SS-05	0	17-MAY-94	2.1	mg/kg	1	
			TA3/5-107-SS-06	0	17-MAY-94	3.3	mg/kg	1	
			TA3/5-107-SS-06D	0	17-MAY-94	2.7	mg/kg	1	
			TA3/5-107-SS-07	0	17-MAY-94	3	mg/kg	1	
			TA3/5-107-SS-08	0	17-MAY-94	2.4	mg/kg	1	
			TA3/5-107-SS-09	0	17-MAY-94	1.9	mg/kg	1	
			TA3/5-107-SS-10	0	17-MAY-94	2.5	mg/kg	1	
		BARIUM	TA3/5-107-SS-01	0	17-MAY-94	93.6	mg/kg	1	
			TA3/5-107-SS-02	0	17-MAY-94	82.5	mg/kg	1	
			TA3/5-107-SS-03	0	17-MAY-94	79.2	mg/kg	1	
			TA3/5-107-SS-04	0	17-MAY-94	69.7	mg/kg	1	
			TA3/5-107-SS-05	0	17-MAY-94	62	mg/kg	1	
			TA3/5-107-SS-06	0	17-MAY-94	70.6	mg/kg	1	
			TA3/5-107-SS-06D	0	17-MAY-94	74.8	mg/kg	1	
			TA3/5-107-SS-07	0	17-MAY-94	60.3	mg/kg	1	
			TA3/5-107-SS-08	0	17-MAY-94	63.3	mg/kg	1	
			TA3/5-107-SS-09	0	17-MAY-94	62	mg/kg	1	
			TA3/5-107-SS-10	0	17-MAY-94	61.7	mg/kg	1	
		BERYLLIUM	TA3/5-107-SS-01	0	17-MAY-94	0.42	mg/kg	0.2	
			TA3/5-107-SS-02	0	17-MAY-94	0.42	mg/kg	0.2	
			TA3/5-107-SS-03	0	17-MAY-94	0.64	mg/kg	0.2	
			TA3/5-107-SS-04	0	17-MAY-94	0.42	mg/kg	0.2	
			TA3/5-107-SS-05	0	17-MAY-94	0.37	mg/kg	0.2	
			TA3/5-107-SS-06	0	17-MAY-94	0.42	mg/kg	0.2	
			TA3/5-107-SS-06D	0	17-MAY-94	0.53	mg/kg	0.2	
			TA3/5-107-SS-07	0	17-MAY-94	0.31	mg/kg	0.2	
			TA3/5-107-SS-08	0	17-MAY-94	0.42	mg/kg	0.2	
			TA3/5-107-SS-09	0	17-MAY-94	0.42	mg/kg	0.2	
			TA3/5-107-SS-10	0	17-MAY-94	0.31	mg/kg	0.2	
		CADMIUM	TA3/5-107-SS-03	0	17-MAY-94	1.3	mg/kg	0.5	
			TA3/5-107-SS-08	0	17-MAY-94	0.53	mg/kg	0.5	
			TA3/5-107-SS-10	0	17-MAY-94	0.58	mg/kg	0.5	
		CALCIUM	TA3/5-107-SS-01	0	17-MAY-94	26100	mg/kg	20	
			TA3/5-107-SS-02	0	17-MAY-94	11100	mg/kg	20	
			TA3/5-107-SS-03	0	17-MAY-94	4850	mg/kg	20	
			TA3/5-107-SS-04	0	17-MAY-94	8180	mg/kg	20	
			TA3/5-107-SS-05	0	17-MAY-94	3020	mg/kg	20	
			TA3/5-107-SS-06	0	17-MAY-94	8630	mg/kg	20	
			TA3/5-107-SS-06D	0	17-MAY-94	8720	mg/kg	20	
			TA3/5-107-SS-07	0	17-MAY-94	10400	mg/kg	20	
			TA3/5-107-SS-08	0	17-MAY-94	4120	mg/kg	20	
			TA3/5-107-SS-09	0	17-MAY-94	2540	mg/kg	20	
			TA3/5-107-SS-10	0	17-MAY-94	2620	mg/kg	20	
		CHROMIUM	TA3/5-107-SS-01	0	17-MAY-94	6	mg/kg	1	
			TA3/5-107-SS-02	0	17-MAY-94	6.7	mg/kg	1	
			TA3/5-107-SS-03	0	17-MAY-94	7.9	mg/kg	1	
			TA3/5-107-SS-04	0	17-MAY-94	6.3	mg/kg	1	
			TA3/5-107-SS-05	0	17-MAY-94	5.2	mg/kg	1	
			TA3/5-107-SS-06	0	17-MAY-94	5.6	mg/kg	1	
			TA3/5-107-SS-06D	0	17-MAY-94	6.3	mg/kg	1	
			TA3/5-107-SS-07	0	17-MAY-94	5.7	mg/kg	1	
			TA3/5-107-SS-08	0	17-MAY-94	5.8	mg/kg	1	
			TA3/5-107-SS-09	0	17-MAY-94	6.3	mg/kg	1	
			TA3/5-107-SS-10	0	17-MAY-94	5.4	mg/kg	1	
		COBALT	TA3/5-107-SS-01	0	17-MAY-94	2.9	mg/kg	1	
			TA3/5-107-SS-02	0	17-MAY-94	3.7	mg/kg	1	
			TA3/5-107-SS-03	0	17-MAY-94	3.5	mg/kg	1	
			TA3/5-107-SS-04	0	17-MAY-94	3.2	mg/kg	1	
			TA3/5-107-SS-05	0	17-MAY-94	3.1	mg/kg	1	
			TA3/5-107-SS-06	0	17-MAY-94	3.2	mg/kg	1	
			TA3/5-107-SS-06D	0	17-MAY-94	3.3	mg/kg	1	
			TA3/5-107-SS-07	0	17-MAY-94	2.9	mg/kg	1	
			TA3/5-107-SS-08	0	17-MAY-94	3.1	mg/kg	1	
			TA3/5-107-SS-09	0	17-MAY-94	3.2	mg/kg	1	
			TA3/5-107-SS-10	0	17-MAY-94	3	mg/kg	1	
		COPPER	TA3/5-107-SS-01	0	17-MAY-94	6.9	mg/kg	2	
			TA3/5-107-SS-02	0	17-MAY-94	7.1	mg/kg	2	
			TA3/5-107-SS-03	0	17-MAY-94	8.1	mg/kg	2	
			TA3/5-107-SS-04	0	17-MAY-94	10.6	mg/kg	2	
			TA3/5-107-SS-05	0	17-MAY-94	6.5	mg/kg	2	
			TA3/5-107-SS-06	0	17-MAY-94	6.7	mg/kg	2	
			TA3/5-107-SS-06D	0	17-MAY-94	7.5	mg/kg	2	
			TA3/5-107-SS-07	0	17-MAY-94	6.6	mg/kg	2	
			TA3/5-107-SS-08	0	17-MAY-94	6.7	mg/kg	2	
			TA3/5-107-SS-09	0	17-MAY-94	6.2	mg/kg	2	
			TA3/5-107-SS-10	0	17-MAY-94	5.9	mg/kg	2	
		IRON	TA3/5-107-SS-01	0	17-MAY-94	7050	mg/kg	10	
			TA3/5-107-SS-02	0	17-MAY-94	7970	mg/kg	10	
			TA3/5-107-SS-03	0	17-MAY-94	9180	mg/kg	10	
			TA3/5-107-SS-04	0	17-MAY-94	7920	mg/kg	10	
			TA3/5-107-SS-05	0	17-MAY-94	6520	mg/kg	10	
			TA3/5-107-SS-06	0	17-MAY-94	7280	mg/kg	10	
			TA3/5-107-SS-06D	0	17-MAY-94	7600	mg/kg	10	
			TA3/5-107-SS-07	0	17-MAY-94	6380	mg/kg	10	
			TA3/5-107-SS-08	0	17-MAY-94	7100	mg/kg	10	
			TA3/5-107-SS-09	0	17-MAY-94	7250	mg/kg	10	
			TA3/5-107-SS-10	0	17-MAY-94	6910	mg/kg	10	
		LEAD	TA3/5-107-SS-01	0	17-MAY-94	9.6	mg/kg	0.3	
			TA3/5-107-SS-02	0	17-MAY-94	9.6	mg/kg	0.3	
			TA3/5-107-SS-03	0	17-MAY-94	10	mg/kg	0.3	
			TA3/5-107-SS-04	0	17-MAY-94	11.2	mg/kg	0.3	
			TA3/5-107-SS-05	0	17-MAY-94	8.6	mg/kg	0.3	
			TA3/5-107-SS-06	0	17-MAY-94	10.4	mg/kg	0.3	
			TA3/5-107-SS-06D	0	17-MAY-94	9.4	mg/kg	0.3	
			TA3/5-107-SS-07	0	17-MAY-94	9	mg/kg	0.3	
			TA3/5-107-SS-08	0	17-MAY-94	8.5	mg/kg	0.3	
			TA3/5-107-SS-09	0	17-MAY-94	8.2	mg/kg	0.3	
			TA3/5-107-SS-10	0	17-MAY-94	9.2	mg/kg	0.3	
		MAGNESIUM	TA3/5-107-SS-01	0	17-MAY-94	3420	mg/kg	20	
			TA3/5-107-SS-02	0	17-MAY-94	2460	mg/kg	20	
			TA3/5-107-SS-03	0	17-MAY-94	2590	mg/kg	20	
			TA3/5-107-SS-04	0	17-MAY-94	2220	mg/kg	20	
			TA3/5-107-SS-05	0	17-MAY-94	1910	mg/kg	20	
			TA3/5-107-SS-06	0	17-MAY-94	2100	mg/kg	20	
			TA3/5-107-SS-06D	0	17-MAY-94	2300	mg/kg	20	
			TA3/5-107-SS-07	0	17-MAY-94	1800	mg/kg	20	
			TA3/5-107-SS-08	0	17-MAY-94	1970	mg/kg	20	
			TA3/5-107-SS-09	0	17-MAY-94	1800	mg/kg	20	
			TA3/5-107-SS-10	0	17-MAY-94	1660	mg/kg	20	
		MANGANESE	TA3/5-107-SS-01	0	17-MAY-94	142	mg/kg	1	
			TA3/5-107-SS-02	0	17-MAY-94	182	mg/kg	1	
			TA3/5-107-SS-03	0	17-MAY-94	228	mg/kg	1	
			TA3/5-107-SS-04	0	17-MAY-94	181	mg/kg	1	
			TA3/5-107-SS-05	0	17-MAY-94	199	mg/kg	1	
			TA3/5-107-SS-06	0	17-MAY-94	185	mg/kg	1	
			TA3/5-107-SS-06D	0	17-MAY-94	185	mg/kg	1	
			TA3/5-107-SS-07	0	17-MAY-94	133	mg/kg	1	
			TA3/5-107-SS-08	0	17-MAY-94	158	mg/kg	1	
			TA3/5-107-SS-09	0	17-MAY-94	185	mg/kg	1	
			TA3/5-107-SS-10	0	17-MAY-94	176	mg/kg	1	
		NICKEL	TA3/5-107-SS-01	0	17-MAY-94	7.8	mg/kg	4	
			TA3/5-107-SS-02	0	17-MAY-94	6.6	mg/kg	4	
			TA3/5-107-SS-03	0	17-MAY-94	7.3	mg/kg	4	
			TA3/5-107-SS-04	0	17-MAY-94	6.4	mg/kg	4	
			TA3/5-107-SS-05	0	17-MAY-94	6.1	mg/kg	4	
			TA3/5-107-SS-06	0	17-MAY-94	6.2	mg/kg	4	
			TA3/5-107-SS-06D	0	17-MAY-94	6.6	mg/kg	4	
			TA3/5-107-SS-07	0	17-MAY-94	5.1	mg/kg	4	
			TA3/5-107-SS-08	0	17-MAY-94	5.8	mg/kg	4	
			TA3/5-107-SS-09	0	17-MAY-94	6	mg/kg	4	
			TA3/5-107-SS-10	0	17-MAY-94	5.3	mg/kg	4	
		POTASSIUM	TA3/5-107-SS-01	0	17-MAY-94	1490	mg/kg	500	
			TA3/5-107-SS-02	0	17-MAY-94	1920	mg/kg	500	
			TA3/5-107-SS-03	0	17-MAY-94	2450	mg/kg	500	
			TA3/5-107-SS-04	0	17-MAY-94	1880	mg/kg	500	
			TA3/5-107-SS-05	0	17-MAY-94	1700	mg/kg	500	
			TA3/5-107-SS-06	0	17-MAY-94	1640	mg/kg	500	
			TA3/5-107-SS-06D	0	17-MAY-94	2060	mg/kg	500	
			TA3/5-107-SS-07	0	17-MAY-94	1450	mg/kg	500	
			TA3/5-107-SS-08	0	17-MAY-94	1640	mg/kg	500	
			TA3/5-107-SS-09	0	17-MAY-94	1720	mg/kg	500	
			TA3/5-107-SS-10	0	17-MAY-94	1430	mg/kg	500	
		SILVER	TA3/5-107-SS-01	0	17-MAY-94	0.6	mg/kg	1	J
			TA3/5-107-SS-02	0	17-MAY-94	0.42	mg/kg	1	J
			TA3/5-107-SS-03	0	17-MAY-94	0.6	mg/kg	1	J
			TA3/5-107-SS-04	0	17-MAY-94	0.3	mg/kg	1	J
			TA3/5-107-SS-08	0	17-MAY-94	0.36	mg/kg	1	J
		SODIUM	TA3/5-107-SS-06D	0	17-MAY-94	66.4	mg/kg	500	J
			TA3/5-107-SS-09	0	17-MAY-94	98.7	mg/kg	500	J
		VANADIUM	TA3/5-107-SS-01	0	17-MAY-94	14.3	mg/kg	1	
			TA3/5-107-SS-02	0	17-MAY-94	13.9	mg/kg	1	
			TA3/5-107-SS-03	0	17-MAY-94	15.7	mg/kg	1	
			TA3/5-107-SS-04	0	17-MAY-94	13.8	mg/kg	1	
			TA3/5-107-SS-05	0	17-MAY-94	11.1	mg/kg	1	
			TA3/5-107-SS-06	0	17-MAY-94	13.2	mg/kg	1	
			TA3/5-107-SS-06D	0	17-MAY-94	14.2	mg/kg	1	
			TA3/5-107-SS-07	0	17-MAY-94	12.4	mg/kg	1	
			TA3/5-107-SS-08	0	17-MAY-94	13.7	mg/kg	1	
			TA3/5-107-SS-09	0	17-MAY-94	12.4	mg/kg	1	
			TA3/5-107-SS-10	0	17-MAY-94	12.4	mg/kg	1	
		ZINC	TA3/5-107-SS-01	0	17-MAY-94	22.5	mg/kg	2	
			TA3/5-107-SS-02	0	17-MAY-94	23.2	mg/kg	2	
			TA3/5-107-SS-03	0	17-MAY-94	29.5	mg/kg	2	
			TA3/5-107-SS-04	0	17-MAY-94	34.5	mg/kg	2	
			TA3/5-107-SS-05	0	17-MAY-94	20.5	mg/kg	2	
			TA3/5-107-SS-06	0	17-MAY-94	20.2	mg/kg	2	
			TA3/5-107-SS-06D	0	17-MAY-94	20.7	mg/kg	2	
			TA3/5-107-SS-07	0	17-MAY-94	23.3	mg/kg	2	
			TA3/5-107-SS-08	0	17-MAY-94	20.7	mg/kg	2	
			TA3/5-107-SS-09	0	17-MAY-94	19.5	mg/kg	2	
			TA3/5-107-SS-10	0	17-MAY-94	18.2	mg/kg	2	
Radiological Data									
107	Gamma Spec	ACTINIUM-228	TA3/5-107-SS-01	0	17-MAY-94	0.71	pCi/g	0.28	
			TA3/5-107-SS-01	0	17-MAY-94	0.692	pCi/g	No Data	
			TA3/5-107-SS-02	0	17-MAY-94	0.96	pCi/g	0.34	
			TA3/5-107-SS-02	0	17-MAY-94	0.96	pCi/g	0.34	
			TA3/5-107-SS-02	0	17-MAY-94	0.698	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.98	pCi/g	0.31	
			TA3/5-107-SS-03	0	17-MAY-94	0.95	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	0.94	pCi/g	0.29	
			TA3/5-107-SS-04	0	17-MAY-94	0.838	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.79	pCi/g	0.29	
			TA3/5-107-SS-05	0	17-MAY-94	0.746	pCi/g	No Data	
			TA3/5-107-SS-06	0	17-MAY-94	1.1	pCi/g	0.26	
			TA3/5-107-SS-06	0	17-MAY-94	0.88	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	0.91	pCi/g	0.35	
			TA3/5-107-SS-06D	0	17-MAY-94	0.898	pCi/g	No Data	
			TA3/5-107-SS-07	0	17-MAY-94	0.98	pCi/g	0.3	
			TA3/5-107-SS-07	0	17-MAY-94	0.631	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.92	pCi/g	0.39	
			TA3/5-107-SS-08	0	17-MAY-94	0.862	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	0.882	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	0.6	pCi/g	0.38	
			TA3/5-107-SS-10	0	17-MAY-94	0.78	pCi/g	0.25	
			TA3/5-107-SS-10	0	17-MAY-94	0.71	pCi/g	No Data	
		BISMUTH-212	TA3/5-107-SS-01	0	17-MAY-94	1.2	pCi/g	0.99	
			TA3/5-107-SS-01	0	17-MAY-94	0.331	pCi/g	No Data	
			TA3/5-107-SS-02	0	17-MAY-94	1.2	pCi/g	0.99	
			TA3/5-107-SS-02	0	17-MAY-94	1.2	pCi/g	0.99	
			TA3/5-107-SS-02	0	17-MAY-94	0.37	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.608	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	0.608	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.458	pCi/g	No Data	
			TA3/5-107-SS-06	0	17-MAY-94	0.515	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	1.6	pCi/g	1.1	
			TA3/5-107-SS-06D	0	17-MAY-94	0.449	pCi/g	No Data	
			TA3/5-107-SS-07	0	17-MAY-94	0.282	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.572	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	1.4	pCi/g	1.2	
			TA3/5-107-SS-09	0	17-MAY-94	0.411	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	0.563	pCi/g	No Data	
		BISMUTH-214	TA3/5-107-SS-01	0	17-MAY-94	0.62	pCi/g	0.098	
			TA3/5-107-SS-01	0	17-MAY-94	0.471	pCi/g	No Data	
			TA3/5-107-SS-02	0	17-MAY-94	0.75	pCi/g	0.13	
			TA3/5-107-SS-02	0	17-MAY-94	0.75	pCi/g	0.13	
			TA3/5-107-SS-02	0	17-MAY-94	0.442	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.567	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	0.75	pCi/g	0.16	
			TA3/5-107-SS-04	0	17-MAY-94	0.504	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.75	pCi/g	0.19	
			TA3/5-107-SS-05	0	17-MAY-94	0.523	pCi/g	No Data	
			TA3/5-107-SS-06	0	17-MAY-94	0.71	pCi/g	0.14	
			TA3/5-107-SS-06	0	17-MAY-94	0.548	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	0.54	pCi/g	0.19	
			TA3/5-107-SS-06D	0	17-MAY-94	0.535	pCi/g	No Data	
			TA3/5-107-SS-07	0	17-MAY-94	0.5	pCi/g	0.12	
			TA3/5-107-SS-07	0	17-MAY-94	0.467	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.57	pCi/g	0.17	
			TA3/5-107-SS-08	0	17-MAY-94	0.456	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	0.68	pCi/g	0.14	
			TA3/5-107-SS-09	0	17-MAY-94	0.538	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	0.59	pCi/g	0.14	
			TA3/5-107-SS-10	0	17-MAY-94	0.488	pCi/g	No Data	
		CESIUM-137	TA3/5-107-SS-01	0	17-MAY-94	0.198	pCi/g	No Data	
			TA3/5-107-SS-01	0	17-MAY-94	0.15	pCi/g	0.084	
			TA3/5-107-SS-02	0	17-MAY-94	0.2	pCi/g	0.11	
			TA3/5-107-SS-02	0	17-MAY-94	0.2	pCi/g	0.11	
			TA3/5-107-SS-02	0	17-MAY-94	0.169	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.189	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.18	pCi/g	0.1	
			TA3/5-107-SS-04	0	17-MAY-94	0.22	pCi/g	0.091	
			TA3/5-107-SS-04	0	17-MAY-94	0.198	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.16	pCi/g	0.11	
			TA3/5-107-SS-05	0	17-MAY-94	0.148	pCi/g	No Data	
			TA3/5-107-SS-06	0	17-MAY-94	0.192	pCi/g	No Data	
			TA3/5-107-SS-06	0	17-MAY-94	0.15	pCi/g	0.09	
			TA3/5-107-SS-06D	0	17-MAY-94	0.18	pCi/g	0.085	
			TA3/5-107-SS-06D	0	17-MAY-94	0.177	pCi/g	No Data	
			TA3/5-107-SS-07	0	17-MAY-94	0.13	pCi/g	0.08	
			TA3/5-107-SS-07	0	17-MAY-94	0.12	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.246	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.21	pCi/g	0.079	
			TA3/5-107-SS-09	0	17-MAY-94	0.32	pCi/g	0.086	
			TA3/5-107-SS-09	0	17-MAY-94	0.303	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	0.224	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	0.15	pCi/g	0.087	
		LEAD-212	TA3/5-107-SS-01	0	17-MAY-94	0.71	pCi/g	0.088	
			TA3/5-107-SS-01	0	17-MAY-94	0.646	pCi/g	No Data	
			TA3/5-107-SS-02	0	17-MAY-94	0.77	pCi/g	0.095	
			TA3/5-107-SS-02	0	17-MAY-94	0.77	pCi/g	0.095	
			TA3/5-107-SS-02	0	17-MAY-94	0.697	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.93	pCi/g	0.096	
			TA3/5-107-SS-03	0	17-MAY-94	0.83	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	0.81	pCi/g	0.099	
			TA3/5-107-SS-04	0	17-MAY-94	0.787	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.88	pCi/g	0.092	
			TA3/5-107-SS-05	0	17-MAY-94	0.681	pCi/g	No Data	
			TA3/5-107-SS-06	0	17-MAY-94	0.88	pCi/g	0.093	
			TA3/5-107-SS-06	0	17-MAY-94	0.67	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	0.84	pCi/g	0.095	
			TA3/5-107-SS-06D	0	17-MAY-94	0.744	pCi/g	No Data	
			TA3/5-107-SS-07	0	17-MAY-94	0.69	pCi/g	0.088	
			TA3/5-107-SS-07	0	17-MAY-94	0.575	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.74	pCi/g	0.12	
			TA3/5-107-SS-08	0	17-MAY-94	0.65	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	0.78	pCi/g	0.088	
			TA3/5-107-SS-09	0	17-MAY-94	0.637	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	0.83	pCi/g	0.091	
			TA3/5-107-SS-10	0	17-MAY-94	0.679	pCi/g	No Data	
		LEAD-214	TA3/5-107-SS-01	0	17-MAY-94	0.56	pCi/g	0.15	
			TA3/5-107-SS-01	0	17-MAY-94	0.48	pCi/g	No Data	
			TA3/5-107-SS-02	0	17-MAY-94	0.76	pCi/g	0.16	
			TA3/5-107-SS-02	0	17-MAY-94	0.76	pCi/g	0.16	
			TA3/5-107-SS-02	0	17-MAY-94	0.572	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.81	pCi/g	0.16	
			TA3/5-107-SS-03	0	17-MAY-94	0.696	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	0.77	pCi/g	0.22	
			TA3/5-107-SS-04	0	17-MAY-94	0.59	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.78	pCi/g	0.15	
			TA3/5-107-SS-05	0	17-MAY-94	0.625	pCi/g	No Data	
			TA3/5-107-SS-06	0	17-MAY-94	0.76	pCi/g	0.16	
			TA3/5-107-SS-06	0	17-MAY-94	0.621	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	0.78	pCi/g	0.16	
			TA3/5-107-SS-06D	0	17-MAY-94	0.616	pCi/g	No Data	
			TA3/5-107-SS-07	0	17-MAY-94	0.67	pCi/g	0.17	
			TA3/5-107-SS-07	0	17-MAY-94	0.466	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.76	pCi/g	0.16	
			TA3/5-107-SS-08	0	17-MAY-94	0.568	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	0.68	pCi/g	0.14	
			TA3/5-107-SS-09	0	17-MAY-94	0.597	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	0.81	pCi/g	0.16	
			TA3/5-107-SS-10	0	17-MAY-94	0.56	pCi/g	No Data	
		POTASSIUM-40	TA3/5-107-SS-01	0	17-MAY-94	15.6	pCi/g	No Data	
			TA3/5-107-SS-01	0	17-MAY-94	15	pCi/g	0.78	
			TA3/5-107-SS-02	0	17-MAY-94	15.6	pCi/g	No Data	
			TA3/5-107-SS-02	0	17-MAY-94	15	pCi/g	0.66	
			TA3/5-107-SS-02	0	17-MAY-94	15	pCi/g	0.66	
			TA3/5-107-SS-03	0	17-MAY-94	16	pCi/g	0.72	
			TA3/5-107-SS-03	0	17-MAY-94	15.9	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	17	pCi/g	0.57	
			TA3/5-107-SS-04	0	17-MAY-94	15.8	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	16.6	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	16	pCi/g	0.86	
			TA3/5-107-SS-06	0	17-MAY-94	17	pCi/g	No Data	
			TA3/5-107-SS-06	0	17-MAY-94	16	pCi/g	0.66	
			TA3/5-107-SS-06D	0	17-MAY-94	17	pCi/g	0.75	
			TA3/5-107-SS-06D	0	17-MAY-94	16.8	pCi/g	No Data	
			TA3/5-107-SS-07	0	17-MAY-94	16	pCi/g	0.56	
			TA3/5-107-SS-07	0	17-MAY-94	15.6	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	16	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	15	pCi/g	0.76	
			TA3/5-107-SS-09	0	17-MAY-94	17.3	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	14	pCi/g	0.54	
			TA3/5-107-SS-10	0	17-MAY-94	16.8	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	16	pCi/g	0.72	
		RADIUM-223	TA3/5-107-SS-04	0	17-MAY-94	0.39	pCi/g	0.29	
		RADIUM-224	TA3/5-107-SS-01	0	17-MAY-94	2.27	pCi/g	No Data	
			TA3/5-107-SS-02	0	17-MAY-94	0.653	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	2	pCi/g	1.2	
			TA3/5-107-SS-03	0	17-MAY-94	0.634	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	1.29	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	1.31	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	2.94	pCi/g	No Data	
			TA3/5-107-SS-07	0	17-MAY-94	0.972	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	1.7	pCi/g	1.6	
			TA3/5-107-SS-10	0	17-MAY-94	1.05	pCi/g	No Data	
		RADIUM-226	TA3/5-107-SS-01	0	17-MAY-94	1.33	pCi/g	No Data	
			TA3/5-107-SS-01	0	17-MAY-94	0.6	pCi/g	0.096	
			TA3/5-107-SS-02	0	17-MAY-94	0.971	pCi/g	No Data	
			TA3/5-107-SS-02	0	17-MAY-94	0.73	pCi/g	0.13	
			TA3/5-107-SS-02	0	17-MAY-94	0.73	pCi/g	0.13	
			TA3/5-107-SS-03	0	17-MAY-94	1.61	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.69	pCi/g	0.14	
			TA3/5-107-SS-04	0	17-MAY-94	1.91	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	0.73	pCi/g	0.15	
			TA3/5-107-SS-05	0	17-MAY-94	1.33	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.73	pCi/g	0.18	
			TA3/5-107-SS-06	0	17-MAY-94	1.56	pCi/g	No Data	
			TA3/5-107-SS-06	0	17-MAY-94	0.66	pCi/g	0.14	
			TA3/5-107-SS-06D	0	17-MAY-94	2.02	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	0.53	pCi/g	0.19	
			TA3/5-107-SS-07	0	17-MAY-94	1.2	pCi/g	No Data	
			TA3/5-107-SS-07	0	17-MAY-94	0.48	pCi/g	0.12	
			TA3/5-107-SS-08	0	17-MAY-94	1.46	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.55	pCi/g	0.17	
			TA3/5-107-SS-09	0	17-MAY-94	2.18	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	0.63	pCi/g	0.14	
			TA3/5-107-SS-10	0	17-MAY-94	1.34	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	0.57	pCi/g	0.14	
		RADIUM-228	TA3/5-107-SS-01	0	17-MAY-94	0.767	pCi/g	No Data	
			TA3/5-107-SS-01	0	17-MAY-94	0.71	pCi/g	0.28	
			TA3/5-107-SS-02	0	17-MAY-94	0.96	pCi/g	0.34	
			TA3/5-107-SS-02	0	17-MAY-94	0.96	pCi/g	0.34	
			TA3/5-107-SS-02	0	17-MAY-94	0.765	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.98	pCi/g	0.31	
			TA3/5-107-SS-04	0	17-MAY-94	0.94	pCi/g	0.29	
			TA3/5-107-SS-04	0	17-MAY-94	0.928	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.826	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.79	pCi/g	0.29	
			TA3/5-107-SS-06	0	17-MAY-94	1.1	pCi/g	0.26	
			TA3/5-107-SS-06	0	17-MAY-94	0.953	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	0.995	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	0.91	pCi/g	0.35	
			TA3/5-107-SS-07	0	17-MAY-94	0.98	pCi/g	0.3	
			TA3/5-107-SS-07	0	17-MAY-94	0.699	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.955	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.92	pCi/g	0.39	
			TA3/5-107-SS-09	0	17-MAY-94	0.977	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	0.6	pCi/g	0.38	
			TA3/5-107-SS-10	0	17-MAY-94	0.786	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	0.78	pCi/g	0.25	
		RADON-219	TA3/5-107-SS-04	0	17-MAY-94	0.5	pCi/g	0.37	
		STRONTIUM-85	TA3/5-107-SS-09	0	17-MAY-94	0.0312	pCi/g	No Data	
		THALLIUM-208	TA3/5-107-SS-01	0	17-MAY-94	0.7	pCi/g	0.22	
			TA3/5-107-SS-01	0	17-MAY-94	0.218	pCi/g	No Data	
			TA3/5-107-SS-02	0	17-MAY-94	0.74	pCi/g	0.26	
			TA3/5-107-SS-02	0	17-MAY-94	0.74	pCi/g	0.26	
			TA3/5-107-SS-02	0	17-MAY-94	0.283	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.86	pCi/g	0.23	
			TA3/5-107-SS-03	0	17-MAY-94	0.269	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	0.86	pCi/g	0.23	
			TA3/5-107-SS-04	0	17-MAY-94	0.219	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.8	pCi/g	0.27	
			TA3/5-107-SS-05	0	17-MAY-94	0.243	pCi/g	No Data	
			TA3/5-107-SS-06	0	17-MAY-94	0.77	pCi/g	0.19	
			TA3/5-107-SS-06	0	17-MAY-94	0.246	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	0.8	pCi/g	0.19	
			TA3/5-107-SS-06D	0	17-MAY-94	0.291	pCi/g	No Data	
			TA3/5-107-SS-07	0	17-MAY-94	0.58	pCi/g	0.17	
			TA3/5-107-SS-07	0	17-MAY-94	0.215	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.82	pCi/g	0.26	
			TA3/5-107-SS-08	0	17-MAY-94	0.239	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	0.68	pCi/g	0.23	
			TA3/5-107-SS-09	0	17-MAY-94	0.264	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	0.78	pCi/g	0.27	
			TA3/5-107-SS-10	0	17-MAY-94	0.207	pCi/g	No Data	
		THORIUM-228	TA3/5-107-SS-01	0	17-MAY-94	0.76	pCi/g	0.23	
			TA3/5-107-SS-01	0	17-MAY-94	0.643	pCi/g	No Data	
			TA3/5-107-SS-02	0	17-MAY-94	0.8	pCi/g	0.28	
			TA3/5-107-SS-02	0	17-MAY-94	0.8	pCi/g	0.28	
			TA3/5-107-SS-02	0	17-MAY-94	0.694	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.91	pCi/g	0.25	
			TA3/5-107-SS-03	0	17-MAY-94	0.828	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	0.92	pCi/g	0.25	
			TA3/5-107-SS-04	0	17-MAY-94	0.783	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.86	pCi/g	0.29	
			TA3/5-107-SS-05	0	17-MAY-94	0.678	pCi/g	No Data	
			TA3/5-107-SS-06	0	17-MAY-94	0.84	pCi/g	0.21	
			TA3/5-107-SS-06	0	17-MAY-94	0.667	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	0.86	pCi/g	0.21	
			TA3/5-107-SS-06D	0	17-MAY-94	0.74	pCi/g	No Data	
			TA3/5-107-SS-07	0	17-MAY-94	0.62	pCi/g	0.18	
			TA3/5-107-SS-07	0	17-MAY-94	0.572	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.88	pCi/g	0.28	
			TA3/5-107-SS-08	0	17-MAY-94	0.647	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	0.74	pCi/g	0.25	
			TA3/5-107-SS-09	0	17-MAY-94	0.634	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	0.84	pCi/g	0.29	
			TA3/5-107-SS-10	0	17-MAY-94	0.676	pCi/g	No Data	
		THORIUM-231	TA3/5-107-SS-03	0	17-MAY-94	0.456	pCi/g	No Data	
		THORIUM-232	TA3/5-107-SS-01	0	17-MAY-94	0.767	pCi/g	No Data	
			TA3/5-107-SS-01	0	17-MAY-94	0.71	pCi/g	0.28	
			TA3/5-107-SS-02	0	17-MAY-94	0.96	pCi/g	0.34	
			TA3/5-107-SS-02	0	17-MAY-94	0.96	pCi/g	0.34	
			TA3/5-107-SS-02	0	17-MAY-94	0.765	pCi/g	No Data	
			TA3/5-107-SS-03	0	17-MAY-94	0.98	pCi/g	0.31	
			TA3/5-107-SS-04	0	17-MAY-94	0.94	pCi/g	0.29	
			TA3/5-107-SS-04	0	17-MAY-94	0.928	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.826	pCi/g	No Data	
			TA3/5-107-SS-05	0	17-MAY-94	0.79	pCi/g	0.29	
			TA3/5-107-SS-06	0	17-MAY-94	1.1	pCi/g	0.26	
			TA3/5-107-SS-06	0	17-MAY-94	0.953	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	0.995	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	0.91	pCi/g	0.35	
			TA3/5-107-SS-07	0	17-MAY-94	0.98	pCi/g	0.3	
			TA3/5-107-SS-07	0	17-MAY-94	0.699	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.955	pCi/g	No Data	
			TA3/5-107-SS-08	0	17-MAY-94	0.92	pCi/g	0.39	
			TA3/5-107-SS-09	0	17-MAY-94	0.977	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	0.6	pCi/g	0.38	
			TA3/5-107-SS-10	0	17-MAY-94	0.786	pCi/g	No Data	
			TA3/5-107-SS-10	0	17-MAY-94	0.78	pCi/g	0.25	
		THORIUM-234	TA3/5-107-SS-01	0	17-MAY-94	1.06	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	0.982	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	1.09	pCi/g	No Data	
			TA3/5-107-SS-09	0	17-MAY-94	1.2	pCi/g	0.87	
		URANIUM-238	TA3/5-107-SS-01	0	17-MAY-94	1.06	pCi/g	No Data	
			TA3/5-107-SS-04	0	17-MAY-94	0.98	pCi/g	No Data	
			TA3/5-107-SS-06D	0	17-MAY-94	1.09	pCi/g	No Data	

APPENDIX C. LABORATORY ANALYTICAL DATA

ERSITE	Test Method	Analyte	Sample ID	Sample Depth (ft)	Sample Date	Result	Units	Detection Lim	Qualifier
111	6010	SILVER	TA3/5-111-B2-8	8	17-JUN-94	2.1	mg/kg	1	
			TA3/5-111-B2-8D	8	17-JUN-94	1.9	mg/kg	1	
			TA3/5-111-B3-15	15	17-JUN-94	0.54	mg/kg	1	J
	8240	ACETONE	TA3/5-111-B2-8	8	17-JUN-94	3.7	ug/kg	10	J
			TA3/5-111-B2-8D	8	17-JUN-94	5.5	ug/kg	10	J
			TA3/5-111-B3-15	15	17-JUN-94	5.7	ug/kg	10	J
		METHYLENE CHLORIDE	TA3/5-111-B1-12	12	17-JUN-94	3.4	ug/kg	5	BJ
			TA3/5-111-B2-8	8	17-JUN-94	3	ug/kg	5	BJ
			TA3/5-111-B2-8D	8	17-JUN-94	3.5	ug/kg	5	BJ
			TA3/5-111-B3-15	15	17-JUN-94	3.6	ug/kg	5	BJ
		TOLUENE	TA3/5-111-B2-8D	8	17-JUN-94	1.5	ug/kg	5	J
			TA3/5-111-B3-15	15	17-JUN-94	1.8	ug/kg	5	J
	8270	BIS(2-ETHYLHEXYL) PHTHALATE	TA3/5-111-B1-12	12	17-JUN-94	70	ug/kg	330	J
			TA3/5-111-B2-8	8	17-JUN-94	87	ug/kg	330	J
			TA3/5-111-B2-8D	8	17-JUN-94	51	ug/kg	330	J
			TA3/5-111-B3-15	15	17-JUN-94	350	ug/kg	330	

APPENDIX C. LABORATORY ANALYTICAL DATA

ERSITE	Test Method	Analyte	Sample ID	Sample Depth (ft)	Sample Date	Result	Units	Detection Lim	Qualifier
196									
Chemical Data	3550/418	TPH	TA3/5-196-CISTERN	0	27-JUN-94	60500	mg/kg	2000	
			TA3/5-196-D1-13	13	27-Mar-96	4300	mg/kg	20	
			TA3/5-196-D2-001	1	27-Mar-96	19000	mg/kg	20	
			TA3/5-196-D2-005	5	27-Mar-96	7800	mg/kg	20	
			TA3/5-196-D2-007	7	27-Mar-96	7200	mg/kg	20	
			TA3/5-196-D2-011	11	27-Mar-96	23000	mg/kg	20	
			TA3/5-196-D2-011-DUP	11	27-Mar-96	21000	mg/kg	20	
			TA3/5-196-D2-012	12	27-Mar-96	40000	mg/kg	20	
			TA3/5-196-D3-002	2	27-Mar-96	35	mg/kg	20	
			TA3/5-196-D3-004	4	27-Mar-96	20	mg/kg	20	U
			TA3/5-196-D1-008	8	26-Mar-96	29000	mg/kg	20	
			TA3/5-196-D1-009	9	26-Mar-96	15000	mg/kg	20	
	6010	ALUMINUM	TA3/5-196-CISTERN	0	27-JUN-94	4900	mg/kg	10	
		ARSENIC	TA3/5-196-CISTERN	0	27-JUN-94	0.56	mg/kg	1	J
		BARIUM	TA3/5-196-CISTERN	0	27-JUN-94	87.3	mg/kg	1	
		BERYLLIUM	TA3/5-196-CISTERN	0	27-JUN-94	0.25	mg/kg	0.2	
		CADMIUM	TA3/5-196-CISTERN	0	27-JUN-94	2.5	mg/kg	0.5	
		CALCIUM	TA3/5-196-CISTERN	0	27-JUN-94	14700	mg/kg	20	
		CHROMIUM	TA3/5-196-CISTERN	0	27-JUN-94	14.8	mg/kg	1	
		COBALT	TA3/5-196-CISTERN	0	27-JUN-94	5.8	mg/kg	1	
		COPPER	TA3/5-196-CISTERN	0	27-JUN-94	213	mg/kg	2	
		IRON	TA3/5-196-CISTERN	0	27-JUN-94	8750	mg/kg	10	
		LEAD	TA3/5-196-CISTERN	0	27-JUN-94	180	mg/kg	0.3	
		MAGNESIUM	TA3/5-196-CISTERN	0	27-JUN-94	2640	mg/kg	20	
		MANGANESE	TA3/5-196-CISTERN	0	27-JUN-94	111	mg/kg	1	
		NICKEL	TA3/5-196-CISTERN	0	27-JUN-94	17.8	mg/kg	4	
		POTASSIUM	TA3/5-196-CISTERN	0	27-JUN-94	859	mg/kg	500	
		SILVER	TA3/5-196-CISTERN	0	27-JUN-94	2.9	mg/kg	1	
		SODIUM	TA3/5-196-CISTERN	0	27-JUN-94	144	mg/kg	500	J
		VANADIUM	TA3/5-196-CISTERN	0	27-JUN-94	13.8	mg/kg	1	
		ZINC	TA3/5-196-CISTERN	0	27-JUN-94	458	mg/kg	2	B
	8240	METHYLENE CHLORIDE	TA3/5-196-CISTERN	0	27-JUN-94	0.27	mg/kg	0.5	BJ
Radiological Data									
196	Gamma Spec	ACTINIUM-228	TA3/5-196-SS-B1	0	10-OCT-94	0.615	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	0.608	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	0.756	pCi/g	No Data	
		BERYLLIUM-7	TA3/5-196-SS-B1	0	10-OCT-94	3.67	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	1.6	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	2.72	pCi/g	No Data	
		BISMUTH-212	TA3/5-196-SS-B1	0	10-OCT-94	0.505	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	0.53	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	0.84	pCi/g	No Data	
		BISMUTH-214	TA3/5-196-SS-B1	0	10-OCT-94	0.648	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	0.6	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	0.548	pCi/g	No Data	
		CESIUM-137	TA3/5-196-SS-B1	0	10-OCT-94	0.147	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	0.0797	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	0.0974	pCi/g	No Data	
		LEAD-210	TA3/5-196-SS-B1	0	10-OCT-94	6.02	pCi/g	No Data	
		LEAD-212	TA3/5-196-SS-B1	0	10-OCT-94	0.591	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	0.671	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	0.654	pCi/g	No Data	
		LEAD-214	TA3/5-196-SS-B1	0	10-OCT-94	0.674	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	0.608	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	0.575	pCi/g	No Data	
		POTASSIUM-40	TA3/5-196-SS-B1	0	10-OCT-94	13	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	13.3	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	12	pCi/g	No Data	
		RADIUM-224	TA3/5-196-SS-B2	0	10-OCT-94	1.7	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	1.1	pCi/g	No Data	
		RADIUM-226	TA3/5-196-SS-B1	0	10-OCT-94	2.03	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	1.67	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	1.06	pCi/g	No Data	
		RADIUM-228	TA3/5-196-SS-B1	0	10-OCT-94	0.682	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	0.674	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	0.838	pCi/g	No Data	
		THALLIUM-208	TA3/5-196-SS-B1	0	10-OCT-94	0.592	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	0.557	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	0.523	pCi/g	No Data	
		THORIUM-228	TA3/5-196-SS-B1	0	10-OCT-94	0.589	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	0.668	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	0.651	pCi/g	No Data	
		THORIUM-232	TA3/5-196-SS-B1	0	10-OCT-94	0.682	pCi/g	No Data	
			TA3/5-196-SS-B2	0	10-OCT-94	0.674	pCi/g	No Data	
			TA3/5-196-SS-B3	0	10-OCT-94	0.838	pCi/g	No Data	
		THORIUM-234	TA3/5-196-SS-B2	0	10-OCT-94	1.85	pCi/g	No Data	
		URANIUM-238	TA3/5-196-SS-B2	0	10-OCT-94	1.85	pCi/g	No Data	

APPENDIX C. LABORATORY ANALYTICAL DATA									
SITE	Test Method	Analyte	Sample ID	Sample Depth (ft)	Sample Date	Result	Units	Detection Lim	Qualifier
240									
Chemical Data	6010	BERYLLIUM	TA3/5-240-SS-18A	0	22-JUN-94	0.62	mg/kg	0.2	
			TA3/5-240-SS-19F	0	22-JUN-94	0.57	mg/kg	0.2	
			TA3/5-240-SS-19F-D	0	22-JUN-94	0.45	mg/kg	0.2	
			TA3/5-240-SS-21B	0	22-JUN-94	0.34	mg/kg	0.2	
			TA3/5-240-SS-21D	0	22-JUN-94	0.57	mg/kg	0.2	
			TA3/5-240-SS-24B	0	22-JUN-94	0.56	mg/kg	0.2	
			TA3/5-240-SS-24F	0	22-JUN-94	0.56	mg/kg	0.2	
			TA3/5-240-SS-25A	0	22-JUN-94	0.56	mg/kg	0.2	
			TA3/5-240-SS-25E	0	22-JUN-94	0.56	mg/kg	0.2	
			TA3/5-240-SS-26E	0	22-JUN-94	0.34	mg/kg	0.2	
			TA3/5-240-SS-27B	0	22-JUN-94	0.57	mg/kg	0.2	
			TA3/5-240-SS-27F	0	22-JUN-94	0.35	mg/kg	0.2	
			TA3/5-240-SS-29C	0	22-JUN-94	0.5	mg/kg	0.2	
			TA3/5-240-SS-30E	0	22-JUN-94	0.34	mg/kg	0.2	
			TA3/5-240-SS-31A	0	22-JUN-94	0.39	mg/kg	0.2	
			TA3/5-240-SS-31E	0	22-JUN-94	0.56	mg/kg	0.2	
			TA3/5-240-SS-33B	0	22-JUN-94	0.34	mg/kg	0.2	
			TA3/5-240-SS-33D	0	22-JUN-94	0.56	mg/kg	0.2	
			TA3/5-240-SS-34B	0	22-JUN-94	0.56	mg/kg	0.2	
			TA3/5-240-SS-34F	0	22-JUN-94	0.57	mg/kg	0.2	
			TA3/5-240-SS-34F-D	0	22-JUN-94	0.57	mg/kg	0.2	
			TA3/5-240-SS-35C	0	22-JUN-94	0.45	mg/kg	0.2	
			TA3/5-240-SS-36D	0	22-JUN-94	0.56	mg/kg	0.2	
			TA3/5-240-SS-37F	0	22-JUN-94	0.56	mg/kg	0.2	
			TA3/5-240-SS-38C	0	22-JUN-94	0.56	mg/kg	0.2	
			TA3/5-240-SS-38C-D	0	22-JUN-94	0.56	mg/kg	0.2	
			TA3/5-240-SS-38F	0	22-JUN-94	0.57	mg/kg	0.2	
		LEAD	TA3/5-240-SS-18A	0	22-JUN-94	13.2	mg/kg	5	
			TA3/5-240-SS-19F	0	22-JUN-94	130	mg/kg	5	
			TA3/5-240-SS-19F-D	0	22-JUN-94	9.1	mg/kg	5	
			TA3/5-240-SS-21B	0	22-JUN-94	9.5	mg/kg	5	
			TA3/5-240-SS-21D	0	22-JUN-94	9.3	mg/kg	5	
			TA3/5-240-SS-24B	0	22-JUN-94	12.1	mg/kg	5	
			TA3/5-240-SS-24F	0	22-JUN-94	12.1	mg/kg	5	
			TA3/5-240-SS-25A	0	22-JUN-94	9	mg/kg	5	
			TA3/5-240-SS-25E	0	22-JUN-94	10.8	mg/kg	5	
			TA3/5-240-SS-26E	0	22-JUN-94	8.2	mg/kg	5	
			TA3/5-240-SS-27B	0	22-JUN-94	9.2	mg/kg	5	
			TA3/5-240-SS-27F	0	22-JUN-94	7.9	mg/kg	5	
			TA3/5-240-SS-29C	0	22-JUN-94	7.8	mg/kg	5	
			TA3/5-240-SS-30E	0	22-JUN-94	11.6	mg/kg	5	
			TA3/5-240-SS-31A	0	22-JUN-94	6.3	mg/kg	5	
			TA3/5-240-SS-31E	0	22-JUN-94	4.8	mg/kg	5	U
			TA3/5-240-SS-33B	0	22-JUN-94	6	mg/kg	5	
			TA3/5-240-SS-33D	0	22-JUN-94	6.3	mg/kg	5	
			TA3/5-240-SS-34B	0	22-JUN-94	6.3	mg/kg	5	
			TA3/5-240-SS-34F	0	22-JUN-94	14	mg/kg	5	
			TA3/5-240-SS-34F-D	0	22-JUN-94	14.3	mg/kg	5	
			TA3/5-240-SS-35C	0	22-JUN-94	10.2	mg/kg	5	
			TA3/5-240-SS-36D	0	22-JUN-94	10.5	mg/kg	5	
			TA3/5-240-SS-37F	0	22-JUN-94	6.2	mg/kg	5	
			TA3/5-240-SS-38C	0	22-JUN-94	10.8	mg/kg	5	
			TA3/5-240-SS-38C-D	0	22-JUN-94	7.1	mg/kg	5	
			TA3/5-240-SS-38F	0	22-JUN-94	12	mg/kg	5	
		LITHIUM	TA3/5-240-SS-18A	0	22-JUN-94	6.2	mg/kg	5	
			TA3/5-240-SS-19F	0	22-JUN-94	5.6	mg/kg	5	
			TA3/5-240-SS-24B	0	22-JUN-94	6.8	mg/kg	5	
			TA3/5-240-SS-24F	0	22-JUN-94	5.3	mg/kg	5	
			TA3/5-240-SS-25A	0	22-JUN-94	6.2	mg/kg	5	
			TA3/5-240-SS-25E	0	22-JUN-94	6.2	mg/kg	5	
			TA3/5-240-SS-27B	0	22-JUN-94	6.7	mg/kg	5	
			TA3/5-240-SS-29C	0	22-JUN-94	7.6	mg/kg	5	
			TA3/5-240-SS-31A	0	22-JUN-94	5.3	mg/kg	5	
			TA3/5-240-SS-31E	0	22-JUN-94	5.6	mg/kg	5	
			TA3/5-240-SS-33B	0	22-JUN-94	6.4	mg/kg	5	
			TA3/5-240-SS-33D	0	22-JUN-94	5.3	mg/kg	5	
			TA3/5-240-SS-34B	0	22-JUN-94	6.9	mg/kg	5	
			TA3/5-240-SS-36D	0	22-JUN-94	5.7	mg/kg	5	
			TA3/5-240-SS-37F	0	22-JUN-94	6.5	mg/kg	5	
			TA3/5-240-SS-38C	0	22-JUN-94	5.2	mg/kg	5	
	7421	LEAD	TA3/5-240-SS-01-C	0	13-JUN-94	104	mg/kg	25	
			TA3/5-240-SS-03-C	0	13-JUN-94	3.7	mg/kg	0.5	
			TA3/5-240-SS-04-C	0	13-JUN-94	14.2	mg/kg	2.5	
			TA3/5-240-SS-05-C	0	13-JUN-94	12.8	mg/kg	1	
			TA3/5-240-SS-05D-C	0	13-JUN-94	12.3	mg/kg	1	
			TA3/5-240-SS-06-C	0	13-JUN-94	8.2	mg/kg	1	
			TA3/5-240-SS-07-C	0	13-JUN-94	6.5	mg/kg	0.5	
			TA3/5-240-SS-08-C	0	13-JUN-94	12.4	mg/kg	1	
			TA3/5-240-SS-11-C	0	13-JUN-94	6.7	mg/kg	1	
			TA3/5-240-SS-13-C	0	13-JUN-94	8.3	mg/kg	1	
			TA3/5-240-SS-14-C	0	13-JUN-94	9	mg/kg	1	
			TA3/5-240-SS-17-C	0	13-JUN-94	8.8	mg/kg	1	
			TA3/5-240-SS-18-C	0	13-JUN-94	8.9	mg/kg	1	
	7471	MERCURY	TA3/5-240-SS-24F	0	22-JUN-94	0.065	mg/kg	0.11	J
			TA3/5-240-SS-25A	0	22-JUN-94	0.065	mg/kg	0.11	J
			TA3/5-240-SS-26E	0	22-JUN-94	0.056	mg/kg	0.11	J
	RMAL	TOT NIOBIUM	TA3/5-240-SS-18A	0	22-JUN-94	0.31	mg/kg	0.02	B
			TA3/5-240-SS-19F	0	22-JUN-94	0.24	mg/kg	0.02	B
			TA3/5-240-SS-19F-D	0	22-JUN-94	0.3	mg/kg	0.02	B
			TA3/5-240-SS-21B	0	22-JUN-94	0.28	mg/kg	0.02	B
			TA3/5-240-SS-21D	0	22-JUN-94	0.22	mg/kg	0.02	B
			TA3/5-240-SS-24B	0	22-JUN-94	0.28	mg/kg	0.02	B
			TA3/5-240-SS-24F	0	22-JUN-94	0.26	mg/kg	0.02	B
			TA3/5-240-SS-25A	0	22-JUN-94	0.24	mg/kg	0.02	B
			TA3/5-240-SS-25E	0	22-JUN-94	0.29	mg/kg	0.02	B
			TA3/5-240-SS-26E	0	22-JUN-94	0.26	mg/kg	0.02	B
			TA3/5-240-SS-27B	0	22-JUN-94	0.19	mg/kg	0.02	B
			TA3/5-240-SS-27F	0	22-JUN-94	0.24	mg/kg	0.02	B
			TA3/5-240-SS-29C	0	22-JUN-94	0.44	mg/kg	0.02	
			TA3/5-240-SS-30E	0	22-JUN-94	0.53	mg/kg	0.02	
			TA3/5-240-SS-31A	0	22-JUN-94	0.26	mg/kg	0.02	
			TA3/5-240-SS-31E	0	22-JUN-94	0.23	mg/kg	0.02	
			TA3/5-240-SS-33B	0	22-JUN-94	0.23	mg/kg	0.02	
			TA3/5-240-SS-33D	0	22-JUN-94	0.28	mg/kg	0.02	
			TA3/5-240-SS-34B	0	22-JUN-94	0.27	mg/kg	0.02	
			TA3/5-240-SS-34F	0	22-JUN-94	0.38	mg/kg	0.02	
			TA3/5-240-SS-34F-D	0	22-JUN-94	0.39	mg/kg	0.02	
			TA3/5-240-SS-35C	0	22-JUN-94	0.25	mg/kg	0.02	
			TA3/5-240-SS-36D	0	22-JUN-94	0.33	mg/kg	0.02	
			TA3/5-240-SS-37F	0	22-JUN-94	0.32	mg/kg	0.02	
			TA3/5-240-SS-38C	0	22-JUN-94	0.3	mg/kg	0.02	
			TA3/5-240-SS-38C-D	0	22-JUN-94	0.24	mg/kg	0.02	
			TA3/5-240-SS-38F	0	22-JUN-94	0.28	mg/kg	0.02	
		TOT URANIUM	TA3/5-240-SS-18A	0	22-JUN-94	0.32	mg/kg	0.005	
			TA3/5-240-SS-19F	0	22-JUN-94	0.25	mg/kg	0.005	
			TA3/5-240-SS-19F-D	0	22-JUN-94	0.28	mg/kg	0.005	
			TA3/5-240-SS-21B	0	22-JUN-94	0.25	mg/kg	0.005	
			TA3/5-240-SS-21D	0	22-JUN-94	0.27	mg/kg	0.005	
			TA3/5-240-SS-24B	0	22-JUN-94	0.33	mg/kg	0.005	
			TA3/5-240-SS-24F	0	22-JUN-94	0.36	mg/kg	0.005	
			TA3/5-240-SS-25A	0	22-JUN-94	0.26	mg/kg	0.005	
			TA3/5-240-SS-25E	0	22-JUN-94	0.29	mg/kg	0.005	
			TA3/5-240-SS-26E	0	22-JUN-94	0.23	mg/kg	0.005	
			TA3/5-240-SS-27B	0	22-JUN-94	0.1	mg/kg	0.005	
			TA3/5-240-SS-27F	0	22-JUN-94	0.3	mg/kg	0.005	
			TA3/5-240-SS-29C	0	22-JUN-94	0.4	mg/kg	0.005	
			TA3/5-240-SS-30E	0	22-JUN-94	0.38	mg/kg	0.005	
			TA3/5-240-SS-31A	0	22-JUN-94	0.42	mg/kg	0.005	
			TA3/5-240-SS-31E	0	22-JUN-94	0.81	mg/kg	0.005	
			TA3/5-240-SS-33B	0	22-JUN-94	0.66	mg/kg	0.005	
			TA3/5-240-SS-33D	0	22-JUN-94	0.18	mg/kg	0.005	
			TA3/5-240-SS-34B	0	22-JUN-94	0.6	mg/kg	0.005	
			TA3/5-240-SS-34F	0	22-JUN-94	0.27	mg/kg	0.005	
			TA3/5-240-SS-34F-D	0	22-JUN-94	0.42	mg/kg	0.005	
			TA3/5-240-SS-36C	0	22-JUN-94	0.47	mg/kg	0.005	
			TA3/5-240-SS-36D	0	22-JUN-94	0.43	mg/kg	0.005	
			TA3/5-240-SS-37F	0	22-JUN-94	0.48	mg/kg	0.005	
			TA3/5-240-SS-38C	0	22-JUN-94	0.44	mg/kg	0.005	
			TA3/5-240-SS-38C-D	0	22-JUN-94	0.38	mg/kg	0.005	
			TA3/5-240-SS-38F	0	22-JUN-94	0.33	mg/kg	0.005	
Radiological Data									
240	Gamma Spec	ACTINIUM-228	TA3/5-240-SS-01-C	0	13-JUN-94	0.676	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	0.639	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.464	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	0.56	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	0.757	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	0.736	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	0.739	pCi/g	No Data	
		BERYLLIUM-7	TA3/5-240-SS-01-C	0	13-JUN-94	0.377	pCi/g	No Data	
		BISMUTH-212	TA3/5-240-SS-01-C	0	13-JUN-94	0.88	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	0.375	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.446	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	0.341	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	0.457	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	0.583	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	0.557	pCi/g	No Data	
		BISMUTH-214	TA3/5-240-SS-01-C	0	13-JUN-94	0.679	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	0.449	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	0.448	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	0.568	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	0.437	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	0.485	pCi/g	No Data	
		CESIUM-137	TA3/5-240-SS-01-C	0	13-JUN-94	0.0385	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	0.4	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.108	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	0.116	pCi/g	No Data	
		LEAD-210	TA3/5-240-SS-01-C	0	13-JUN-94	0.713	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	1.37	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	1.08	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	1.41	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	1.23	pCi/g	No Data	
		LEAD-212	TA3/5-240-SS-01-C	0	13-JUN-94	0.668	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	0.577	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.642	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	0.586	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	0.646	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	0.658	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	0.771	pCi/g	No Data	
		LEAD-214	TA3/5-240-SS-01-C	0	13-JUN-94	0.673	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	0.516	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.595	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	0.56	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	0.563	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	0.485	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	0.483	pCi/g	No Data	
		POTASSIUM-40	TA3/5-240-SS-01-C	0	13-JUN-94	14.7	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	13.5	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	15.1	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	14.5	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	12.7	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	11.6	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	15.7	pCi/g	No Data	
		RADIUM-224	TA3/5-240-SS-01-C	0	13-JUN-94	0.66	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.688	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	0.713	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	0.63	pCi/g	No Data	
		RADIUM-226	TA3/5-240-SS-01-C	0	13-JUN-94	1.17	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	1.46	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.946	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	1.11	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	1.54	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	1.75	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	1.47	pCi/g	No Data	
		RADIUM-228	TA3/5-240-SS-01-C	0	13-JUN-94	0.747	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	0.788	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.735	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	0.621	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	0.838	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	0.621	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	0.814	pCi/g	No Data	
		THALLIUM-208	TA3/5-240-SS-01-C	0	13-JUN-94	0.206	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	0.215	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.238	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	0.187	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	0.228	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	0.218	pCi/g	No Data	
		THORIUM-228	TA3/5-240-SS-01-C	0	13-JUN-94	0.665	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	0.575	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.639	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	0.584	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	0.643	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	0.655	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	0.768	pCi/g	No Data	
		THORIUM-231	TA3/5-240-SS-38C	0	22-JUN-94	0.336	pCi/g	No Data	
		THORIUM-232	TA3/5-240-SS-01-C	0	13-JUN-94	0.747	pCi/g	No Data	
			TA3/5-240-SS-14-C	0	13-JUN-94	0.788	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.735	pCi/g	No Data	
			TA3/5-240-SS-30E	0	22-JUN-94	0.621	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	0.838	pCi/g	No Data	
			TA3/5-240-SS-34B	0	22-JUN-94	0.621	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	0.814	pCi/g	No Data	
		THORIUM-234	TA3/5-240-SS-01-C	0	13-JUN-94	0.866	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.666	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	0.921	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	1.61	pCi/g	No Data	
		URANIUM-238	TA3/5-240-SS-01-C	0	13-JUN-94	0.95	pCi/g	No Data	
			TA3/5-240-SS-25E	0	22-JUN-94	0.688	pCi/g	No Data	
			TA3/5-240-SS-31E	0	22-JUN-94	0.918	pCi/g	No Data	
			TA3/5-240-SS-38C	0	22-JUN-94	1.61	pCi/g	No Data	

APPENDIX C. LABORATORY ANALYTICAL DATA									
ERSITE	Test Method	Analyte	Sample ID	Sample Depth (ft)	Sample Date	Result	Units	Detection Lim	Qualifier
241									
Chemical Data	6010	ALUMINUM	TA3/5-241-SS-04	0	24-MAY-94	4400	mg/kg	10	
			TA3/5-241-SS-14	0	24-MAY-94	5130	mg/kg	10	
			TA3/5-241-SS-16	0	24-MAY-94	4150	mg/kg	10	
			TA3/5-241-SS-17	0	24-MAY-94	4400	mg/kg	10	
			TA3/5-241-SS-17D	0	24-MAY-94	5690	mg/kg	10	
			TA3/5-241-SS-18	0	24-MAY-94	4610	mg/kg	10	
			TA3/5-241-SS-19	0	24-MAY-94	5030	mg/kg	10	
			TA3/5-241-SS-20	0	24-MAY-94	5150	mg/kg	10	
			TA3/5-241-SS-21	0	24-MAY-94	4620	mg/kg	10	
			TA3/5-241-SS-22	0	24-MAY-94	4520	mg/kg	10	
			TA3/5-241-SS-23	0	24-MAY-94	5600	mg/kg	10	
			TA3/5-241-SS-25	0	24-MAY-94	4280	mg/kg	10	
			TA3/5-241-SS-28	0	24-MAY-94	4780	mg/kg	10	
			TA3/5-241-SS-29	0	24-MAY-94	3300	mg/kg	10	
			TA3/5-241-SS-29D	0	24-MAY-94	4150	mg/kg	10	
		ANTIMONY	TA3/5-241-SS-04	0	24-MAY-94	2.3	mg/kg	6	J
			TA3/5-241-SS-17	0	24-MAY-94	2.5	mg/kg	6	J
			TA3/5-241-SS-19	0	24-MAY-94	29.6	mg/kg	6	
			TA3/5-241-SS-29	0	24-MAY-94	11.6	mg/kg	6	
		ARSENIC	TA3/5-241-SS-04	0	24-MAY-94	2.7	mg/kg	0.5	
			TA3/5-241-SS-14	0	24-MAY-94	2.8	mg/kg	0.5	
			TA3/5-241-SS-16	0	24-MAY-94	2.6	mg/kg	0.5	
			TA3/5-241-SS-17	0	24-MAY-94	2.6	mg/kg	0.5	
			TA3/5-241-SS-17D	0	24-MAY-94	3	mg/kg	0.5	
			TA3/5-241-SS-18	0	24-MAY-94	2.2	mg/kg	0.5	
			TA3/5-241-SS-19	0	24-MAY-94	2.8	mg/kg	0.5	
			TA3/5-241-SS-20	0	24-MAY-94	2.8	mg/kg	0.5	
			TA3/5-241-SS-21	0	24-MAY-94	2.8	mg/kg	0.5	
			TA3/5-241-SS-22	0	24-MAY-94	2.3	mg/kg	0.5	
			TA3/5-241-SS-23	0	24-MAY-94	3.3	mg/kg	0.5	
			TA3/5-241-SS-25	0	24-MAY-94	2.3	mg/kg	0.5	
			TA3/5-241-SS-28	0	24-MAY-94	2.7	mg/kg	0.5	
			TA3/5-241-SS-29	0	24-MAY-94	3.4	mg/kg	0.5	
			TA3/5-241-SS-29D	0	24-MAY-94	2.5	mg/kg	0.5	
		BARIUM	TA3/5-241-SS-04	0	24-MAY-94	60.7	mg/kg	1	
			TA3/5-241-SS-14	0	24-MAY-94	79.7	mg/kg	1	
			TA3/5-241-SS-16	0	24-MAY-94	61.1	mg/kg	1	
			TA3/5-241-SS-17	0	24-MAY-94	62.5	mg/kg	1	
			TA3/5-241-SS-17D	0	24-MAY-94	76.4	mg/kg	1	
			TA3/5-241-SS-18	0	24-MAY-94	59.7	mg/kg	1	
			TA3/5-241-SS-19	0	24-MAY-94	59.8	mg/kg	1	
			TA3/5-241-SS-20	0	24-MAY-94	57.3	mg/kg	1	
			TA3/5-241-SS-21	0	24-MAY-94	70.4	mg/kg	1	
			TA3/5-241-SS-22	0	24-MAY-94	73	mg/kg	1	
			TA3/5-241-SS-23	0	24-MAY-94	67	mg/kg	1	
			TA3/5-241-SS-25	0	24-MAY-94	55.6	mg/kg	1	
			TA3/5-241-SS-28	0	24-MAY-94	65.5	mg/kg	1	
			TA3/5-241-SS-29	0	24-MAY-94	47.2	mg/kg	1	
			TA3/5-241-SS-29D	0	24-MAY-94	57.7	mg/kg	1	
		BERYLLIUM	TA3/5-241-SS-04	0	24-MAY-94	0.6	mg/kg	0.2	
			TA3/5-241-SS-14	0	24-MAY-94	0.55	mg/kg	0.2	
			TA3/5-241-SS-16	0	24-MAY-94	0.66	mg/kg	0.2	
			TA3/5-241-SS-17	0	24-MAY-94	0.44	mg/kg	0.2	
			TA3/5-241-SS-17D	0	24-MAY-94	0.65	mg/kg	0.2	
			TA3/5-241-SS-18	0	24-MAY-94	0.54	mg/kg	0.2	
			TA3/5-241-SS-19	0	24-MAY-94	0.59	mg/kg	0.2	
			TA3/5-241-SS-20	0	24-MAY-94	0.53	mg/kg	0.2	
			TA3/5-241-SS-21	0	24-MAY-94	0.66	mg/kg	0.2	
			TA3/5-241-SS-22	0	24-MAY-94	0.66	mg/kg	0.2	
			TA3/5-241-SS-23	0	24-MAY-94	0.6	mg/kg	0.2	
			TA3/5-241-SS-25	0	24-MAY-94	0.6	mg/kg	0.2	
			TA3/5-241-SS-28	0	24-MAY-94	0.6	mg/kg	0.2	
			TA3/5-241-SS-29	0	24-MAY-94	0.48	mg/kg	0.2	
			TA3/5-241-SS-29D	0	24-MAY-94	0.66	mg/kg	0.2	
		CADMIUM	TA3/5-241-SS-04	0	24-MAY-94	1.1	mg/kg	0.5	
			TA3/5-241-SS-14	0	24-MAY-94	0.68	mg/kg	0.5	
			TA3/5-241-SS-16	0	24-MAY-94	0.68	mg/kg	0.5	
			TA3/5-241-SS-17D	0	24-MAY-94	0.54	mg/kg	0.5	
			TA3/5-241-SS-18	0	24-MAY-94	1.6	mg/kg	0.5	
			TA3/5-241-SS-20	0	24-MAY-94	0.68	mg/kg	0.5	
			TA3/5-241-SS-28	0	24-MAY-94	1.3	mg/kg	0.5	
			TA3/5-241-SS-29	0	24-MAY-94	0.55	mg/kg	0.5	
			TA3/5-241-SS-29D	0	24-MAY-94	0.54	mg/kg	0.5	
		CALCIUM	TA3/5-241-SS-04	0	24-MAY-94	5180	mg/kg	20	
			TA3/5-241-SS-14	0	24-MAY-94	9180	mg/kg	20	
			TA3/5-241-SS-16	0	24-MAY-94	5450	mg/kg	20	
			TA3/5-241-SS-17	0	24-MAY-94	6140	mg/kg	20	
			TA3/5-241-SS-17D	0	24-MAY-94	6970	mg/kg	20	
			TA3/5-241-SS-18	0	24-MAY-94	5030	mg/kg	20	
			TA3/5-241-SS-19	0	24-MAY-94	4970	mg/kg	20	
			TA3/5-241-SS-20	0	24-MAY-94	5970	mg/kg	20	
			TA3/5-241-SS-21	0	24-MAY-94	4720	mg/kg	20	
			TA3/5-241-SS-22	0	24-MAY-94	5310	mg/kg	20	
			TA3/5-241-SS-23	0	24-MAY-94	2650	mg/kg	20	
			TA3/5-241-SS-25	0	24-MAY-94	2900	mg/kg	20	
			TA3/5-241-SS-28	0	24-MAY-94	5170	mg/kg	20	
			TA3/5-241-SS-29	0	24-MAY-94	4710	mg/kg	20	
			TA3/5-241-SS-29D	0	24-MAY-94	5040	mg/kg	20	
		CHROMIUM	TA3/5-241-SS-04	0	24-MAY-94	7.4	mg/kg	1	
			TA3/5-241-SS-14	0	24-MAY-94	7.4	mg/kg	1	
			TA3/5-241-SS-16	0	24-MAY-94	6	mg/kg	1	
			TA3/5-241-SS-17	0	24-MAY-94	5.3	mg/kg	1	
			TA3/5-241-SS-17D	0	24-MAY-94	7.5	mg/kg	1	
			TA3/5-241-SS-18	0	24-MAY-94	6.1	mg/kg	1	
			TA3/5-241-SS-19	0	24-MAY-94	7.5	mg/kg	1	
			TA3/5-241-SS-20	0	24-MAY-94	6.9	mg/kg	1	
			TA3/5-241-SS-21	0	24-MAY-94	6.7	mg/kg	1	
			TA3/5-241-SS-22	0	24-MAY-94	6.1	mg/kg	1	
			TA3/5-241-SS-23	0	24-MAY-94	6.7	mg/kg	1	
			TA3/5-241-SS-25	0	24-MAY-94	5.6	mg/kg	1	
			TA3/5-241-SS-28	0	24-MAY-94	6.4	mg/kg	1	
			TA3/5-241-SS-29	0	24-MAY-94	5	mg/kg	1	
			TA3/5-241-SS-29D	0	24-MAY-94	6.2	mg/kg	1	
		COBALT	TA3/5-241-SS-04	0	24-MAY-94	3.1	mg/kg	1	
			TA3/5-241-SS-14	0	24-MAY-94	3.8	mg/kg	1	
			TA3/5-241-SS-16	0	24-MAY-94	2.6	mg/kg	1	
			TA3/5-241-SS-17	0	24-MAY-94	2.6	mg/kg	1	
			TA3/5-241-SS-17D	0	24-MAY-94	3.1	mg/kg	1	
			TA3/5-241-SS-18	0	24-MAY-94	2.3	mg/kg	1	
			TA3/5-241-SS-19	0	24-MAY-94	3.2	mg/kg	1	
			TA3/5-241-SS-20	0	24-MAY-94	2.6	mg/kg	1	
			TA3/5-241-SS-21	0	24-MAY-94	2.7	mg/kg	1	
			TA3/5-241-SS-22	0	24-MAY-94	2.3	mg/kg	1	
			TA3/5-241-SS-23	0	24-MAY-94	3.2	mg/kg	1	
			TA3/5-241-SS-25	0	24-MAY-94	2.7	mg/kg	1	
			TA3/5-241-SS-28	0	24-MAY-94	2.3	mg/kg	1	
			TA3/5-241-SS-29	0	24-MAY-94	2.8	mg/kg	1	
			TA3/5-241-SS-29D	0	24-MAY-94	2.4	mg/kg	1	
		COPPER	TA3/5-241-SS-04	0	24-MAY-94	9.8	mg/kg	2	
			TA3/5-241-SS-14	0	24-MAY-94	8.7	mg/kg	2	
			TA3/5-241-SS-16	0	24-MAY-94	6.8	mg/kg	2	
			TA3/5-241-SS-17	0	24-MAY-94	6.2	mg/kg	2	
			TA3/5-241-SS-17D	0	24-MAY-94	7.7	mg/kg	2	
			TA3/5-241-SS-18	0	24-MAY-94	8.1	mg/kg	2	
			TA3/5-241-SS-19	0	24-MAY-94	6.3	mg/kg	2	
			TA3/5-241-SS-20	0	24-MAY-94	5.4	mg/kg	2	
			TA3/5-241-SS-21	0	24-MAY-94	5.7	mg/kg	2	
			TA3/5-241-SS-22	0	24-MAY-94	7.7	mg/kg	2	
			TA3/5-241-SS-23	0	24-MAY-94	6.3	mg/kg	2	
			TA3/5-241-SS-25	0	24-MAY-94	12.2	mg/kg	2	
			TA3/5-241-SS-28	0	24-MAY-94	9	mg/kg	2	
			TA3/5-241-SS-29	0	24-MAY-94	34.4	mg/kg	2	
			TA3/5-241-SS-29D	0	24-MAY-94	6.6	mg/kg	2	
		IRON	TA3/5-241-SS-04	0	24-MAY-94	7280	mg/kg	10	
			TA3/5-241-SS-14	0	24-MAY-94	12300	mg/kg	10	
			TA3/5-241-SS-16	0	24-MAY-94	6920	mg/kg	10	
			TA3/5-241-SS-17	0	24-MAY-94	6140	mg/kg	10	
			TA3/5-241-SS-17D	0	24-MAY-94	8570	mg/kg	10	
			TA3/5-241-SS-18	0	24-MAY-94	7350	mg/kg	10	
			TA3/5-241-SS-19	0	24-MAY-94	9000	mg/kg	10	
			TA3/5-241-SS-20	0	24-MAY-94	7780	mg/kg	10	
			TA3/5-241-SS-21	0	24-MAY-94	7870	mg/kg	10	
			TA3/5-241-SS-22	0	24-MAY-94	6850	mg/kg	10	
			TA3/5-241-SS-23	0	24-MAY-94	7910	mg/kg	10	
			TA3/5-241-SS-25	0	24-MAY-94	6790	mg/kg	10	
			TA3/5-241-SS-28	0	24-MAY-94	7610	mg/kg	10	
			TA3/5-241-SS-29	0	24-MAY-94	6250	mg/kg	10	
			TA3/5-241-SS-29D	0	24-MAY-94	7710	mg/kg	10	
		LEAD	TA3/5-241-SS-04	0	24-MAY-94	14.8	mg/kg	0.5	
			TA3/5-241-SS-14	0	24-MAY-94	18.6	mg/kg	0.5	
			TA3/5-241-SS-16	0	24-MAY-94	14.1	mg/kg	0.5	
			TA3/5-241-SS-17	0	24-MAY-94	9.5	mg/kg	0.5	
			TA3/5-241-SS-17D	0	24-MAY-94	12.9	mg/kg	0.5	
			TA3/5-241-SS-18	0	24-MAY-94	15.3	mg/kg	0.5	
			TA3/5-241-SS-19	0	24-MAY-94	11.6	mg/kg	0.5	
			TA3/5-241-SS-20	0	24-MAY-94	7.3	mg/kg	0.5	
			TA3/5-241-SS-21	0	24-MAY-94	7.8	mg/kg	0.5	
			TA3/5-241-SS-22	0	24-MAY-94	11.8	mg/kg	0.5	
			TA3/5-241-SS-23	0	24-MAY-94	6.8	mg/kg	0.5	
			TA3/5-241-SS-25	0	24-MAY-94	8.6	mg/kg	0.5	
			TA3/5-241-SS-28	0	24-MAY-94	24.9	mg/kg	0.5	
			TA3/5-241-SS-29	0	24-MAY-94	685	mg/kg	0.5	
			TA3/5-241-SS-29D	0	24-MAY-94	231	mg/kg	0.5	
		MAGNESIUM	TA3/5-241-SS-04	0	24-MAY-94	1630	mg/kg	20	
			TA3/5-241-SS-14	0	24-MAY-94	1890	mg/kg	20	
			TA3/5-241-SS-16	0	24-MAY-94	1730	mg/kg	20	
			TA3/5-241-SS-17	0	24-MAY-94	1820	mg/kg	20	
			TA3/5-241-SS-17D	0	24-MAY-94	2090	mg/kg	20	
			TA3/5-241-SS-18	0	24-MAY-94	1630	mg/kg	20	
			TA3/5-241-SS-19	0	24-MAY-94	1760	mg/kg	20	
			TA3/5-241-SS-20	0	24-MAY-94	1750	mg/kg	20	
			TA3/5-241-SS-21	0	24-MAY-94	1660	mg/kg	20	
			TA3/5-241-SS-22	0	24-MAY-94	1610	mg/kg	20	
			TA3/5-241-SS-23	0	24-MAY-94	1780	mg/kg	20	
			TA3/5-241-SS-25	0	24-MAY-94	1500	mg/kg	20	
			TA3/5-241-SS-28	0	24-MAY-94	1570	mg/kg	20	
			TA3/5-241-SS-29	0	24-MAY-94	1300	mg/kg	20	
			TA3/5-241-SS-29D	0	24-MAY-94	1520	mg/kg	20	
		MANGANESE	TA3/5-241-SS-04	0	24-MAY-94	135	mg/kg	1	
			TA3/5-241-SS-14	0	24-MAY-94	171	mg/kg	1	
			TA3/5-241-SS-16	0	24-MAY-94	135	mg/kg	1	
			TA3/5-241-SS-17	0	24-MAY-94	142	mg/kg	1	
			TA3/5-241-SS-17D	0	24-MAY-94	161	mg/kg	1	
			TA3/5-241-SS-18	0	24-MAY-94	128	mg/kg	1	
			TA3/5-241-SS-19	0	24-MAY-94	139	mg/kg	1	
			TA3/5-241-SS-20	0	24-MAY-94	130	mg/kg	1	
			TA3/5-241-SS-21	0	24-MAY-94	136	mg/kg	1	
			TA3/5-241-SS-22	0	24-MAY-94	124	mg/kg	1	
			TA3/5-241-SS-23	0	24-MAY-94	170	mg/kg	1	
			TA3/5-241-SS-25	0	24-MAY-94	149	mg/kg	1	
			TA3/5-241-SS-28	0	24-MAY-94	131	mg/kg	1	
			TA3/5-241-SS-29	0	24-MAY-94	111	mg/kg	1	
			TA3/5-241-SS-29D	0	24-MAY-94	123	mg/kg	1	
		NICKEL	TA3/5-241-SS-04	0	24-MAY-94	3.9	mg/kg	4	J
			TA3/5-241-SS-16	0	24-MAY-94	4.3	mg/kg	4	
			TA3/5-241-SS-17	0	24-MAY-94	4.9	mg/kg	4	
			TA3/5-241-SS-17D	0	24-MAY-94	5.3	mg/kg	4	
			TA3/5-241-SS-19	0	24-MAY-94	4.5	mg/kg	4	
			TA3/5-241-SS-20	0	24-MAY-94	3.7	mg/kg	4	J
			TA3/5-241-SS-21	0	24-MAY-94	3.6	mg/kg	4	J
			TA3/5-241-SS-22	0	24-MAY-94	3.5	mg/kg	4	J
			TA3/5-241-SS-23	0	24-MAY-94	4.5	mg/kg	4	
			TA3/5-241-SS-25	0	24-MAY-94	3.8	mg/kg	4	J
			TA3/5-241-SS-28	0	24-MAY-94	3.5	mg/kg	4	J
			TA3/5-241-SS-29	0	24-MAY-94	3.9	mg/kg	4	J
			TA3/5-241-SS-29D	0	24-MAY-94	3.7	mg/kg	4	J
		POTASSIUM	TA3/5-241-SS-04	0	24-MAY-94	1590	mg/kg	500	
			TA3/5-241-SS-14	0	24-MAY-94	1460	mg/kg	500	
			TA3/5-241-SS-16	0	24-MAY-94	1560	mg/kg	500	
			TA3/5-241-SS-17	0	24-MAY-94	1590	mg/kg	500	
			TA3/5-241-SS-17D	0	24-MAY-94	1920	mg/kg	500	
			TA3/5-241-SS-18	0	24-MAY-94	1440	mg/kg	500	
			TA3/5-241-SS-19	0	24-MAY-94	1480	mg/kg	500	
			TA3/5-241-SS-20	0	24-MAY-94	1710	mg/kg	500	
			TA3/5-241-SS-21	0	24-MAY-94	1840	mg/kg	500	
			TA3/5-241-SS-22	0	24-MAY-94	1800	mg/kg	500	
			TA3/5-241-SS-23	0	24-MAY-94	1870	mg/kg	500	
			TA3/5-241-SS-25	0	24-MAY-94	1430	mg/kg	500	
			TA3/5-241-SS-28	0	24-MAY-94	1320	mg/kg	500	
			TA3/5-241-SS-29	0	24-MAY-94	1110	mg/kg	500	
			TA3/5-241-SS-29D	0	24-MAY-94	1270	mg/kg	500	
		SODIUM	TA3/5-241-SS-04	0	24-MAY-94	68.1	mg/kg	500	J
			TA3/5-241-SS-14	0	24-MAY-94	116	mg/kg	500	J
			TA3/5-241-SS-16	0	24-MAY-94	134	mg/kg	500	J
			TA3/5-241-SS-17	0	24-MAY-94	61.6	mg/kg	500	J
			TA3/5-241-SS-17D	0	24-MAY-94	75.1	mg/kg	500	J
			TA3/5-241-SS-18	0	24-MAY-94	87.3	mg/kg	500	J
			TA3/5-241-SS-19	0	24-MAY-94	126	mg/kg	500	J
			TA3/5-241-SS-20	0	24-MAY-94	84.3	mg/kg	500	J
			TA3/5-241-SS-21	0	24-MAY-94	173	mg/kg	500	J
			TA3/5-241-SS-22	0	24-MAY-94	131	mg/kg	500	J
			TA3/5-241-SS-23	0	24-MAY-94	82.4	mg/kg	500	J
			TA3/5-241-SS-25	0	24-MAY-94	113	mg/kg	500	J
			TA3/5-241-SS-28	0	24-MAY-94	102	mg/kg	500	J
			TA3/5-241-SS-29	0	24-MAY-94	358	mg/kg	500	J
			TA3/5-241-SS-29D	0	24-MAY-94	276	mg/kg	500	J
		VANADIUM	TA3/5-241-SS-04	0	24-MAY-94	12.9	mg/kg	1	
			TA3/5-241-SS-14	0	24-MAY-94	12.5	mg/kg	1	
			TA3/5-241-SS-16	0	24-MAY-94	11.8	mg/kg	1	
			TA3/5-241-SS-17	0	24-MAY-94	10.1	mg/kg	1	
			TA3/5-241-SS-17D	0	24-MAY-94	15.1	mg/kg	1	
			TA3/5-241-SS-18	0	24-MAY-94	12.8	mg/kg	1	
			TA3/5-241-SS-19	0	24-MAY-94	16.8	mg/kg	1	
			TA3/5-241-SS-20	0	24-MAY-94	13.9	mg/kg	1	
			TA3/5-241-SS-21	0	24-MAY-94	14.3	mg/kg	1	
			TA3/5-241-SS-22	0	24-MAY-94	11.8	mg/kg	1	
			TA3/5-241-SS-23	0	24-MAY-94	12.4	mg/kg	1	
			TA3/5-241-SS-25	0	24-MAY-94	10.9	mg/kg	1	
			TA3/5-241-SS-28	0	24-MAY-94	13.7	mg/kg	1	
			TA3/5-241-SS-29	0	24-MAY-94	11.4	mg/kg	1	
			TA3/5-241-SS-29D	0	24-MAY-94	13.2	mg/kg	1	
		ZINC	TA3/5-241-SS-04	0	24-MAY-94	40.2	mg/kg	2	
			TA3/5-241-SS-14	0	24-MAY-94	43.7	mg/kg	2	
			TA3/5-241-SS-16	0	24-MAY-94	41.3	mg/kg	2	
			TA3/5-241-SS-17	0	24-MAY-94	35.2	mg/kg	2	
			TA3/5-241-SS-17D	0	24-MAY-94	50.4	mg/kg	2	
			TA3/5-241-SS-18	0	24-MAY-94	33	mg/kg	2	
			TA3/5-241-SS-19	0	24-MAY-94	41	mg/kg	2	
			TA3/5-241-SS-20	0	24-MAY-94	75.8	mg/kg	2	
			TA3/5-241-SS-21	0	24-MAY-94	57.8	mg/kg	2	
			TA3/5-241-SS-22	0	24-MAY-94	38.4	mg/kg	2	
			TA3/5-241-SS-23	0	24-MAY-94	20.4	mg/kg	2	
			TA3/5-241-SS-25	0	24-MAY-94	19.5	mg/kg	2	
			TA3/5-241-SS-28	0	24-MAY-94	24.6	mg/kg	2	
			TA3/5-241-SS-29	0	24-MAY-94	26.1	mg/kg	2	
			TA3/5-241-SS-29D	0	24-MAY-94	29.4	mg/kg	2	
	7471	MERCURY	TA3/5-241-SS-04	0	24-MAY-94	0.19	mg/kg	0.1	
	8080	AROCLOR-1248	TA3/5-241-SS-04	0	24-MAY-94	60	ug/kg	33	
Radiological Data	Gamma Spec	ACTINIUM-228	TA3/5-241-SS-01	0	24-MAY-94	0.538	pCi/g	No Data	
			TA3/5-241-SS-02	0	24-MAY-94	0.704	pCi/g	No Data	
			TA3/5-241-SS-03	0	24-MAY-94	0.922	pCi/g	No Data	
			TA3/5-241-SS-04	0	24-MAY-94	0.697	pCi/g	No Data	
			TA3/5-241-SS-04	0	24-MAY-94	0.45	pCi/g	0.35	
			TA3/5-241-SS-05	0	24-MAY-94	0.617	pCi/g	No Data	
			TA3/5-241-SS-06	0	24-MAY-94	0.833	pCi/g	No Data	
			TA3/5-241-SS-07	0	24-MAY-94	0.781	pCi/g	No Data	
			TA3/5-241-SS-08	0	24-MAY-94	0.822	pCi/g	No Data	
			TA3/5-241-SS-09	0	24-MAY-94	0.669	pCi/g	No Data	
			TA3/5-241-SS-10	0	24-MAY-94	0.777	pCi/g	No Data	
			TA3/5-241-SS-11	0	24-MAY-94	0.737	pCi/g	No Data	
			TA3/5-241-SS-12	0	24-MAY-94	0.815	pCi/g	No Data	
			TA3/5-241-SS-13	0	24-MAY-94	0.825	pCi/g	No Data	
			TA3/5-241-SS-14	0	24-MAY-94	0.784	pCi/g	No Data	
			TA3/5-241-SS-14	0	24-MAY-94	0.57	pCi/g	0.26	
			TA3/5-241-SS-15	0	24-MAY-94	0.706	pCi/g	No Data	
			TA3/5-241-SS-16	0	24-MAY-94	0.86	pCi/g	0.23	
			TA3/5-241-SS-16	0	24-MAY-94	0.717	pCi/g	No Data	
			TA3/5-241-SS-17	0	24-MAY-94	0.765	pCi/g	No Data	
			TA3/5-241-SS-17	0	24-MAY-94	0.74	pCi/g	0.3	
			TA3/5-241-SS-17D	0	24-MAY-94	0.763	pCi/g	No Data	
			TA3/5-241-SS-17D	0	24-MAY-94	0.59	pCi/g	0.4	
			TA3/5-241-SS-18	0	24-MAY-94	0.656	pCi/g	No Data	
			TA3/5-241-SS-18	0	24-MAY-94	0.52	pCi/g	0.34	
			TA3/5-241-SS-19	0	24-MAY-94	0.76	pCi/g	0.37	
			TA3/5-241-SS-19	0	24-MAY-94	0.643	pCi/g	No Data	
			TA3/5-241-SS-20	0	24-MAY-94	0.656	pCi/g	No Data	
			TA3/5-241-SS-20	0	24-MAY-94	0.64	pCi/g	0.34	
			TA3/5-241-SS-21	0	24-MAY-94	0.749	pCi/g	No Data	
			TA3/5-241-SS-21	0	24-MAY-94	0.52	pCi/g	0.21	
			TA3/5-241-SS-22	0	24-MAY-94	0.683	pCi/g	No Data	
			TA3/5-241-SS-22	0	24-MAY-94	0.67	pCi/g	0.29	
			TA3/5-241-SS-23	0	24-MAY-94	0.95	pCi/g	0.22	
			TA3/5-241-SS-23	0	24-MAY-94	0.802	pCi/g	No Data	
			TA3/5-241-SS-24	0	24-MAY-94	0.749	pCi/g	No Data	
			TA3/5-241-SS-25	0	29-MAY-94	0.91	pCi/g	0.27	
			TA3/5-241-SS-25	0	24-MAY-94	0.751	pCi/g	No Data	
			TA3/5-241-SS-26	0	24-MAY-94	0.718	pCi/g	No Data	
			TA3/5-241-SS-27	0	24-MAY-94	0.722	pCi/g	No Data	
			TA3/5-241-SS-28	0	24-MAY-94	0.774	pCi/g	No Data	
			TA3/5-241-SS-28	0	29-MAY-94	0.59	pCi/g	0.33	
			TA3/5-241-SS-29	0	24-MAY-94	0.651	pCi/g	No Data	
			TA3/5-241-SS-29	0	29-MAY-94	0.59	pCi/g	0.37	
			TA3/5-241-SS-29D	0	29-MAY-94	0.6	pCi/g	0.35	
			TA3/5-241-SS-29D	0	24-MAY-94	0.588	pCi/g	No Data	
		BERYLLIUM-7	TA3/5-241-SS-01	0	24-MAY-94	0.229	pCi/g	No Data	
			TA3/5-241-SS-06	0	24-MAY-94	0.656	pCi/g	No Data	
			TA3/5-241-SS-07	0	24-MAY-94	0.434	pCi/g	No Data	
			TA3/5-241-SS-08	0	24-MAY-94	0.348	pCi/g	No Data	
			TA3/5-241-SS-09	0	24-MAY-94	0.545	pCi/g	No Data	
			TA3/5-241-SS-10	0	24-MAY-94	0.405	pCi/g	No Data	
			TA3/5-241-SS-11	0	24-MAY-94	0.361	pCi/g	No Data	
			TA3/5-241-SS-12	0	24-MAY-94	0.408	pCi/g	No Data	
			TA3/5-241-SS-13	0	24-MAY-94	0.304	pCi/g	No Data	
			TA3/5-241-SS-14	0	24-MAY-94	0.117	pCi/g	No Data	
			TA3/5-241-SS-15	0	24-MAY-94	0.157	pCi/g	No Data	
			TA3/5-241-SS-17	0	24-MAY-94	0.57	pCi/g	0.55	
			TA3/5-241-SS-17	0	24-MAY-94	0.428	pCi/g	No Data	
			TA3/5-241-SS-17D	0	24-MAY-94	0.24	pCi/g	No Data	
			TA3/5-241-SS-19	0	24-MAY-94	1.1	pCi/g	0.82	
			TA3/5-241-SS-19	0	24-MAY-94	1.1	pCi/g	0.82	
			TA3/5-241-SS-20	0	24-MAY-94	0.292	pCi/g	No Data	
			TA3/5-241-SS-24	0	24-MAY-94	0.347	pCi/g	No Data	
			TA3/5-241-SS-25	0	24-MAY-94	0.263	pCi/g	No Data	
			TA3/5-241-SS-26	0	24-MAY-94	0.191	pCi/g	No Data	
			TA3/5-241-SS-27	0	24-MAY-94	0.174	pCi/g	No Data	
			TA3/5-241-SS-28	0	24-MAY-94	0.2	pCi/g	No Data	
			TA3/5-241-SS-29D	0	24-MAY-94	0.107	pCi/g	No Data	
		BISMUTH-212	TA3/5-241-SS-01	0	24-MAY-94	0.392	pCi/g	No Data	
			TA3/5-241-SS-02	0	24-MAY-94	0.327	pCi/g	No Data	
			TA3/5-241-SS-03	0	24-MAY-94	0.455	pCi/g	No Data	
			TA3/5-241-SS-04	0	24-MAY-94	0.434	pCi/g	No Data	
			TA3/5-241-SS-05	0	24-MAY-94	0.494	pCi/g	No Data	
			TA3/5-241-SS-06	0	24-MAY-94	0.348	pCi/g	No Data	
			TA3/5-241-SS-07	0	24-MAY-94	0.552	pCi/g	No Data	
			TA3/5-241-SS-08	0	24-MAY-94	0.525	pCi/g	No Data	
			TA3/5-241-SS-09	0	24-MAY-94	0.633	pCi/g	No Data	
			TA3/5-241-SS-10	0	24-MAY-94	0.594	pCi/g	No Data	
			TA3/5-241-SS-11	0	24-MAY-94	0.435	pCi/g	No Data	
			TA3/5-241-SS-12	0	24-MAY-94	0.503	pCi/g	No Data	
			TA3/5-241-SS-13	0	24-MAY-94	0.554	pCi/g	No Data	
			TA3/5-241-SS-14	0	24-MAY-94	0.452	pCi/g	No Data	
			TA3/5-241-SS-15	0	24-MAY-94	0.386	pCi/g	No Data	
			TA3/5-241-SS-16	0	24-MAY-94	0.481	pCi/g	No Data	
			TA3/5-241-SS-17	0	24-MAY-94	0.348	pCi/g	No Data	
			TA3/5-241-SS-17D	0	24-MAY-94	0.93	pCi/g	0.7	
			TA3/5-241-SS-17D	0	24-MAY-94	0.691	pCi/g	No Data	
			TA3/5-241-SS-18	0	24-MAY-94	0.715	pCi/g	No Data	
			TA3/5-241-SS-19	0	24-MAY-94	0.43	pCi/g	No Data	
			TA3/5-241-SS-20	0	24-MAY-94	0.419	pCi/g	No Data	
			TA3/5-241-SS-21	0	24-MAY-94	0.416	pCi/g	No Data	
			TA3/5-241-SS-22	0	24-MAY-94	0.626	pCi/g	No Data	
			TA3/5-241-SS-23	0	24-MAY-94	0.427	pCi/g	No Data	
			TA3/5-241-SS-24	0	24-MAY-94	0.55	pCi/g	No Data	
			TA3/5-241-SS-25	0	24-MAY-94	0.569	pCi/g	No Data	
			TA3/5-241-SS-26	0	24-MAY-94	0.584	pCi/g	No Data	
			TA3/5-241-SS-27	0	24-MAY-94	0.499	pCi/g	No Data	
			TA3/5-241-SS-28	0	24-MAY-94	0.593	pCi/g	No Data	
			TA3/5-241-SS-29	0	29-MAY-94	0.98	pCi/g	0.83	
			TA3/5-241-SS-29	0	24-MAY-94	0.33	pCi/g	No Data	
			TA3/5-241-SS-29D	0	29-MAY-94	0.99	pCi/g	0.89	
			TA3/5-241-SS-29D	0	24-MAY-94	0.579	pCi/g	No Data	
		BISMUTH-214	TA3/5-241-SS-01	0	24-MAY-94	0.471	pCi/g	No Data	
			TA3/5-241-SS-02	0	24-MAY-94	0.538	pCi/g	No Data	
			TA3/5-241-SS-04	0	24-MAY-94	0.669	pCi/g	No Data	
			TA3/5-241-SS-04	0	24-MAY-94	0.48	pCi/g	0.17	
			TA3/5-241-SS-05	0	24-MAY-94	0.568	pCi/g	No Data	
			TA3/5-241-SS-06	0	24-MAY-94	0.591	pCi/g	No Data	
			TA3/5-241-SS-07	0	24-MAY-94	0.518	pCi/g	No Data	
			TA3/5-241-SS-08	0	24-MAY-94	0.519	pCi/g	No Data	
			TA3/5-241-SS-09	0	24-MAY-94	0.528	pCi/g	No Data	
			TA3/5-241-SS-10	0	24-MAY-94	0.519	pCi/g	No Data	
			TA3/5-241-SS-11	0	24-MAY-94	0.552	pCi/g	No Data	
			TA3/5-241-SS-12	0	24-MAY-94	0.611	pCi/g	No Data	
			TA3/5-241-SS-13	0	24-MAY-94	0.507	pCi/g	No Data	
			TA3/5-241-SS-14	0	24-MAY-94	0.531	pCi/g	No Data	
			TA3/5-241-SS-15	0	24-MAY-94	0.512	pCi/g	No Data	
			TA3/5-241-SS-16	0	24-MAY-94	0.56	pCi/g	0.11	
			TA3/5-241-SS-16	0	24-MAY-94	0.546	pCi/g	No Data	
			TA3/5-241-SS-17	0	24-MAY-94	0.75	pCi/g	0.15	
			TA3/5-241-SS-17	0	24-MAY-94	0.54	pCi/g	No Data	
			TA3/5-241-SS-17D	0	24-MAY-94	0.532	pCi/g	No Data	
			TA3/5-241-SS-18	0	24-MAY-94	0.524	pCi/g	No Data	
			TA3/5-241-SS-18	0	24-MAY-94	0.49	pCi/g	0.16	
			TA3/5-241-SS-19	0	24-MAY-94	0.58	pCi/g	0.12	
			TA3/5-241-SS-19	0	24-MAY-94	0.466	pCi/g	No Data	
			TA3/5-241-SS-20	0	24-MAY-94	0.52	pCi/g	0.11	
			TA3/5-241-SS-20	0	24-MAY-94	0.473	pCi/g	No Data	
			TA3/5-241-SS-21	0	24-MAY-94	0.58	pCi/g	0.15	
			TA3/5-241-SS-21	0	24-MAY-94	0.539	pCi/g	No Data	
			TA3/5-241-SS-22	0	24-MAY-94	0.429	pCi/g	No Data	
			TA3/5-241-SS-23	0	24-MAY-94	0.66	pCi/g	0.12	
			TA3/5-241-SS-23	0	24-MAY-94	0.526	pCi/g	No Data	
			TA3/5-241-SS-24	0	24-MAY-94	0.533	pCi/g	No Data	
			TA3/5-241-SS-25	0	29-MAY-94	0.61	pCi/g	0.12	
			TA3/5-241-SS-25	0	24-MAY-94	0.478	pCi/g	No Data	
			TA3/5-241-SS-26	0	24-MAY-94	0.435	pCi/g	No Data	
			TA3/5-241-SS-27	0	24-MAY-94	0.474	pCi/g	No Data	
			TA3/5-241-SS-28	0	24-MAY-94	0.442	pCi/g	No Data	
			TA3/5-241-SS-28	0	29-MAY-94	0.44	pCi/g	0.15	
			TA3/5-241-SS-29	0	24-MAY-94	0.37	pCi/g	No Data	
			TA3/5-241-SS-29D	0	29-MAY-94	0.55	pCi/g	0.14	
			TA3/5-241-SS-29D	0	24-MAY-94	0.358	pCi/g	No Data	
		CESIUM-137	TA3/5-241-SS-01	0	24-MAY-94	0.142	pCi/g	No Data	
			TA3/5-241-SS-02	0	24-MAY-94	0.164	pCi/g	No Data	
			TA3/5-241-SS-03	0	24-MAY-94	0.0232	pCi/g	No Data	
			TA3/5-241-SS-04	0	24-MAY-94	0.135	pCi/g	No Data	
			TA3/5-241-SS-04	0	24-MAY-94	0.12	pCi/g	0.076	
			TA3/5-241-SS-05	0	24-MAY-94	0.165	pCi/g	No Data	
			TA3/5-241-SS-06	0	24-MAY-94	0.0989	pCi/g	No Data	
			TA3/5-241-SS-07	0	24-MAY-94	0.0777	pCi/g	No Data	
			TA3/5-241-SS-08	0	24-MAY-94	0.0556	pCi/g	No Data	
			TA3/5-241-SS-09	0	24-MAY-94	0.0916	pCi/g	No Data	
			TA3/5-241-SS-10	0	24-MAY-94	0.166	pCi/g	No Data	
			TA3/5-241-SS-11	0	24-MAY-94	0.0977	pCi/g	No Data	
			TA3/5-241-SS-12	0	24-MAY-94	0.131	pCi/g	No Data	
			TA3/5-241-SS-13	0	24-MAY-94	0.0837	pCi/g	No Data	
			TA3/5-241-SS-14	0	24-MAY-94	0.13	pCi/g	0.082	
			TA3/5-241-SS-14	0	24-MAY-94	0.123	pCi/g	No Data	
			TA3/5-241-SS-15	0	24-MAY-94	0.145	pCi/g	No Data	
			TA3/5-241-SS-16	0	24-MAY-94	0.177	pCi/g	No Data	
			TA3/5-241-SS-17	0	24-MAY-94	0.17	pCi/g	No Data	
			TA3/5-241-SS-17	0	24-MAY-94	0.13	pCi/g	0.081	
			TA3/5-241-SS-17D	0	24-MAY-94	0.123	pCi/g	No Data	
			TA3/5-241-SS-17D	0	24-MAY-94	0.06	pCi/g	0.079	
			TA3/5-241-SS-18	0	24-MAY-94	0.137	pCi/g	No Data	
			TA3/5-241-SS-18	0	24-MAY-94	0.12	pCi/g	0.081	
			TA3/5-241-SS-19	0	24-MAY-94	0.0831	pCi/g	No Data	
			TA3/5-241-SS-19	0	24-MAY-94	0.073	pCi/g	0.054	
			TA3/5-241-SS-20	0	24-MAY-94	0.152	pCi/g	No Data	
			TA3/5-241-SS-20	0	24-MAY-94	0.085	pCi/g	0.092	
			TA3/5-241-SS-21	0	24-MAY-94	0.13	pCi/g	0.092	
			TA3/5-241-SS-21	0	24-MAY-94	0.0863	pCi/g	No Data	
			TA3/5-241-SS-22	0	24-MAY-94	0.24	pCi/g	0.11	
			TA3/5-241-SS-22	0	24-MAY-94	0.187	pCi/g	No Data	
			TA3/5-241-SS-23	0	24-MAY-94	0.092	pCi/g	0.08	
			TA3/5-241-SS-23	0	24-MAY-94	0.0354	pCi/g	No Data	
			TA3/5-241-SS-24	0	24-MAY-94	0.0992	pCi/g	No Data	
			TA3/5-241-SS-25	0	24-MAY-94	0.0886	pCi/g	No Data	
			TA3/5-241-SS-25	0	29-MAY-94	0.083	pCi/g	0.059	
			TA3/5-241-SS-26	0	24-MAY-94	0.117	pCi/g	No Data	
			TA3/5-241-SS-27	0	24-MAY-94	0.195	pCi/g	No Data	
			TA3/5-241-SS-28	0	29-MAY-94	0.12	pCi/g	0.067	
			TA3/5-241-SS-28	0	24-MAY-94	0.103	pCi/g	No Data	
			TA3/5-241-SS-29	0	29-MAY-94	0.14	pCi/g	0.086	
			TA3/5-241-SS-29	0	24-MAY-94	0.114	pCi/g	No Data	
			TA3/5-241-SS-29D	0	29-MAY-94	0.1	pCi/g	0.062	
			TA3/5-241-SS-29D	0	24-MAY-94	0.0892	pCi/g	No Data	
		GROSS ALPHA	TA3/5-241-SS-04	0	24-MAY-94	6.7	pCi/g	7.1	
			TA3/5-241-SS-14	0	24-MAY-94	7.7	pCi/g	6.2	
			TA3/5-241-SS-16	0	24-MAY-94	6.7	pCi/g	5.6	
			TA3/5-241-SS-17	0	24-MAY-94	4.8	pCi/g	7.1	
			TA3/5-241-SS-17D	0	24-MAY-94	5.8	pCi/g	6.7	
			TA3/5-241-SS-18	0	24-MAY-94	3.6	pCi/g	6.1	
			TA3/5-241-SS-19	0	24-MAY-94	2.8	pCi/g	6.8	
			TA3/5-241-SS-20	0	24-MAY-94	6.3	pCi/g	8.1	
			TA3/5-241-SS-21	0	24-MAY-94	5.3	pCi/g	8.1	
			TA3/5-241-SS-22	0	24-MAY-94	7.3	pCi/g	7.7	
			TA3/5-241-SS-23	0	24-MAY-94	9.6	pCi/g	7.1	
			TA3/5-241-SS-25	0	29-MAY-94	19	pCi/g	6.2	
			TA3/5-241-SS-28	0	29-MAY-94	11	pCi/g	5.6	
			TA3/5-241-SS-29	0	29-MAY-94	20	pCi/g	7.1	
			TA3/5-241-SS-29D	0	29-MAY-94	9.5	pCi/g	6.7	
		GROSS BETA	TA3/5-241-SS-04	0	24-MAY-94	17	pCi/g	5.5	
			TA3/5-241-SS-14	0	24-MAY-94	14	pCi/g	4.8	
			TA3/5-241-SS-16	0	24-MAY-94	8.2	pCi/g	5.2	
			TA3/5-241-SS-17	0	24-MAY-94	12	pCi/g	5.2	
			TA3/5-241-SS-17D	0	24-MAY-94	12	pCi/g	5.3	
			TA3/5-241-SS-18	0	24-MAY-94	13	pCi/g	6.1	
			TA3/5-241-SS-19	0	24-MAY-94	11	pCi/g	5.4	
			TA3/5-241-SS-20	0	24-MAY-94	8.4	pCi/g	5	
			TA3/5-241-SS-21	0	24-MAY-94	9.8	pCi/g	5.3	
			TA3/5-241-SS-22	0	24-MAY-94	12	pCi/g	6.2	
			TA3/5-241-SS-23	0	24-MAY-94	29	pCi/g	5.7	
			TA3/5-241-SS-25	0	29-MAY-94	27	pCi/g	4.7	
			TA3/5-241-SS-28	0	29-MAY-94	22	pCi/g	5.3	
			TA3/5-241-SS-29	0	29-MAY-94	26	pCi/g	5.2	
			TA3/5-241-SS-29D	0	29-MAY-94	27	pCi/g	5.2	
		LEAD-212	TA3/5-241-SS-01	0	24-MAY-94	0.586	pCi/g	No Data	
			TA3/5-241-SS-02	0	24-MAY-94	0.655	pCi/g	No Data	
			TA3/5-241-SS-03	0	24-MAY-94	0.878	pCi/g	No Data	
			TA3/5-241-SS-04	0	24-MAY-94	0.621	pCi/g	No Data	
			TA3/5-241-SS-04	0	24-MAY-94	0.62	pCi/g	0.088	
			TA3/5-241-SS-05	0	24-MAY-94	0.62	pCi/g	No Data	
			TA3/5-241-SS-06	0	24-MAY-94	0.792	pCi/g	No Data	
			TA3/5-241-SS-07	0	24-MAY-94	0.712	pCi/g	No Data	
			TA3/5-241-SS-08	0	24-MAY-94	0.636	pCi/g	No Data	
			TA3/5-241-SS-09	0	24-MAY-94	0.724	pCi/g	No Data	
			TA3/5-241-SS-10	0	24-MAY-94	0.688	pCi/g	No Data	
			TA3/5-241-SS-11	0	24-MAY-94	0.668	pCi/g	No Data	
			TA3/5-241-SS-12	0	24-MAY-94	0.72	pCi/g	No Data	
			TA3/5-241-SS-13	0	24-MAY-94	0.661	pCi/g	No Data	
			TA3/5-241-SS-14	0	24-MAY-94	0.695	pCi/g	No Data	
			TA3/5-241-SS-14	0	24-MAY-94	0.64	pCi/g	0.081	
			TA3/5-241-SS-15	0	24-MAY-94	0.692	pCi/g	No Data	
			TA3/5-241-SS-16	0	24-MAY-94	0.7	pCi/g	0.093	
			TA3/5-241-SS-16	0	24-MAY-94	0.679	pCi/g	No Data	
			TA3/5-241-SS-17	0	24-MAY-94	0.728	pCi/g	No Data	
			TA3/5-241-SS-17	0	24-MAY-94	0.65	pCi/g	0.12	

	TA3/5-241-SS-17D	0	24-MAY-94	0.68	pCi/g		0.088
	TA3/5-241-SS-17D	0	24-MAY-94	0.656	pCi/g	No Data	
	TA3/5-241-SS-18	0	24-MAY-94	0.679	pCi/g	No Data	
	TA3/5-241-SS-18	0	24-MAY-94	0.65	pCi/g		0.085
	TA3/5-241-SS-19	0	24-MAY-94	0.7	pCi/g		0.09
	TA3/5-241-SS-19	0	24-MAY-94	0.641	pCi/g	No Data	
	TA3/5-241-SS-20	0	24-MAY-94	0.64	pCi/g		0.088
	TA3/5-241-SS-20	0	24-MAY-94	0.602	pCi/g	No Data	
	TA3/5-241-SS-21	0	24-MAY-94	0.66	pCi/g		0.083
	TA3/5-241-SS-21	0	24-MAY-94	0.644	pCi/g	No Data	
	TA3/5-241-SS-22	0	24-MAY-94	0.688	pCi/g	No Data	
	TA3/5-241-SS-22	0	24-MAY-94	0.62	pCi/g		0.097
	TA3/5-241-SS-23	0	24-MAY-94	0.74	pCi/g		0.093
	TA3/5-241-SS-23	0	24-MAY-94	0.732	pCi/g	No Data	
	TA3/5-241-SS-24	0	24-MAY-94	0.707	pCi/g	No Data	
	TA3/5-241-SS-25	0	24-MAY-94	0.695	pCi/g	No Data	
	TA3/5-241-SS-25	0	29-MAY-94	0.55	pCi/g		0.14
	TA3/5-241-SS-26	0	24-MAY-94	0.621	pCi/g	No Data	
	TA3/5-241-SS-27	0	24-MAY-94	0.698	pCi/g	No Data	
	TA3/5-241-SS-28	0	24-MAY-94	0.739	pCi/g	No Data	
	TA3/5-241-SS-28	0	29-MAY-94	0.64	pCi/g		0.079
	TA3/5-241-SS-29	0	29-MAY-94	0.67	pCi/g		0.089
	TA3/5-241-SS-29	0	24-MAY-94	0.547	pCi/g	No Data	
	TA3/5-241-SS-29D	0	29-MAY-94	0.6	pCi/g		0.085
	TA3/5-241-SS-29D	0	24-MAY-94	0.553	pCi/g	No Data	
LEAD-214	TA3/5-241-SS-01	0	24-MAY-94	0.499	pCi/g	No Data	
	TA3/5-241-SS-02	0	24-MAY-94	0.599	pCi/g	No Data	
	TA3/5-241-SS-03	0	24-MAY-94	0.563	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	0.716	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	0.58	pCi/g		0.19
	TA3/5-241-SS-05	0	24-MAY-94	0.712	pCi/g	No Data	
	TA3/5-241-SS-06	0	24-MAY-94	0.697	pCi/g	No Data	
	TA3/5-241-SS-07	0	24-MAY-94	0.57	pCi/g	No Data	
	TA3/5-241-SS-08	0	24-MAY-94	0.535	pCi/g	No Data	
	TA3/5-241-SS-09	0	24-MAY-94	0.562	pCi/g	No Data	
	TA3/5-241-SS-10	0	24-MAY-94	0.588	pCi/g	No Data	
	TA3/5-241-SS-11	0	24-MAY-94	0.559	pCi/g	No Data	
	TA3/5-241-SS-12	0	24-MAY-94	0.658	pCi/g	No Data	
	TA3/5-241-SS-13	0	24-MAY-94	0.532	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	0.67	pCi/g		0.14
	TA3/5-241-SS-14	0	24-MAY-94	0.592	pCi/g	No Data	
	TA3/5-241-SS-15	0	24-MAY-94	0.643	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	0.57	pCi/g		0.17
	TA3/5-241-SS-16	0	24-MAY-94	0.542	pCi/g	No Data	
	TA3/5-241-SS-17	0	24-MAY-94	0.681	pCi/g	No Data	
	TA3/5-241-SS-17	0	24-MAY-94	0.62	pCi/g		0.13
	TA3/5-241-SS-17D	0	24-MAY-94	0.68	pCi/g		0.15
	TA3/5-241-SS-17D	0	24-MAY-94	0.5	pCi/g	No Data	
	TA3/5-241-SS-18	0	24-MAY-94	0.59	pCi/g		0.15
	TA3/5-241-SS-18	0	24-MAY-94	0.544	pCi/g	No Data	
	TA3/5-241-SS-19	0	24-MAY-94	0.57	pCi/g		0.14
	TA3/5-241-SS-19	0	24-MAY-94	0.493	pCi/g	No Data	
	TA3/5-241-SS-20	0	24-MAY-94	0.62	pCi/g		0.15
	TA3/5-241-SS-20	0	24-MAY-94	0.549	pCi/g	No Data	
	TA3/5-241-SS-21	0	24-MAY-94	0.513	pCi/g	No Data	
	TA3/5-241-SS-21	0	24-MAY-94	0.5	pCi/g		0.16
	TA3/5-241-SS-22	0	24-MAY-94	0.583	pCi/g	No Data	
	TA3/5-241-SS-22	0	24-MAY-94	0.56	pCi/g		0.16
	TA3/5-241-SS-23	0	24-MAY-94	0.68	pCi/g		0.19
	TA3/5-241-SS-23	0	24-MAY-94	0.599	pCi/g	No Data	
	TA3/5-241-SS-24	0	24-MAY-94	0.608	pCi/g	No Data	
	TA3/5-241-SS-25	0	29-MAY-94	0.62	pCi/g		0.14
	TA3/5-241-SS-25	0	24-MAY-94	0.559	pCi/g	No Data	
	TA3/5-241-SS-26	0	24-MAY-94	0.479	pCi/g	No Data	
	TA3/5-241-SS-27	0	24-MAY-94	0.509	pCi/g	No Data	
	TA3/5-241-SS-28	0	29-MAY-94	0.55	pCi/g		0.16
	TA3/5-241-SS-28	0	24-MAY-94	0.522	pCi/g	No Data	
	TA3/5-241-SS-29	0	29-MAY-94	0.55	pCi/g		0.16
	TA3/5-241-SS-29	0	24-MAY-94	0.487	pCi/g	No Data	
	TA3/5-241-SS-29D	0	24-MAY-94	0.515	pCi/g	No Data	
	TA3/5-241-SS-29D	0	29-MAY-94	0.44	pCi/g		0.13
POTASSIUM-40	TA3/5-241-SS-01	0	24-MAY-94	16.1	pCi/g	No Data	
	TA3/5-241-SS-02	0	24-MAY-94	16	pCi/g	No Data	
	TA3/5-241-SS-03	0	24-MAY-94	17.2	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	17.1	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	14	pCi/g		0.66
	TA3/5-241-SS-05	0	24-MAY-94	16.8	pCi/g	No Data	
	TA3/5-241-SS-06	0	24-MAY-94	21	pCi/g	No Data	
	TA3/5-241-SS-07	0	24-MAY-94	19.6	pCi/g	No Data	
	TA3/5-241-SS-08	0	24-MAY-94	16.6	pCi/g	No Data	
	TA3/5-241-SS-09	0	24-MAY-94	17.5	pCi/g	No Data	
	TA3/5-241-SS-10	0	24-MAY-94	17.7	pCi/g	No Data	
	TA3/5-241-SS-11	0	24-MAY-94	17.8	pCi/g	No Data	
	TA3/5-241-SS-12	0	24-MAY-94	19.5	pCi/g	No Data	
	TA3/5-241-SS-13	0	24-MAY-94	18.5	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	19.1	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	16	pCi/g		0.69
	TA3/5-241-SS-15	0	24-MAY-94	18.5	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	17.9	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	15	pCi/g		0.54
	TA3/5-241-SS-17	0	24-MAY-94	20	pCi/g	No Data	
	TA3/5-241-SS-17	0	24-MAY-94	15	pCi/g		0.59
	TA3/5-241-SS-17D	0	24-MAY-94	17.8	pCi/g	No Data	
	TA3/5-241-SS-17D	0	24-MAY-94	15	pCi/g		0.53
	TA3/5-241-SS-18	0	24-MAY-94	17.4	pCi/g	No Data	
	TA3/5-241-SS-18	0	24-MAY-94	14	pCi/g		0.7
	TA3/5-241-SS-19	0	24-MAY-94	17.7	pCi/g	No Data	
	TA3/5-241-SS-19	0	24-MAY-94	16	pCi/g		0.57
	TA3/5-241-SS-20	0	24-MAY-94	17.9	pCi/g	No Data	
	TA3/5-241-SS-20	0	24-MAY-94	15	pCi/g		0.63
	TA3/5-241-SS-21	0	24-MAY-94	17.9	pCi/g	No Data	
	TA3/5-241-SS-21	0	24-MAY-94	15	pCi/g		0.61
	TA3/5-241-SS-22	0	24-MAY-94	17.3	pCi/g	No Data	
	TA3/5-241-SS-22	0	24-MAY-94	15	pCi/g		0.5
	TA3/5-241-SS-23	0	24-MAY-94	17.5	pCi/g	No Data	
	TA3/5-241-SS-23	0	24-MAY-94	15	pCi/g		0.71
	TA3/5-241-SS-24	0	24-MAY-94	19.7	pCi/g	No Data	
	TA3/5-241-SS-25	0	24-MAY-94	18.3	pCi/g	No Data	
	TA3/5-241-SS-25	0	29-MAY-94	17	pCi/g		0.51
	TA3/5-241-SS-26	0	24-MAY-94	19.6	pCi/g	No Data	
	TA3/5-241-SS-27	0	24-MAY-94	18.6	pCi/g	No Data	
	TA3/5-241-SS-28	0	24-MAY-94	18.3	pCi/g	No Data	
	TA3/5-241-SS-28	0	29-MAY-94	17	pCi/g		0.29
	TA3/5-241-SS-29	0	24-MAY-94	17.3	pCi/g	No Data	
	TA3/5-241-SS-29	0	29-MAY-94	14	pCi/g		0.52
	TA3/5-241-SS-29D	0	24-MAY-94	18	pCi/g	No Data	
	TA3/5-241-SS-29D	0	29-MAY-94	15	pCi/g		0.66
RADIUM-223	TA3/5-241-SS-21	0	24-MAY-94	0.37	pCi/g		0.28
	TA3/5-241-SS-25	0	29-MAY-94	0.42	pCi/g		0.32
RADIUM-224	TA3/5-241-SS-01	0	24-MAY-94	0.873	pCi/g	No Data	
	TA3/5-241-SS-02	0	24-MAY-94	0.779	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	0.663	pCi/g	No Data	
	TA3/5-241-SS-05	0	24-MAY-94	0.741	pCi/g	No Data	
	TA3/5-241-SS-06	0	24-MAY-94	1.3	pCi/g	No Data	
	TA3/5-241-SS-08	0	24-MAY-94	0.878	pCi/g	No Data	
	TA3/5-241-SS-09	0	24-MAY-94	0.886	pCi/g	No Data	
	TA3/5-241-SS-10	0	24-MAY-94	0.878	pCi/g	No Data	
	TA3/5-241-SS-11	0	24-MAY-94	1.06	pCi/g	No Data	
	TA3/5-241-SS-12	0	24-MAY-94	0.829	pCi/g	No Data	
	TA3/5-241-SS-13	0	24-MAY-94	1.66	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	1.8	pCi/g		1.7
	TA3/5-241-SS-14	0	24-MAY-94	1.02	pCi/g	No Data	
	TA3/5-241-SS-15	0	24-MAY-94	0.655	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	0.802	pCi/g	No Data	
	TA3/5-241-SS-17	0	24-MAY-94	0.697	pCi/g	No Data	
	TA3/5-241-SS-17D	0	24-MAY-94	0.828	pCi/g	No Data	
	TA3/5-241-SS-18	0	24-MAY-94	0.867	pCi/g	No Data	
	TA3/5-241-SS-19	0	24-MAY-94	1.03	pCi/g	No Data	
	TA3/5-241-SS-20	0	24-MAY-94	1.22	pCi/g	No Data	
	TA3/5-241-SS-21	0	24-MAY-94	0.833	pCi/g	No Data	
	TA3/5-241-SS-22	0	24-MAY-94	0.856	pCi/g	No Data	
	TA3/5-241-SS-23	0	24-MAY-94	2	pCi/g	No Data	
	TA3/5-241-SS-24	0	24-MAY-94	2.36	pCi/g	No Data	
	TA3/5-241-SS-25	0	24-MAY-94	0.7	pCi/g	No Data	
	TA3/5-241-SS-26	0	24-MAY-94	1.94	pCi/g	No Data	
	TA3/5-241-SS-27	0	24-MAY-94	0.923	pCi/g	No Data	
	TA3/5-241-SS-28	0	24-MAY-94	0.979	pCi/g	No Data	
	TA3/5-241-SS-29	0	29-MAY-94	1.4	pCi/g		1.2
	TA3/5-241-SS-29	0	24-MAY-94	0.812	pCi/g	No Data	
	TA3/5-241-SS-29D	0	24-MAY-94	0.433	pCi/g	No Data	
RADIUM-226	TA3/5-241-SS-01	0	24-MAY-94	0.918	pCi/g	No Data	
	TA3/5-241-SS-02	0	24-MAY-94	0.764	pCi/g	No Data	
	TA3/5-241-SS-03	0	24-MAY-94	0.871	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	1.92	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	0.66	pCi/g		0.16
	TA3/5-241-SS-05	0	24-MAY-94	1.49	pCi/g	No Data	
	TA3/5-241-SS-06	0	24-MAY-94	1.14	pCi/g	No Data	
	TA3/5-241-SS-07	0	24-MAY-94	1.17	pCi/g	No Data	
	TA3/5-241-SS-08	0	24-MAY-94	1.14	pCi/g	No Data	
	TA3/5-241-SS-09	0	24-MAY-94	1.54	pCi/g	No Data	
	TA3/5-241-SS-10	0	24-MAY-94	1.6	pCi/g	No Data	
	TA3/5-241-SS-11	0	24-MAY-94	1.75	pCi/g	No Data	
	TA3/5-241-SS-12	0	24-MAY-94	1.19	pCi/g	No Data	
	TA3/5-241-SS-13	0	24-MAY-94	1.45	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	1.49	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	0.55	pCi/g		0.11
	TA3/5-241-SS-15	0	24-MAY-94	1.31	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	1.92	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	0.55	pCi/g		0.11
	TA3/5-241-SS-17	0	24-MAY-94	1.3	pCi/g	No Data	
	TA3/5-241-SS-17	0	24-MAY-94	0.72	pCi/g		0.15
	TA3/5-241-SS-17D	0	24-MAY-94	1.33	pCi/g	No Data	
	TA3/5-241-SS-17D	0	24-MAY-94	0.68	pCi/g		0.16
	TA3/5-241-SS-18	0	24-MAY-94	1.16	pCi/g	No Data	
	TA3/5-241-SS-18	0	24-MAY-94	0.47	pCi/g		0.15
	TA3/5-241-SS-19	0	24-MAY-94	1.64	pCi/g	No Data	
	TA3/5-241-SS-19	0	24-MAY-94	0.56	pCi/g		0.11
	TA3/5-241-SS-20	0	24-MAY-94	1.15	pCi/g	No Data	
	TA3/5-241-SS-20	0	24-MAY-94	0.51	pCi/g		0.11
	TA3/5-241-SS-21	0	24-MAY-94	1.38	pCi/g	No Data	
	TA3/5-241-SS-21	0	24-MAY-94	0.56	pCi/g		0.14
	TA3/5-241-SS-22	0	24-MAY-94	1.05	pCi/g	No Data	
	TA3/5-241-SS-22	0	24-MAY-94	0.49	pCi/g		0.14
	TA3/5-241-SS-23	0	24-MAY-94	1.56	pCi/g	No Data	
	TA3/5-241-SS-23	0	24-MAY-94	0.64	pCi/g		0.12
	TA3/5-241-SS-24	0	24-MAY-94	0.978	pCi/g	No Data	
	TA3/5-241-SS-25	0	24-MAY-94	1.37	pCi/g	No Data	
	TA3/5-241-SS-25	0	29-MAY-94	0.6	pCi/g		0.11
	TA3/5-241-SS-26	0	24-MAY-94	1.12	pCi/g	No Data	
	TA3/5-241-SS-27	0	24-MAY-94	0.919	pCi/g	No Data	
	TA3/5-241-SS-28	0	24-MAY-94	1.44	pCi/g	No Data	
	TA3/5-241-SS-28	0	29-MAY-94	0.43	pCi/g		0.15
	TA3/5-241-SS-29	0	24-MAY-94	1.22	pCi/g	No Data	
	TA3/5-241-SS-29	0	29-MAY-94	0.4	pCi/g		0.16
	TA3/5-241-SS-29D	0	24-MAY-94	1.14	pCi/g	No Data	
	TA3/5-241-SS-29D	0	29-MAY-94	0.53	pCi/g		0.13
RADIUM-228	TA3/5-241-SS-01	0	24-MAY-94	0.594	pCi/g	No Data	
	TA3/5-241-SS-02	0	24-MAY-94	0.78	pCi/g	No Data	
	TA3/5-241-SS-03	0	24-MAY-94	1.02	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	0.772	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	0.45	pCi/g		0.35
	TA3/5-241-SS-05	0	24-MAY-94	0.684	pCi/g	No Data	
	TA3/5-241-SS-06	0	24-MAY-94	0.923	pCi/g	No Data	
	TA3/5-241-SS-07	0	24-MAY-94	0.865	pCi/g	No Data	
	TA3/5-241-SS-08	0	24-MAY-94	0.91	pCi/g	No Data	
	TA3/5-241-SS-09	0	24-MAY-94	0.741	pCi/g	No Data	
	TA3/5-241-SS-10	0	24-MAY-94	0.86	pCi/g	No Data	
	TA3/5-241-SS-11	0	24-MAY-94	0.818	pCi/g	No Data	
	TA3/5-241-SS-12	0	24-MAY-94	0.903	pCi/g	No Data	
	TA3/5-241-SS-13	0	24-MAY-94	0.914	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	0.869	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	0.57	pCi/g		0.26
	TA3/5-241-SS-15	0	24-MAY-94	0.782	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	0.86	pCi/g		0.23
	TA3/5-241-SS-16	0	24-MAY-94	0.794	pCi/g	No Data	
	TA3/5-241-SS-17	0	24-MAY-94	0.847	pCi/g	No Data	
	TA3/5-241-SS-17	0	24-MAY-94	0.74	pCi/g		0.3
	TA3/5-241-SS-17D	0	24-MAY-94	0.845	pCi/g	No Data	
	TA3/5-241-SS-17D	0	24-MAY-94	0.59	pCi/g		0.4
	TA3/5-241-SS-18	0	24-MAY-94	0.727	pCi/g	No Data	
	TA3/5-241-SS-18	0	24-MAY-94	0.52	pCi/g		0.34
	TA3/5-241-SS-19	0	24-MAY-94	0.76	pCi/g		0.37
	TA3/5-241-SS-19	0	24-MAY-94	0.712	pCi/g	No Data	
	TA3/5-241-SS-20	0	24-MAY-94	0.727	pCi/g	No Data	
	TA3/5-241-SS-20	0	24-MAY-94	0.64	pCi/g		0.34
	TA3/5-241-SS-21	0	24-MAY-94	0.83	pCi/g	No Data	
	TA3/5-241-SS-21	0	24-MAY-94	0.52	pCi/g		0.21
	TA3/5-241-SS-22	0	24-MAY-94	0.757	pCi/g	No Data	
	TA3/5-241-SS-22	0	24-MAY-94	0.67	pCi/g		0.29
	TA3/5-241-SS-23	0	24-MAY-94	0.95	pCi/g		0.22
	TA3/5-241-SS-23	0	24-MAY-94	0.888	pCi/g	No Data	
	TA3/5-241-SS-24	0	24-MAY-94	0.826	pCi/g	No Data	
	TA3/5-241-SS-25	0	29-MAY-94	0.91	pCi/g		0.27
	TA3/5-241-SS-25	0	24-MAY-94	0.832	pCi/g	No Data	
	TA3/5-241-SS-26	0	24-MAY-94	0.795	pCi/g	No Data	
	TA3/5-241-SS-27	0	24-MAY-94	0.803	pCi/g	No Data	
	TA3/5-241-SS-28	0	24-MAY-94	0.857	pCi/g	No Data	
	TA3/5-241-SS-28	0	29-MAY-94	0.59	pCi/g		0.33
	TA3/5-241-SS-29	0	24-MAY-94	0.72	pCi/g	No Data	
	TA3/5-241-SS-29	0	29-MAY-94	0.59	pCi/g		0.37
	TA3/5-241-SS-29D	0	24-MAY-94	0.652	pCi/g	No Data	
	TA3/5-241-SS-29D	0	29-MAY-94	0.6	pCi/g		0.35
RADON-219	TA3/5-241-SS-21	0	24-MAY-94	0.47	pCi/g		0.37
	TA3/5-241-SS-25	0	29-MAY-94	0.53	pCi/g		0.41
SODIUM-22	TA3/5-241-SS-19	0	24-MAY-94	0.055	pCi/g		0.046
THALLIUM-208	TA3/5-241-SS-01	0	24-MAY-94	0.194	pCi/g	No Data	
	TA3/5-241-SS-02	0	24-MAY-94	0.226	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	0.51	pCi/g		0.2
	TA3/5-241-SS-04	0	24-MAY-94	0.217	pCi/g	No Data	
	TA3/5-241-SS-05	0	24-MAY-94	0.198	pCi/g	No Data	
	TA3/5-241-SS-06	0	24-MAY-94	0.228	pCi/g	No Data	
	TA3/5-241-SS-07	0	24-MAY-94	0.281	pCi/g	No Data	
	TA3/5-241-SS-08	0	24-MAY-94	0.227	pCi/g	No Data	
	TA3/5-241-SS-09	0	24-MAY-94	0.2	pCi/g	No Data	
	TA3/5-241-SS-10	0	24-MAY-94	0.209	pCi/g	No Data	
	TA3/5-241-SS-11	0	24-MAY-94	0.204	pCi/g	No Data	
	TA3/5-241-SS-12	0	24-MAY-94	0.239	pCi/g	No Data	
	TA3/5-241-SS-13	0	24-MAY-94	0.229	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	0.67	pCi/g		0.2
	TA3/5-241-SS-14	0	24-MAY-94	0.25	pCi/g	No Data	
	TA3/5-241-SS-15	0	24-MAY-94	0.244	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	0.58	pCi/g		0.21
	TA3/5-241-SS-16	0	24-MAY-94	0.216	pCi/g	No Data	
	TA3/5-241-SS-17	0	24-MAY-94	0.68	pCi/g		0.25
	TA3/5-241-SS-17	0	24-MAY-94	0.278	pCi/g	No Data	
	TA3/5-241-SS-17D	0	24-MAY-94	0.62	pCi/g		0.24
	TA3/5-241-SS-17D	0	24-MAY-94	0.231	pCi/g	No Data	
	TA3/5-241-SS-18	0	24-MAY-94	0.68	pCi/g		0.21
	TA3/5-241-SS-18	0	24-MAY-94	0.193	pCi/g	No Data	
	TA3/5-241-SS-19	0	24-MAY-94	0.65	pCi/g		0.22
	TA3/5-241-SS-19	0	24-MAY-94	0.219	pCi/g	No Data	
	TA3/5-241-SS-20	0	24-MAY-94	0.71	pCi/g		0.23
	TA3/5-241-SS-20	0	24-MAY-94	0.221	pCi/g	No Data	
	TA3/5-241-SS-21	0	24-MAY-94	0.75	pCi/g		0.15
	TA3/5-241-SS-21	0	24-MAY-94	0.21	pCi/g	No Data	
	TA3/5-241-SS-22	0	24-MAY-94	0.51	pCi/g		0.2
	TA3/5-241-SS-22	0	24-MAY-94	0.207	pCi/g	No Data	
	TA3/5-241-SS-23	0	24-MAY-94	0.79	pCi/g		0.2
	TA3/5-241-SS-23	0	24-MAY-94	0.219	pCi/g	No Data	
	TA3/5-241-SS-24	0	24-MAY-94	0.252	pCi/g	No Data	
	TA3/5-241-SS-25	0	29-MAY-94	0.62	pCi/g		0.2
	TA3/5-241-SS-25	0	24-MAY-94	0.256	pCi/g	No Data	
	TA3/5-241-SS-26	0	24-MAY-94	0.238	pCi/g	No Data	
	TA3/5-241-SS-27	0	24-MAY-94	0.221	pCi/g	No Data	
	TA3/5-241-SS-28	0	29-MAY-94	0.64	pCi/g		0.2
	TA3/5-241-SS-28	0	24-MAY-94	0.245	pCi/g	No Data	
	TA3/5-241-SS-29	0	29-MAY-94	0.64	pCi/g		0.15
	TA3/5-241-SS-29	0	24-MAY-94	0.199	pCi/g	No Data	
	TA3/5-241-SS-29D	0	29-MAY-94	0.49	pCi/g		0.21
	TA3/5-241-SS-29D	0	24-MAY-94	0.178	pCi/g	No Data	
THORIUM-228	TA3/5-241-SS-01	0	24-MAY-94	0.583	pCi/g	No Data	
	TA3/5-241-SS-02	0	24-MAY-94	0.652	pCi/g	No Data	
	TA3/5-241-SS-03	0	24-MAY-94	0.874	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	0.618	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	0.55	pCi/g		0.21
	TA3/5-241-SS-05	0	24-MAY-94	0.617	pCi/g	No Data	
	TA3/5-241-SS-06	0	24-MAY-94	0.788	pCi/g	No Data	
	TA3/5-241-SS-07	0	24-MAY-94	0.709	pCi/g	No Data	
	TA3/5-241-SS-08	0	24-MAY-94	0.633	pCi/g	No Data	
	TA3/5-241-SS-09	0	24-MAY-94	0.721	pCi/g	No Data	
	TA3/5-241-SS-10	0	24-MAY-94	0.685	pCi/g	No Data	
	TA3/5-241-SS-11	0	24-MAY-94	0.665	pCi/g	No Data	
	TA3/5-241-SS-12	0	24-MAY-94	0.717	pCi/g	No Data	
	TA3/5-241-SS-13	0	24-MAY-94	0.658	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	0.72	pCi/g		0.22
	TA3/5-241-SS-14	0	24-MAY-94	0.692	pCi/g	No Data	
	TA3/5-241-SS-15	0	24-MAY-94	0.689	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	0.676	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	0.62	pCi/g		0.23
	TA3/5-241-SS-17	0	24-MAY-94	0.74	pCi/g		0.26
	TA3/5-241-SS-17	0	24-MAY-94	0.725	pCi/g	No Data	
	TA3/5-241-SS-17D	0	24-MAY-94	0.66	pCi/g		0.25
	TA3/5-241-SS-17D	0	24-MAY-94	0.655	pCi/g	No Data	
	TA3/5-241-SS-18	0	24-MAY-94	0.74	pCi/g		0.22
	TA3/5-241-SS-18	0	24-MAY-94	0.676	pCi/g	No Data	
	TA3/5-241-SS-19	0	24-MAY-94	0.71	pCi/g		0.24
	TA3/5-241-SS-19	0	24-MAY-94	0.638	pCi/g	No Data	
	TA3/5-241-SS-20	0	24-MAY-94	0.77	pCi/g		0.24
	TA3/5-241-SS-20	0	24-MAY-94	0.6	pCi/g	No Data	
	TA3/5-241-SS-21	0	24-MAY-94	0.81	pCi/g		0.17
	TA3/5-241-SS-21	0	24-MAY-94	0.641	pCi/g	No Data	
	TA3/5-241-SS-22	0	24-MAY-94	0.685	pCi/g	No Data	
	TA3/5-241-SS-22	0	24-MAY-94	0.55	pCi/g		0.22
	TA3/5-241-SS-23	0	24-MAY-94	0.85	pCi/g		0.21
	TA3/5-241-SS-23	0	24-MAY-94	0.728	pCi/g	No Data	
	TA3/5-241-SS-24	0	24-MAY-94	0.703	pCi/g	No Data	
	TA3/5-241-SS-25	0	24-MAY-94	0.692	pCi/g	No Data	
	TA3/5-241-SS-25	0	29-MAY-94	0.66	pCi/g		0.22
	TA3/5-241-SS-26	0	24-MAY-94	0.619	pCi/g	No Data	
	TA3/5-241-SS-27	0	24-MAY-94	0.695	pCi/g	No Data	
	TA3/5-241-SS-28	0	24-MAY-94	0.736	pCi/g	No Data	
	TA3/5-241-SS-28	0	29-MAY-94	0.69	pCi/g		0.21
	TA3/5-241-SS-29	0	29-MAY-94	0.68	pCi/g		0.16
	TA3/5-241-SS-29	0	24-MAY-94	0.545	pCi/g	No Data	
	TA3/5-241-SS-29D	0	24-MAY-94	0.55	pCi/g	No Data	
	TA3/5-241-SS-29D	0	29-MAY-94	0.52	pCi/g		0.23
THORIUM-231	TA3/5-241-SS-05	0	24-MAY-94	0.516	pCi/g	No Data	
	TA3/5-241-SS-13	0	24-MAY-94	0.424	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	0.334	pCi/g	No Data	
	TA3/5-241-SS-15	0	24-MAY-94	0.397	pCi/g	No Data	
THORIUM-232	TA3/5-241-SS-01	0	24-MAY-94	0.594	pCi/g	No Data	
	TA3/5-241-SS-02	0	24-MAY-94	0.78	pCi/g	No Data	
	TA3/5-241-SS-03	0	24-MAY-94	1.02	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	0.772	pCi/g	No Data	
	TA3/5-241-SS-04	0	24-MAY-94	0.45	pCi/g		0.35
	TA3/5-241-SS-05	0	24-MAY-94	0.684	pCi/g	No Data	
	TA3/5-241-SS-06	0	24-MAY-94	0.923	pCi/g	No Data	
	TA3/5-241-SS-07	0	24-MAY-94	0.865	pCi/g	No Data	
	TA3/5-241-SS-08	0	24-MAY-94	0.91	pCi/g	No Data	
	TA3/5-241-SS-09	0	24-MAY-94	0.741	pCi/g	No Data	
	TA3/5-241-SS-10	0	24-MAY-94	0.86	pCi/g	No Data	
	TA3/5-241-SS-11	0	24-MAY-94	0.818	pCi/g	No Data	
	TA3/5-241-SS-12	0	24-MAY-94	0.903	pCi/g	No Data	
	TA3/5-241-SS-13	0	24-MAY-94	0.914	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	0.869	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	0.57	pCi/g		0.26
	TA3/5-241-SS-15	0	24-MAY-94	0.782	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	0.86	pCi/g		0.23
	TA3/5-241-SS-16	0	24-MAY-94	0.794	pCi/g	No Data	
	TA3/5-241-SS-17	0	24-MAY-94	0.847	pCi/g	No Data	
	TA3/5-241-SS-17	0	24-MAY-94	0.74	pCi/g		0.3
	TA3/5-241-SS-17D	0	24-MAY-94	0.845	pCi/g	No Data	
	TA3/5-241-SS-17D	0	24-MAY-94	0.59	pCi/g		0.4
	TA3/5-241-SS-18	0	24-MAY-94	0.727	pCi/g	No Data	
	TA3/5-241-SS-18	0	24-MAY-94	0.52	pCi/g		0.34
	TA3/5-241-SS-19	0	24-MAY-94	0.76	pCi/g		0.37
	TA3/5-241-SS-19	0	24-MAY-94	0.712	pCi/g	No Data	
	TA3/5-241-SS-20	0	24-MAY-94	0.727	pCi/g	No Data	
	TA3/5-241-SS-20	0	24-MAY-94	0.64	pCi/g		0.34
	TA3/5-241-SS-21	0	24-MAY-94	0.83	pCi/g	No Data	
	TA3/5-241-SS-21	0	24-MAY-94	0.52	pCi/g		0.21
	TA3/5-241-SS-22	0	24-MAY-94	0.757	pCi/g	No Data	
	TA3/5-241-SS-22	0	24-MAY-94	0.67	pCi/g		0.29
	TA3/5-241-SS-23	0	24-MAY-94	0.95	pCi/g		0.22
	TA3/5-241-SS-23	0	24-MAY-94	0.888	pCi/g	No Data	
	TA3/5-241-SS-24	0	24-MAY-94	0.826	pCi/g	No Data	
	TA3/5-241-SS-25	0	29-MAY-94	0.91	pCi/g		0.27
	TA3/5-241-SS-25	0	24-MAY-94	0.832	pCi/g	No Data	
	TA3/5-241-SS-26	0	24-MAY-94	0.795	pCi/g	No Data	
	TA3/5-241-SS-27	0	24-MAY-94	0.803	pCi/g	No Data	
	TA3/5-241-SS-28	0	24-MAY-94	0.857	pCi/g	No Data	
	TA3/5-241-SS-28	0	29-MAY-94	0.59	pCi/g		0.33
	TA3/5-241-SS-29	0	24-MAY-94	0.72	pCi/g	No Data	
	TA3/5-241-SS-29	0	29-MAY-94	0.59	pCi/g		0.37
	TA3/5-241-SS-29D	0	24-MAY-94	0.652	pCi/g	No Data	
	TA3/5-241-SS-29D	0	29-MAY-94	0.6	pCi/g		0.35
THORIUM-234	TA3/5-241-SS-01	0	24-MAY-94	1.22	pCi/g	No Data	
	TA3/5-241-SS-12	0	24-MAY-94	0.936	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	1.22	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	0.758	pCi/g	No Data	
	TA3/5-241-SS-23	0	24-MAY-94	1.21	pCi/g	No Data	
	TA3/5-241-SS-25	0	24-MAY-94	0.975	pCi/g	No Data	
	TA3/5-241-SS-26	0	24-MAY-94	1.14	pCi/g	No Data	
	TA3/5-241-SS-28	0	29-MAY-94	0.91	pCi/g		0.76
URANIUM-238	TA3/5-241-SS-01	0	24-MAY-94	1.22	pCi/g	No Data	
	TA3/5-241-SS-12	0	24-MAY-94	0.934	pCi/g	No Data	
	TA3/5-241-SS-14	0	24-MAY-94	1.21	pCi/g	No Data	
	TA3/5-241-SS-16	0	24-MAY-94	0.758	pCi/g	No Data	
	TA3/5-241-SS-23	0	24-MAY-94	1.21	pCi/g	No Data	
	TA3/5-241-SS-25	0	24-MAY-94	0.973	pCi/g	No Data	
	TA3/5-241-SS-26	0	24-MAY-94	1.14	pCi/g	No Data	

Appendix D. Quality Assurance/Quality Control Data

SITE 36 - QA/QC DATA

Sample ID	Analyte	Result	Spike Amt	Units	Detection Limit	Qualifier	Sample Type	Sample Date	Matrix
TA3/5-36-BH-02-70.50	1,1-DICHLOROETHENE	44	50	ug/kg	5		SD	08-MAR-95	SOIL
TA3/5-36-BH-02-70.50	1,1-DICHLOROETHENE	48	50	ug/kg	5		MS	08-MAR-95	SOIL
TA3/5-36-BH-02-70.50	BENZENE	49	50	ug/kg	5		MS	08-MAR-95	SOIL
TA3/5-36-BH-02-70.50	BENZENE	51	50	ug/kg	5		SD	08-MAR-95	SOIL
TA3/5-36-BH-02-70.50	TOLUENE	49	50	ug/kg	5		MS	08-MAR-95	SOIL
TA3/5-36-BH-02-70.50	TOLUENE	51	50	ug/kg	5		SD	08-MAR-95	SOIL
TA3/5-36-BH-02-70.50	CHLOROBENZENE	50	50	ug/kg	5		MS	08-MAR-95	SOIL
TA3/5-36-BH-02-70.50	CHLOROBENZENE	51	50	ug/kg	5		SD	08-MAR-95	SOIL
TA3/5-36-BH-02-70.50	TRICHLOROETHENE	54	50	ug/kg	5		MS	08-MAR-95	SOIL
TA3/5-36-BH-02-70.50	TRICHLOROETHENE	58	50	ug/kg	5		SD	08-MAR-95	SOIL
TA3/5-36-G4-15	TPH	210	250	mg/kg	20		MS	06-JUL-94	SOIL
TA3/5-36-G4-15	TPH	216	250	mg/kg	20		SD	06-JUL-94	SOIL

Appendix D. Quality Assurance/Quality Control Data

SITE 37 - QA/QC DATA

Sample ID	Analyte	Result	Spike Amt	Units	Detection Limit	Qualifier	Sample Type	Sample Date	Matrix
TA3/5-37-A4-1	AROCLOR 1254	36	33	ug/kg	33		SD	06-JUN-94	SOIL
TA3/5-37-A4-1	TPH	231	250	mg/kg	20		SD	06-JUN-94	SOIL
TA3/5-37-A4-1	TPH	242	250	mg/kg	20		MS	06-JUN-94	SOIL

Appendix D. Quality Assurance/Quality Control Data

SITE 51 - QA/QC DATA

Sample ID	Analyte	Result	Spike Amt	Units	Detection Limit	Qualifier	Sample Type	Sample Date	Matrix
TA3/5-51-A4	1,1-DICHLOROETHENE	33	50	ug/kg	5		MS	06-SEP-94	SOIL
TA3/5-51-A4	1,1-DICHLOROETHENE	37	50	ug/kg	5		SD	06-SEP-94	SOIL
TA3/5-51-A4	1,2,4-TRICHLOROBENZENE	2500	3300	ug/kg	330		SD	06-SEP-94	SOIL
TA3/5-51-A4	1,2,4-TRICHLOROBENZENE	2700	3300	ug/kg	330		MS	06-SEP-94	SOIL
TA3/5-51-A4	1,3,5-TRINITROBENZENE	3.8	5	ug/g	0.25		MS	06-SEP-94	SOIL
TA3/5-51-A4	1,3,5-TRINITROBENZENE	3.9	5	ug/g	0.25		SD	06-SEP-94	SOIL
TA3/5-51-A4	1,3-DINITROBENZENE	6	5	ug/g	0.25		MS	06-SEP-94	SOIL
TA3/5-51-A4	1,3-DINITROBENZENE	6	5	ug/g	0.25		SD	06-SEP-94	SOIL
TA3/5-51-A4	1,4-DICHLOROBENZENE	2400	3300	ug/kg	330		SD	06-SEP-94	SOIL
TA3/5-51-A4	1,4-DICHLOROBENZENE	2600	3300	ug/kg	330		MS	06-SEP-94	SOIL
TA3/5-51-A4	2,4-DINITROTOLUENE	5.6	5	ug/g	0.25		MS	06-SEP-94	SOIL
TA3/5-51-A4	2,4-DINITROTOLUENE	2800	3300	ug/kg	330		MS	06-SEP-94	SOIL
TA3/5-51-A4	2,4-DINITROTOLUENE	5.5	5	ug/g	0.25		SD	06-SEP-94	SOIL
TA3/5-51-A4	2,4-DINITROTOLUENE	2900	3300	ug/kg	330		SD	06-SEP-94	SOIL
TA3/5-51-A4	2,6-DINITROTOLUENE	5.3	5	ug/g	0.26		SD	06-SEP-94	SOIL
TA3/5-51-A4	2,6-DINITROTOLUENE	5.5	5	ug/g	0.26		MS	06-SEP-94	SOIL
TA3/5-51-A4	2-AMINO-4,6-DINITROTOLUENE	5.4	5	ug/g	0.25		SD	06-SEP-94	SOIL
TA3/5-51-A4	2-AMINO-4,6-DINITROTOLUENE	5.5	5	ug/g	0.25		MS	06-SEP-94	SOIL
TA3/5-51-A4	2-CHLOROPHENOL	3500	6700	ug/kg	330		SD	06-SEP-94	SOIL
TA3/5-51-A4	2-CHLOROPHENOL	3800	6700	ug/kg	330		MS	06-SEP-94	SOIL
TA3/5-51-A4	2-NITROTOLUENE	6	5	ug/g	0.25		MS	06-SEP-94	SOIL
TA3/5-51-A4	2-NITROTOLUENE	6	5	ug/g	0.25		SD	06-SEP-94	SOIL
TA3/5-51-A4	3-NITROTOLUENE	5.8	5	ug/g	0.25		SD	06-SEP-94	SOIL
TA3/5-51-A4	3-NITROTOLUENE	5.9	5	ug/g	0.25		MS	06-SEP-94	SOIL
TA3/5-51-A4	4-AMINO-2,6-DINITROTOLUENE	5.9	5	ug/g	0.25		SD	06-SEP-94	SOIL
TA3/5-51-A4	4-AMINO-2,6-DINITROTOLUENE	6	5	ug/g	0.25		MS	06-SEP-94	SOIL
TA3/5-51-A4	4-CHLORO-3-METHYLPHENOL	5000	6700	ug/kg	330		MS	06-SEP-94	SOIL
TA3/5-51-A4	4-CHLORO-3-METHYLPHENOL	5000	6700	ug/kg	330		SD	06-SEP-94	SOIL
TA3/5-51-A4	4-NITROPHENOL	5500	6700	ug/kg	1600		MS	06-SEP-94	SOIL
TA3/5-51-A4	4-NITROPHENOL	5700	6700	ug/kg	1600		SD	06-SEP-94	SOIL
TA3/5-51-A4	4-NITROTOLUENE	5.6	5	ug/g	0.25		SD	06-SEP-94	SOIL
TA3/5-51-A4	4-NITROTOLUENE	6	5	ug/g	0.25		MS	06-SEP-94	SOIL
TA3/5-51-A4	ACENAPHTHENE	2600	3300	ug/kg	330		MS	06-SEP-94	SOIL
TA3/5-51-A4	ACENAPHTHENE	2600	3300	ug/kg	330		SD	06-SEP-94	SOIL
TA3/5-51-A4	ARSENIC	45.5	50	mg/kg	1		MS	06-SEP-94	SOIL
TA3/5-51-A4	ARSENIC	47.7	50	mg/kg	1		SD	06-SEP-94	SOIL
TA3/5-51-A4	BARIUM	293	200	mg/kg	1		MS	06-SEP-94	SOIL
TA3/5-51-A4	BARIUM	300	200	mg/kg	1		SD	06-SEP-94	SOIL
TA3/5-51-A4	BENZENE	46	50	ug/kg	5		MS	06-SEP-94	SOIL
TA3/5-51-A4	BENZENE	47	50	ug/kg	5		SD	06-SEP-94	SOIL
TA3/5-51-A4	TOLUENE	48	50	ug/kg	5		MS	06-SEP-94	SOIL
TA3/5-51-A4	TOLUENE	50	50	ug/kg	5		SD	06-SEP-94	SOIL
TA3/5-51-A4	CADMIUM	4.9	5	mg/kg	0.5		MS	06-SEP-94	SOIL
TA3/5-51-A4	CADMIUM	5.1	5	mg/kg	0.5		SD	06-SEP-94	SOIL
TA3/5-51-A4	CHLOROBENZENE	48	50	ug/kg	5		MS	06-SEP-94	SOIL
TA3/5-51-A4	CHLOROBENZENE	50	50	ug/kg	5		SD	06-SEP-94	SOIL
TA3/5-51-A4	CHROMIUM	20.3	20	mg/kg	1		MS	06-SEP-94	SOIL
TA3/5-51-A4	CHROMIUM	20.9	20	mg/kg	1		SD	06-SEP-94	SOIL
TA3/5-51-A4	HMX	5.6	5	ug/g	2.2		MS	06-SEP-94	SOIL
TA3/5-51-A4	HMX	5.9	5	ug/g	2.2		SD	06-SEP-94	SOIL
TA3/5-51-A4	LEAD	50.3	50	mg/kg	5		MS	06-SEP-94	SOIL
TA3/5-51-A4	LEAD	51.7	50	mg/kg	5		SD	06-SEP-94	SOIL
TA3/5-51-A4	MERCURY	0.5	0.5	mg/kg	0.1		MS	06-SEP-94	SOIL
TA3/5-51-A4	MERCURY	0.51	0.5	mg/kg	0.1		SD	06-SEP-94	SOIL
TA3/5-51-A4	N-NITROSODI-N-PROPYLAMINE	2600	3300	ug/kg	330		SD	06-SEP-94	SOIL
TA3/5-51-A4	N-NITROSODI-N-PROPYLAMINE	3000	3300	ug/kg	330		MS	06-SEP-94	SOIL
TA3/5-51-A4	NITROBENZENE	6.3	5	ug/g	0.26		SD	06-SEP-94	SOIL
TA3/5-51-A4	NITROBENZENE	6.7	5	ug/g	0.26		MS	06-SEP-94	SOIL
TA3/5-51-A4	PENTACHLOROPHENOL	5300	6700	ug/kg	1600		SD	06-SEP-94	SOIL
TA3/5-51-A4	PENTACHLOROPHENOL	5500	6700	ug/kg	1600		MS	06-SEP-94	SOIL
TA3/5-51-A4	PHENOL	5200	6700	ug/kg	330		SD	06-SEP-94	SOIL
TA3/5-51-A4	PHENOL	5600	6700	ug/kg	330		MS	06-SEP-94	SOIL
TA3/5-51-A4	PYRENE	2400	3300	ug/kg	330		MS	06-SEP-94	SOIL
TA3/5-51-A4	PYRENE	2400	3300	ug/kg	330		SD	06-SEP-94	SOIL
TA3/5-51-A4	RDX	5.4	5	ug/g	1		SD	06-SEP-94	SOIL
TA3/5-51-A4	RDX	5.8	5	ug/g	1		MS	06-SEP-94	SOIL
TA3/5-51-A4	SELENIUM	44.9	50	mg/kg	0.57		MS	06-SEP-94	SOIL
TA3/5-51-A4	SELENIUM	47	50	mg/kg	0.57		SD	06-SEP-94	SOIL
TA3/5-51-A4	SILVER	4.4	5	mg/kg	1		MS	06-SEP-94	SOIL
TA3/5-51-A4	SILVER	4.5	5	mg/kg	1		SD	06-SEP-94	SOIL
TA3/5-51-A4	TETRYL	1.5	5	ug/g	0.65		MS	06-SEP-94	SOIL
TA3/5-51-A4	TETRYL	1.6	5	ug/g	0.65		SD	06-SEP-94	SOIL
TA3/5-51-A4	TRICHLOROETHENE	48	50	ug/kg	5		MS	06-SEP-94	SOIL
TA3/5-51-A4	TRICHLOROETHENE	49	50	ug/kg	5		SD	06-SEP-94	SOIL
TA3/5-51-A4	TRINITROTOLUENE	4.4	5	ug/g	0.25		SD	06-SEP-94	SOIL
TA3/5-51-A4	TRINITROTOLUENE	4.6	5	ug/g	0.25		MS	06-SEP-94	SOIL

Appendix D. Quality Assurance/Quality Control Data

SITE 78 - QA/QC DATA

Sample ID	Analyte	Result	Spike Amt	Units	Detection Limit	Qualifier	Sample Type	Sample Date	Matrix
TA3/5-78-C-AH-05	1,2,4-TRICHLOROBENZENE	2600	3300	ug/kg	330		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	1,2,4-TRICHLOROBENZENE	2800	3300	ug/kg	330		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	1,3,5-TRINITROBENZENE	4	5	ug/g	0.25		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	1,3,5-TRINITROBENZENE	4.2	5	ug/g	0.25		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	1,3-DINITROBENZENE	4.9	5	ug/g	0.25		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	1,3-DINITROBENZENE	5	5	ug/g	0.25		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	1,4-DICHLOROBENZENE	2500	3300	ug/kg	330		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	1,4-DICHLOROBENZENE	2600	3300	ug/kg	330		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2,4-DINITROTOLUENE	2900	3300	ug/kg	330		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2,4-DINITROTOLUENE	3000	3300	ug/kg	330		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2,4-DINITROTOLUENE	5	5	ug/g	0.25		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2,4-DINITROTOLUENE	5.1	5	ug/g	0.25		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2,6-DINITROTOLUENE	5	5	ug/g	0.26		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2,6-DINITROTOLUENE	5	5	ug/g	0.26		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2-AMINO-4,6-DINITROTOLUENE	5.1	5	ug/g	0.25		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2-AMINO-4,6-DINITROTOLUENE	5.2	5	ug/g	0.25		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2-CHLOROPHENOL	5000	6700	ug/kg	330		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2-CHLOROPHENOL	5100	6700	ug/kg	330		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2-NITROTOLUENE	5	5	ug/g	0.25		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	2-NITROTOLUENE	5	5	ug/g	0.25		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	3-NITROTOLUENE	4.9	5	ug/g	0.25		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	3-NITROTOLUENE	4.9	5	ug/g	0.25		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	4-AMINO-2,6-DINITROTOLUENE	5.6	5	ug/g	0.25		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	4-AMINO-2,6-DINITROTOLUENE	5.6	5	ug/g	0.25		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	4-CHLORO-3-METHYLPHENOL	4400	6700	ug/kg	330		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	4-CHLORO-3-METHYLPHENOL	4500	6700	ug/kg	330		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	4-NITROPHENOL	5700	6700	ug/kg	1600		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	4-NITROPHENOL	6000	6700	ug/kg	1600		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	4-NITROTOLUENE	4.8	5	ug/g	0.25		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	4-NITROTOLUENE	4.8	5	ug/g	0.25		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	ACENAPHTHENE	2700	3300	ug/kg	330		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	ACENAPHTHENE	2900	3300	ug/kg	330		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	ARSENIC	45.6	50	mg/kg	1		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	ARSENIC	48.4	50	mg/kg	1		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	BARIUM	248	200	mg/kg	1		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	BARIUM	268	200	mg/kg	1		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	CADMIUM	4.4	5	mg/kg	0.5		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	CADMIUM	4.7	5	mg/kg	0.5		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	CHROMIUM	24.5	20	mg/kg	1		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	CHROMIUM	24.6	20	mg/kg	1		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	HMX	5.1	5	ug/g	2.2		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	HMX	5.2	5	ug/g	2.2		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	LEAD	54.5	50	mg/kg	5		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	LEAD	56.5	50	mg/kg	5		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	MERCURY	0.52	0.5	mg/kg	0.1		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	MERCURY	0.52	0.5	mg/kg	0.1		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	N-NITROSODI-N-PROPYLAMINE	2700	3300	ug/kg	330		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	N-NITROSODI-N-PROPYLAMINE	2800	3300	ug/kg	330		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	NITROBENZENE	4.8	5	ug/g	0.26		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	NITROBENZENE	4.9	5	ug/g	0.26		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	PENTACHLOROPHENOL	5300	6700	ug/kg	1600		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	PENTACHLOROPHENOL	5600	6700	ug/kg	1600		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	PHENOL	4700	6700	ug/kg	330		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	PHENOL	4900	6700	ug/kg	330		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	PYRENE	3000	3300	ug/kg	330		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	PYRENE	3400	3300	ug/kg	330		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	RDX	5.4	5	ug/g	1		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	RDX	5.5	5	ug/g	1		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	SELENIUM	42.2	50	mg/kg	0.5		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	SELENIUM	44.1	50	mg/kg	0.5		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	SILVER	5	5	mg/kg	1		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	SILVER	5.2	5	mg/kg	1		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	TETRYL	3.6	5	ug/g	0.65		SD	08-MAR-95	SOIL
TA3/5-78-C-AH-05	TETRYL	3.7	5	ug/g	0.65		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	TRINITROTOLUENE	4.8	5	ug/g	0.25		MS	08-MAR-95	SOIL
TA3/5-78-C-AH-05	TRINITROTOLUENE	4.9	5	ug/g	0.25		SD	08-MAR-95	SOIL
TA3/5-78-EB	SELENIUM	0.0057		mg/L	0.005		EB	08-MAR-95	AQUEOUS
TA3/5-78-FB	LEAD	0.016		mg/L	0.003		FB	08-MAR-95	AQUEOUS

Appendix D. Quality Assurance/Quality Control Data

SITE 102 - QA/QC DATA

Sample ID	Analyte	Result	Spike Amt	Units	Detection Limit	Qualifier	Sample Type	Sample Date	Matrix
TA3/5-102-UST-02	1,1-DICHLOROETHENE	41	50	ug/kg	5		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	1,1-DICHLOROETHENE	45	50	ug/kg	5		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	1,2,4-TRICHLOROBENZENE	2100	3300	ug/kg	330		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	1,2,4-TRICHLOROBENZENE	2300	3300	ug/kg	330		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	1,4-DICHLOROBENZENE	2100	3300	ug/kg	330		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	1,4-DICHLOROBENZENE	2300	3300	ug/kg	330		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	2,4-DINITROTOLUENE	2500	3300	ug/kg	330		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	2,4-DINITROTOLUENE	2700	3300	ug/kg	330		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	2-CHLOROPHENOL	4000	6700	ug/kg	330		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	2-CHLOROPHENOL	4300	6700	ug/kg	330		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	4-CHLORO-3-METHYLPHENOL	5000	6700	ug/kg	330		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	4-CHLORO-3-METHYLPHENOL	5300	6700	ug/kg	330		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	4-NITROPHENOL	6400	6700	ug/kg	1600		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	4-NITROPHENOL	6700	6700	ug/kg	1600		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	ACENAPHTHENE	2400	3300	ug/kg	330		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	ACENAPHTHENE	2600	3300	ug/kg	330		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	ARSENIC	41.6	50	mg/kg	1		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	ARSENIC	41.8	50	mg/kg	1		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	BARIUM	268	200	mg/kg	1		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	BARIUM	275	200	mg/kg	1		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	BENZENE	49	50	ug/kg	5		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	BENZENE	51	50	ug/kg	5		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	TOLUENE	49	50	ug/kg	5		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	TOLUENE	52	50	ug/kg	5		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	CADMIUM	4.4	5	mg/kg	0.5		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	CADMIUM	5	5	mg/kg	0.5		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	CHLOROBENZENE	52	50	ug/kg	5		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	CHLOROBENZENE	52	50	ug/kg	5		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	CHROMIUM	22.3	20	mg/kg	1		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	CHROMIUM	24.4	20	mg/kg	1		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	LEAD	51.5	50	mg/kg	5		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	LEAD	55.8	50	mg/kg	5		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	MERCURY	0.47	0.5	mg/kg	0.1		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	MERCURY	0.48	0.5	mg/kg	0.1		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	N-NITROSODI-N-PROPYLAMINE	2400	3300	ug/kg	330		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	N-NITROSODI-N-PROPYLAMINE	2600	3300	ug/kg	330		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	PENTACHLOROPHENOL	4300	6700	ug/kg	1600		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	PENTACHLOROPHENOL	4800	6700	ug/kg	1600		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	PHENOL	4200	6700	ug/kg	330		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	PHENOL	4500	6700	ug/kg	330		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	PYRENE	2400	3300	ug/kg	330		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	PYRENE	2400	3300	ug/kg	330		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	SELENIUM	38	50	mg/kg	0.5		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	SELENIUM	38.6	50	mg/kg	0.5		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	SILVER	3.9	5	mg/kg	1		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	SILVER	4.1	5	mg/kg	1		SD	25-JUL-94	SOIL
TA3/5-102-UST-02	TRICHLOROETHENE	50	50	ug/kg	5		MS	25-JUL-94	SOIL
TA3/5-102-UST-02	TRICHLOROETHENE	52	50	ug/kg	5		SD	25-JUL-94	SOIL

Appendix D. Quality Assurance/Quality Control Data

SITE 107 - QA/QC DATA

Sample ID	Analyte	Result	Spike Amt	Units	Detection Limit	Qualifier	Sample Type	Sample Date	Matrix
TA3/5-107-RB	LEAD	0.0044		mg/L	0.003	B	EB	17-MAY-94	WATER
TA3/5-107-RB	SELENIUM	0.0058		mg/L	0.005		EB	17-MAY-94	WATER
TA3/5-107-RB	ZINC	0.053		mg/L	0.02		EB	17-MAY-94	WATER
TA3/5-107-SS-03	1,3,5-TRINITROBENZENE	4.6	5	ug/g	0.25		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	1,3,5-TRINITROBENZENE	5.4	5	ug/g	0.25		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	1,3-DINITROBENZENE	4.7	5	ug/g	0.25		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	1,3-DINITROBENZENE	5.4	5	ug/g	0.25		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	2,4-DINITROTOLUENE	4.6	5	ug/g	0.25		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	2,4-DINITROTOLUENE	5.2	5	ug/g	0.25		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	2,6-DINITROTOLUENE	4.6	5	ug/g	0.26		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	2,6-DINITROTOLUENE	5.2	5	ug/g	0.26		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	2-AMINO-4,6-DINITROTOLUENE	4.6	5	ug/g	0.25		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	2-AMINO-4,6-DINITROTOLUENE	5.3	5	ug/g	0.25		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	2-NITROTOLUENE	4.9	5	ug/g	0.25		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	2-NITROTOLUENE	5.7	5	ug/g	0.25		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	3-NITROTOLUENE	3.5	5	ug/g	0.25		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	3-NITROTOLUENE	4.1	5	ug/g	0.25		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	4-AMINO-2,6-DINITROTOLUENE	4.4	5	ug/g	0.25		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	4-AMINO-2,6-DINITROTOLUENE	5.1	5	ug/g	0.25		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	4-NITROTOLUENE	4.9	5	ug/g	0.25		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	4-NITROTOLUENE	5.9	5	ug/g	0.25		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	ALUMINUM	8260	200	mg/kg	10		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	ALUMINUM	8540	200	mg/kg	10		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	ANTIMONY	22.7	50	mg/kg	6		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	ANTIMONY	25.4	50	mg/kg	6		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	ARSENIC	47.5	50	mg/kg	1		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	ARSENIC	48.8	50	mg/kg	1		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	BARIUM	256	200	mg/kg	1		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	BARIUM	256	200	mg/kg	1		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	BERYLLIUM	5	5	mg/kg	0.2		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	BERYLLIUM	5.2	5	mg/kg	0.2		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	CADMIUM	5.1	5	mg/kg	0.5		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	CADMIUM	5.3	5	mg/kg	0.5		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	CALCIUM	13900	10000	mg/kg	20		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	CALCIUM	14100	10000	mg/kg	20		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	CHROMIUM	25.4	20	mg/kg	1		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	CHROMIUM	25.9	20	mg/kg	1		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	COBALT	48.3	50	mg/kg	1		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	COBALT	49.5	50	mg/kg	1		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	COPPER	31	25	mg/kg	2		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	COPPER	31.3	25	mg/kg	2		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	HMX	4.7	5	ug/g	2.2		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	HMX	5.4	5	ug/g	2.2		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	IRON	8910	100	mg/kg	10		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	IRON	8990	100	mg/kg	10		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	LEAD	57.6	50	mg/kg	0.3		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	LEAD	59.6	50	mg/kg	0.3		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	MAGNESIUM	7640	5000	mg/kg	20		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	MAGNESIUM	7670	5000	mg/kg	20		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	MANGANESE	256	50	mg/kg	1		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	MANGANESE	259	50	mg/kg	1		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	MERCURY	0.56	0.5	mg/kg	0.1		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	MERCURY	0.56	0.5	mg/kg	0.1		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	NICKEL	52.3	50	mg/kg	4		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	NICKEL	52.8	50	mg/kg	4		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	NITRATE/NITRITE	6.3	5	mg/kg	0.5		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	NITRATE/NITRITE	6.7	5	mg/kg	0.5		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	NITROBENZENE	4.3	5	ug/g	0.26		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	NITROBENZENE	5	5	ug/g	0.26		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	POTASSIUM	7060	5000	mg/kg	500		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	POTASSIUM	7160	5000	mg/kg	500		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	RDX	4.1	5	ug/g	1		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	RDX	4.8	5	ug/g	1		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	SELENIUM	42.6	50	mg/kg	0.5		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	SELENIUM	44.9	50	mg/kg	0.5		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	SILVER	4.5	5	mg/kg	1		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	SILVER	4.7	5	mg/kg	1		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	SODIUM	9650	10000	mg/kg	500		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	SODIUM	9870	10000	mg/kg	500		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	TETRYL	2	5	ug/g	0.65		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	TETRYL	2.4	5	ug/g	0.65		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	THALLIUM	49.4	50	mg/kg	1		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	THALLIUM	50.5	50	mg/kg	1		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	TRINITROTOLUENE	3.9	5	ug/g	0.25		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	TRINITROTOLUENE	4.4	5	ug/g	0.25		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	VANADIUM	54.7	50	mg/kg	1		SD	17-MAY-94	SOIL
TA3/5-107-SS-03	VANADIUM	55.6	50	mg/kg	1		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	ZINC	72.6	50	mg/kg	2		MS	17-MAY-94	SOIL
TA3/5-107-SS-03	ZINC	72.7	50	mg/kg	2		SD	17-MAY-94	SOIL

Appendix D. Quality Assurance/Quality Control Data

SITE 111 - QA/QC DATA

Sample ID	Analyte	Result	Spike Amt	Units	Detection Limit	Qualifier	Sample Type	Sample Date	Matrix
TA3/5-111-B-RBA	BIS(2-ETHYLHEXYL)PHTHALATE	12		ug/L	10		EB	17-JUN-94	WATER
TA3/5-111-B3-15	1,1-DICHLOROETHENE	45	50	ug/kg	5		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	1,1-DICHLOROETHENE	45	50	ug/kg	5		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	1,2,4-TRICHLOROBENZENE	2100	3300	ug/kg	330		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	1,2,4-TRICHLOROBENZENE	2500	3300	ug/kg	330		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	1,3,5-TRINITROBENZENE	5.6	5	ug/g	0.25		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	1,3,5-TRINITROBENZENE	5.8	5	ug/g	0.25		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	1,3-DINITROBENZENE	6.2	5	ug/g	0.25		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	1,3-DINITROBENZENE	6.4	5	ug/g	0.25		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	1,4-DICHLOROBENZENE	2100	3300	ug/kg	330		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	1,4-DICHLOROBENZENE	2400	3300	ug/kg	330		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	2,4-DINITROTOLUENE	6.5	5	ug/g	0.25		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	2,4-DINITROTOLUENE	3200	3300	ug/kg	330		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	2,4-DINITROTOLUENE	6.2	5	ug/g	0.25		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	2,4-DINITROTOLUENE	2900	3300	ug/kg	330		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	2,6-DINITROTOLUENE	5.8	5	ug/g	0.26		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	2,6-DINITROTOLUENE	6	5	ug/g	0.26		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	2-AMINO-4,6-DINITROTOLUENE	6.3	5	ug/g	0.25		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	2-AMINO-4,6-DINITROTOLUENE	6.6	5	ug/g	0.25		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	2-CHLOROPHENOL	4300	6700	ug/kg	330		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	2-CHLOROPHENOL	5000	6700	ug/kg	330		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	2-NITROTOLUENE	5.8	5	ug/g	0.25		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	2-NITROTOLUENE	6.2	5	ug/g	0.25		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	3-NITROTOLUENE	4.6	5	ug/g	0.25		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	3-NITROTOLUENE	4.8	5	ug/g	0.25		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	4-AMINO-2,6-DINITROTOLUENE	6.4	5	ug/g	0.25		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	4-AMINO-2,6-DINITROTOLUENE	6.8	5	ug/g	0.25		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	4-CHLORO-3-METHYLPHENOL	4100	6700	ug/kg	330		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	4-CHLORO-3-METHYLPHENOL	4700	6700	ug/kg	330		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	4-NITROPHENOL	5100	6700	ug/kg	1600		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	4-NITROPHENOL	5600	6700	ug/kg	1600		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	4-NITROTOLUENE	6	5	ug/g	0.25		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	4-NITROTOLUENE	6.5	5	ug/g	0.25		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	ACENAPHTHENE	2200	3300	ug/kg	330		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	ACENAPHTHENE	2400	3300	ug/kg	330		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	BENZENE	46	50	ug/kg	5		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	BENZENE	50	50	ug/kg	5		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	TOLUENE	46	50	ug/kg	5		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	TOLUENE	48	50	ug/kg	5		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	CHLOROBENZENE	47	50	ug/kg	5		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	CHLOROBENZENE	51	50	ug/kg	5		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	HMX	5.8	5	ug/g	2.2		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	HMX	6	5	ug/g	2.2		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	N-NITROSODI-N-PROPYLAMINE	2400	3300	ug/kg	330		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	N-NITROSODI-N-PROPYLAMINE	2900	3300	ug/kg	330		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	NITROBENZENE	6.9	5	ug/g	0.26		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	NITROBENZENE	7.2	5	ug/g	0.26		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	PENTACHLOROPHENOL	2800	6700	ug/kg	1600		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	PENTACHLOROPHENOL	3200	6700	ug/kg	1600		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	PHENOL	3900	6700	ug/kg	330		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	PHENOL	4400	6700	ug/kg	330		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	PYRENE	2900	3300	ug/kg	330		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	PYRENE	3400	3300	ug/kg	330		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	RDX	5.7	5	ug/g	1		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	RDX	6	5	ug/g	1		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	SILVER	5.1	5	mg/kg	1		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	SILVER	5.2	5	mg/kg	1		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	TETRYL	3.3	5	ug/g	0.65		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	TETRYL	3.4	5	ug/g	0.65		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	TRICHLOROETHENE	48	50	ug/kg	5		MS	17-JUN-94	SOIL
TA3/5-111-B3-15	TRICHLOROETHENE	50	50	ug/kg	5		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	TRINITROTOLUENE	5.2	5	ug/g	0.25		SD	17-JUN-94	SOIL
TA3/5-111-B3-15	TRINITROTOLUENE	5.4	5	ug/g	0.25		MS	17-JUN-94	SOIL

Appendix D. Quality Assurance/Quality Control Data

SITE 240 - QA/QC DATA

Sample ID	Analyte	Result	Spike Amt	Units	Detection Limit	Qualifier	Sample Type	Sample Date	Matrix
TA3/5-240-FBA	TOT NIOBIUM	0.00026		mg/L	0.0002		FB	22-JUN-94	WATER
TA3/5-240-SS-18-C	LEAD	11.9	3	mg/kg	1		SD	13-JUN-94	SOIL
TA3/5-240-SS-18-C	LEAD	13.5	3	mg/kg	1		MS	13-JUN-94	SOIL

Appendix D. Quality Assurance/Quality Control Data

SITE 241 - QA/QC DATA

Sample ID	Analyte	Result	Spike Amt	Units	Detection Limit	Qualifier	Sample Type	Sample Date	Matrix
TA3/5-241-SS-19	1,3,5-TRINITROBENZENE	4	5	ug/g	0.25		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	1,3,5-TRINITROBENZENE	4.5	5	ug/g	0.25		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	1,3-DINITROBENZENE	4.3	5	ug/g	0.25		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	1,3-DINITROBENZENE	5	5	ug/g	0.25		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	2,4-DINITROTOLUENE	4.3	5	ug/g	0.25		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	2,4-DINITROTOLUENE	4.9	5	ug/g	0.25		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	2,6-DINITROTOLUENE	4.1	5	ug/g	0.26		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	2,6-DINITROTOLUENE	4.7	5	ug/g	0.26		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	2-AMINO-4,6-DINITROTOLUENE	4.4	5	ug/g	0.25		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	2-AMINO-4,6-DINITROTOLUENE	5	5	ug/g	0.25		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	2-NITROTOLUENE	4.5	5	ug/g	0.25		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	2-NITROTOLUENE	5.1	5	ug/g	0.25		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	3-NITROTOLUENE	3.6	5	ug/g	0.25		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	3-NITROTOLUENE	4.1	5	ug/g	0.25		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	4-AMINO-2,6-DINITROTOLUENE	4.5	5	ug/g	0.25		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	4-AMINO-2,6-DINITROTOLUENE	5.2	5	ug/g	0.25		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	4-NITROTOLUENE	5.1	5	ug/g	0.25		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	4-NITROTOLUENE	5.8	5	ug/g	0.25		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	ALUMINUM	4600	200	mg/kg	10		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	ALUMINUM	4840	200	mg/kg	10		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	ANTIMONY	21.4	50	mg/kg	6		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	ANTIMONY	22.8	50	mg/kg	6		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	ARSENIC	48.3	50	mg/kg	0.5		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	ARSENIC	49	50	mg/kg	0.5		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	BARIUM	225	200	mg/kg	1		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	BARIUM	231	200	mg/kg	1		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	BERYLLIUM	5.5	5	mg/kg	0.2		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	BERYLLIUM	5.5	5	mg/kg	0.2		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	CADMIUM	4.7	5	mg/kg	0.5		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	CADMIUM	5.4	5	mg/kg	0.5		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	CALCIUM	13100	10000	mg/kg	20		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	CALCIUM	14200	10000	mg/kg	20		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	CHROMIUM	24.3	20	mg/kg	1		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	CHROMIUM	24.3	20	mg/kg	1		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	COBALT	47.5	50	mg/kg	1		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	COBALT	47.9	50	mg/kg	1		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	COPPER	28.1	25	mg/kg	2		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	COPPER	28.4	25	mg/kg	2		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	HMX	4.2	5	ug/g	2.2		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	HMX	4.8	5	ug/g	2.2		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	IRON	7200	100	mg/kg	10		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	IRON	7480	100	mg/kg	10		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	LEAD	56.5	50	mg/kg	0.5		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	LEAD	57.4	50	mg/kg	0.5		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	MAGNESIUM	6160	5000	mg/kg	20		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	MAGNESIUM	6160	5000	mg/kg	20		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	MANGANESE	158	50	mg/kg	1		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	MANGANESE	168	50	mg/kg	1		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	MERCURY	0.5	0.5	mg/kg	0.1		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	MERCURY	0.53	0.5	mg/kg	0.1		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	NICKEL	49.2	50	mg/kg	4		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	NICKEL	49.2	50	mg/kg	4		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	NITROBENZENE	4.5	5	ug/g	0.26		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	NITROBENZENE	5.2	5	ug/g	0.26		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	POTASSIUM	5640	5000	mg/kg	500		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	POTASSIUM	5670	5000	mg/kg	500		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	RDX	4.2	5	ug/g	1		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	RDX	4.7	5	ug/g	1		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	SELENIUM	45	50	mg/kg	0.5		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	SELENIUM	45.1	50.5	mg/kg	0.5		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	SILVER	4.3	5	mg/kg	1		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	SILVER	4.5	5	mg/kg	1		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	SODIUM	9610	10000	mg/kg	500		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	SODIUM	9640	10000	mg/kg	500		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	TETRYL	2.2	5	ug/g	0.65		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	TETRYL	2.6	5	ug/g	0.65		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	THALLIUM	45.1	50	mg/kg	0.5		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	THALLIUM	45.3	50	mg/kg	0.5		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	TPH	199	250	mg/kg	20		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	TPH	199	250	mg/kg	20		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	TRINITROTOLUENE	3.7	5	ug/g	0.25		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	TRINITROTOLUENE	4.3	5	ug/g	0.25		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	VANADIUM	54.9	50	mg/kg	1		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	VANADIUM	55.1	50	mg/kg	1		SD	24-MAY-94	SOIL
TA3/5-241-SS-19	ZINC	69.8	50	mg/kg	2		MS	24-MAY-94	SOIL
TA3/5-241-SS-19	ZINC	71.8	50	mg/kg	2		SD	24-MAY-94	SOIL
TA3/5-241-SS-FBA	CALCIUM	0.26		mg/L	0.2	B	FB	24-MAY-94	WATER

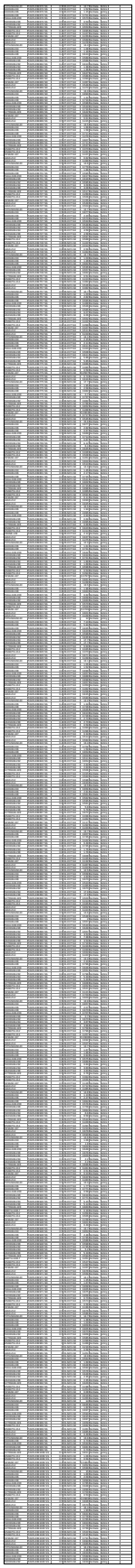
Appendix G. Confirmatory Gamma Spectroscopic Analyses for Surface Radiation Anomaly Removal Actior								
Site 18 - Radiation VCM Confirmatory Gamma Spectroscopic Analyses								
Analyte	Sample ID	Depth (ft)	Sample Date	Result	Det Limit	Units		
BISMUTH-212	TA3/5-18-017385-3	0	22-AUG-94	0.461	No Data	pCi/g		
CESIUM-137	TA3/5-18-017385-3	0	22-AUG-94	0.358	No Data	pCi/g		
COBALT-60	TA3/5-18-017385-3	0	22-AUG-94	5.82	No Data	pCi/g		
LEAD-210	TA3/5-18-017385-3	0	22-AUG-94	1.62	No Data	pCi/g		
LEAD-212	TA3/5-18-017385-3	0	22-AUG-94	0.591	No Data	pCi/g		
LEAD-214	TA3/5-18-017385-3	0	22-AUG-94	0.487	No Data	pCi/g		
POTASSIUM-40	TA3/5-18-017385-3	0	22-AUG-94	13	No Data	pCi/g		
RADIUM-226	TA3/5-18-017385-3	0	22-AUG-94	0.621	No Data	pCi/g		
THALLIUM-208	TA3/5-18-017385-3	0	22-AUG-94	0.552	No Data	pCi/g		
THORIUM-228	TA3/5-18-017385-3	0	22-AUG-94	0.588	No Data	pCi/g		
THORIUM-234	TA3/5-18-017385-3	0	22-AUG-94	0.851	No Data	pCi/g		
URANIUM-238	TA3/5-18-017385-3	0	22-AUG-94	0.849	No Data	pCi/g		
ACTINIUM-228	TA3/5-18E1 SD	0	16-AUG-94	0.57	No Data	pCi/g		
BISMUTH-214	TA3/5-18E1 SD	0	16-AUG-94	0.426	No Data	pCi/g		
CESIUM-137	TA3/5-18E1 SD	0	16-AUG-94	0.213	No Data	pCi/g		
COBALT-60	TA3/5-18E1 SD	0	16-AUG-94	3.39	No Data	pCi/g		
LEAD-212	TA3/5-18E1 SD	0	16-AUG-94	0.48	No Data	pCi/g		
LEAD-214	TA3/5-18E1 SD	0	16-AUG-94	0.379	No Data	pCi/g		
POTASSIUM-40	TA3/5-18E1 SD	0	16-AUG-94	12.2	No Data	pCi/g		
RADIUM-224	TA3/5-18E1 SD	0	16-AUG-94	0.986	No Data	pCi/g		
RADIUM-226	TA3/5-18E1 SD	0	16-AUG-94	0.352	No Data	pCi/g		
RADIUM-228	TA3/5-18E1 SD	0	16-AUG-94	0.632	No Data	pCi/g		
THALLIUM-208	TA3/5-18E1 SD	0	16-AUG-94	0.456	No Data	pCi/g		
THORIUM-228	TA3/5-18E1 SD	0	16-AUG-94	0.478	No Data	pCi/g		
THORIUM-232	TA3/5-18E1 SD	0	16-AUG-94	0.632	No Data	pCi/g		
ACTINIUM-228	TA3/5-18E1 SS	0	16-AUG-94	0.44	No Data	pCi/g		
BISMUTH-214	TA3/5-18E1 SS	0	16-AUG-94	0.369	No Data	pCi/g		
CESIUM-137	TA3/5-18E1 SS	0	16-AUG-94	0.299	No Data	pCi/g		
COBALT-60	TA3/5-18E1 SS	0	16-AUG-94	4.91	No Data	pCi/g		
LEAD-212	TA3/5-18E1 SS	0	16-AUG-94	0.46	No Data	pCi/g		
LEAD-214	TA3/5-18E1 SS	0	16-AUG-94	0.404	No Data	pCi/g		
POTASSIUM-40	TA3/5-18E1 SS	0	16-AUG-94	12	No Data	pCi/g		
RADIUM-224	TA3/5-18E1 SS	0	16-AUG-94	0.494	No Data	pCi/g		
RADIUM-226	TA3/5-18E1 SS	0	16-AUG-94	0.46	No Data	pCi/g		
RADIUM-228	TA3/5-18E1 SS	0	16-AUG-94	0.488	No Data	pCi/g		
THALLIUM-208	TA3/5-18E1 SS	0	16-AUG-94	0.421	No Data	pCi/g		
THORIUM-228	TA3/5-18E1 SS	0	16-AUG-94	0.458	No Data	pCi/g		
THORIUM-232	TA3/5-18E1 SS	0	16-AUG-94	0.488	No Data	pCi/g		

Appendix G. Confirmatory Gamma Spectroscopic Analyses for Surface Radiation Anomaly Removal Action

Site 83 - Radiation VCM Confirmatory Gamma Spectroscopic Analyses

Analyte	Sample ID	Depth (ft)	Sample Date	Result	Det Limit	Units
ACTINIUM-228	TA3/5-83E1 SS	0.6	14-NOV-94	0.374	No Data	pCi/g
BISMUTH-212	TA3/5-83E1 SS	0.6	14-NOV-94	0.325	No Data	pCi/g
BISMUTH-214	TA3/5-83E1 SS	0.6	14-NOV-94	0.419	No Data	pCi/g
LEAD-212	TA3/5-83E1 SS	0.6	14-NOV-94	0.498	No Data	pCi/g
LEAD-214	TA3/5-83E1 SS	0.6	14-NOV-94	0.425	No Data	pCi/g
POTASSIUM-40	TA3/5-83E1 SS	0.6	14-NOV-94	13.8	No Data	pCi/g
RADIUM-224	TA3/5-83E1 SS	0.6	14-NOV-94	0.833	No Data	pCi/g
RADIUM-226	TA3/5-83E1 SS	0.6	14-NOV-94	1.11	No Data	pCi/g
RADIUM-228	TA3/5-83E1 SS	0.6	14-NOV-94	0.415	No Data	pCi/g
THALLIUM-208	TA3/5-83E1 SS	0.6	14-NOV-94	0.608	No Data	pCi/g
THORIUM-228	TA3/5-83E1 SS	0.6	14-NOV-94	0.496	No Data	pCi/g
THORIUM-232	TA3/5-83E1 SS	0.6	14-NOV-94	0.415	No Data	pCi/g
ACTINIUM-228	TA3/5-83E11 SD	0.8	16-OCT-94	0.625	No Data	pCi/g
BISMUTH-212	TA3/5-83E11 SD	0.8	16-OCT-94	0.383	No Data	pCi/g
BISMUTH-214	TA3/5-83E11 SD	0.8	16-OCT-94	0.461	No Data	pCi/g
CESIUM-137	TA3/5-83E11 SD	0.8	16-OCT-94	0.158	No Data	pCi/g
LEAD-212	TA3/5-83E11 SD	0.8	16-OCT-94	0.632	No Data	pCi/g
LEAD-214	TA3/5-83E11 SD	0.8	16-OCT-94	0.553	No Data	pCi/g
POTASSIUM-40	TA3/5-83E11 SD	0.8	16-OCT-94	14.5	No Data	pCi/g
RADIUM-224	TA3/5-83E11 SD	0.8	16-OCT-94	0.822	No Data	pCi/g
RADIUM-226	TA3/5-83E11 SD	0.8	16-OCT-94	2.43	No Data	pCi/g
RADIUM-228	TA3/5-83E11 SD	0.8	16-OCT-94	0.693	No Data	pCi/g
THALLIUM-208	TA3/5-83E11 SD	0.8	16-OCT-94	0.62	No Data	pCi/g
THORIUM-228	TA3/5-83E11 SD	0.8	16-OCT-94	0.629	No Data	pCi/g
THORIUM-232	TA3/5-83E11 SD	0.8	16-OCT-94	0.693	No Data	pCi/g
THORIUM-234	TA3/5-83E11 SD	0.8	16-OCT-94	4.18	No Data	pCi/g
URANIUM-238	TA3/5-83E11 SD	0.8	16-OCT-94	4.18	No Data	pCi/g
ACTINIUM-228	TA3/5-83E11 SS	0.8	16-OCT-94	0.634	No Data	pCi/g
BISMUTH-212	TA3/5-83E11 SS	0.8	16-OCT-94	0.39	No Data	pCi/g
BISMUTH-214	TA3/5-83E11 SS	0.8	16-OCT-94	0.484	No Data	pCi/g
CESIUM-137	TA3/5-83E11 SS	0.8	16-OCT-94	0.184	No Data	pCi/g
LEAD-212	TA3/5-83E11 SS	0.8	16-OCT-94	0.693	No Data	pCi/g
LEAD-214	TA3/5-83E11 SS	0.8	16-OCT-94	0.592	No Data	pCi/g
POTASSIUM-40	TA3/5-83E11 SS	0.8	16-OCT-94	13.7	No Data	pCi/g
RADIUM-224	TA3/5-83E11 SS	0.8	16-OCT-94	0.52	No Data	pCi/g
RADIUM-226	TA3/5-83E11 SS	0.8	16-OCT-94	1.74	No Data	pCi/g
RADIUM-228	TA3/5-83E11 SS	0.8	16-OCT-94	0.702	No Data	pCi/g
THALLIUM-208	TA3/5-83E11 SS	0.8	16-OCT-94	0.552	No Data	pCi/g
THORIUM-228	TA3/5-83E11 SS	0.8	16-OCT-94	0.69	No Data	pCi/g
THORIUM-232	TA3/5-83E11 SS	0.8	16-OCT-94	0.702	No Data	pCi/g
THORIUM-234	TA3/5-83E11 SS	0.8	16-OCT-94	3.19	No Data	pCi/g
URANIUM-234	TA3/5-83E11 SS	0.8	16-OCT-94	8.88	No Data	pCi/g
URANIUM-238	TA3/5-83E11 SS	0.8	16-OCT-94	3.18	No Data	pCi/g
ACTINIUM-228	TA3/5-83E20 SS	0.8	14-NOV-94	0.728	No Data	pCi/g
BISMUTH-212	TA3/5-83E20 SS	0.8	14-NOV-94	0.389	No Data	pCi/g
BISMUTH-214	TA3/5-83E20 SS	0.8	14-NOV-94	0.467	No Data	pCi/g
CESIUM-137	TA3/5-83E20 SS	0.8	14-NOV-94	0.057	No Data	pCi/g
LEAD-212	TA3/5-83E20 SS	0.8	14-NOV-94	0.81	No Data	pCi/g
LEAD-214	TA3/5-83E20 SS	0.8	14-NOV-94	0.549	No Data	pCi/g
POTASSIUM-40	TA3/5-83E20 SS	0.8	14-NOV-94	12.1	No Data	pCi/g
RADIUM-224	TA3/5-83E20 SS	0.8	14-NOV-94	0.951	No Data	pCi/g
RADIUM-226	TA3/5-83E20 SS	0.8	14-NOV-94	1.21	No Data	pCi/g
RADIUM-228	TA3/5-83E20 SS	0.8	14-NOV-94	0.807	No Data	pCi/g
THALLIUM-208	TA3/5-83E20 SS	0.8	14-NOV-94	0.785	No Data	pCi/g
THORIUM-228	TA3/5-83E20 SS	0.8	14-NOV-94	0.807	No Data	pCi/g
THORIUM-232	TA3/5-83E20 SS	0.8	14-NOV-94	0.807	No Data	pCi/g
THORIUM-234	TA3/5-83E20 SS	0.8	14-NOV-94	1.42	No Data	pCi/g
URANIUM-238	TA3/5-83E20 SS	0.8	14-NOV-94	1.42	No Data	pCi/g
ACTINIUM-228	TA3/5-83E34 SS	0.5	14-NOV-94	0.564	No Data	pCi/g
BISMUTH-212	TA3/5-83E34 SS	0.5	14-NOV-94	0.592	No Data	pCi/g
BISMUTH-214	TA3/5-83E34 SS	0.5	14-NOV-94	0.424	No Data	pCi/g
CESIUM-137	TA3/5-83E34 SS	0.5	14-NOV-94	0.0651	No Data	pCi/g
LEAD-212	TA3/5-83E34 SS	0.5	14-NOV-94	0.576	No Data	pCi/g
LEAD-214	TA3/5-83E34 SS	0.5	14-NOV-94	0.427	No Data	pCi/g
POTASSIUM-40	TA3/5-83E34 SS	0.5	14-NOV-94	13.1	No Data	pCi/g
RADIUM-224	TA3/5-83E34 SS	0.5	14-NOV-94	0.618	No Data	pCi/g
RADIUM-226	TA3/5-83E34 SS	0.5	14-NOV-94	1.43	No Data	pCi/g
RADIUM-228	TA3/5-83E34 SS	0.5	14-NOV-94	0.625	No Data	pCi/g
THALLIUM-208	TA3/5-83E34 SS	0.5	14-NOV-94	0.54	No Data	pCi/g
THORIUM-228	TA3/5-83E34 SS	0.5	14-NOV-94	0.574	No Data	pCi/g
THORIUM-232	TA3/5-83E34 SS	0.5	14-NOV-94	0.625	No Data	pCi/g
ACTINIUM-228	TA3/5-83E36 SS	0.6	14-NOV-94	0.615	No Data	pCi/g
BISMUTH-212	TA3/5-83E36 SS	0.6	14-NOV-94	0.63	No Data	pCi/g
BISMUTH-214	TA3/5-83E36 SS	0.6	14-NOV-94	0.469	No Data	pCi/g
CESIUM-137	TA3/5-83E36 SS	0.6	14-NOV-94	0.192	No Data	pCi/g
LEAD-212	TA3/5-83E36 SS	0.6	14-NOV-94	0.664	No Data	pCi/g
LEAD-214	TA3/5-83E36 SS	0.6	14-NOV-94	0.553	No Data	pCi/g
POTASSIUM-40	TA3/5-83E36 SS	0.6	14-NOV-94	14.4	No Data	pCi/g
RADIUM-224	TA3/5-83E36 SS	0.6	14-NOV-94	0.857	No Data	pCi/g
RADIUM-226	TA3/5-83E36 SS	0.6	14-NOV-94	1.46	No Data	pCi/g
RADIUM-228	TA3/5-83E36 SS	0.6	14-NOV-94	0.681	No Data	pCi/g
THALLIUM-208	TA3/5-83E36 SS	0.6	14-NOV-94	0.691	No Data	pCi/g
THORIUM-228	TA3/5-83E36 SS	0.6	14-NOV-94	0.661	No Data	pCi/g
THORIUM-232	TA3/5-83E36 SS	0.6	14-NOV-94	0.681	No Data	pCi/g
ACTINIUM-228	TA3/5-83E46 SS	0.4	14-NOV-94	0.612	No Data	pCi/g
BISMUTH-212	TA3/5-83E46 SS	0.4	14-NOV-94	0.371	No Data	pCi/g
BISMUTH-214	TA3/5-83E46 SS	0.4	14-NOV-94	0.39	No Data	pCi/g
LEAD-212	TA3/5-83E46 SS	0.4	14-NOV-94	0.6	No Data	pCi/g
LEAD-214	TA3/5-83E46 SS	0.4	14-NOV-94	0.492	No Data	pCi/g
POTASSIUM-40	TA3/5-83E46 SS	0.4	14-NOV-94	13.9	No Data	pCi/g
RADIUM-224	TA3/5-83E46 SS	0.4	14-NOV-94	0.705	No Data	pCi/g
RADIUM-226	TA3/5-83E46 SS	0.4	14-NOV-94	1.61	No Data	pCi/g
RADIUM-228	TA3/5-83E46 SS	0.4	14-NOV-94	0.679	No Data	pCi/g
THALLIUM-208	TA3/5-83E46 SS	0.4	14-NOV-94	0.54	No Data	pCi/g
THORIUM-228	TA3/5-83E46 SS	0.4	14-NOV-94	0.597	No Data	pCi/g
THORIUM-232	TA3/5-83E46 SS	0.4	14-NOV-94	0.679	No Data	pCi/g
THORIUM-234	TA3/5-83E46 SS	0.4	14-NOV-94	2.39	No Data	pCi/g
URANIUM-238	TA3/5-83E46 SS	0.4	14-NOV-94	2.38	No Data	pCi/g
ACTINIUM-228	TA3/5-83E72 SD	0	18-AUG-94	0.572	No Data	pCi/g
BISMUTH-212	TA3/5-83E72 SD	0	18-AUG-94	0.306	No Data	pCi/g
BISMUTH-214	TA3/5-83E72 SD	0	18-AUG-94	0.374	No Data	pCi/g
CESIUM-137	TA3/5-83E72 SD	0	18-AUG-94	0.0391	No Data	pCi/g
LEAD-212	TA3/5-83E72 SD	0	18-AUG-94	0.546	No Data	pCi/g
LEAD-214	TA3/5-83E72 SD	0	18-AUG-94	0.459	No Data	pCi/g
POTASSIUM-40	TA3/5-83E72 SD	0	18-AUG-94	13.5	No Data	pCi/g
RADIUM-224	TA3/5-83E72 SD	0	18-AUG-94	0.628	No Data	pCi/g
RADIUM-226	TA3/5-83E72 SD	0	18-AUG-94	0.842	No Data	pCi/g
RADIUM-228	TA3/5-83E72 SD	0	18-AUG-94	0.633	No Data	pCi/g
THALLIUM-208	TA3/5-83E72 SD	0	18-AUG-94	0.532	No Data	pCi/g
THORIUM-228	TA3/5-83E72 SD	0	18-AUG-94	0.544	No Data	pCi/g
THORIUM-232	TA3/5-83E72 SD	0	18-AUG-94	0.633	No Data	pCi/g
THORIUM-234	TA3/5-83E72 SD	0	18-AUG-94	4.54	No Data	pCi/g
URANIUM-238	TA3/5-83E72 SD	0	18-AUG-94	4.54	No Data	pCi/g
ACTINIUM-228	TA3/5-83E72 SS	0	18-AUG-94	0.587	No Data	pCi/g
LEAD-214	TA3/5-83E72 SS	0	18-AUG-94	0.472	No Data	pCi/g
POTASSIUM-40	TA3/5-83E72 SS	0	18-AUG-94	13.5	No Data	pCi/g
RADIUM-224	TA3/5-83E72 SS	0	18-AUG-94	0.702	No Data	pCi/g
RADIUM-226	TA3/5-83E72 SS	0	18-AUG-94	1.31	No Data	pCi/g
RADIUM-228	TA3/5-83E72 SS	0	18-AUG-94	0.651	No Data	pCi/g
THALLIUM-208	TA3/5-83E72 SS	0	18-AUG-94	0.501	No Data	pCi/g
THORIUM-228	TA3/5-83E72 SS	0	18-AUG-94	0.536	No Data	pCi/g
THORIUM-232	TA3/5-83E72 SS	0	18-AUG-94	0.651	No Data	pCi/g
THORIUM-234	TA3/5-83E72 SS	0	18-AUG-94	12.1	No Data	pCi/g
URANIUM-238	TA3/5-83E72 SS	0	18-AUG-94	12	No Data	pCi/g
ACTINIUM-228	TA3/5-83E77 SS	0.5	12-NOV-94	0.72	No Data	pCi/g
BISMUTH-212	TA3/5-83E77 SS	0.5	12-NOV-94	0.506	No Data	pCi/g
BISMUTH-214	TA3/5-83E77 SS	0.5	12-NOV-94	0.477	No Data	pCi/g
CESIUM-137	TA3/5-83E77 SS	0.5	12-NOV-94	0.0502	No Data	pCi/g
LEAD-212	TA3/5-83E77 SS	0.5	12-NOV-94	0.61	No Data	pCi/g
LEAD-214	TA3/5-83E77 SS	0.5	12-NOV-94	0.441	No Data	pCi/g
POTASSIUM-40	TA3/5-83E77 SS	0.5	12-NOV-94	14.8	No Data	pCi/g
RADIUM-224	TA3/5-83E77 SS	0.5	12-NOV-94	0.998	No Data	pCi/g
RADIUM-226	TA3/5-83E77 SS	0.5	12-NOV-94	2.46	No Data	pCi/g
RADIUM-228	TA3/5-83E77 SS	0.5	12-NOV-94	0.797	No Data	pCi/g
THALLIUM-208	TA3/5-83E77 SS	0.5	12-NOV-94	0.536	No Data	pCi/g
THORIUM-228	TA3/5-83E77 SS	0.5	12-NOV-94	0.607	No Data	pCi/g
THORIUM-232	TA3/5-83E77 SS	0.5	12-NOV-94	0.797	No Data	pCi/g
THORIUM-234	TA3/5-83E77 SS	0.5	12-NOV-94	4.46	No Data	pCi/g
URANIUM-238	TA3/5-83E77 SS	0.5	12-NOV-94	4.45	No Data	pCi/g
ACTINIUM-228	TA3/5-83E78 SD	0.7	13-NOV-94	0.476	No Data	pCi/g
BISMUTH-212	TA3/5-83E78 SD	0.7	13-NOV-94	0.496	No Data	pCi/g
BISMUTH-214	TA3/5-83E78 SD	0.7	13-NOV-94	0.37	No Data	pCi/g
LEAD-212	TA3/5-83E78 SD	0.7	13-NOV-94	0.508	No Data	pCi/g
LEAD-214	TA3/5-83E78 SD	0.7	13-NOV-94	0.454	No Data	pCi/g
POTASSIUM-40	TA3/5-83E78 SD	0.7	13-NOV-94	11.7	No Data	pCi/g
RADIUM-224	TA3/5-83E78 SD	0.7	13-NOV-94	1.13	No Data	pCi/g
RADIUM-226	TA3/5-83E78 SD	0.7	13-NOV-94	2.6	No Data	pCi/g
RADIUM-228	TA3/5-83E78 SD	0.7	13-NOV-94	0.527	No Data	pCi/g
THALLIUM-208	TA3/5-83E78 SD	0.7	13-NOV-94	0.353	No Data	pCi/g
THORIUM-228	TA3/5-83E78 SD	0.7	13-NOV-94	0.506	No Data	pCi/g
THORIUM-232	TA3/5-83E78 SD	0.7	13-NOV-94	0.527	No Data	pCi/g
THORIUM-234	TA3/5-83E78 SD	0.7	13-NOV-94	8.11	No Data	pCi/g
URANIUM-238	TA3/5-83E78 SD	0.7	13-NOV-94	8.09	No Data	pCi/g
ACTINIUM-228	TA3/5-83E78 SS	0.7	13-NOV-94	0.551	No Data	pCi/g
BISMUTH-212	TA3/5-83E78 SS	0.7	13-NOV-94	0.59	No Data	pCi/g
BISMUTH-214	TA3/5-83E78 SS	0.7	13-NOV-94	0.415	No Data	pCi/g
LEAD-212	TA3/5-83E78 SS	0.7	13-NOV-94	0.638	No Data	pCi/g
LEAD-214	TA3/5-83E78 SS	0.7	13-NOV-94	0.494	No Data	pCi/g
POTASSIUM-40	TA3/5-83E78 SS	0.7	13-NOV-94	13.7	No Data	pCi/g
RADIUM-224	TA3/5-83E78 SS	0.7	13-NOV-94	0.878	No Data	pCi/g
RADIUM-226	TA3/5-83E78 SS	0.7	13-NOV-94	3.08	No Data	pCi/g
RADIUM-228	TA3/5-83E78 SS	0.7	13-NOV-94	0.611	No Data	pCi/g
THALLIUM-208	TA3/5-83E78 SS	0.7	13-NOV-94	0.586	No Data	pCi/g
THORIUM-228	TA3/5-83E78 SS	0.7	13-NOV-94	0.635	No Data	pCi/g
THORIUM-232	TA3/5-83E78 SS	0.7	13-NOV-94	0.611	No Data	pCi/g
THORIUM-234	TA3/5-83E78 SS	0.7	13-NOV-94	5.57	No Data	pCi/g
URANIUM-234	TA3/5-83E78 SS	0.7	13-NOV-94	13	No Data	pCi/g
URANIUM-238	TA3/5-83E78 SS	0.7	13-NOV-94	5.56	No Data	pCi/g
ACTINIUM-228	TA3/5-83E79 SS	0.6	12-NOV-94	0.476	No Data	pCi/g
BISMUTH-212	TA3/5-83E79 SS	0.6	12-NOV-94	0.388	No Data	pCi/g
BISMUTH-214	TA3/5-83E79 SS	0.6	12-NOV-94	0.349	No Data	pCi/g
LEAD-212	TA3/5-83E79 SS	0.6	12-NOV-94	0.524	No Data	pCi/g
LEAD-214	TA3/5-83E79 SS	0.6	12-NOV-94	0.367	No Data	pCi/g
POTASSIUM-40	TA3/5-83E79 SS	0.6	12-NOV-94	11.2	No Data	pCi/g
RADIUM-224	TA3/5-83E79 SS	0.6	12-NOV-94	1.19	No Data	pCi/g
RADIUM-226	TA3/5-83E79 SS	0.6	12-NOV-94	1.24	No Data	pCi/g
RADIUM-228	TA3/5-83E79 SS	0.6	12-NOV-94	0.528	No Data	pCi/g
THALLIUM-208	TA3/5-83E79 SS	0.6	12-NOV-94	0.451	No Data	pCi/g
THORIUM-228	TA3/5-83E79 SS	0.6	12-NOV-94	0.522	No Data	pCi/g
THORIUM-232	TA3/5-83E79 SS	0.6	12-NOV-94	0.528	No Data	pCi/g
ACTINIUM-228	TA3/5-83E87 SS	0.4	14-NOV-94	0.482	No Data	pCi/g
BISMUTH-212	TA3/5-83E87 SS	0.4	14-NOV-94	0.325	No Data	pCi/g
CESIUM-137	TA3/5-83E87 SS	0.4	14-NOV-94	0.0228	No Data	pCi/g
LEAD-212	TA3/5-83E87 SS	0.4	14-NOV-94	0.539	No Data	pCi/g
LEAD-214	TA3/5-83E87 SS	0.4	14-NOV-94	0.446	No Data	pCi/g
POTASSIUM-40	TA3/5-83E87 SS	0.4	14-NOV-94	13.1	No Data	pCi/g
RADIUM-224	TA3/5-83E87 SS	0.4	14-NOV-94	0.912	No Data	pCi/g
RADIUM-226	TA3/5-83E87 SS	0.4	14-NOV-94	0.771	No Data	pCi/g
RADIUM-228	TA3/5-83E87 SS	0.4	14-NOV-94	0.534	No Data	pCi/g
THALLIUM-208	TA3/5-83E87 SS	0.4	14-NOV-94	0.542	No Data	pCi/g
THORIUM-228	TA3/5-83E87 SS	0.4	14-NOV-94	0.537	No Data	pCi/g
THORIUM-232	TA3/5-83E87 SS	0.4	14-NOV-94	0.534	No Data	pCi/g
ACTINIUM-228	TA3/5-83E97 SS	0.5	12-NOV-94	0.54	No Data	pCi/g
BISMUTH-212	TA3/5-83E97 SS	0.5	12-NOV-94	0.324	No Data	pCi/g
BISMUTH-214	TA3/5-83E97 SS	0.5	12-NOV-94	0.415	No Data	pCi/g
CESIUM-137	TA3/5-83E97 SS	0.5	12-NOV-94	0.0358	No Data	pCi/g
LEAD-212	TA3/5-83E97 SS	0.5	12-NOV-94	0.62	No Data	pCi/g
LEAD-214	TA3/5-83E97 SS	0.5	12-NOV-94	0.49	No Data	pCi/g
POTASSIUM-40	TA3/5-83E97 SS	0.5	12-NOV-94	13.4	No Data	pCi/g
RADIUM-224	TA3/5-83E97 SS	0.5	12-NOV-94	0.894	No Data	pCi/g
RADIUM-226	TA3/5-83E97 SS	0.5	12-NOV-94	1.91	No Data	pCi/g
RADIUM-228	TA3/5-83E97 SS	0.5	12-NOV-94	0.598	No Data	pCi/g
THALLIUM-208	TA3/5-83E97 SS	0.5	12-NOV-94	0.585	No Data	pCi/g
THORIUM-228	TA3/5-83E97 SS	0.5	12-NOV-94	0.617	No Data	pCi/g
THORIUM-232	TA3/5-83E97 SS	0.5	12-NOV-94	0.598	No Data	pCi/g
THORIUM-234	TA3/5-83E97 SS	0.5	12-NOV-94	3.1	No Data	pCi/g
URANIUM-238	TA3/5-83E97 SS	0.5	12-NOV-94	3.09	No Data	pCi/g
ACTINIUM-228	TA3/5-83E109 SS	0	16-OCT-94	0.648	No Data	pCi/g
BISMUTH-212	TA3/5-83E109 SS	0	16-OCT-94	0.509	No Data	pCi/g
BISMUTH-214	TA3/5-83E109 SS	0	16-OCT-94	0.484	No Data	pCi/g
LEAD-212	TA3/5-83E109 SS	0	16-OCT-94	0.617	No Data	pCi/g
LEAD-214	TA3/5-83E109 SS	0	16-OCT-94	0.675	No Data	pCi/g
POTASSIUM-40	TA3/5-83E109 SS	0	16-OCT-94	15.8	No Data	pCi/g
RADIUM-226	TA3/5-83E109 SS	0	16-OCT-94	2.02	No Data	pCi/g
RADIUM-228	TA3/5-83E109 SS	0	16-OCT-94	0.718	No Data	pCi/g
THALLIUM-208	TA3/5-83E109 SS	0	16-OCT-94	0.559	No Data	pCi/g
THORIUM-228	TA3/5-83E109 SS	0	16-OCT-94	0.614	No Data	pCi/g
THORIUM-232	TA3/5-83E109 SS	0	16-OCT-94	0.718	No Data	pCi/g
THORIUM-234	TA3/5-83E109 SS	0	16-OCT-94	2.94	No Data	pCi/g
URANIUM-238	TA3/5-83E109 SS	0	16-OCT-94	2.93	No Data	pCi/g
ACTINIUM-228	TA3/5-83E123 SS	0	16-OCT-94	0.544	No Data	pCi/g
BISMUTH-212	TA3/5-83E123 SS	0	16-OCT-94	0.328	No Data	pCi/g
BISMUTH-214	TA3/5-83E123 SS	0	16-OCT-94	0.481	No Data	pCi/g
LEAD-212	TA3/5-83E123 SS	0	16-OCT-94	0.543	No Data	pCi/g
LEAD-214	TA3/5-83E123 SS	0	16-OCT-94	0.491	No Data	pCi/g
POTASSIUM-40	TA3/5-83E123 SS	0	16-OCT-94	12.3	No Data	pCi/g
RADIUM-224	TA3/5-83E123 SS	0	16-OCT-94	0.839	No Data	pCi/g
RADIUM-226	TA3/5-83E123 SS	0	16-OCT-94	1.54	No Data	pCi/g
RADIUM-228	TA3/5-83E123 SS	0	16-OCT-94	0.603	No Data	pCi/g
THALLIUM-208	TA3/5-83E123 SS	0	16-OCT-94	0.453	No Data	pCi/g
THORIUM-228	TA3/5-83E123 SS	0	16-OCT-94	0.54	No Data	pCi/g
THORIUM-232	TA3/5-83E123 SS	0	16-OCT-94	0.603	No Data	pCi/g
THORIUM-234	TA3/5-83E123 SS	0	16-OCT-94	1.61	No Data	pCi/g
URANIUM-238	TA3/5-83E123 SS	0	16-OCT-94	1.61	No Data	pCi/g
ACTINIUM-228	TA3/5-83E135 SS	0	16-OCT-94	0.478	No Data	pCi/g
BISMUTH-212	TA3/5-83E135 SS	0	16-OCT-94	0.338	No Data	pCi/g
BISMUTH-214	TA3/5-83E135 SS	0	16-OCT-94	0.344	No Data	pCi/g
CESIUM-137	TA3/5-83E135 SS	0	16-OCT-94	0.0284	No Data	pCi/g
LEAD-212	TA3/5-83E135 SS	0	16-OCT-94	0.532	No Data	pCi/g
LEAD-214	TA3/5-83E135 SS	0	16-OCT-94	0.432	No Data	pCi/g
POTASSIUM-40	TA3/5-83E135 SS	0	16-OCT-94	11.8	No Data	pCi/g
RADIUM-226	TA3/5-83E135 SS	0	16-OCT-94	1.51	No Data	pCi/g
RADIUM-228	TA3/5-83E135 SS	0	16-OCT-94	0.53	No Data	pCi/g
THALLIUM-208	TA3/5-83E135 SS	0	16-OCT-94	0.481	No Data	pCi/g
THORIUM-228	TA3/5-83E135 SS	0	16-OCT-94	0.53	No Data	pCi/g
THORIUM-232	TA3/5-83E135 SS	0	16-OCT-94	0.53	No Data	pCi/g
THORIUM-234	TA3/5-83E135 SS	0	16-OCT-94	1.69	No Data	pCi/g
URANIUM-238	TA3/5-83E135 SS	0	16-OCT-94	1.68	No Data	pCi/g
ACTINIUM-228	TA3/5-83E140 SS	0	16-OCT-94	0.516	No Data	pCi/g
BISMUTH-212	TA3/5-83E140 SS	0	16-OCT-94	0.413	No Data	pCi/g
BISMUTH-214	TA3/5-83E140 SS	0	16-OCT-94	0.402	No Data	pCi/g
LEAD-212	TA3/5-83E140 SS	0	16-OCT-94	0.541	No Data	pCi/g
LEAD-214	TA3/5-83E140 SS	0	16-OCT-94	0.565	No Data	pCi/g
POTASSIUM-40	TA3/5-83E140 SS	0	16-OCT-94	11.3	No Data	pCi/g
RADIUM-226	TA3/5-83E140 SS	0	16-OCT-94	1.53	No Data	pCi/g
RADIUM-228	TA3/5-83E140 SS	0	16-OCT-94	0.572	No Data	pCi/g
THALLIUM-208	TA3/5-83E140 SS	0	16-OCT-94	0.464	No Data	pCi/g
THORIUM-228	TA3/5-83E140 SS	0	16-OCT-94	0.538	No Data	pCi/g
THORIUM-232	TA3/5-83E140 SS	0	16-OCT-94	0.572	No Data	pCi/g
THORIUM-234	TA3/5-83E140 SS	0	16-OCT-94	1.82	No Data	pCi/g
URANIUM-238	TA3/5-83E140 SS	0	16-OCT-94	1.81	No Data	pCi/g
ACTINIUM-228	TA3/5-83E149 SS	0.5	11-NOV-94	0.873	No Data	pCi/g
BISMUTH-212	TA3/5-83E149 SS	0.5	11-NOV-94	0.552	No Data	pCi/g
BISMUTH-214	TA3/5-83E149 SS	0.5	11-NOV-94	0.514	No Data	pCi/g
LEAD-212	TA3/5-83E149 SS	0.5	11-NOV-94	0.666	No Data	pCi/g
LEAD-214	TA3/5-83E149 SS	0.5	11-NOV-94	0.54	No Data	pCi/g
POTASSIUM-40	TA3/5-83E149 SS	0.5	11-NOV-94	16.6	No Data	pCi/g
RADIUM-224	TA3/5-83E149 SS	0.5	11-NOV-94	0.673	No Data	pCi/g
RADIUM-226	TA3/5-83E149 SS	0.5	11-NOV-94	2.14	No Data	pCi/g
RADIUM-228	TA3/5-83E149 SS	0.5	11-NOV-94	0.967	No Data	pCi/g
THALLIUM-208	TA3/5-83E149 SS	0.5	11-NOV-94	0.649	No Data	pCi/g
THORIUM-228	TA3/5-83E149 SS	0.5	11-NOV-94	0.663	No Data	pCi/g
THORIUM-232	TA3/5-83E149 SS	0.5	11-NOV-94	0.967	No Data	pCi/g
THORIUM-234	TA3/5-83E149 SS	0.5	11-NOV-94	5.08	No Data	pCi/g
URANIUM-238	TA3/5-83E149 SS	0.5	11-NOV-94	5.07	No Data	pCi/g
ACTINIUM-228	TA3/5-83E150 SS	0.8	11-NOV-94	0.477	No Data	pCi/g
BISMUTH-212	TA3/5-83E150 SS	0.8	11-NOV-94	0.423	No Data	pCi/g
BISMUTH-214	TA3/5-83E150 SS	0.8	11-NOV-94	0.35	No Data	pCi/g
CESIUM-137	TA3/5-83E150 SS	0.8	11-NOV-94	0.0459	No Data	pCi/g
LEAD-212	TA3/5-83E150 SS	0.8	11-NOV-94	0.542	No Data	pCi/g
LEAD-214	TA3/5-83E150 SS	0.8	11-NOV-94	0.478	No Data	pCi/g
POTASSIUM-40	TA3/5-83E150 SS	0.8	11-NOV-94	13.3	No Data	pCi/g
RADIUM-226	TA3/5-83E150 SS	0.8	11-NOV-94	1.52	No Data	pCi/g
RADIUM-228	TA3/5-83E150 SS	0.8	11-NOV-94	0.528	No Data	pCi/g
THALLIUM-208	TA3/5-83E150 SS	0.8	11-NOV-94	0.597	No Data	pCi/g
THORIUM-228	TA3/5-83E150 SS	0.8	11-NOV-94	0.54	No Data	pCi/g
THORIUM-232	TA3/5-83E150 SS	0.8	11-NOV-94	0.528	No Data	pCi/g
ACTINIUM-228	TA3/5-83E151 SS	0.6	11-NOV-94	0.554	No Data	pCi/g
BISMUTH-212	TA3/5-83E151 SS	0.6	11-NOV-94	0.4	No Data	pCi/g
BISMUTH-214	TA3/5-83E151 SS	0.6	11-NOV-94	0.562	No Data	pCi/g
CESIUM-137	TA3/5-83E151 SS	0.6	11-NOV-94	0.0495	No Data	pCi/g
EUROPIUM-155	TA3/5-83E151 SS	0.6	11-NOV-94	0.129	No Data	pCi/g
LEAD-212	TA3/5-83E151 SS	0.6	11-NOV-94	0.631	No Data	pCi/g
LEAD-214	TA3/5-83E151 SS	0.6	11-NOV-94	0.578	No Data	pCi/g
MERCURY-203	TA3/5-83E151 SS	0.6	11-NOV-94	0.0391	No Data	pCi/g
POTASSIUM-40	TA3/5-83E151 SS	0.6	11-NOV-94	15.9	No Data	pCi/g
RADIUM-224	TA3/5-83E151 SS	0.6	11-NOV-94	2.56	No Data	pCi/g
RADIUM-226	TA3/5-83E151 SS	0.6	11-NOV-94	1.73	No Data	pCi/g
RADIUM-228	TA3/5-83E151 SS	0.6	11-NOV-94	0.614	No Data	pCi/g
THALLIUM-208	TA3/5-83E151 SS	0.6	11-NOV-94	0.645	No Data	pCi/g
THORIUM-228	TA3/5-83E151 SS	0.6	11-NOV-94	0.628	No Data	pCi/g
THORIUM-232	TA3/5-83E151 SS	0.6	11-NOV-94	0.614	No Data	pCi/g
ACTINIUM-228	TA3/5-83E163 SS	0.5	16-OCT-94	0.527	No Data	pCi/g
BISMUTH-212	TA3/5-83E163 SS	0.5	16-OCT-94	0.361	No Data	pCi/g
BISMUTH-214	TA3/5-83E163 SS	0.5	16-OCT-94	0.372	No Data	pCi/g
CESIUM-137	TA3/5-83E163 SS	0.5	16-OCT-94	0.0187	No Data	pCi/g
LEAD-212	TA3/5-83E163 SS	0.5	16-OCT-94	0.467	No Data	pCi/g
LEAD-214	TA3/5-83E163 SS	0.5	16-OCT-94	0.382	No Data	pCi/g
POTASSIUM-40	TA3/5-83E163 SS	0.5	16-OCT-94	14.2	No Data	pCi/g
RADIUM-224	TA3/5-83E163 SS	0.5	16-OCT-94	0.54	No Data	pCi/g
RADIUM-226	TA3/5-83E163 SS	0.5	16-OCT-94	1.23	No Data	pCi/g
RADIUM-228	TA3/5-83E163 SS	0.5	16-OCT-94	0.584	No Data	pCi/g
THALLIUM-208	TA3/5-83E163 SS	0.5	16-OCT-94	0.439	No Data	pCi/g
THORIUM-228	TA3/5-83E163 SS	0.5	16-OCT-94	0.465	No Data	pCi/g
THORIUM-232	TA3/5-83E163 SS	0.5	16-OCT-94	0.584	No Data	pCi/g
THORIUM-234	TA3/5-83E163 SS	0.5	16-OCT-94	1.76	No Data	pCi/g
URANIUM-238	TA3/5-83E163 SS	0.5	16-OCT-94	1.76	No Data	pCi/g
ACTINIUM-228	TA3/5-83E166 SS	0.6	25-OCT-94	0.549	No Data	pCi/g
BISMUTH-212	TA3/5-83E166 SS	0.6	25-OCT-94	0.534	No Data	pCi/g
BISMUTH-214	TA3/5-83E166 SS	0.6	25-OCT-94	0.531	No Data	pCi/g
CESIUM-137	TA3/5-83E166 SS	0.6	25-OCT-94	0.303	No Data	pCi/g
LEAD-212	TA3/5-83E166 SS	0.6	25-OCT-94	0.64	No Data	pCi/g
LEAD-214	TA3/5-83E166 SS	0.6	25-OCT-94	0.589	No Data	pCi/g
POTASSIUM-40	TA3/5-83E166 SS	0.6	25-OCT-94	14	No Data	pCi/g
RADIUM-224	TA3/5-83E166 SS	0.6	25-OCT-94	2.24	No Data	pCi/g
RADIUM-226	TA3/5-83E166 SS	0.6	25-OCT-94	3.33	No Data	pCi/g
RADIUM-228	TA3/5-83E166 SS	0.6	25-OCT-94	0.608	No Data	pCi/g
THALLIUM-208	TA3/5-83E166 SS	0.6	25-OCT-94	0.557	No Data	pCi/g
THORIUM-228	TA3/5-83E166 SS	0.6	25-OCT-94	0.637	No Data	pCi/g
THORIUM-232	TA3/5-83E166 SS	0.6	25-OCT-94	0.608	No Data	pCi/g
THORIUM-234	TA3/5-83E166 SS	0.6	25-OCT-94	7.75	No Data	pCi/g
URANIUM-238	TA3/5-83E166 SS	0.6	25-OCT-94	7.74	No Data	pCi/g
ACTINIUM-228	TA3/5-83E171 SS	0.4	18-OCT-94	0.476	No Data	pCi/g
BISMUTH-212	TA3/5-83E171 SS	0.4	18-OCT-94	0.246	No Data	pCi/g
BISMUTH-214	TA3/5-83E171 SS	0.4	18-OCT-94	0.356	No Data	pCi/g
CESIUM-137	TA3/5-83E171 SS	0.4	18-OCT-94	0.0902	No Data	pCi/g
LEAD-212	TA3/5-83E171 SS	0.4	18-OCT-94	0.448	No Data	pCi/g
LEAD-214	TA3/5-83E171 SS	0.4	18-OCT-94	0.363	No Data	pCi/g
POTASSIUM-40	TA3/5-83E171 SS	0.4	18-OCT-94	12.8	No Data	pCi/g
RADIUM-224	TA3/5-83E171 SS	0.4	18-OCT-94	0.894	No Data	pCi/g
RADIUM-226	TA3/5-83E171 SS	0.4	18-OCT-94	1.27	No Data	pCi/g
RADIUM-228	TA3/5-83E171 SS	0.4	18-OCT-94	0.527	No Data	pCi/g
THALLIUM-208	TA3/5-83E171 SS	0.4	18-OCT-94	0.407	No Data	pCi/g
THORIUM-228	TA3/5-83E171 SS	0.4	18-OCT-94	0.446	No Data	pCi/g
THORIUM-232	TA3/5-83E171 SS	0.4	18-OCT-94	0.527	No Data	pCi/g
THORIUM-234	TA3/5-83E171 SS	0.4	18-OCT-94	2.07	No Data	pCi/g
URANIUM-238	TA3/5-83E171 SS	0.4	18-OCT-94	2.06	No Data	pCi/g
ACTINIUM-228	TA3/5-83E184 SS	0.5	16-OCT-94	0.535	No Data	pCi/g
BISMUTH-212	TA3/5-83E184 SS	0.5	16-OCT-94	0.406	No Data	pCi/g
BISMUTH-214	TA3/5-83E184 SS	0.5	16-OCT-94	0.395	No Data	pCi/g
CESIUM-137	TA3/5-83E184 SS	0.5	16-OCT-94	0.208	No Data	pCi/g
IRIDIUM-192	TA3/5-83E184 SS	0.5	16-OCT-94	1	0.0159	pCi/g
LEAD-212	TA3/5-83E184 SS	0.5	16-OCT-94	0.507	No Data	pCi/g
LEAD-214	TA3/5-83E184 SS	0.5	16-OCT-94	0.446	No Data	pCi/g
POTASSIUM-40	TA3/5-83E184 SS	0.5	16-OCT-94	14.7	No Data	pCi/g
RADIUM-226	TA3/5-83E184 SS	0.5	16-OCT-94	1.57	No Data	pCi/g
RADIUM-228	TA3/5-83E184 SS	0.5	16-OCT-94	0.592	No Data	pCi/g
THALLIUM-208	TA3/5-83E184 SS	0.5	16-OCT-94	0.456	No Data	pCi/g
THORIUM-228	TA3/5-83E184 SS	0.5	16-OCT-94	0.505	No Data	pCi/g
THORIUM-232	TA3/5-83E184 SS	0.5	16-OCT-94	0.592	No Data	pCi/g
THORIUM-234	TA3/5-83E184 SS	0.5	16-OCT-94	1.37	No Data	pCi/g
URANIUM-238	TA3/5-83E184 SS	0.5	16-OCT-94	1.37	No Data	pCi/g
ACTINIUM-228	TA3/5-83E188 SS	0.8	16-OCT-94	0.456	No Data	pCi/g
BISMUTH-212	TA3/5-83E188 SS	0.8	16-OCT-94	0.417	No Data	pCi/g
BISMUTH-214	TA3/5-83E188 SS	0.8	16-OCT-94	0.399	No Data	pCi/g
CESIUM-137	TA3/5-83E188 SS	0.8	16-OCT-94	0.328	No Data	pCi/g
LEAD-212	TA3/5-83E188 SS	0.8	16-OCT-94	0.471	No Data	pCi/g
LEAD-214	TA3/5-83E188 SS	0.8	16-OCT-94	0.448	No Data	pCi/g
POTASSIUM-40	TA3/5-83E188 SS	0.8	16-OCT-94	14.2	No Data	pCi/g
PROTACTINIUM-231	TA3/5-83E188 SS	0.8	16-OCT-94	0.727	No Data	pCi/g
RADIUM-224	TA3/5-83E188 SS	0.8	16-OCT-94	1.06	No Data	pCi/g
RADIUM-226	TA3/5-83E188 SS	0.8	16-OCT-94	7.74	No Data	pCi/g
RADIUM-228	TA3/5-83E188 SS	0.8	16-OCT-94	0.505	No Data	pCi/g
THALLIUM-208	TA3/5-83E188 SS	0.8	16-OCT-94	0.507	No Data	pCi/g
THORIUM-228	TA3/5-83E188 SS	0.8	16-OCT-94	0.469	No Data	pCi/g
THORIUM-231	TA3/5-83E188 SS	0.8	16-OCT-94	0.434	No Data	pCi/g
THORIUM-232	TA3/5-83E188 SS	0.8	16-OCT-94	0.505	No Data	pCi/g
THORIUM-234	TA3/5-83E188 SS	0.8	16-OCT-94	23.8	No Data	pCi/g
URANIUM-238	TA3/5-83E188 SS	0.8	16-OCT-94	23.8	No Data	pCi/g
ACTINIUM-228	TA3/5-83E223 SS	0.5	16-OCT-94	0.56	No Data	pCi/g
BERYLLIUM-7	TA3/5-83E223 SS	0.5	16-OCT-94	0.188	No Data	pCi/g
BISMUTH-212	TA3/5-83E223 SS	0.5	16-OCT-94	0.457	No Data	pCi/g
BISMUTH-214	TA3/5-83E223 SS	0.5	16-OCT-94	0.397	No Data	pCi/g
CESIUM-137	TA3/5-83E223 SS	0.5	16-OCT-94	0.403	No Data	pCi/g
LEAD-212	TA3/5-83E223 SS	0.5	16-OCT-94	0.533	No Data	pCi/g
LEAD-214	TA3/5-83E223 SS	0.5	16-OCT-94	0.428	No Data	pCi/g
POTASSIUM-40	TA3/5-83E223 SS	0.5	16-OCT-94	14	No Data	pCi/g
RADIUM-224	TA3/5-83E223 SS	0.5	16-OCT-94	0.883	No Data	pCi/g
RADIUM-226	TA3/5-83E223 SS	0.5	16-OCT-94	1.81	No Data	pCi/g
RADIUM-228	TA3/5-83E223 SS	0.5	16-OCT-94	0.62	No Data	pCi/g
THALLIUM-208	TA3/5-83E223 SS	0.5	16-OCT-94	0.448	No Data	pCi/g
THORIUM-228	TA3/5-83E223 SS	0.5	16-OCT-94	0.531	No Data	pCi/g
THORIUM-232	TA3/5-83E223 SS	0.5	16-OCT-94	0.62	No Data	pCi/g
THORIUM-234	TA3/5-83E223 SS	0.5	16-OCT-94	3.71	No Data	pCi/g
URANIUM-238	TA3/5-83E223 SS	0.5	16-OCT-94	3.71	No Data	pCi/g
ACTINIUM-228	TA3/5-83E234 SS	0.8	16-OCT-94	0.544	No Data	pCi/g
BISMUTH-212	TA3/5-83E234 SS	0.8	16-OCT-94	0.405	No Data	pCi/g
BISMUTH-214	TA3/5-83E234 SS	0.8	16-OCT-94	0.407	No Data	pCi/g
CESIUM-137	TA3/5-83E234 SS	0.8	16-OCT-94	0.153	No Data	pCi/g
LEAD-212	TA3/5-83E234 SS	0.8	16-OCT-94	0.626	No Data	pCi/g
LEAD-214	TA3/5-83E234 SS	0.8	16-OCT-94	0.518	No Data	pCi/g
POTASSIUM-40	TA3/5-83E234 SS	0.8	16-OCT-94	13.6	No Data	pCi/g
RADIUM-224	TA3/5-83E234 SS	0.8	16-OCT-94	0.761	No Data	pCi/g
RADIUM-226	TA3/5-83E234 SS	0.8	16-OCT-94	2.18	No Data	pCi/g
RADIUM-228	TA3/5-83E234 SS	0.8	16-OCT-94	0.603	No Data	pCi/g
THALLIUM-208	TA3/5-83E234 SS	0.8	16-OCT-94	0.538	No Data	pCi/g
THORIUM-228	TA3/5-83E234 SS	0.8	16-OCT-94	0.623	No Data	pCi/g
THORIUM-232	TA3/5-83E234 SS	0.8	16-OCT-94	0.603	No Data	pCi/g
THORIUM-234	TA3/5-83E234 SS	0.8	16-OCT-94	4.15	No Data	pCi/g
URANIUM-238	TA3/5-83E234 SS	0.8	16-OCT-94	4.15	No Data	pCi/g
ACTINIUM-228	TA3/5-83E246 SS	0.8	16-OCT-94	0.574	No Data	pCi/g
BISMUTH-212	TA3/5-83E246 SS	0.8	16-OCT-94	0.516	No Data	pCi/g
BISMUTH-214	TA3/5-83E246 SS	0.8	16-OCT-94	0.405	No Data	pCi/g
LEAD-212	TA3/5-83E246 SS	0.8	16-OCT-94	0.634	No Data	pCi/g
LEAD-214	TA3/5-83E246 SS	0.8	16-OCT-94	0.501	No Data	pCi/g
POTASSIUM-40	TA3/5-83E246 SS	0.8	16-OCT-94	13.9	No Data	pCi/g
RADIUM-224	TA3/5-83E246 SS	0.8	16-OCT-94	0.508	No Data	pCi/g
RADIUM-226	TA3/5-83E246 SS	0.8	16-OCT-94	3.28	No Data	pCi/g
RADIUM-228	TA3/5-83E246 SS	0.8	16-OCT-94	0.636	No Data	pCi/g
THALLIUM-208	TA3/5-83E246 SS	0.8	16-OCT-94	0.645	No Data	pCi/g
THORIUM-228	TA3/5-83E246 SS	0.8	16-OCT-94	0.631	No Data	pCi/g
THORIUM-232	TA3/5-83E246 SS	0.8	16-OCT-94	0.636	No Data	pCi/g
THORIUM-234	TA3/5-83E246 SS	0.8	16-OCT-94	9.09	No Data	pCi/g
URANIUM-238	TA3/5-83E246 SS	0.8	16-OCT-94	9.08	No Data	pCi/g
ACTINIUM-228	TA3/5-83E255 SS	0.5	16-OCT-94	0.602	No Data	pCi/g
BISMUTH-212	TA3/5-83E255 SS	0.5	16-OCT-94	0.486	No Data	pCi/g
BISMUTH-214	TA3/5-83E255 SS	0.5	16-OCT-94	0.433	No Data	pCi/g
CESIUM-137	TA3/5-83E255 SS	0.5	16-OCT-94	0.0249	No Data	pCi/g
LEAD-212	TA3/5-83E255 SS	0.5	16-OCT-94	0.611	No Data	pCi/g
LEAD-214	TA3/5-83E255 SS	0.5	16-OCT-94	0.478	No Data	pCi/g
POTASSIUM-40	TA3/5-83E255 SS	0.5	16-OCT-94	13.6	No Data	pCi/g
RADIUM-224	TA3/5-83E255 SS	0.5	16-OCT-94	0.615	No Data	pCi/g
RADIUM-226	TA3/5-83E255 SS	0.5	16-OCT-94	1.21	No Data	pCi/g
RADIUM-228	TA3/5-83E255 SS	0.5	16-OCT-94	0.667	No Data	pCi/g
THALLIUM-208	TA3/5-83E255 SS	0.5	16-OCT-94	0.568	No Data	pCi/g
THORIUM-228	TA3/5-83E255 SS	0.5	16-OCT-94	0.609	No Data	pCi/g
THORIUM-232	TA3/5-83E255 SS	0.5	16-OCT-94	0.667	No Data	pCi/g
THORIUM-234	TA3/5-83E255 SS	0.5	16-OCT-94	1.85	No Data	pCi/g
URANIUM-238	TA3/5-83E255 SS	0.5	16-OCT-94	1.85	No Data	pCi/g
ACTINIUM-228	TA3/5-83E260 SS	0.9	16-OCT-94	0.524	No Data	pCi/g
BISMUTH-212	TA3/5-83E260 SS	0.9	16-OCT-94	0.466	No Data	pCi/g
BISMUTH-214	TA3/5-83E260 SS	0.9	16-OCT-94	0.333	No Data	pCi/g
CESIUM-137	TA3/5-83E260 SS	0.9	16-OCT-94	0.0305	No Data	pCi/g
LEAD-212	TA3/5-83E260 SS	0.9	16-OCT-94	0.513	No Data	pCi/g
LEAD-214	TA3/5-83E260 SS	0.9	16-OCT-94	0.356	No Data	pCi/g
POTASSIUM-40	TA3/5-83E260 SS	0.9	16-OCT-94	12.6	No Data	pCi/g
RADIUM-224	TA3/5-83E260 SS	0.9	16-OCT-94	0.981	No Data	pCi/g
RADIUM-226	TA3/5-83E260 SS	0.9	16-OCT-94	1.76	No Data	pCi/g
RADIUM-228	TA3/5-83E260 SS	0.9	16-OCT-94	0.58	No Data	pCi/g
THALLIUM-208	TA3/5-83E260 SS	0.9	16-OCT-94	0.472	No Data	pCi/g
THORIUM-228	TA3/5-83E260 SS	0.9	16-OCT-94	0.511	No Data	pCi/g
THORIUM-232	TA3/5-83E260 SS	0.9	16-OCT-94	0.58	No Data	pCi/g
THORIUM-234	TA3/5-83E260 SS	0.9	16-OCT-94	4.08	No Data	pCi/g
URANIUM-238	TA3/5-83E260 SS	0.9	16-OCT-94	4.08	No Data	pCi/g
ACTINIUM-228	TA3/5-83E283 SS	0.3	16-OCT-94	0.534	No Data	pCi/g
BISMUTH-212	TA3/5-83E283 SS	0.3	16-OCT-94	0.268	No Data	pCi/g
BISMUTH-214	TA3/5-83E283 SS	0.3	16-OCT-94	0.35	No Data	pCi/g
CESIUM-137	TA3/5-83E283 SS	0.3	16-OCT-94	0.0861	No Data	pCi/g
LEAD-212	TA3/5-83E283 SS	0.3	16-OCT-94	0.464	No Data	pCi/g
LEAD-214	TA3/5-83E283 SS	0.3	16-OCT-94	0.347	No Data	pCi/g
POTASSIUM-40	TA3/5-83E283 SS	0.3	16-OCT-94	14.8	No Data	pCi/g
RADIUM-224	TA3/5-83E283 SS	0.3	16-OCT-94	0.793	No Data	pCi/g
RADIUM-226	TA3/5-83E283 SS	0.3	16-OCT-94	1.3	No Data	pCi/g
RADIUM-228	TA3/5-83E283 SS	0.3	16-OCT-94	0.591	No Data	pCi/g
THALLIUM-208	TA3/5-83E283 SS	0.3	16-OCT-94	0.51	No Data	pCi/g
THORIUM-228	TA3/5-83E283 SS	0.3	16-OCT-94	0.462	No Data	pCi/g
THORIUM-232	TA3/5-83E283 SS	0.3	16-OCT-94	0.591	No Data	pCi/g
THORIUM-234	TA3/5-83E283 SS	0.3	16-OCT-94	1.08	No Data	pCi/g
URANIUM-238	TA3/5-83E283 SS	0.3	16-OCT-94	1.08	No Data	pCi/g
ACTINIUM-228	TA3/5-83E289 SS	0.5	12-NOV-94	0.532	No Data	pCi/g
BISMUTH-212	TA3/5-83E289 SS	0.5	12-NOV-94	0.422	No Data	pCi/g
BISMUTH-214	TA3/5-83E289 SS	0.5	12-NOV-94	0.375	No Data	pCi/g
LEAD-212	TA3/5-83E289 SS	0.5	12-NOV-94	0.58	No Data	pCi/g
LEAD-214	TA3/5-83E289 SS	0.5	12-NOV-94	0.466	No Data	pCi/g
POTASSIUM-40	TA3/5-83E289 SS	0.5	12-NOV-94	13	No Data	pCi/g
RADIUM-224	TA3/5-83E289 SS	0.5	12-NOV-94	1.54	No Data	pCi/g
RADIUM-226	TA3/5-83E289 SS	0.5	12-NOV-94	1.99	No Data	pCi/g
RADIUM-228	TA3/5-83E289 SS	0.5	12-NOV-94	0.589	No Data	pCi/g
THALLIUM-208	TA3/5-83E289 SS	0.5	12-NOV-94	0.442	No Data	pCi/g
THORIUM-228	TA3/5-83E289 SS	0.5	12-NOV-94	0.578	No Data	pCi/g
THORIUM-232	TA3/5-83E289 SS	0.5	12-NOV-94	0.589	No Data	pCi/g
ACTINIUM-228	TA3/5-83E304 SS	0.5	10-NOV-94	0.579	No Data	pCi/g
BISMUTH-212	TA3/5-83E304 SS	0.5	10-NOV-94	0.625	No Data	pCi/g
BISMUTH-214	TA3/5-83E304 SS	0.5	10-NOV-94	0.4	No Data	pCi/g
LEAD-212	TA3/5-83E304 SS	0.5	10-NOV-94	0.621	No Data	pCi/g
LEAD-214	TA3/5-83E304 SS	0.5	10-NOV-94	0.44	No Data	pCi/g
POTASSIUM-40	TA3/5-83E304 SS	0.5	10-NOV-94	13.3	No Data	pCi/g
RADIUM-226	TA3/5-83E304 SS	0.5	10-NOV-94	1.57	No Data	pCi/g
RADIUM-228	TA3/5-83E304 SS	0.5	10-NOV-94	0.642	No Data	pCi/g
THALLIUM-208	TA3/5-83E304 SS	0.5	10-NOV-94	0.525	No Data	pCi/g
THORIUM-228	TA3/5-83E304 SS	0.5	10-NOV-94	0.619	No Data	pCi/g
THORIUM-232	TA3/5-83E304 SS	0.5	10-NOV-94	0.642	No Data	pCi/g
THORIUM-234	TA3/5-83E304 SS	0.5	10-NOV-94	3.42	No Data	pCi/g
URANIUM-238	TA3/5-83E304 SS	0.5	10-NOV-94	3.42	No Data	pCi/g
ACTINIUM-228	TA3/5-83E319 SS	0.3	11-NOV-94	0.811	No Data	pCi/g
BISMUTH-212	TA3/5-83E319 SS	0.3	11-NOV-94	0.68	No Data	pCi/g
LEAD-212	TA3/5-83E319 SS	0.3	11-NOV-94	0.64	No Data	pCi/g
LEAD-214	TA3/5-83E319 SS	0.3	11-NOV-94	0.551	No Data	pCi/g
POTASSIUM-40	TA3/5-83E319 SS	0.3	11-NOV-94	14.7	No Data	pCi/g
RADIUM-228	TA3/5-83E319 SS	0.3	11-NOV-94	0.898	No Data	pCi/g
THALLIUM-208	TA3/5-83E319 SS	0.3	11-NOV-94	0.551	No Data	pCi/g
THORIUM-228	TA3/5-83E319 SS	0.3	11-NOV-94	0.637	No Data	pCi/g
THORIUM-232	TA3/5-83E319 SS	0.3	11-NOV-94	0.898	No Data	pCi/g
THORIUM-234	TA3/5-83E319 SS	0.3	11-NOV-94	28.3	No Data	pCi/g
URANIUM-235	TA3/5-83E319 SS	0.3	11-NOV-94	0.568	No Data	pCi/g
URANIUM-238	TA3/5-83E319 SS	0.3	11-NOV-94	28.3	No Data	pCi/g
ACTINIUM-228	TA3/5-83E324 SS	0.8	11-NOV-94	0.595	No Data	pCi/g
BISMUTH-212	TA3/5-83E324 SS	0.8	11-NOV-94	0.484	No Data	pCi/g
BISMUTH-214	TA3/5-83E324 SS	0.8	11-NOV-94	0.436	No Data	pCi/g
LEAD-212	TA3/5-83E324 SS	0.8	11-NOV-94	0.597	No Data	pCi/g

LEAD-214	TA3/5-83E324 SS	0.8	11-NOV-94	0.483	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E324 SS	0.8	11-NOV-94	14.8	No Data	pCi/g		
RADIUM-224	TA3/5-83E324 SS	0.8	11-NOV-94	1.02	No Data	pCi/g		
RADIUM-226	TA3/5-83E324 SS	0.8	11-NOV-94	1.59	No Data	pCi/g		
RADIUM-228	TA3/5-83E324 SS	0.8	11-NOV-94	0.66	No Data	pCi/g		
THALLIUM-208	TA3/5-83E324 SS	0.8	11-NOV-94	0.671	No Data	pCi/g		
THORIUM-228	TA3/5-83E324 SS	0.8	11-NOV-94	0.595	No Data	pCi/g		
THORIUM-232	TA3/5-83E324 SS	0.8	11-NOV-94	0.66	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E345 SD	1	25-OCT-94	0.729	No Data	pCi/g		
BISMUTH-212	TA3/5-83E345 SD	1	25-OCT-94	0.311	No Data	pCi/g		
BISMUTH-214	TA3/5-83E345 SD	1	25-OCT-94	0.486	No Data	pCi/g		
LEAD-212	TA3/5-83E345 SD	1	25-OCT-94	0.739	No Data	pCi/g		
LEAD-214	TA3/5-83E345 SD	1	25-OCT-94	0.535	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E345 SD	1	25-OCT-94	14	No Data	pCi/g		
RADIUM-224	TA3/5-83E345 SD	1	25-OCT-94	0.68	No Data	pCi/g		
RADIUM-228	TA3/5-83E345 SD	1	25-OCT-94	0.808	No Data	pCi/g		
THALLIUM-208	TA3/5-83E345 SD	1	25-OCT-94	0.616	No Data	pCi/g		
THORIUM-228	TA3/5-83E345 SD	1	25-OCT-94	0.736	No Data	pCi/g		
THORIUM-231	TA3/5-83E345 SD	1	25-OCT-94	0.789	No Data	pCi/g		
THORIUM-232	TA3/5-83E345 SD	1	25-OCT-94	0.808	No Data	pCi/g		
THORIUM-234	TA3/5-83E345 SD	1	25-OCT-94	17.9	No Data	pCi/g		
URANIUM-235	TA3/5-83E345 SD	1	25-OCT-94	0.392	No Data	pCi/g		
URANIUM-238	TA3/5-83E345 SD	1	25-OCT-94	17.9	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E345 SS	1	25-OCT-94	0.695	No Data	pCi/g		
BISMUTH-212	TA3/5-83E345 SS	1	25-OCT-94	0.366	No Data	pCi/g		
BISMUTH-214	TA3/5-83E345 SS	1	25-OCT-94	0.431	No Data	pCi/g		
LEAD-210	TA3/5-83E345 SS	1	25-OCT-94	1.23	No Data	pCi/g		
LEAD-212	TA3/5-83E345 SS	1	25-OCT-94	0.694	No Data	pCi/g		
LEAD-214	TA3/5-83E345 SS	1	25-OCT-94	0.519	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E345 SS	1	25-OCT-94	13.8	No Data	pCi/g		
RADIUM-224	TA3/5-83E345 SS	1	25-OCT-94	0.814	No Data	pCi/g		
RADIUM-228	TA3/5-83E345 SS	1	25-OCT-94	0.77	No Data	pCi/g		
THALLIUM-208	TA3/5-83E345 SS	1	25-OCT-94	0.662	No Data	pCi/g		
THORIUM-228	TA3/5-83E345 SS	1	25-OCT-94	0.69	No Data	pCi/g		
THORIUM-232	TA3/5-83E345 SS	1	25-OCT-94	0.77	No Data	pCi/g		
THORIUM-234	TA3/5-83E345 SS	1	25-OCT-94	18	No Data	pCi/g		
URANIUM-235	TA3/5-83E345 SS	1	25-OCT-94	0.378	No Data	pCi/g		
URANIUM-238	TA3/5-83E345 SS	1	25-OCT-94	17.9	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E347 SS	0.8	27-OCT-94	0.648	No Data	pCi/g		
BISMUTH-212	TA3/5-83E347 SS	0.8	27-OCT-94	0.41	No Data	pCi/g		
BISMUTH-214	TA3/5-83E347 SS	0.8	27-OCT-94	0.412	No Data	pCi/g		
CESIUM-137	TA3/5-83E347 SS	0.8	27-OCT-94	0.0866	No Data	pCi/g		
LEAD-212	TA3/5-83E347 SS	0.8	27-OCT-94	0.555	No Data	pCi/g		
LEAD-214	TA3/5-83E347 SS	0.8	27-OCT-94	0.41	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E347 SS	0.8	27-OCT-94	12.9	No Data	pCi/g		
RADIUM-224	TA3/5-83E347 SS	0.8	27-OCT-94	0.971	No Data	pCi/g		
RADIUM-226	TA3/5-83E347 SS	0.8	27-OCT-94	2.06	No Data	pCi/g		
RADIUM-228	TA3/5-83E347 SS	0.8	27-OCT-94	0.718	No Data	pCi/g		
THALLIUM-208	TA3/5-83E347 SS	0.8	27-OCT-94	0.432	No Data	pCi/g		
THORIUM-228	TA3/5-83E347 SS	0.8	27-OCT-94	0.552	No Data	pCi/g		
THORIUM-232	TA3/5-83E347 SS	0.8	27-OCT-94	0.718	No Data	pCi/g		
THORIUM-234	TA3/5-83E347 SS	0.8	27-OCT-94	4.36	No Data	pCi/g		
URANIUM-238	TA3/5-83E347 SS	0.8	27-OCT-94	4.35	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E357 SS	0.3	25-OCT-94	0.617	No Data	pCi/g		
BISMUTH-212	TA3/5-83E357 SS	0.3	25-OCT-94	0.455	No Data	pCi/g		
BISMUTH-214	TA3/5-83E357 SS	0.3	25-OCT-94	0.395	No Data	pCi/g		
LEAD-212	TA3/5-83E357 SS	0.3	25-OCT-94	0.632	No Data	pCi/g		
LEAD-214	TA3/5-83E357 SS	0.3	25-OCT-94	0.554	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E357 SS	0.3	25-OCT-94	13.6	No Data	pCi/g		
RADIUM-226	TA3/5-83E357 SS	0.3	25-OCT-94	1.56	No Data	pCi/g		
RADIUM-228	TA3/5-83E357 SS	0.3	25-OCT-94	0.684	No Data	pCi/g		
THALLIUM-208	TA3/5-83E357 SS	0.3	25-OCT-94	0.526	No Data	pCi/g		
THORIUM-228	TA3/5-83E357 SS	0.3	25-OCT-94	0.629	No Data	pCi/g		
THORIUM-231	TA3/5-83E357 SS	0.3	25-OCT-94	0.182	No Data	pCi/g		
THORIUM-232	TA3/5-83E357 SS	0.3	25-OCT-94	0.684	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E369 SS	0.5	26-OCT-94	0.647	No Data	pCi/g		
BISMUTH-212	TA3/5-83E369 SS	0.5	26-OCT-94	0.413	No Data	pCi/g		
BISMUTH-214	TA3/5-83E369 SS	0.5	26-OCT-94	0.416	No Data	pCi/g		
CESIUM-137	TA3/5-83E369 SS	0.5	26-OCT-94	0.153	No Data	pCi/g		
LEAD-212	TA3/5-83E369 SS	0.5	26-OCT-94	0.509	No Data	pCi/g		
LEAD-214	TA3/5-83E369 SS	0.5	26-OCT-94	0.457	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E369 SS	0.5	26-OCT-94	12.8	No Data	pCi/g		
RADIUM-224	TA3/5-83E369 SS	0.5	26-OCT-94	0.858	No Data	pCi/g		
RADIUM-226	TA3/5-83E369 SS	0.5	26-OCT-94	1.55	No Data	pCi/g		
RADIUM-228	TA3/5-83E369 SS	0.5	26-OCT-94	0.717	No Data	pCi/g		
THALLIUM-208	TA3/5-83E369 SS	0.5	26-OCT-94	0.518	No Data	pCi/g		
THORIUM-228	TA3/5-83E369 SS	0.5	26-OCT-94	0.507	No Data	pCi/g		
THORIUM-232	TA3/5-83E369 SS	0.5	26-OCT-94	0.717	No Data	pCi/g		
THORIUM-234	TA3/5-83E369 SS	0.5	26-OCT-94	4.09	No Data	pCi/g		
URANIUM-238	TA3/5-83E369 SS	0.5	26-OCT-94	4.08	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E383 SS	0.3	18-OCT-94	0.595	No Data	pCi/g		
BISMUTH-212	TA3/5-83E383 SS	0.3	18-OCT-94	0.366	No Data	pCi/g		
BISMUTH-214	TA3/5-83E383 SS	0.3	18-OCT-94	0.414	No Data	pCi/g		
CESIUM-137	TA3/5-83E383 SS	0.3	18-OCT-94	0.273	No Data	pCi/g		
LEAD-212	TA3/5-83E383 SS	0.3	18-OCT-94	0.546	No Data	pCi/g		
LEAD-214	TA3/5-83E383 SS	0.3	18-OCT-94	0.472	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E383 SS	0.3	18-OCT-94	13.5	No Data	pCi/g		
RADIUM-224	TA3/5-83E383 SS	0.3	18-OCT-94	0.76	No Data	pCi/g		
RADIUM-226	TA3/5-83E383 SS	0.3	18-OCT-94	1.32	No Data	pCi/g		
RADIUM-228	TA3/5-83E383 SS	0.3	18-OCT-94	0.659	No Data	pCi/g		
STRONTIUM-85	TA3/5-83E383 SS	0.3	18-OCT-94	0.0139	No Data	pCi/g		
THALLIUM-208	TA3/5-83E383 SS	0.3	18-OCT-94	0.471	No Data	pCi/g		
THORIUM-228	TA3/5-83E383 SS	0.3	18-OCT-94	0.544	No Data	pCi/g		
THORIUM-232	TA3/5-83E383 SS	0.3	18-OCT-94	0.659	No Data	pCi/g		
THORIUM-234	TA3/5-83E383 SS	0.3	18-OCT-94	1.35	No Data	pCi/g		
URANIUM-238	TA3/5-83E383 SS	0.3	18-OCT-94	1.35	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E384 SS	0.8	18-OCT-94	0.704	No Data	pCi/g		
BISMUTH-212	TA3/5-83E384 SS	0.8	18-OCT-94	0.393	No Data	pCi/g		
BISMUTH-214	TA3/5-83E384 SS	0.8	18-OCT-94	0.469	No Data	pCi/g		
CESIUM-137	TA3/5-83E384 SS	0.8	18-OCT-94	0.284	No Data	pCi/g		
LEAD-212	TA3/5-83E384 SS	0.8	18-OCT-94	0.766	No Data	pCi/g		
LEAD-214	TA3/5-83E384 SS	0.8	18-OCT-94	0.502	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E384 SS	0.8	18-OCT-94	13.6	No Data	pCi/g		
RADIUM-224	TA3/5-83E384 SS	0.8	18-OCT-94	1.05	No Data	pCi/g		
RADIUM-228	TA3/5-83E384 SS	0.8	18-OCT-94	0.78	No Data	pCi/g		
THALLIUM-208	TA3/5-83E384 SS	0.8	18-OCT-94	0.644	No Data	pCi/g		
THORIUM-228	TA3/5-83E384 SS	0.8	18-OCT-94	0.762	No Data	pCi/g		
THORIUM-232	TA3/5-83E384 SS	0.8	18-OCT-94	0.78	No Data	pCi/g		
THORIUM-234	TA3/5-83E384 SS	0.8	18-OCT-94	25.3	No Data	pCi/g		
URANIUM-235	TA3/5-83E384 SS	0.8	18-OCT-94	0.44	No Data	pCi/g		
URANIUM-238	TA3/5-83E384 SS	0.8	18-OCT-94	25.2	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E397 SS	0.5	18-OCT-94	0.55	No Data	pCi/g		
BISMUTH-212	TA3/5-83E397 SS	0.5	18-OCT-94	0.397	No Data	pCi/g		
BISMUTH-214	TA3/5-83E397 SS	0.5	18-OCT-94	0.419	No Data	pCi/g		
CESIUM-137	TA3/5-83E397 SS	0.5	18-OCT-94	0.183	0.0326	pCi/g		
LEAD-212	TA3/5-83E397 SS	0.5	18-OCT-94	0.484	No Data	pCi/g		
LEAD-214	TA3/5-83E397 SS	0.5	18-OCT-94	0.447	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E397 SS	0.5	18-OCT-94	13.2	No Data	pCi/g		
RADIUM-224	TA3/5-83E397 SS	0.5	18-OCT-94	0.684	No Data	pCi/g		
RADIUM-226	TA3/5-83E397 SS	0.5	18-OCT-94	1.63	No Data	pCi/g		
RADIUM-228	TA3/5-83E397 SS	0.5	18-OCT-94	0.61	No Data	pCi/g		
THALLIUM-208	TA3/5-83E397 SS	0.5	18-OCT-94	0.423	No Data	pCi/g		
THORIUM-228	TA3/5-83E397 SS	0.5	18-OCT-94	0.481	No Data	pCi/g		
THORIUM-232	TA3/5-83E397 SS	0.5	18-OCT-94	0.61	No Data	pCi/g		
THORIUM-234	TA3/5-83E397 SS	0.5	18-OCT-94	3.09	No Data	pCi/g		
URANIUM-238	TA3/5-83E397 SS	0.5	18-OCT-94	3.09	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E404 SS	0.5	25-OCT-94	0.778	No Data	pCi/g		
BISMUTH-212	TA3/5-83E404 SS	0.5	25-OCT-94	0.46	No Data	pCi/g		
BISMUTH-214	TA3/5-83E404 SS	0.5	25-OCT-94	0.548	No Data	pCi/g		
LEAD-210	TA3/5-83E404 SS	0.5	25-OCT-94	1.45	No Data	pCi/g		
LEAD-212	TA3/5-83E404 SS	0.5	25-OCT-94	0.625	No Data	pCi/g		
LEAD-214	TA3/5-83E404 SS	0.5	25-OCT-94	0.608	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E404 SS	0.5	25-OCT-94	14.8	No Data	pCi/g		
RADIUM-226	TA3/5-83E404 SS	0.5	25-OCT-94	2.17	No Data	pCi/g		
RADIUM-228	TA3/5-83E404 SS	0.5	25-OCT-94	0.862	No Data	pCi/g		
THALLIUM-208	TA3/5-83E404 SS	0.5	25-OCT-94	0.616	No Data	pCi/g		
THORIUM-228	TA3/5-83E404 SS	0.5	25-OCT-94	0.622	No Data	pCi/g		
THORIUM-231	TA3/5-83E404 SS	0.5	25-OCT-94	0.428	No Data	pCi/g		
THORIUM-232	TA3/5-83E404 SS	0.5	25-OCT-94	0.862	No Data	pCi/g		
THORIUM-234	TA3/5-83E404 SS	0.5	25-OCT-94	1.9	No Data	pCi/g		
URANIUM-238	TA3/5-83E404 SS	0.5	25-OCT-94	1.9	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E416 SS	0.8	26-OCT-94	0.541	No Data	pCi/g		
BISMUTH-212	TA3/5-83E416 SS	0.8	26-OCT-94	0.56	No Data	pCi/g		
BISMUTH-214	TA3/5-83E416 SS	0.8	26-OCT-94	0.551	No Data	pCi/g		
CESIUM-137	TA3/5-83E416 SS	0.8	26-OCT-94	0.16	No Data	pCi/g		
LEAD-212	TA3/5-83E416 SS	0.8	26-OCT-94	0.542	No Data	pCi/g		
LEAD-214	TA3/5-83E416 SS	0.8	26-OCT-94	0.502	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E416 SS	0.8	26-OCT-94	13.9	No Data	pCi/g		
RADIUM-224	TA3/5-83E416 SS	0.8	26-OCT-94	0.625	No Data	pCi/g		
RADIUM-226	TA3/5-83E416 SS	0.8	26-OCT-94	1.76	No Data	pCi/g		
RADIUM-228	TA3/5-83E416 SS	0.8	26-OCT-94	0.599	No Data	pCi/g		
THALLIUM-208	TA3/5-83E416 SS	0.8	26-OCT-94	0.554	No Data	pCi/g		
THORIUM-228	TA3/5-83E416 SS	0.8	26-OCT-94	0.539	No Data	pCi/g		
THORIUM-232	TA3/5-83E416 SS	0.8	26-OCT-94	0.599	No Data	pCi/g		
THORIUM-234	TA3/5-83E416 SS	0.8	26-OCT-94	1.97	No Data	pCi/g		
URANIUM-238	TA3/5-83E416 SS	0.8	26-OCT-94	1.97	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E423 SS	0.5	25-OCT-94	0.645	No Data	pCi/g		
BISMUTH-212	TA3/5-83E423 SS	0.5	25-OCT-94	0.432	No Data	pCi/g		
BISMUTH-214	TA3/5-83E423 SS	0.5	25-OCT-94	0.526	No Data	pCi/g		
CESIUM-137	TA3/5-83E423 SS	0.5	25-OCT-94	0.231	No Data	pCi/g		
LEAD-210	TA3/5-83E423 SS	0.5	25-OCT-94	2.15	No Data	pCi/g		
LEAD-212	TA3/5-83E423 SS	0.5	25-OCT-94	0.646	No Data	pCi/g		
LEAD-214	TA3/5-83E423 SS	0.5	25-OCT-94	0.572	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E423 SS	0.5	25-OCT-94	13.3	No Data	pCi/g		
RADIUM-224	TA3/5-83E423 SS	0.5	25-OCT-94	2.45	No Data	pCi/g		
RADIUM-226	TA3/5-83E423 SS	0.5	25-OCT-94	2.71	No Data	pCi/g		
RADIUM-228	TA3/5-83E423 SS	0.5	25-OCT-94	0.715	No Data	pCi/g		
THALLIUM-208	TA3/5-83E423 SS	0.5	25-OCT-94	0.565	No Data	pCi/g		
THORIUM-228	TA3/5-83E423 SS	0.5	25-OCT-94	0.643	No Data	pCi/g		
THORIUM-232	TA3/5-83E423 SS	0.5	25-OCT-94	0.715	No Data	pCi/g		
THORIUM-234	TA3/5-83E423 SS	0.5	25-OCT-94	6.54	No Data	pCi/g		
URANIUM-238	TA3/5-83E423 SS	0.5	25-OCT-94	6.53	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E431 SS	0.6	26-OCT-94	0.492	No Data	pCi/g		
BISMUTH-214	TA3/5-83E431 SS	0.6	26-OCT-94	0.407	No Data	pCi/g		
CESIUM-137	TA3/5-83E431 SS	0.6	26-OCT-94	0.114	No Data	pCi/g		
LEAD-212	TA3/5-83E431 SS	0.6	26-OCT-94	0.463	No Data	pCi/g		
LEAD-214	TA3/5-83E431 SS	0.6	26-OCT-94	0.441	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E431 SS	0.6	26-OCT-94	12.4	No Data	pCi/g		
RADIUM-226	TA3/5-83E431 SS	0.6	26-OCT-94	1.11	No Data	pCi/g		
RADIUM-228	TA3/5-83E431 SS	0.6	26-OCT-94	0.545	No Data	pCi/g		
THALLIUM-208	TA3/5-83E431 SS	0.6	26-OCT-94	0.485	No Data	pCi/g		
THORIUM-228	TA3/5-83E431 SS	0.6	26-OCT-94	0.461	No Data	pCi/g		
THORIUM-232	TA3/5-83E431 SS	0.6	26-OCT-94	0.545	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E441 SS	0.8	26-OCT-94	0.516	No Data	pCi/g		
BISMUTH-212	TA3/5-83E441 SS	0.8	26-OCT-94	0.591	No Data	pCi/g		
BISMUTH-214	TA3/5-83E441 SS	0.8	26-OCT-94	0.459	No Data	pCi/g		
CESIUM-137	TA3/5-83E441 SS	0.8	26-OCT-94	0.193	No Data	pCi/g		
LEAD-212	TA3/5-83E441 SS	0.8	26-OCT-94	0.648	No Data	pCi/g		
LEAD-214	TA3/5-83E441 SS	0.8	26-OCT-94	0.491	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E441 SS	0.8	26-OCT-94	12.9	No Data	pCi/g		
RADIUM-224	TA3/5-83E441 SS	0.8	26-OCT-94	0.85	No Data	pCi/g		
RADIUM-226	TA3/5-83E441 SS	0.8	26-OCT-94	1.55	No Data	pCi/g		
RADIUM-228	TA3/5-83E441 SS	0.8	26-OCT-94	0.571	No Data	pCi/g		
THALLIUM-208	TA3/5-83E441 SS	0.8	26-OCT-94	0.571	No Data	pCi/g		
THORIUM-228	TA3/5-83E441 SS	0.8	26-OCT-94	0.645	No Data	pCi/g		
THORIUM-232	TA3/5-83E441 SS	0.8	26-OCT-94	0.571	No Data	pCi/g		
THORIUM-234	TA3/5-83E441 SS	0.8	26-OCT-94	1.01	No Data	pCi/g		
URANIUM-238	TA3/5-83E441 SS	0.8	26-OCT-94	1.01	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E467 SS	1	10-NOV-94	0.754	No Data	pCi/g		
BISMUTH-212	TA3/5-83E467 SS	1	10-NOV-94	0.415	No Data	pCi/g		
BISMUTH-214	TA3/5-83E467 SS	1	10-NOV-94	0.402	No Data	pCi/g		
LEAD-212	TA3/5-83E467 SS	1	10-NOV-94	0.715	No Data	pCi/g		
LEAD-214	TA3/5-83E467 SS	1	10-NOV-94	0.488	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E467 SS	1	10-NOV-94	12.8	No Data	pCi/g		
RADIUM-224	TA3/5-83E467 SS	1	10-NOV-94	1.53	No Data	pCi/g		
RADIUM-226	TA3/5-83E467 SS	1	10-NOV-94	2.5	No Data	pCi/g		
RADIUM-228	TA3/5-83E467 SS	1	10-NOV-94	0.836	No Data	pCi/g		
THALLIUM-208	TA3/5-83E467 SS	1	10-NOV-94	0.642	No Data	pCi/g		
THORIUM-228	TA3/5-83E467 SS	1	10-NOV-94	0.712	No Data	pCi/g		
THORIUM-232	TA3/5-83E467 SS	1	10-NOV-94	0.836	No Data	pCi/g		
THORIUM-234	TA3/5-83E467 SS	1	10-NOV-94	4.62	No Data	pCi/g		
URANIUM-238	TA3/5-83E467 SS	1	10-NOV-94	4.61	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E481 SS	0.4	10-NOV-94	0.737	No Data	pCi/g		
BISMUTH-212	TA3/5-83E481 SS	0.4	10-NOV-94	0.375	No Data	pCi/g		
BISMUTH-214	TA3/5-83E481 SS	0.4	10-NOV-94	0.52	No Data	pCi/g		
CESIUM-137	TA3/5-83E481 SS	0.4	10-NOV-94	0.136	No Data	pCi/g		
LEAD-210	TA3/5-83E481 SS	0.4	10-NOV-94	3.27	No Data	pCi/g		
LEAD-212	TA3/5-83E481 SS	0.4	10-NOV-94	0.733	No Data	pCi/g		
LEAD-214	TA3/5-83E481 SS	0.4	10-NOV-94	0.517	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E481 SS	0.4	10-NOV-94	1.28	No Data	pCi/g		
RADIUM-224	TA3/5-83E481 SS	0.4	10-NOV-94	1.04	No Data	pCi/g		
RADIUM-226	TA3/5-83E481 SS	0.4	10-NOV-94	1.52	No Data	pCi/g		
RADIUM-228	TA3/5-83E481 SS	0.4	10-NOV-94	0.816	No Data	pCi/g		
THALLIUM-208	TA3/5-83E481 SS	0.4	10-NOV-94	0.636	No Data	pCi/g		
THORIUM-228	TA3/5-83E481 SS	0.4	10-NOV-94	0.73	No Data	pCi/g		
THORIUM-232	TA3/5-83E481 SS	0.4	10-NOV-94	0.816	No Data	pCi/g		
THORIUM-234	TA3/5-83E481 SS	0.4	10-NOV-94	2.14	No Data	pCi/g		
URANIUM-238	TA3/5-83E481 SS	0.4	10-NOV-94	2.13	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E488 SS	0.6	10-NOV-94	0.615	No Data	pCi/g		
BISMUTH-212	TA3/5-83E488 SS	0.6	10-NOV-94	0.442	No Data	pCi/g		
BISMUTH-214	TA3/5-83E488 SS	0.6	10-NOV-94	0.376	No Data	pCi/g		
LEAD-212	TA3/5-83E488 SS	0.6	10-NOV-94	0.615	No Data	pCi/g		
LEAD-214	TA3/5-83E488 SS	0.6	10-NOV-94	0.392	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E488 SS	0.6	10-NOV-94	12.1	No Data	pCi/g		
RADIUM-224	TA3/5-83E488 SS	0.6	10-NOV-94	0.787	No Data	pCi/g		
RADIUM-226	TA3/5-83E488 SS	0.6	10-NOV-94	0.7	No Data	pCi/g		
RADIUM-228	TA3/5-83E488 SS	0.6	10-NOV-94	0.681	No Data	pCi/g		
THALLIUM-208	TA3/5-83E488 SS	0.6	10-NOV-94	0.506	No Data	pCi/g		
THORIUM-228	TA3/5-83E488 SS	0.6	10-NOV-94	0.612	No Data	pCi/g		
THORIUM-232	TA3/5-83E488 SS	0.6	10-NOV-94	0.681	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E498 SS	0.6	10-NOV-94	0.672	No Data	pCi/g		
BISMUTH-212	TA3/5-83E498 SS	0.6	10-NOV-94	0.47	No Data	pCi/g		
BISMUTH-214	TA3/5-83E498 SS	0.6	10-NOV-94	0.475	No Data	pCi/g		
CESIUM-137	TA3/5-83E498 SS	0.6	10-NOV-94	0.06	No Data	pCi/g		
LEAD-212	TA3/5-83E498 SS	0.6	10-NOV-94	0.479	No Data	pCi/g		
LEAD-214	TA3/5-83E498 SS	0.6	10-NOV-94	0.459	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E498 SS	0.6	10-NOV-94	15	No Data	pCi/g		
RADIUM-226	TA3/5-83E498 SS	0.6	10-NOV-94	2.89	No Data	pCi/g		
RADIUM-228	TA3/5-83E498 SS	0.6	10-NOV-94	0.744	No Data	pCi/g		
THALLIUM-208	TA3/5-83E498 SS	0.6	10-NOV-94	0.485	No Data	pCi/g		
THORIUM-228	TA3/5-83E498 SS	0.6	10-NOV-94	0.477	No Data	pCi/g		
THORIUM-232	TA3/5-83E498 SS	0.6	10-NOV-94	0.744	No Data	pCi/g		
THORIUM-234	TA3/5-83E498 SS	0.6	10-NOV-94	5.51	No Data	pCi/g		
URANIUM-238	TA3/5-83E498 SS	0.6	10-NOV-94	5.5	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E521 SD	0.8	10-NOV-94	0.571	No Data	pCi/g		
BISMUTH-212	TA3/5-83E521 SD	0.8	10-NOV-94	0.246	No Data	pCi/g		
BISMUTH-214	TA3/5-83E521 SD	0.8	10-NOV-94	0.383	No Data	pCi/g		
CESIUM-137	TA3/5-83E521 SD	0.8	10-NOV-94	0.125	No Data	pCi/g		
LEAD-212	TA3/5-83E521 SD	0.8	10-NOV-94	0.597	No Data	pCi/g		
LEAD-214	TA3/5-83E521 SD	0.8	10-NOV-94	0.464	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E521 SD	0.8	10-NOV-94	12.6	No Data	pCi/g		
RADIUM-226	TA3/5-83E521 SD	0.8	10-NOV-94	1.42	No Data	pCi/g		
RADIUM-228	TA3/5-83E521 SD	0.8	10-NOV-94	0.632	No Data	pCi/g		
THALLIUM-208	TA3/5-83E521 SD	0.8	10-NOV-94	0.572	No Data	pCi/g		
THORIUM-228	TA3/5-83E521 SD	0.8	10-NOV-94	0.594	No Data	pCi/g		
THORIUM-232	TA3/5-83E521 SD	0.8	10-NOV-94	0.632	No Data	pCi/g		
THORIUM-234	TA3/5-83E521 SD	0.8	10-NOV-94	3.6	No Data	pCi/g		
URANIUM-238	TA3/5-83E521 SD	0.8	10-NOV-94	3.59	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E521 SS	0.8	10-NOV-94	0.588	No Data	pCi/g		
BISMUTH-212	TA3/5-83E521 SS	0.8	10-NOV-94	0.601	No Data	pCi/g		
BISMUTH-214	TA3/5-83E521 SS	0.8	10-NOV-94	0.402	No Data	pCi/g		
CESIUM-137	TA3/5-83E521 SS	0.8	10-NOV-94	0.0789	No Data	pCi/g		
LEAD-212	TA3/5-83E521 SS	0.8	10-NOV-94	0.592	No Data	pCi/g		
LEAD-214	TA3/5-83E521 SS	0.8	10-NOV-94	0.531	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E521 SS	0.8	10-NOV-94	13	No Data	pCi/g		
RADIUM-224	TA3/5-83E521 SS	0.8	10-NOV-94	0.784	No Data	pCi/g		
RADIUM-226	TA3/5-83E521 SS	0.8	10-NOV-94	1.23	No Data	pCi/g		
RADIUM-228	TA3/5-83E521 SS	0.8	10-NOV-94	0.651	No Data	pCi/g		
THALLIUM-208	TA3/5-83E521 SS	0.8	10-NOV-94	0.601	No Data	pCi/g		
THORIUM-228	TA3/5-83E521 SS	0.8	10-NOV-94	0.59	No Data	pCi/g		
THORIUM-232	TA3/5-83E521 SS	0.8	10-NOV-94	0.651	No Data	pCi/g		
THORIUM-234	TA3/5-83E521 SS	0.8	10-NOV-94	1.54	No Data	pCi/g		
URANIUM-238	TA3/5-83E521 SS	0.8	10-NOV-94	1.54	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E531 SS	0.3	10-NOV-94	0.927	No Data	pCi/g		
BISMUTH-212	TA3/5-83E531 SS	0.3	10-NOV-94	0.525	No Data	pCi/g		
BISMUTH-214	TA3/5-83E531 SS	0.3	10-NOV-94	0.517	No Data	pCi/g		
CESIUM-137	TA3/5-83E531 SS	0.3	10-NOV-94	0.343	No Data	pCi/g		
LEAD-212	TA3/5-83E531 SS	0.3	10-NOV-94	0.819	No Data	pCi/g		
LEAD-214	TA3/5-83E531 SS	0.3	10-NOV-94	0.56	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E531 SS	0.3	10-NOV-94	14	No Data	pCi/g		
RADIUM-224	TA3/5-83E531 SS	0.3	10-NOV-94	1.15	No Data	pCi/g		
RADIUM-226	TA3/5-83E531 SS	0.3	10-NOV-94	1.98	No Data	pCi/g		
RADIUM-228	TA3/5-83E531 SS	0.3	10-NOV-94	1.03	No Data	pCi/g		
THALLIUM-208	TA3/5-83E531 SS	0.3	10-NOV-94	0.657	No Data	pCi/g		
THORIUM-228	TA3/5-83E531 SS	0.3	10-NOV-94	0.815	No Data	pCi/g		
THORIUM-232	TA3/5-83E531 SS	0.3	10-NOV-94	1.03	No Data	pCi/g		
THORIUM-234	TA3/5-83E531 SS	0.3	10-NOV-94	2.99	No Data	pCi/g		
URANIUM-238	TA3/5-83E531 SS	0.3	10-NOV-94	2.98	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E537 SS	0.8	28-OCT-94	0.636	No Data	pCi/g		
BISMUTH-212	TA3/5-83E537 SS	0.8	28-OCT-94	0.683	No Data	pCi/g		
BISMUTH-214	TA3/5-83E537 SS	0.8	28-OCT-94	0.681	No Data	pCi/g		
LEAD-212	TA3/5-83E537 SS	0.8	28-OCT-94	0.599	No Data	pCi/g		
LEAD-214	TA3/5-83E537 SS	0.8	28-OCT-94	0.615	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E537 SS	0.8	28-OCT-94	13.9	No Data	pCi/g		
RADIUM-226	TA3/5-83E537 SS	0.8	28-OCT-94	1.31	No Data	pCi/g		
RADIUM-228	TA3/5-83E537 SS	0.8	28-OCT-94	0.705	No Data	pCi/g		
THALLIUM-208	TA3/5-83E537 SS	0.8	28-OCT-94	0.83	No Data	pCi/g		
THORIUM-228	TA3/5-83E537 SS	0.8	28-OCT-94	0.596	No Data	pCi/g		
THORIUM-232	TA3/5-83E537 SS	0.8	28-OCT-94	0.705	No Data	pCi/g		
THORIUM-234	TA3/5-83E537 SS	0.8	28-OCT-94	3.62	No Data	pCi/g		
URANIUM-238	TA3/5-83E537 SS	0.8	28-OCT-94	3.61	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E542 SS	0.8	27-OCT-94	0.782	No Data	pCi/g		
BISMUTH-212	TA3/5-83E542 SS	0.8	27-OCT-94	0.569	No Data	pCi/g		
BISMUTH-214	TA3/5-83E542 SS	0.8	27-OCT-94	0.406	No Data	pCi/g		
CESIUM-137	TA3/5-83E542 SS	0.8	27-OCT-94	0.0945	No Data	pCi/g		
LEAD-212	TA3/5-83E542 SS	0.8	27-OCT-94	0.646	No Data	pCi/g		
LEAD-214	TA3/5-83E542 SS	0.8	27-OCT-94	0.495	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E542 SS	0.8	27-OCT-94	11.8	No Data	pCi/g		
RADIUM-226	TA3/5-83E542 SS	0.8	27-OCT-94	2.08	No Data	pCi/g		
RADIUM-228	TA3/5-83E542 SS	0.8	27-OCT-94	0.866	No Data	pCi/g		
THALLIUM-208	TA3/5-83E542 SS	0.8	27-OCT-94	0.702	No Data	pCi/g		
THORIUM-228	TA3/5-83E542 SS	0.8	27-OCT-94	0.643	No Data	pCi/g		
THORIUM-232	TA3/5-83E542 SS	0.8	27-OCT-94	0.866	No Data	pCi/g		
THORIUM-234	TA3/5-83E542 SS	0.8	27-OCT-94	2.58	No Data	pCi/g		
URANIUM-238	TA3/5-83E542 SS	0.8	27-OCT-94	2.58	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E550 SS	1	27-OCT-94	0.763	No Data	pCi/g		
BISMUTH-212	TA3/5-83E550 SS	1	27-OCT-94	0.575	No Data	pCi/g		
BISMUTH-214	TA3/5-83E550 SS	1	27-OCT-94	0.486	No Data	pCi/g		
CESIUM-137	TA3/5-83E550 SS	1	27-OCT-94	0.0617	No Data	pCi/g		
LEAD-212	TA3/5-83E550 SS	1	27-OCT-94	0.764	No Data	pCi/g		
LEAD-214	TA3/5-83E550 SS	1	27-OCT-94	0.543	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E550 SS	1	27-OCT-94	13	No Data	pCi/g		
RADIUM-224	TA3/5-83E550 SS	1	27-OCT-94	1.5	No Data	pCi/g		
RADIUM-226	TA3/5-83E550 SS	1	27-OCT-94	1.1	No Data	pCi/g		
RADIUM-228	TA3/5-83E550 SS	1	27-OCT-94	0.845	No Data	pCi/g		
THALLIUM-208	TA3/5-83E550 SS	1	27-OCT-94	0.719	No Data	pCi/g		
THORIUM-228	TA3/5-83E550 SS	1	27-OCT-94	0.761	No Data	pCi/g		
THORIUM-232	TA3/5-83E550 SS	1	27-OCT-94	0.845	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E560 SS	1	27-OCT-94	0.707	No Data	pCi/g		
BISMUTH-212	TA3/5-83E560 SS	1	27-OCT-94	0.534	No Data	pCi/g		
BISMUTH-214	TA3/5-83E560 SS	1	27-OCT-94	0.42	No Data	pCi/g		
CESIUM-137	TA3/5-83E560 SS	1	27-OCT-94	0.0427	No Data	pCi/g		
LEAD-212	TA3/5-83E560 SS	1	27-OCT-94	0.685	No Data	pCi/g		
LEAD-214	TA3/5-83E560 SS	1	27-OCT-94	0.482	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E560 SS	1	27-OCT-94	13.2	No Data	pCi/g		
RADIUM-224	TA3/5-83E560 SS	1	27-OCT-94	0.832	No Data	pCi/g		
RADIUM-226	TA3/5-83E560 SS	1	27-OCT-94	1.34	No Data	pCi/g		
RADIUM-228	TA3/5-83E560 SS	1	27-OCT-94	0.784	No Data	pCi/g		
THALLIUM-208	TA3/5-83E560 SS	1	27-OCT-94	0.676	No Data	pCi/g		
THORIUM-228	TA3/5-83E560 SS	1	27-OCT-94	0.682	No Data	pCi/g		
THORIUM-232	TA3/5-83E560 SS	1	27-OCT-94	0.784	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E564 SS	0.8	26-OCT-94	0.604	No Data	pCi/g		
BISMUTH-212	TA3/5-83E564 SS	0.8	26-OCT-94	0.331	No Data	pCi/g		
BISMUTH-214	TA3/5-83E564 SS	0.8	26-OCT-94	0.514	No Data	pCi/g		
CESIUM-137	TA3/5-83E564 SS	0.8	26-OCT-94	0.299	No Data	pCi/g		
LEAD-212	TA3/5-83E564 SS	0.8	26-OCT-94	0.521	No Data	pCi/g		
LEAD-214	TA3/5-83E564 SS	0.8	26-OCT-94	0.43	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E564 SS	0.8	26-OCT-94	13.6	No Data	pCi/g		
RADIUM-224	TA3/5-83E564 SS	0.8	26-OCT-94	0.668	No Data	pCi/g		
RADIUM-226	TA3/5-83E564 SS	0.8	26-OCT-94	1.19	No Data	pCi/g		
RADIUM-228	TA3/5-83E564 SS	0.8	26-OCT-94	0.669	No Data	pCi/g		
THALLIUM-208	TA3/5-83E564 SS	0.8	26-OCT-94	0.523	No Data	pCi/g		
THORIUM-228	TA3/5-83E564 SS	0.8	26-OCT-94	0.518	No Data	pCi/g		
THORIUM-232	TA3/5-83E564 SS	0.8	26-OCT-94	0.669	No Data	pCi/g		
THORIUM-234	TA3/5-83E564 SS	0.8	26-OCT-94	1.44	No Data	pCi/g		
URANIUM-238	TA3/5-83E564 SS	0.8	26-OCT-94	1.43	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E575 SS	0.8	26-OCT-94	0.642	No Data	pCi/g		
BISMUTH-212	TA3/5-83E575 SS	0.8	26-OCT-94	0.371	No Data	pCi/g		
BISMUTH-214	TA3/5-83E575 SS	0.8	26-OCT-94	0.425	No Data	pCi/g		
CESIUM-137	TA3/5-83E575 SS	0.8	26-OCT-94	0.0318	No Data	pCi/g		
LEAD-212	TA3/5-83E575 SS	0.8	26-OCT-94	0.589	No Data	pCi/g		
LEAD-214	TA3/5-83E575 SS	0.8	26-OCT-94	0.406	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E575 SS	0.8	26-OCT-94	11.9	No Data	pCi/g		
RADIUM-224	TA3/5-83E575 SS	0.8	26-OCT-94	1.19	No Data	pCi/g		
RADIUM-226	TA3/5-83E575 SS	0.8	26-OCT-94	3.18	No Data	pCi/g		
RADIUM-228	TA3/5-83E575 SS	0.8	26-OCT-94	0.712	No Data	pCi/g		
THALLIUM-208	TA3/5-83E575 SS	0.8	26-OCT-94	0.611	No Data	pCi/g		
THORIUM-228	TA3/5-83E575 SS	0.8	26-OCT-94	0.587	No Data	pCi/g		
THORIUM-232	TA3/5-83E575 SS	0.8	26-OCT-94	0.712	No Data	pCi/g		
THORIUM-234	TA3/5-83E575 SS	0.8	26-OCT-94	10.1	No Data	pCi/g		
URANIUM-238	TA3/5-83E575 SS	0.8	26-OCT-94	10.1	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E585 SS	0.6	26-OCT-94	0.675	No Data	pCi/g		
BISMUTH-207	TA3/5-83E585 SS	0.6	26-OCT-94	0.0215	No Data	pCi/g		
BISMUTH-212	TA3/5-83E585 SS	0.6	26-OCT-94	0.357	No Data	pCi/g		
BISMUTH-214	TA3/5-83E585 SS	0.6	26-OCT-94	0.474	No Data	pCi/g		
CESIUM-137	TA3/5-83E585 SS	0.6	26-OCT-94	0.0408	No Data	pCi/g		
LEAD-212	TA3/5-83E585 SS	0.6	26-OCT-94	0.625	No Data	pCi/g		
LEAD-214	TA3/5-83E585 SS	0.6	26-OCT-94	0.48	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E585 SS	0.6	26-OCT-94	12.4	No Data	pCi/g		
RADIUM-224	TA3/5-83E585 SS	0.6	26-OCT-94	1.11	No Data	pCi/g		
RADIUM-226	TA3/5-83E585 SS	0.6	26-OCT-94	2.07	No Data	pCi/g		
RADIUM-228	TA3/5-83E585 SS	0.6	26-OCT-94	0.748	No Data	pCi/g		
THALLIUM-208	TA3/5-83E585 SS	0.6	26-OCT-94	0.49	No Data	pCi/g		
THORIUM-228	TA3/5-83E585 SS	0.6	26-OCT-94	0.622	No Data	pCi/g		
THORIUM-232	TA3/5-83E585 SS	0.6	26-OCT-94	0.748	No Data	pCi/g		
THORIUM-234	TA3/5-83E585 SS	0.6	26-OCT-94	5.49	No Data	pCi/g		
URANIUM-238	TA3/5-83E585 SS	0.6	26-OCT-94	5.48	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E596 SS	0.5	27-OCT-94	0.693	No Data	pCi/g		
BISMUTH-212	TA3/5-83E596 SS	0.5	27-OCT-94	0.771	No Data	pCi/g		
BISMUTH-214	TA3/5-83E596 SS	0.5	27-OCT-94	0.516	No Data	pCi/g		
CESIUM-137	TA3/5-83E596 SS	0.5	27-OCT-94	0.181	No Data	pCi/g		
LEAD-212	TA3/5-83E596 SS	0.5	27-OCT-94	0.661	No Data	pCi/g		
LEAD-214	TA3/5-83E596 SS	0.5	27-OCT-94	0.518	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E596 SS	0.5	27-OCT-94	12.7	No Data	pCi/g		
RADIUM-224	TA3/5-83E596 SS	0.5	27-OCT-94	0.677	No Data	pCi/g		
RADIUM-226	TA3/5-83E596 SS	0.5	27-OCT-94	4.52	No Data	pCi/g		
RADIUM-228	TA3/5-83E596 SS	0.5	27-OCT-94	0.768	No Data	pCi/g		
THALLIUM-208	TA3/5-83E596 SS	0.5	27-OCT-94	0.664	No Data	pCi/g		
THORIUM-228	TA3/5-83E596 SS	0.5	27-OCT-94	0.658	No Data	pCi/g		
THORIUM-232	TA3/5-83E596 SS	0.5	27-OCT-94	0.768	No Data	pCi/g		
THORIUM-234	TA3/5-83E596 SS	0.5	27-OCT-94	11.5	No Data	pCi/g		
URANIUM-238	TA3/5-83E596 SS	0.5	27-OCT-94	11.4	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E608 SS	0.4	26-OCT-94	0.563	No Data	pCi/g		
BISMUTH-212	TA3/5-83E608 SS	0.4	26-OCT-94	0.505	No Data	pCi/g		
BISMUTH-214	TA3/5-83E608 SS	0.4	26-OCT-94	0.386	No Data	pCi/g		
CESIUM-137	TA3/5-83E608 SS	0.4	26-OCT-94	0.413	No Data	pCi/g		
LEAD-212	TA3/5-83E608 SS	0.4	26-OCT-94	0.516	No Data	pCi/g		
LEAD-214	TA3/5-83E608 SS	0.4	26-OCT-94	0.44	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E608 SS	0.4	26-OCT-94	13	No Data	pCi/g		
RADIUM-224	TA3/5-83E608 SS	0.4	26-OCT-94	0.708	No Data	pCi/g		
RADIUM-226	TA3/5-83E608 SS	0.4	26-OCT-94	1.49	No Data	pCi/g		
RADIUM-228	TA3/5-83E608 SS	0.4	26-OCT-94	0.624	No Data	pCi/g		
THALLIUM-208	TA3/5-83E608 SS	0.4	26-OCT-94	0.432	No Data	pCi/g		
THORIUM-228	TA3/5-83E608 SS	0.4	26-OCT-94	0.514	No Data	pCi/g		
THORIUM-232	TA3/5-83E608 SS	0.4	26-OCT-94	0.624	No Data	pCi/g		
THORIUM-234	TA3/5-83E608 SS	0.4	26-OCT-94	3.14	No Data	pCi/g		
URANIUM-238	TA3/5-83E608 SS	0.4	26-OCT-94	3.13	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E626 SS	0.4	27-OCT-94	0.488	No Data	pCi/g		
BISMUTH-212	TA3/5-83E626 SS	0.4	27-OCT-94	0.263	No Data	pCi/g		
BISMUTH-214	TA3/5-83E626 SS	0.4	27-OCT-94	0.561	No Data	pCi/g		
CESIUM-137	TA3/5-83E626 SS	0.4	27-OCT-94	0.098	No Data	pCi/g		
LEAD-212	TA3/5-83E626 SS	0.4	27-OCT-94	0.496	No Data	pCi/g		
LEAD-214	TA3/5-83E626 SS	0.4	27-OCT-94	0.585	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E626 SS	0.4	27-OCT-94	13.5	No Data	pCi/g		
RADIUM-226	TA3/5-83E626 SS	0.4	27-OCT-94	1.84	No Data	pCi/g		
RADIUM-228	TA3/5-83E626 SS	0.4	27-OCT-94	0.541	No Data	pCi/g		
THALLIUM-208	TA3/5-83E626 SS	0.4	27-OCT-94	0.617	No Data	pCi/g		
THORIUM-228	TA3/5-83E626 SS	0.4	27-OCT-94	0.493	No Data	pCi/g		
THORIUM-232	TA3/5-83E626 SS	0.4	27-OCT-94	0.541	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E631 SS	0.5	26-OCT-94	0.595	No Data	pCi/g		
BISMUTH-212	TA3/5-83E631 SS	0.5	26-OCT-94	0.43	No Data	pCi/g		
BISMUTH-214	TA3/5-83E631 SS	0.5	26-OCT-94	0.456	No Data	pCi/g		
CESIUM-137	TA3/5-83E631 SS	0.5	26-OCT-94	0.383	No Data	pCi/g		
LEAD-212	TA3/5-83E631 SS	0.5	26-OCT-94	0.546	No Data	pCi/g		
LEAD-214	TA3/5-83E631 SS	0.5	26-OCT-94	0.432	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E631 SS	0.5	26-OCT-94	13.6	No Data	pCi/g		
RADIUM-224	TA3/5-83E631 SS	0.5	26-OCT-94	0.96	No Data	pCi/g		
RADIUM-226	TA3/5-83E631 SS	0.5	26-OCT-94	1.63	No Data	pCi/g		
RADIUM-228	TA3/5-83E631 SS	0.5	26-OCT-94	0.66	No Data	pCi/g		
THALLIUM-208	TA3/5-83E631 SS	0.5	26-OCT-94	0.475	No Data	pCi/g		
THORIUM-228	TA3/5-83E631 SS	0.5	26-OCT-94	0.544	No Data	pCi/g		
THORIUM-232	TA3/5-83E631 SS	0.5	26-OCT-94	0.66	No Data	pCi/g		
THORIUM-234	TA3/5-83E631 SS	0.5	26-OCT-94	2.79	No Data	pCi/g		
URANIUM-238	TA3/5-83E631 SS	0.5	26-OCT-94	2.78	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E648 SS	0.5	30-OCT-94	0.543	No Data	pCi/g		
BISMUTH-212	TA3/5-83E648 SS	0.5	30-OCT-94	0.438	No Data	pCi/g		
BISMUTH-214	TA3/5-83E648 SS	0.5	30-OCT-94	0.448	No Data	pCi/g		
CESIUM-137	TA3/5-83E648 SS	0.5	30-OCT-94	0.0222	No Data	pCi/g		
LEAD-212	TA3/5-83E648 SS	0.5	30-OCT-94	0.568	No Data	pCi/g		
LEAD-214	TA3/5-83E648 SS	0.5	30-OCT-94	0.524	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E648 SS	0.5	30-OCT-94	13.7	No Data	pCi/g		
RADIUM-228	TA3/5-83E648 SS	0.5	30-OCT-94	0.602	No Data	pCi/g		
THALLIUM-208	TA3/5-83E648 SS	0.5	30-OCT-94	0.488	No Data	pCi/g		
THORIUM-228	TA3/5-83E648 SS	0.5	30-OCT-94	0.566	No Data	pCi/g		
THORIUM-232	TA3/5-83E648 SS	0.5	30-OCT-94	0.602	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E652 SS	0.5	30-OCT-94	0.562	No Data	pCi/g		
BISMUTH-212	TA3/5-83E652 SS	0.5	30-OCT-94	0.545	No Data	pCi/g		
BISMUTH-214	TA3/5-83E652 SS	0.5	30-OCT-94	0.434	No Data	pCi/g		
CESIUM-137	TA3/5-83E652 SS	0.5	30-OCT-94	0.0476	No Data	pCi/g		
LEAD-212	TA3/5-83E652 SS	0.5	30-OCT-94	0.602	No Data	pCi/g		
LEAD-214	TA3/5-83E652 SS	0.5	30-OCT-94	0.465	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E652 SS	0.5	30-OCT-94	13.5	No Data	pCi/g		
RADIUM-224	TA3/5-83E652 SS	0.5	30-OCT-94	1.27	No Data	pCi/g		
RADIUM-226	TA3/5-83E652 SS	0.5	30-OCT-94	1.33	No Data	pCi/g		
RADIUM-228	TA3/5-83E652 SS	0.5	30-OCT-94	0.623	No Data	pCi/g		
THALLIUM-208	TA3/5-83E652 SS	0.5	30-OCT-94	0.527	No Data	pCi/g		
THORIUM-228	TA3/5-83E652 SS	0.5	30-OCT-94	0.599	No Data	pCi/g		
THORIUM-232	TA3/5-83E652 SS	0.5	30-OCT-94	0.623	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E667 SS	0	01-NOV-94	0.631	No Data	pCi/g		
BISMUTH-212	TA3/5-83E667 SS	0	01-NOV-94	0.339	No Data	pCi/g		
BISMUTH-214	TA3/5-83E667 SS	0	01-NOV-94	0.42	No Data	pCi/g		
CESIUM-137	TA3/5-83E667 SS	0	01-NOV-94	0.12	No Data	pCi/g		
LEAD-210	TA3/5-83E667 SS	0	01-NOV-94	1.28	No Data	pCi/g		
LEAD-212	TA3/5-83E667 SS	0	01-NOV-94	0.58	No Data	pCi/g		
LEAD-214	TA3/5-83E667 SS	0	01-NOV-94	0.513	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E667 SS	0	01-NOV-94	12.8	No Data	pCi/g		
RADIUM-224	TA3/5-83E667 SS	0	01-NOV-94	0.76	No Data	pCi/g		
RADIUM-226	TA3/5-83E667 SS	0	01-NOV-94	1.92	No Data	pCi/g		
RADIUM-228	TA3/5-83E667 SS	0	01-NOV-94	0.699	No Data	pCi/g		
THALLIUM-208	TA3/5-83E667 SS	0	01-NOV-94	0.526	No Data	pCi/g		
THORIUM-228	TA3/5-83E667 SS	0	01-NOV-94	0.577	No Data	pCi/g		
THORIUM-232	TA3/5-83E667 SS	0	01-NOV-94	0.699	No Data	pCi/g		
THORIUM-234	TA3/5-83E667 SS	0	01-NOV-94	2.31	No Data	pCi/g		
URANIUM-238	TA3/5-83E667 SS	0	01-NOV-94	2.3	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E675 SS	0.4	28-OCT-94	0.494	No Data	pCi/g		
BISMUTH-212	TA3/5-83E675 SS	0.4	28-OCT-94	0.391	No Data	pCi/g		
BISMUTH-214	TA3/5-83E675 SS	0.4	28-OCT-94	0.412	No Data	pCi/g		
CESIUM-137	TA3/5-83E675 SS	0.4	28-OCT-94	0.124	No Data	pCi/g		
LEAD-212	TA3/5-83E675 SS	0.4	28-OCT-94	0.554	No Data	pCi/g		
LEAD-214	TA3/5-83E675 SS	0.4	28-OCT-94	0.485	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E675 SS	0.4	28-OCT-94	12.8	No Data	pCi/g		
RADIUM-224	TA3/5-83E675 SS	0.4	28-OCT-94	2.04	No Data	pCi/g		
RADIUM-226	TA3/5-83E675 SS	0.4	28-OCT-94	1.41	No Data	pCi/g		
RADIUM-228	TA3/5-83E675 SS	0.4	28-OCT-94	0.548	No Data	pCi/g		
THALLIUM-208	TA3/5-83E675 SS	0.4	28-OCT-94	0.42	No Data	pCi/g		
THORIUM-228	TA3/5-83E675 SS	0.4	28-OCT-94	0.552	No Data	pCi/g		
THORIUM-232	TA3/5-83E675 SS	0.4	28-OCT-94	0.548	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E676 SS	0.5	30-OCT-94	0.633	No Data	pCi/g		
BERYLLIUM-7	TA3/5-83E676 SS	0.5	30-OCT-94	0.316	No Data	pCi/g		
BISMUTH-212	TA3/5-83E676 SS	0.5	30-OCT-94	0.498	No Data	pCi/g		
BISMUTH-214	TA3/5-83E676 SS	0.5	30-OCT-94	0.393	No Data	pCi/g		
CESIUM-137	TA3/5-83E676 SS	0.5	30-OCT-94	0.157	No Data	pCi/g		
LEAD-212	TA3/5-83E676 SS	0.5	30-OCT-94	0.533	No Data	pCi/g		
LEAD-214	TA3/5-83E676 SS	0.5	30-OCT-94	0.401	No Data	pCi/g		



ACTINIUM-228	TA3/5-83E1022 SS	0.3	09-NOV-94	0.63	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1022 SS	0.3	09-NOV-94	0.437	No Data	pCi/g		
CESIUM-137	TA3/5-83E1022 SS	0.3	09-NOV-94	0.157	No Data	pCi/g		
LEAD-212	TA3/5-83E1022 SS	0.3	09-NOV-94	0.66	No Data	pCi/g		
LEAD-214	TA3/5-83E1022 SS	0.3	09-NOV-94	0.62	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1022 SS	0.3	09-NOV-94	15.5	No Data	pCi/g		
RADIUM-224	TA3/5-83E1022 SS	0.3	09-NOV-94	0.916	No Data	pCi/g		
RADIUM-226	TA3/5-83E1022 SS	0.3	09-NOV-94	1.51	No Data	pCi/g		
RADIUM-228	TA3/5-83E1022 SS	0.3	09-NOV-94	0.698	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1022 SS	0.3	09-NOV-94	0.608	No Data	pCi/g		
THORIUM-228	TA3/5-83E1022 SS	0.3	09-NOV-94	0.657	No Data	pCi/g		
THORIUM-232	TA3/5-83E1022 SS	0.3	09-NOV-94	0.698	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1033 SS	0.7	09-NOV-94	0.689	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1033 SS	0.7	09-NOV-94	0.653	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1033 SS	0.7	09-NOV-94	0.493	No Data	pCi/g		
LEAD-212	TA3/5-83E1033 SS	0.7	09-NOV-94	0.683	No Data	pCi/g		
LEAD-214	TA3/5-83E1033 SS	0.7	09-NOV-94	0.554	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1033 SS	0.7	09-NOV-94	16.2	No Data	pCi/g		
RADIUM-224	TA3/5-83E1033 SS	0.7	09-NOV-94	1.65	No Data	pCi/g		
RADIUM-228	TA3/5-83E1033 SS	0.7	09-NOV-94	0.763	No Data	pCi/g		
STRONTIUM-85	TA3/5-83E1033 SS	0.7	09-NOV-94	0.0319	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1033 SS	0.7	09-NOV-94	0.583	No Data	pCi/g		
THORIUM-228	TA3/5-83E1033 SS	0.7	09-NOV-94	0.68	No Data	pCi/g		
THORIUM-232	TA3/5-83E1033 SS	0.7	09-NOV-94	0.763	No Data	pCi/g		
THORIUM-234	TA3/5-83E1033 SS	0.7	09-NOV-94	24.8	No Data	pCi/g		
URANIUM-235	TA3/5-83E1033 SS	0.7	09-NOV-94	0.494	No Data	pCi/g		
URANIUM-238	TA3/5-83E1033 SS	0.7	09-NOV-94	24.7	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1040 SS	0.8	09-NOV-94	0.742	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1040 SS	0.8	09-NOV-94	0.517	No Data	pCi/g		
CESIUM-137	TA3/5-83E1040 SS	0.8	09-NOV-94	0.0993	No Data	pCi/g		
LEAD-212	TA3/5-83E1040 SS	0.8	09-NOV-94	0.767	No Data	pCi/g		
LEAD-214	TA3/5-83E1040 SS	0.8	09-NOV-94	0.519	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1040 SS	0.8	09-NOV-94	14.7	No Data	pCi/g		
RADIUM-224	TA3/5-83E1040 SS	0.8	09-NOV-94	1.24	No Data	pCi/g		
RADIUM-226	TA3/5-83E1040 SS	0.8	09-NOV-94	2.08	No Data	pCi/g		
RADIUM-228	TA3/5-83E1040 SS	0.8	09-NOV-94	0.822	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1040 SS	0.8	09-NOV-94	0.716	No Data	pCi/g		
THORIUM-228	TA3/5-83E1040 SS	0.8	09-NOV-94	0.763	No Data	pCi/g		
THORIUM-232	TA3/5-83E1040 SS	0.8	09-NOV-94	0.822	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1044 SS	0.5	08-NOV-94	0.732	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1044 SS	0.5	08-NOV-94	0.51	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1044 SS	0.5	08-NOV-94	0.458	No Data	pCi/g		
CESIUM-137	TA3/5-83E1044 SS	0.5	08-NOV-94	0.31	No Data	pCi/g		
LEAD-212	TA3/5-83E1044 SS	0.5	08-NOV-94	0.682	No Data	pCi/g		
LEAD-214	TA3/5-83E1044 SS	0.5	08-NOV-94	0.551	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1044 SS	0.5	08-NOV-94	14	No Data	pCi/g		
RADIUM-224	TA3/5-83E1044 SS	0.5	08-NOV-94	1.25	No Data	pCi/g		
RADIUM-226	TA3/5-83E1044 SS	0.5	08-NOV-94	1.41	No Data	pCi/g		
RADIUM-228	TA3/5-83E1044 SS	0.5	08-NOV-94	0.811	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1044 SS	0.5	08-NOV-94	0.607	No Data	pCi/g		
THORIUM-228	TA3/5-83E1044 SS	0.5	08-NOV-94	0.659	No Data	pCi/g		
THORIUM-232	TA3/5-83E1044 SS	0.5	08-NOV-94	0.811	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1063 SS	0.5	09-NOV-94	0.732	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1063 SS	0.5	09-NOV-94	0.58	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1063 SS	0.5	09-NOV-94	0.442	No Data	pCi/g		
CESIUM-137	TA3/5-83E1063 SS	0.5	09-NOV-94	0.0345	No Data	pCi/g		
LEAD-212	TA3/5-83E1063 SS	0.5	09-NOV-94	0.723	No Data	pCi/g		
LEAD-214	TA3/5-83E1063 SS	0.5	09-NOV-94	0.483	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1063 SS	0.5	09-NOV-94	14.6	No Data	pCi/g		
RADIUM-224	TA3/5-83E1063 SS	0.5	09-NOV-94	1.44	No Data	pCi/g		
RADIUM-226	TA3/5-83E1063 SS	0.5	09-NOV-94	1.56	No Data	pCi/g		
RADIUM-228	TA3/5-83E1063 SS	0.5	09-NOV-94	0.811	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1063 SS	0.5	09-NOV-94	0.581	No Data	pCi/g		
THORIUM-228	TA3/5-83E1063 SS	0.5	09-NOV-94	0.72	No Data	pCi/g		
THORIUM-232	TA3/5-83E1063 SS	0.5	09-NOV-94	0.811	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1082 SS	0.9	09-NOV-94	0.665	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1082 SS	0.9	09-NOV-94	0.556	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1082 SS	0.9	09-NOV-94	0.347	No Data	pCi/g		
CESIUM-137	TA3/5-83E1082 SS	0.9	09-NOV-94	0.115	No Data	pCi/g		
LEAD-212	TA3/5-83E1082 SS	0.9	09-NOV-94	0.681	No Data	pCi/g		
LEAD-214	TA3/5-83E1082 SS	0.9	09-NOV-94	0.518	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1082 SS	0.9	09-NOV-94	15.1	No Data	pCi/g		
RADIUM-226	TA3/5-83E1082 SS	0.9	09-NOV-94	1.74	No Data	pCi/g		
RADIUM-228	TA3/5-83E1082 SS	0.9	09-NOV-94	0.737	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1082 SS	0.9	09-NOV-94	0.699	No Data	pCi/g		
THORIUM-228	TA3/5-83E1082 SS	0.9	09-NOV-94	0.677	No Data	pCi/g		
THORIUM-232	TA3/5-83E1082 SS	0.9	09-NOV-94	0.737	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1094 SS	0.3	13-NOV-94	0.646	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1094 SS	0.3	13-NOV-94	0.427	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1094 SS	0.3	13-NOV-94	0.418	No Data	pCi/g		
CESIUM-137	TA3/5-83E1094 SS	0.3	13-NOV-94	0.085	No Data	pCi/g		
LEAD-212	TA3/5-83E1094 SS	0.3	13-NOV-94	0.585	No Data	pCi/g		
LEAD-214	TA3/5-83E1094 SS	0.3	13-NOV-94	0.48	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1094 SS	0.3	13-NOV-94	13	No Data	pCi/g		
RADIUM-224	TA3/5-83E1094 SS	0.3	13-NOV-94	0.763	No Data	pCi/g		
RADIUM-226	TA3/5-83E1094 SS	0.3	13-NOV-94	1.6	No Data	pCi/g		
RADIUM-228	TA3/5-83E1094 SS	0.3	13-NOV-94	0.715	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1094 SS	0.3	13-NOV-94	0.437	No Data	pCi/g		
THORIUM-228	TA3/5-83E1094 SS	0.3	13-NOV-94	0.583	No Data	pCi/g		
THORIUM-232	TA3/5-83E1094 SS	0.3	13-NOV-94	0.715	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1099 SS	0.5	09-NOV-94	0.881	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1099 SS	0.5	09-NOV-94	0.772	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1099 SS	0.5	09-NOV-94	0.516	No Data	pCi/g		
CESIUM-137	TA3/5-83E1099 SS	0.5	09-NOV-94	0.172	No Data	pCi/g		
LEAD-212	TA3/5-83E1099 SS	0.5	09-NOV-94	0.728	No Data	pCi/g		
LEAD-214	TA3/5-83E1099 SS	0.5	09-NOV-94	0.597	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1099 SS	0.5	09-NOV-94	16.9	No Data	pCi/g		
RADIUM-224	TA3/5-83E1099 SS	0.5	09-NOV-94	1.15	No Data	pCi/g		
RADIUM-226	TA3/5-83E1099 SS	0.5	09-NOV-94	5.47	No Data	pCi/g		
RADIUM-228	TA3/5-83E1099 SS	0.5	09-NOV-94	0.976	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1099 SS	0.5	09-NOV-94	0.797	No Data	pCi/g		
THORIUM-228	TA3/5-83E1099 SS	0.5	09-NOV-94	0.724	No Data	pCi/g		
THORIUM-232	TA3/5-83E1099 SS	0.5	09-NOV-94	0.976	No Data	pCi/g		
THORIUM-234	TA3/5-83E1099 SS	0.5	09-NOV-94	16.9	No Data	pCi/g		
URANIUM-238	TA3/5-83E1099 SS	0.5	09-NOV-94	16.9	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1112 SS	0.3	09-NOV-94	0.63	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1112 SS	0.3	09-NOV-94	0.561	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1112 SS	0.3	09-NOV-94	0.48	No Data	pCi/g		
CESIUM-137	TA3/5-83E1112 SS	0.3	09-NOV-94	0.0942	No Data	pCi/g		
LEAD-212	TA3/5-83E1112 SS	0.3	09-NOV-94	0.667	No Data	pCi/g		
LEAD-214	TA3/5-83E1112 SS	0.3	09-NOV-94	0.581	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1112 SS	0.3	09-NOV-94	16.1	No Data	pCi/g		
RADIUM-226	TA3/5-83E1112 SS	0.3	09-NOV-94	1.56	No Data	pCi/g		
RADIUM-228	TA3/5-83E1112 SS	0.3	09-NOV-94	0.698	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1112 SS	0.3	09-NOV-94	0.582	No Data	pCi/g		
THORIUM-228	TA3/5-83E1112 SS	0.3	09-NOV-94	0.664	No Data	pCi/g		
THORIUM-232	TA3/5-83E1112 SS	0.3	09-NOV-94	0.698	No Data	pCi/g		
THORIUM-234	TA3/5-83E1112 SS	0.3	09-NOV-94	1	No Data	pCi/g		
URANIUM-238	TA3/5-83E1112 SS	0.3	09-NOV-94	0.998	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1119 SS	0.5	09-NOV-94	0.494	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1119 SS	0.5	09-NOV-94	0.405	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1119 SS	0.5	09-NOV-94	0.506	No Data	pCi/g		
CESIUM-137	TA3/5-83E1119 SS	0.5	09-NOV-94	0.0649	No Data	pCi/g		
LEAD-212	TA3/5-83E1119 SS	0.5	09-NOV-94	0.688	No Data	pCi/g		
LEAD-214	TA3/5-83E1119 SS	0.5	09-NOV-94	0.531	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1119 SS	0.5	09-NOV-94	14.6	No Data	pCi/g		
RADIUM-224	TA3/5-83E1119 SS	0.5	09-NOV-94	1.07	No Data	pCi/g		
RADIUM-226	TA3/5-83E1119 SS	0.5	09-NOV-94	1.04	No Data	pCi/g		
RADIUM-228	TA3/5-83E1119 SS	0.5	09-NOV-94	0.547	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1119 SS	0.5	09-NOV-94	0.652	No Data	pCi/g		
THORIUM-228	TA3/5-83E1119 SS	0.5	09-NOV-94	0.685	No Data	pCi/g		
THORIUM-232	TA3/5-83E1119 SS	0.5	09-NOV-94	0.547	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1123 SS	0.5	10-NOV-94	0.674	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1123 SS	0.5	10-NOV-94	0.636	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1123 SS	0.5	10-NOV-94	0.409	No Data	pCi/g		
LEAD-212	TA3/5-83E1123 SS	0.5	10-NOV-94	0.632	No Data	pCi/g		
LEAD-214	TA3/5-83E1123 SS	0.5	10-NOV-94	0.48	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1123 SS	0.5	10-NOV-94	14.5	No Data	pCi/g		
RADIUM-226	TA3/5-83E1123 SS	0.5	10-NOV-94	2.89	No Data	pCi/g		
RADIUM-228	TA3/5-83E1123 SS	0.5	10-NOV-94	0.747	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1123 SS	0.5	10-NOV-94	0.559	No Data	pCi/g		
THORIUM-228	TA3/5-83E1123 SS	0.5	10-NOV-94	0.63	No Data	pCi/g		
THORIUM-232	TA3/5-83E1123 SS	0.5	10-NOV-94	0.747	No Data	pCi/g		
THORIUM-234	TA3/5-83E1123 SS	0.5	10-NOV-94	6.95	No Data	pCi/g		
URANIUM-238	TA3/5-83E1123 SS	0.5	10-NOV-94	6.94	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1124 SS	0.5	12-NOV-94	0.718	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1124 SS	0.5	12-NOV-94	0.383	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1124 SS	0.5	12-NOV-94	0.436	No Data	pCi/g		
CESIUM-137	TA3/5-83E1124 SS	0.5	12-NOV-94	0.0339	No Data	pCi/g		
LEAD-212	TA3/5-83E1124 SS	0.5	12-NOV-94	0.691	No Data	pCi/g		
LEAD-214	TA3/5-83E1124 SS	0.5	12-NOV-94	0.518	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1124 SS	0.5	12-NOV-94	14.3	No Data	pCi/g		
RADIUM-224	TA3/5-83E1124 SS	0.5	12-NOV-94	1.98	No Data	pCi/g		
RADIUM-226	TA3/5-83E1124 SS	0.5	12-NOV-94	2.14	No Data	pCi/g		
RADIUM-228	TA3/5-83E1124 SS	0.5	12-NOV-94	0.795	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1124 SS	0.5	12-NOV-94	0.675	No Data	pCi/g		
THORIUM-228	TA3/5-83E1124 SS	0.5	12-NOV-94	0.688	No Data	pCi/g		
THORIUM-232	TA3/5-83E1124 SS	0.5	12-NOV-94	0.795	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1128 SS	1.3	15-NOV-94	0.504	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1128 SS	1.3	15-NOV-94	0.447	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1128 SS	1.3	15-NOV-94	0.429	No Data	pCi/g		
CESIUM-137	TA3/5-83E1128 SS	1.3	15-NOV-94	0.0299	No Data	pCi/g		
LEAD-212	TA3/5-83E1128 SS	1.3	15-NOV-94	0.532	No Data	pCi/g		
LEAD-214	TA3/5-83E1128 SS	1.3	15-NOV-94	0.499	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1128 SS	1.3	15-NOV-94	13.1	No Data	pCi/g		
RADIUM-224	TA3/5-83E1128 SS	1.3	15-NOV-94	0.854	No Data	pCi/g		
RADIUM-228	TA3/5-83E1128 SS	1.3	15-NOV-94	0.558	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1128 SS	1.3	15-NOV-94	0.486	No Data	pCi/g		
THORIUM-228	TA3/5-83E1128 SS	1.3	15-NOV-94	0.529	No Data	pCi/g		
THORIUM-232	TA3/5-83E1128 SS	1.3	15-NOV-94	0.558	No Data	pCi/g		
THORIUM-234	TA3/5-83E1128 SS	1.3	15-NOV-94	13.6	No Data	pCi/g		
URANIUM-235	TA3/5-83E1128 SS	1.3	15-NOV-94	0.365	No Data	pCi/g		
URANIUM-238	TA3/5-83E1128 SS	1.3	15-NOV-94	13.6	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1150 SS	0.5	10-NOV-94	0.563	No Data	pCi/g		
BERYLLIUM-7	TA3/5-83E1150 SS	0.5	10-NOV-94	0.252	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1150 SS	0.5	10-NOV-94	0.266	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1150 SS	0.5	10-NOV-94	0.455	No Data	pCi/g		
CESIUM-137	TA3/5-83E1150 SS	0.5	10-NOV-94	0.0413	No Data	pCi/g		
LEAD-212	TA3/5-83E1150 SS	0.5	10-NOV-94	0.533	No Data	pCi/g		
LEAD-214	TA3/5-83E1150 SS	0.5	10-NOV-94	0.48	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1150 SS	0.5	10-NOV-94	13.8	No Data	pCi/g		
RADIUM-226	TA3/5-83E1150 SS	0.5	10-NOV-94	1.4	No Data	pCi/g		
RADIUM-228	TA3/5-83E1150 SS	0.5	10-NOV-94	0.624	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1150 SS	0.5	10-NOV-94	0.539	No Data	pCi/g		
THORIUM-228	TA3/5-83E1150 SS	0.5	10-NOV-94	0.53	No Data	pCi/g		
THORIUM-232	TA3/5-83E1150 SS	0.5	10-NOV-94	0.624	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1158 SS	0.5	09-NOV-94	0.589	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1158 SS	0.5	09-NOV-94	0.61	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1158 SS	0.5	09-NOV-94	0.428	No Data	pCi/g		
CESIUM-137	TA3/5-83E1158 SS	0.5	09-NOV-94	0.101	No Data	pCi/g		
LEAD-212	TA3/5-83E1158 SS	0.5	09-NOV-94	0.651	No Data	pCi/g		
LEAD-214	TA3/5-83E1158 SS	0.5	09-NOV-94	0.408	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1158 SS	0.5	09-NOV-94	16.1	No Data	pCi/g		
RADIUM-224	TA3/5-83E1158 SS	0.5	09-NOV-94	0.941	No Data	pCi/g		
RADIUM-226	TA3/5-83E1158 SS	0.5	09-NOV-94	2.57	No Data	pCi/g		
RADIUM-228	TA3/5-83E1158 SS	0.5	09-NOV-94	0.653	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1158 SS	0.5	09-NOV-94	0.559	No Data	pCi/g		
THORIUM-228	TA3/5-83E1158 SS	0.5	09-NOV-94	0.648	No Data	pCi/g		
THORIUM-232	TA3/5-83E1158 SS	0.5	09-NOV-94	0.653	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1161 SS	0.3	10-NOV-94	0.719	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1161 SS	0.3	10-NOV-94	0.342	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1161 SS	0.3	10-NOV-94	0.477	No Data	pCi/g		
CESIUM-137	TA3/5-83E1161 SS	0.3	10-NOV-94	0.441	No Data	pCi/g		
LEAD-212	TA3/5-83E1161 SS	0.3	10-NOV-94	0.564	No Data	pCi/g		
LEAD-214	TA3/5-83E1161 SS	0.3	10-NOV-94	0.507	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1161 SS	0.3	10-NOV-94	14	No Data	pCi/g		
RADIUM-224	TA3/5-83E1161 SS	0.3	10-NOV-94	1.07	No Data	pCi/g		
RADIUM-226	TA3/5-83E1161 SS	0.3	10-NOV-94	1.08	No Data	pCi/g		
RADIUM-228	TA3/5-83E1161 SS	0.3	10-NOV-94	0.797	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1161 SS	0.3	10-NOV-94	0.463	No Data	pCi/g		
THORIUM-228	TA3/5-83E1161 SS	0.3	10-NOV-94	0.562	No Data	pCi/g		
THORIUM-232	TA3/5-83E1161 SS	0.3	10-NOV-94	0.797	No Data	pCi/g		
LEAD-214	TA3/5-83E1171 S	0.3	13-NOV-94	0.433	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1171 SS	0.3	13-NOV-94	0.613	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1171 SS	0.3	13-NOV-94	0.371	No Data	pCi/g		
LEAD-212	TA3/5-83E1171 SS	0.3	13-NOV-94	0.634	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1171 SS	0.3	13-NOV-94	11.5	No Data	pCi/g		
RADIUM-224	TA3/5-83E1171 SS	0.3	13-NOV-94	0.663	No Data	pCi/g		
RADIUM-226	TA3/5-83E1171 SS	0.3	13-NOV-94	1.27	No Data	pCi/g		
RADIUM-228	TA3/5-83E1171 SS	0.3	13-NOV-94	0.679	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1171 SS	0.3	13-NOV-94	0.612	No Data	pCi/g		
THORIUM-228	TA3/5-83E1171 SS	0.3	13-NOV-94	0.631	No Data	pCi/g		
THORIUM-232	TA3/5-83E1171 SS	0.3	13-NOV-94	0.679	No Data	pCi/g		
THORIUM-234	TA3/5-83E1171 SS	0.3	13-NOV-94	1.67	No Data	pCi/g		
URANIUM-238	TA3/5-83E1171 SS	0.3	13-NOV-94	1.67	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1192 SS	0.3	13-NOV-94	0.727	No Data	pCi/g		
LEAD-212	TA3/5-83E1192 SS	0.3	13-NOV-94	0.715	No Data	pCi/g		
LEAD-214	TA3/5-83E1192 SS	0.3	13-NOV-94	0.444	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1192 SS	0.3	13-NOV-94	14.5	No Data	pCi/g		
RADIUM-224	TA3/5-83E1192 SS	0.3	13-NOV-94	1.45	No Data	pCi/g		
RADIUM-226	TA3/5-83E1192 SS	0.3	13-NOV-94	1.65	No Data	pCi/g		
RADIUM-228	TA3/5-83E1192 SS	0.3	13-NOV-94	0.806	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1192 SS	0.3	13-NOV-94	0.603	No Data	pCi/g		
THORIUM-228	TA3/5-83E1192 SS	0.3	13-NOV-94	0.712	No Data	pCi/g		
THORIUM-232	TA3/5-83E1192 SS	0.3	13-NOV-94	0.806	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1196 SS	0.6	15-NOV-94	0.575	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1196 SS	0.6	15-NOV-94	0.549	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1196 SS	0.6	15-NOV-94	0.587	No Data	pCi/g		
CESIUM-137	TA3/5-83E1196 SS	0.6	15-NOV-94	0.0456	No Data	pCi/g		
LEAD-212	TA3/5-83E1196 SS	0.6	15-NOV-94	0.658	No Data	pCi/g		
LEAD-214	TA3/5-83E1196 SS	0.6	15-NOV-94	0.556	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1196 SS	0.6	15-NOV-94	14.4	No Data	pCi/g		
RADIUM-224	TA3/5-83E1196 SS	0.6	15-NOV-94	1.26	No Data	pCi/g		
RADIUM-226	TA3/5-83E1196 SS	0.6	15-NOV-94	2.07	No Data	pCi/g		
RADIUM-228	TA3/5-83E1196 SS	0.6	15-NOV-94	0.637	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1196 SS	0.6	15-NOV-94	0.658	No Data	pCi/g		
THORIUM-228	TA3/5-83E1196 SS	0.6	15-NOV-94	0.655	No Data	pCi/g		
THORIUM-232	TA3/5-83E1196 SS	0.6	15-NOV-94	0.637	No Data	pCi/g		
THORIUM-234	TA3/5-83E1196 SS	0.6	15-NOV-94	1.98	No Data	pCi/g		
URANIUM-238	TA3/5-83E1196 SS	0.6	15-NOV-94	1.98	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1204 SS	0.4	13-NOV-94	0.508	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1204 SS	0.4	13-NOV-94	0.391	No Data	pCi/g		
CESIUM-137	TA3/5-83E1204 SS	0.4	13-NOV-94	0.236	No Data	pCi/g		
LEAD-212	TA3/5-83E1204 SS	0.4	13-NOV-94	0.522	No Data	pCi/g		
LEAD-214	TA3/5-83E1204 SS	0.4	13-NOV-94	0.474	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1204 SS	0.4	13-NOV-94	13.2	No Data	pCi/g		
RADIUM-224	TA3/5-83E1204 SS	0.4	13-NOV-94	0.7	No Data	pCi/g		
RADIUM-226	TA3/5-83E1204 SS	0.4	13-NOV-94	2.56	No Data	pCi/g		
RADIUM-228	TA3/5-83E1204 SS	0.4	13-NOV-94	0.563	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1204 SS	0.4	13-NOV-94	0.482	No Data	pCi/g		
THORIUM-228	TA3/5-83E1204 SS	0.4	13-NOV-94	0.519	No Data	pCi/g		
THORIUM-232	TA3/5-83E1204 SS	0.4	13-NOV-94	0.563	No Data	pCi/g		
THORIUM-234	TA3/5-83E1204 SS	0.4	13-NOV-94	6.61	No Data	pCi/g		
URANIUM-238	TA3/5-83E1204 SS	0.4	13-NOV-94	6.6	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1209 SS	1	12-NOV-94	0.599	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1209 SS	1	12-NOV-94	0.489	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1209 SS	1	12-NOV-94	0.392	No Data	pCi/g		
CESIUM-137	TA3/5-83E1209 SS	1	12-NOV-94	0.0479	No Data	pCi/g		
LEAD-212	TA3/5-83E1209 SS	1	12-NOV-94	0.609	No Data	pCi/g		
LEAD-214	TA3/5-83E1209 SS	1	12-NOV-94	0.441	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1209 SS	1	12-NOV-94	12.4	No Data	pCi/g		
RADIUM-226	TA3/5-83E1209 SS	1	12-NOV-94	1.76	No Data	pCi/g		
RADIUM-228	TA3/5-83E1209 SS	1	12-NOV-94	0.664	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1209 SS	1	12-NOV-94	0.583	No Data	pCi/g		
THORIUM-228	TA3/5-83E1209 SS	1	12-NOV-94	0.607	No Data	pCi/g		
THORIUM-232	TA3/5-83E1209 SS	1	12-NOV-94	0.664	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1221 SS	0.5	13-NOV-94	0.635	No Data	pCi/g		
CESIUM-137	TA3/5-83E1221 SS	0.5	13-NOV-94	0.0474	No Data	pCi/g		
LEAD-212	TA3/5-83E1221 SS	0.5	13-NOV-94	0.528	No Data	pCi/g		
LEAD-214	TA3/5-83E1221 SS	0.5	13-NOV-94	0.396	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1221 SS	0.5	13-NOV-94	13	No Data	pCi/g		
RADIUM-224	TA3/5-83E1221 SS	0.5	13-NOV-94	0.744	No Data	pCi/g		
RADIUM-226	TA3/5-83E1221 SS	0.5	13-NOV-94	1.91	No Data	pCi/g		
RADIUM-228	TA3/5-83E1221 SS	0.5	13-NOV-94	0.703	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1221 SS	0.5	13-NOV-94	0.488	No Data	pCi/g		
THORIUM-228	TA3/5-83E1221 SS	0.5	13-NOV-94	0.525	No Data	pCi/g		
THORIUM-232	TA3/5-83E1221 SS	0.5	13-NOV-94	0.703	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1226 SS	0.3	12-NOV-94	0.625	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1226 SS	0.3	12-NOV-94	0.487	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1226 SS	0.3	12-NOV-94	0.416	No Data	pCi/g		
CESIUM-137	TA3/5-83E1226 SS	0.3	12-NOV-94	0.102	No Data	pCi/g		
LEAD-212	TA3/5-83E1226 SS	0.3	12-NOV-94	0.601	No Data	pCi/g		
LEAD-214	TA3/5-83E1226 SS	0.3	12-NOV-94	0.449	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1226 SS	0.3	12-NOV-94	12.7	No Data	pCi/g		
RADIUM-226	TA3/5-83E1226 SS	0.3	12-NOV-94	3.46	No Data	pCi/g		
RADIUM-228	TA3/5-83E1226 SS	0.3	12-NOV-94	0.692	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1226 SS	0.3	12-NOV-94	0.566	No Data	pCi/g		
THORIUM-228	TA3/5-83E1226 SS	0.3	12-NOV-94	0.598	No Data	pCi/g		
THORIUM-232	TA3/5-83E1226 SS	0.3	12-NOV-94	0.692	No Data	pCi/g		
THORIUM-234	TA3/5-83E1226 SS	0.3	12-NOV-94	9.34	No Data	pCi/g		
URANIUM-238	TA3/5-83E1226 SS	0.3	12-NOV-94	9.33	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1241 SS	0.8	13-NOV-94	0.564	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1241 SS	0.8	13-NOV-94	0.268	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1241 SS	0.8	13-NOV-94	0.39	No Data	pCi/g		
CESIUM-137	TA3/5-83E1241 SS	0.8	13-NOV-94	0.0616	No Data	pCi/g		
LEAD-212	TA3/5-83E1241 SS	0.8	13-NOV-94	0.48	No Data	pCi/g		
LEAD-214	TA3/5-83E1241 SS	0.8	13-NOV-94	0.43	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1241 SS	0.8	13-NOV-94	12.6	No Data	pCi/g		
RADIUM-226	TA3/5-83E1241 SS	0.8	13-NOV-94	1.16	No Data	pCi/g		
RADIUM-228	TA3/5-83E1241 SS	0.8	13-NOV-94	0.625	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1241 SS	0.8	13-NOV-94	0.376	No Data	pCi/g		
THORIUM-228	TA3/5-83E1241 SS	0.8	13-NOV-94	0.478	No Data	pCi/g		
THORIUM-232	TA3/5-83E1241 SS	0.8	13-NOV-94	0.625	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1245 SS	0.3	13-NOV-94	0.559	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1245 SS	0.3	13-NOV-94	0.464	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1245 SS	0.3	13-NOV-94	0.43	No Data	pCi/g		
LEAD-212	TA3/5-83E1245 SS	0.3	13-NOV-94	0.527	No Data	pCi/g		
LEAD-214	TA3/5-83E1245 SS	0.3	13-NOV-94	0.448	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1245 SS	0.3	13-NOV-94	12.1	No Data	pCi/g		
RADIUM-224	TA3/5-83E1245 SS	0.3	13-NOV-94	0.601	No Data	pCi/g		
RADIUM-226	TA3/5-83E1245 SS	0.3	13-NOV-94	3.01	No Data	pCi/g		
RADIUM-228	TA3/5-83E1245 SS	0.3	13-NOV-94	0.62	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1245 SS	0.3	13-NOV-94	0.448	No Data	pCi/g		
THORIUM-228	TA3/5-83E1245 SS	0.3	13-NOV-94	0.525	No Data	pCi/g		
THORIUM-232	TA3/5-83E1245 SS	0.3	13-NOV-94	0.62	No Data	pCi/g		
THORIUM-234	TA3/5-83E1245 SS	0.3	13-NOV-94	8.35	No Data	pCi/g		
URANIUM-238	TA3/5-83E1245 SS	0.3	13-NOV-94	8.34	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1277 SS	0.8	26-OCT-94	0.698	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1277 SS	0.8	26-OCT-94	0.455	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1277 SS	0.8	26-OCT-94	0.41	No Data	pCi/g		
CESIUM-137	TA3/5-83E1277 SS	0.8	26-OCT-94	0.0565	No Data	pCi/g		
LEAD-212	TA3/5-83E1277 SS	0.8	26-OCT-94	0.662	No Data	pCi/g		
LEAD-214	TA3/5-83E1277 SS	0.8	26-OCT-94	0.451	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1277 SS	0.8	26-OCT-94	13.8	No Data	pCi/g		
RADIUM-224	TA3/5-83E1277 SS	0.8	26-OCT-94	0.86	No Data	pCi/g		
RADIUM-226	TA3/5-83E1277 SS	0.8	26-OCT-94	1.28	No Data	pCi/g		
RADIUM-228	TA3/5-83E1277 SS	0.8	26-OCT-94	0.773	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1277 SS	0.8	26-OCT-94	0.597	No Data	pCi/g		
THORIUM-228	TA3/5-83E1277 SS	0.8	26-OCT-94	0.659	No Data	pCi/g		
THORIUM-232	TA3/5-83E1277 SS	0.8	26-OCT-94	0.773	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1281 SS	0.6	30-OCT-94	0.574	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1281 SS	0.6	30-OCT-94	0.537	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1281 SS	0.6	30-OCT-94	0.458	No Data	pCi/g		
LEAD-212	TA3/5-83E1281 SS	0.6	30-OCT-94	0.606	No Data	pCi/g		
LEAD-214	TA3/5-83E1281 SS	0.6	30-OCT-94	0.598	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1281 SS	0.6	30-OCT-94	13.9	No Data	pCi/g		
RADIUM-226	TA3/5-83E1281 SS	0.6	30-OCT-94	0.79	No Data	pCi/g		
RADIUM-228	TA3/5-83E1281 SS	0.6	30-OCT-94	0.636	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1281 SS	0.6	30-OCT-94	0.695	No Data	pCi/g		
THORIUM-228	TA3/5-83E1281 SS	0.6	30-OCT-94	0.603	No Data	pCi/g		
THORIUM-232	TA3/5-83E1281 SS	0.6	30-OCT-94	0.636	No Data	pCi/g		
URANIUM-238	TA3/5-83E1298 S	0.5	30-OCT-94	11.3	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1298 SS	0.5	30-OCT-94	0.525	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1298 SS	0.5	30-OCT-94	0.367	No Data	pCi/g		
CESIUM-137	TA3/5-83E1298 SS	0.5	30-OCT-94	0.102	No Data	pCi/g		
LEAD-212	TA3/5-83E1298 SS	0.5	30-OCT-94	0.603	No Data	pCi/g		
LEAD-214	TA3/5-83E1298 SS	0.5	30-OCT-94	0.541	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1298 SS	0.5	30-OCT-94	13.8	No Data	pCi/g		
RADIUM-226	TA3/5-83E1298 SS	0.5	30-OCT-94	3.78	No Data	pCi/g		
RADIUM-228	TA3/5-83E1298 SS	0.5	30-OCT-94	0.582	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1298 SS	0.5	30-OCT-94	0.545	No Data	pCi/g		
THORIUM-228	TA3/5-83E1298 SS	0.5	30-OCT-94	0.6	No Data	pCi/g		
THORIUM-232	TA3/5-83E1298 SS	0.5	30-OCT-94	0.582	No Data	pCi/g		
THORIUM-234	TA3/5-83E1298 SS	0.5	30-OCT-94	11.3	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1304 SS	0.8	30-OCT-94	0.707	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1304 SS	0.8	30-OCT-94	0.349	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1304 SS	0.8	30-OCT-94	0.338	No Data	pCi/g		
CESIUM-137	TA3/5-83E1304 SS	0.8	30-OCT-94	0.0332	No Data	pCi/g		
LEAD-212	TA3/5-83E1304 SS	0.8	30-OCT-94	0.745	No Data	pCi/g		
LEAD-214	TA3/5-83E1304 SS	0.8	30-OCT-94	0.538	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1304 SS	0.8	30-OCT-94	12.9	No Data	pCi/g		
RADIUM-226	TA3/5-83E1304 SS	0.8	30-OCT-94	1.88	No Data	pCi/g		
RADIUM-228	TA3/5-83E1304 SS	0.8	30-OCT-94	0.783	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1304 SS	0.8	30-OCT-94	0.597	No Data	pCi/g		
THORIUM-228	TA3/5-83E1304 SS	0.8	30-OCT-94	0.741	No Data	pCi/g		
THORIUM-232	TA3/5-83E1304 SS	0.8	30-OCT-94	0.783	No Data	pCi/g		
THORIUM-234	TA3/5-83E1304 SS	0.8	30-OCT-94	3.47	No Data	pCi/g		
URANIUM-238	TA3/5-83E1304 SS	0.8	30-OCT-94	3.46	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1321 SS	0.5	07-NOV-94	0.743	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1321 SS	0.5	07-NOV-94	0.564	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1321 SS	0.5	07-NOV-94	0.455	No Data	pCi/g		
CESIUM-137	TA3/5-83E1321 SS	0.5	07-NOV-94	0.427	No Data	pCi/g		
LEAD-212	TA3/5-83E1321 SS	0.5	07-NOV-94	0.57	No Data	pCi/g		
LEAD-214	TA3/5-83E1321 SS	0.5	07-NOV-94	0.464	No Data	pCi/g		
MANGANESE-54	TA3/5-83E1321 SS	0.5	07-NOV-94	0.0307	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1321 SS	0.5	07-NOV-94	14	No Data	pCi/g		
RADIUM-224	TA3/5-83E1321 SS	0.5	07-NOV-94	1.27	No Data	pCi/g		
RADIUM-226	TA3/5-83E1321 SS	0.5	07-NOV-94	1.17	No Data	pCi/g		
RADIUM-228	TA3/5-83E1321 SS	0.5	07-NOV-94	0.823	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1321 SS	0.5	07-NOV-94	0.617	No Data	pCi/g		
THORIUM-228	TA3/5-83E1321 SS	0.5	07-NOV-94	0.567	No Data	pCi/g		
THORIUM-232	TA3/5-83E1321 SS	0.5	07-NOV-94	0.823	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1331 SS	0.5	31-OCT-94	0.641	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1331 SS	0.5	31-OCT-94	0.536	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1331 SS	0.5	31-OCT-94	0.468	No Data	pCi/g		
CESIUM-137	TA3/5-83E1331 SS	0.5	31-OCT-94	0.111	No Data	pCi/g		
LEAD-212	TA3/5-83E1331 SS	0.5	31-OCT-94	0.702	No Data	pCi/g		
LEAD-214	TA3/5-83E1331 SS	0.5	31-OCT-94	0.448	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1331 SS	0.5	31-OCT-94	13.9	No Data	pCi/g		
RADIUM-224	TA3/5-83E1331 SS	0.5	31-OCT-94	1.05	No Data	pCi/g		
RADIUM-226	TA3/5-83E1331 SS	0.5	31-OCT-94	4.64	No Data	pCi/g		
RADIUM-228	TA3/5-83E1331 SS	0.5	31-OCT-94	0.71	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1331 SS	0.5	31-OCT-94	0.645	No Data	pCi/g		
THORIUM-228	TA3/5-83E1331 SS	0.5	31-OCT-94	0.699	No Data	pCi/g		
THORIUM-232	TA3/5-83E1331 SS	0.5	31-OCT-94	0.71	No Data	pCi/g		
THORIUM-234	TA3/5-83E1331 SS	0.5	31-OCT-94	12	No Data	pCi/g		
URANIUM-238	TA3/5-83E1331 SS	0.5	31-OCT-94	12	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1340 SS	1	31-OCT-94	0.536	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1340 SS	1	31-OCT-94	0.465	No Data	pCi/g		
CESIUM-137	TA3/5-83E1340 SS	1	31-OCT-94	0.242	No Data	pCi/g		
LEAD-212	TA3/5-83E1340 SS	1	31-OCT-94	0.567	No Data	pCi/g		
LEAD-214	TA3/5-83E1340 SS	1	31-OCT-94	0.465	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1340 SS	1	31-OCT-94	13.4	No Data	pCi/g		
RADIUM-224	TA3/5-83E1340 SS	1	31-OCT-94	1.01	No Data	pCi/g		
RADIUM-226	TA3/5-83E1340 SS	1	31-OCT-94	1.41	No Data	pCi/g		
RADIUM-228	TA3/5-83E1340 SS	1	31-OCT-94	0.594	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1340 SS	1	31-OCT-94	0.399	No Data	pCi/g		
THORIUM-228	TA3/5-83E1340 SS	1	31-OCT-94	0.564	No Data	pCi/g		
THORIUM-232	TA3/5-83E1340 SS	1	31-OCT-94	0.594	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1342 SD	0.8	31-OCT-94	0.481	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1342 SD	0.8	31-OCT-94	0.405	No Data	pCi/g		
LEAD-212	TA3/5-83E1342 SD	0.8	31-OCT-94	0.572	No Data	pCi/g		
LEAD-214	TA3/5-83E1342 SD	0.8	31-OCT-94	0.436	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1342 SD	0.8	31-OCT-94	12.9	No Data	pCi/g		
RADIUM-224	TA3/5-83E1342 SD	0.8	31-OCT-94	0.771	No Data	pCi/g		
RADIUM-226	TA3/5-83E1342 SD	0.8	31-OCT-94	1.32	No Data	pCi/g		
RADIUM-228	TA3/5-83E1342 SD	0.8	31-OCT-94	0.533	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1342 SD	0.8	31-OCT-94	0.513	No Data	pCi/g		
THORIUM-228	TA3/5-83E1342 SD	0.8	31-OCT-94	0.57	No Data	pCi/g		
THORIUM-232	TA3/5-83E1342 SD	0.8	31-OCT-94	0.533	No Data	pCi/g		
THORIUM-234	TA3/5-83E1342 SD	0.8	31-OCT-94	1.34	No Data	pCi/g		
URANIUM-238	TA3/5-83E1342 SD	0.8	31-OCT-94	1.33	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1342 SS	0.8	31-OCT-94	0.484	No Data	pCi/g		
LEAD-210	TA3/5-83E1342 SS	0.8	31-OCT-94	2.38	No Data	pCi/g		
LEAD-212	TA3/5-83E1342 SS	0.8	31-OCT-94	0.561	No Data	pCi/g		
LEAD-214	TA3/5-83E1342 SS	0.8	31-OCT-94	0.593	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1342 SS	0.8	31-OCT-94	13.2	No Data	pCi/g		
RADIUM-224	TA3/5-83E1342 SS	0.8	31-OCT-94	0.996	No Data	pCi/g		
RADIUM-226	TA3/5-83E1342 SS	0.8	31-OCT-94	2.11	No Data	pCi/g		
RADIUM-228	TA3/5-83E1342 SS	0.8	31-OCT-94	0.537	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1342 SS	0.8	31-OCT-94	0.515	No Data	pCi/g		
THORIUM-228	TA3/5-83E1342 SS	0.8	31-OCT-94	0.559	No Data	pCi/g		
THORIUM-232	TA3/5-83E1342 SS	0.8	31-OCT-94	0.537	No Data	pCi/g		
THORIUM-234	TA3/5-83E1342 SS	0.8	31-OCT-94	1.88	No Data	pCi/g		
URANIUM-238	TA3/5-83E1342 SS	0.8	31-OCT-94	1.88	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1359 SS	0	01-NOV-94	0.77	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1359 SS	0	01-NOV-94	0.539	No Data	pCi/g		
LEAD-212	TA3/5-83E1359 SS	0	01-NOV-94	0.665	No Data	pCi/g		
LEAD-214	TA3/5-83E1359 SS	0	01-NOV-94	0.371	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1359 SS	0	01-NOV-94	13.7	No Data	pCi/g		
RADIUM-226	TA3/5-83E1359 SS	0	01-NOV-94	1.85	No Data	pCi/g		
RADIUM-228	TA3/5-83E1359 SS	0	01-NOV-94	0.853	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1359 SS	0	01-NOV-94	0.65	No Data	pCi/g		
THORIUM-228	TA3/5-83E1359 SS	0	01-NOV-94	0.663	No Data	pCi/g		
THORIUM-232	TA3/5-83E1359 SS	0	01-NOV-94	0.853	No Data	pCi/g		
THORIUM-234	TA3/5-83E1359 SS	0	01-NOV-94	2.59	No Data	pCi/g		
URANIUM-238	TA3/5-83E1359 SS	0	01-NOV-94	2.59	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1368 SS	0	01-NOV-94	0.704	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1368 SS	0	01-NOV-94	0.453	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1368 SS	0	01-NOV-94	0.482	No Data	pCi/g		
CESIUM-137	TA3/5-83E1368 SS	0	01-NOV-94	0.156	No Data	pCi/g		
LEAD-212	TA3/5-83E1368 SS	0	01-NOV-94	0.755	No Data	pCi/g		
LEAD-214	TA3/5-83E1368 SS	0	01-NOV-94	0.547	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1368 SS	0	01-NOV-94	15.3	No Data	pCi/g		
RADIUM-224	TA3/5-83E1368 SS	0	01-NOV-94	1.02	No Data	pCi/g		
RADIUM-226	TA3/5-83E1368 SS	0	01-NOV-94	1.99	No Data	pCi/g		
RADIUM-228	TA3/5-83E1368 SS	0	01-NOV-94	0.78	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1368 SS	0	01-NOV-94	0.803	No Data	pCi/g		
THORIUM-228	TA3/5-83E1368 SS	0	01-NOV-94	0.752	No Data	pCi/g		
THORIUM-232	TA3/5-83E1368 SS	0	01-NOV-94	0.78	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1376 SS	0.8	31-OCT-94	0.461	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1376 SS	0.8	31-OCT-94	0.57	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1376 SS	0.8	31-OCT-94	0.351	No Data	pCi/g		
CESIUM-137	TA3/5-83E1376 SS	0.8	31-OCT-94	0.0243	No Data	pCi/g		
LEAD-214	TA3/5-83E1376 SS	0.8	31-OCT-94	0.392	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1376 SS	0.8	31-OCT-94	13	No Data	pCi/g		
RADIUM-224	TA3/5-83E1376 SS	0.8	31-OCT-94	0.746	No Data	pCi/g		
RADIUM-226	TA3/5-83E1376 SS	0.8	31-OCT-94	1.64	No Data	pCi/g		
RADIUM-228	TA3/5-83E1376 SS	0.8	31-OCT-94	0.511	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1376 SS	0.8	31-OCT-94	0.531	No Data	pCi/g		
THORIUM-228	TA3/5-83E1376 SS	0.8	31-OCT-94	0.602	No Data	pCi/g		
THORIUM-232	TA3/5-83E1376 SS	0.8	31-OCT-94	0.511	No Data	pCi/g		
THORIUM-234	TA3/5-83E1376 SS	0.8	31-OCT-94	3.08	No Data	pCi/g		
URANIUM-238	TA3/5-83E1376 SS	0.8	31-OCT-94	3.08	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E1387 SS	0.5	31-OCT-94	0.54	No Data	pCi/g		
BISMUTH-212	TA3/5-83E1387 SS	0.5	31-OCT-94	0.449	No Data	pCi/g		
BISMUTH-214	TA3/5-83E1387 SS	0.5	31-OCT-94	0.494	No Data	pCi/g		
CESIUM-137	TA3/5-83E1387 SS	0.5	31-OCT-94	0.0795	No Data	pCi/g		
LEAD-212	TA3/5-83E1387 SS	0.5	31-OCT-94	0.53	No Data	pCi/g		
LEAD-214	TA3/5-83E1387 SS	0.5	31-OCT-94	0.552	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E1387 SS	0.5	31-OCT-94	12.9	No Data	pCi/g		
RADIUM-224	TA3/5-83E1387 SS	0.5	31-OCT-94	0.639	No Data	pCi/g		
RADIUM-226	TA3/5-83E1387 SS	0.5	31-OCT-94	1.97	No Data	pCi/g		
RADIUM-228	TA3/5-83E1387 SS	0.5	31-OCT-94	0.598	No Data	pCi/g		
THALLIUM-208	TA3/5-83E1387 SS	0.5	31-OCT-94	0.461	No Data	pCi/g		
THORIUM-228	TA3/5-83E1387 SS	0.5	31-OCT-94	0.527	No Data	pCi/g		
THORIUM-232	TA3/5-83E1387 SS	0.5	31-OCT-94	0.598	No Data	pCi/g		
THORIUM-234	TA3/5-83E1387 SS	0.5	31-OCT-94	2.95	No Data	pCi/g		
URANIUM-238	TA3/5-83E1387 SS	0.5	31-OCT-94	2.95	No Data	pCi/g		
ACTINIUM-228	TA3/5-83E714 10 SS	0	01-DEC-94	0.529	No Data	pCi/g		
BISMUTH-212	TA3/5-83E714 10 SS	0	01-DEC-94	0.448	No Data	pCi/g		
LEAD-212	TA3/5-83E714 10 SS	0	01-DEC-94	0.649	No Data	pCi/g		
LEAD-214	TA3/5-83E714 10 SS	0	01-DEC-94	0.426	No Data	pCi/g		
POTASSIUM-40	TA3/5-83E714 10 SS	0	01-DEC-94	11.7	No Data	pCi/g		
RADIUM-224	TA3/5-83E714 10 SS	0	01-DEC-94	0.881	No Data	pCi/g		
RADIUM-226	TA3/5-83E714 10 SS	0	01-DEC-94	2.26	No Data	pCi/g		
RADIUM-228	TA3/5-83E714 10 SS	0	01-DEC-94	0.587	No Data	pCi/g		
THALLIUM-208	TA3/5-83E714 10 SS	0	01-DEC-94	0.613	No Data	pCi/g		
THORIUM-228	TA3/5-83E714 10 SS	0	01-DEC-94	0.647	No Data	pCi/g		
THORIUM-232	TA3/5-83E714 10 SS	0	01-DEC-94	0.587	No Data	pCi/g		
THORIUM-234	TA3/5-83E714 10 SS	0	01-DEC-94	7.19	No Data	pCi/g		
URANIUM-238	TA3/5-83E714 10 SS	0	01-DEC-94	7.18	No Data	pCi/g		

Appendix G. Confirmatory Gamma Spectroscopic Analyses for Surface Radiation Anomaly Removal Action

Site 84 - Radiation VCM Confirmatory Gamma Spectroscopic Analyses

Analyte	Sample ID	Depth (ft)	Sample Date	Result	Det Limit	Units
ACTINIUM-228	TA3/5-84E3 SS	0.5	13-OCT-94	0.58	0.0749	pCi/g
BISMUTH-212	TA3/5-84E3 SS	0.5	13-OCT-94	0.554	0.285	pCi/g
BISMUTH-214	TA3/5-84E3 SS	0.5	13-OCT-94	0.446	0.0395	pCi/g
CESIUM-137	TA3/5-84E3 SS	0.5	13-OCT-94	0.0662	0.0191	pCi/g
LEAD-212	TA3/5-84E3 SS	0.5	13-OCT-94	0.562	0.0334	pCi/g
LEAD-214	TA3/5-84E3 SS	0.5	13-OCT-94	0.523	0.0416	pCi/g
POTASSIUM-40	TA3/5-84E3 SS	0.5	13-OCT-94	15.6	0.209	pCi/g
RADIUM-224	TA3/5-84E3 SS	0.5	13-OCT-94	0.387	0.361	pCi/g
RADIUM-226	TA3/5-84E3 SS	0.5	13-OCT-94	1.82	0.452	pCi/g
RADIUM-228	TA3/5-84E3 SS	0.5	13-OCT-94	0.63	0.128	pCi/g
THALLIUM-208	TA3/5-84E3 SS	0.5	13-OCT-94	0.514	0.0542	pCi/g
THORIUM-228	TA3/5-84E3 SS	0.5	13-OCT-94	0.339	0.416	pCi/g
THORIUM-232	TA3/5-84E3 SS	0.5	13-OCT-94	0.566	0.125	pCi/g
THORIUM-234	TA3/5-84E3 SS	0.5	13-OCT-94	5.21	0.452	pCi/g
URANIUM-238	TA3/5-84E3 SS	0.5	13-OCT-94	5.62	1.45	pCi/g
ACTINIUM-228	TA3/5-84E10 SS	0.8	13-OCT-94	0.571	0.0781	pCi/g
BISMUTH-212	TA3/5-84E10 SS	0.8	13-OCT-94	0.558	0.292	pCi/g
BISMUTH-214	TA3/5-84E10 SS	0.8	13-OCT-94	0.491	0.0424	pCi/g
CESIUM-137	TA3/5-84E10 SS	0.8	13-OCT-94	0.0487	0.0209	pCi/g
LEAD-212	TA3/5-84E10 SS	0.8	13-OCT-94	0.522	0.036	pCi/g
LEAD-214	TA3/5-84E10 SS	0.8	13-OCT-94	0.499	0.0422	pCi/g
POTASSIUM-40	TA3/5-84E10 SS	0.8	13-OCT-94	16.3	0.232	pCi/g
RADIUM-223	TA3/5-84E10 SS	0.8	13-OCT-94	0.114	0.13	pCi/g
RADIUM-224	TA3/5-84E10 SS	0.8	13-OCT-94	0.382	0.387	pCi/g
RADIUM-226	TA3/5-84E10 SS	0.8	13-OCT-94	2.07	0.461	pCi/g
RADIUM-228	TA3/5-84E10 SS	0.8	13-OCT-94	0.618	0.142	pCi/g
THALLIUM-208	TA3/5-84E10 SS	0.8	13-OCT-94	0.508	0.059	pCi/g
THORIUM-231	TA3/5-84E10 SS	0.8	13-OCT-94	0.339	0.384	pCi/g
THORIUM-232	TA3/5-84E10 SS	0.8	13-OCT-94	0.571	0.129	pCi/g
THORIUM-234	TA3/5-84E10 SS	0.8	13-OCT-94	5.37	0.494	pCi/g
URANIUM-238	TA3/5-84E10 SS	0.8	13-OCT-94	5.78	1.55	pCi/g
ACTINIUM-228	TA3/5-84E12 SD	0.5	13-OCT-94	0.615	0.0858	pCi/g
BISMUTH-212	TA3/5-84E12 SD	0.5	13-OCT-94	0.673	0.292	pCi/g
BISMUTH-214	TA3/5-84E12 SD	0.5	13-OCT-94	0.452	0.0412	pCi/g
CESIUM-137	TA3/5-84E12 SD	0.5	13-OCT-94	0.0331	0.0206	pCi/g
LEAD-212	TA3/5-84E12 SD	0.5	13-OCT-94	0.561	0.0343	pCi/g
LEAD-214	TA3/5-84E12 SD	0.5	13-OCT-94	0.478	0.0407	pCi/g
POTASSIUM-40	TA3/5-84E12 SD	0.5	13-OCT-94	15.3	0.238	pCi/g
RADIUM-224	TA3/5-84E12 SD	0.5	13-OCT-94	0.382	0.368	pCi/g
RADIUM-226	TA3/5-84E12 SD	0.5	13-OCT-94	1.75	0.459	pCi/g
RADIUM-228	TA3/5-84E12 SD	0.5	13-OCT-94	0.555	0.144	pCi/g
THALLIUM-208	TA3/5-84E12 SD	0.5	13-OCT-94	0.551	0.0515	pCi/g
THORIUM-228	TA3/5-84E12 SD	0.5	13-OCT-94	0.516	0.432	pCi/g
THORIUM-232	TA3/5-84E12 SD	0.5	13-OCT-94	0.486	0.129	pCi/g
THORIUM-234	TA3/5-84E12 SD	0.5	13-OCT-94	4.2	0.467	pCi/g
URANIUM-238	TA3/5-84E12 SD	0.5	13-OCT-94	5.24	1.47	pCi/g
ACTINIUM-228	TA3/5-84E12 SS	0.5	13-OCT-94	0.61	0.0849	pCi/g
BERYLLIUM-7	TA3/5-84E12 SS	0.5	13-OCT-94	0.127	0.148	pCi/g
BISMUTH-212	TA3/5-84E12 SS	0.5	13-OCT-94	0.685	0.296	pCi/g
BISMUTH-214	TA3/5-84E12 SS	0.5	13-OCT-94	0.41	0.0407	pCi/g
CESIUM-137	TA3/5-84E12 SS	0.5	13-OCT-94	0.0295	0.0209	pCi/g
LEAD-212	TA3/5-84E12 SS	0.5	13-OCT-94	0.56	0.0355	pCi/g
LEAD-214	TA3/5-84E12 SS	0.5	13-OCT-94	0.413	0.041	pCi/g
POTASSIUM-40	TA3/5-84E12 SS	0.5	13-OCT-94	14.6	No Data	pCi/g
RADIUM-224	TA3/5-84E12 SS	0.5	13-OCT-94	0.563	0.381	pCi/g
RADIUM-226	TA3/5-84E12 SS	0.5	13-OCT-94	1.52	0.463	pCi/g
RADIUM-228	TA3/5-84E12 SS	0.5	13-OCT-94	0.567	0.13	pCi/g
THALLIUM-208	TA3/5-84E12 SS	0.5	13-OCT-94	0.529	0.054	pCi/g
THORIUM-228	TA3/5-84E12 SS	0.5	13-OCT-94	0.593	0.427	pCi/g
THORIUM-231	TA3/5-84E12 SS	0.5	13-OCT-94	0.267	0.359	pCi/g
THORIUM-232	TA3/5-84E12 SS	0.5	13-OCT-94	0.506	0.118	pCi/g
THORIUM-234	TA3/5-84E12 SS	0.5	13-OCT-94	4.35	0.455	pCi/g
URANIUM-238	TA3/5-84E12 SS	0.5	13-OCT-94	5.37	1.51	pCi/g
ACTINIUM-228	TA3/5-84E29 SS	0.3	13-OCT-94	0.59	0.0855	pCi/g
BISMUTH-212	TA3/5-84E29 SS	0.3	13-OCT-94	0.749	0.306	pCi/g
BISMUTH-214	TA3/5-84E29 SS	0.3	13-OCT-94	0.642	0.0422	pCi/g
CESIUM-137	TA3/5-84E29 SS	0.3	13-OCT-94	0.018	0.0221	pCi/g
LEAD-212	TA3/5-84E29 SS	0.3	13-OCT-94	0.659	0.0376	pCi/g
LEAD-214	TA3/5-84E29 SS	0.3	13-OCT-94	0.654	0.0446	pCi/g
POTASSIUM-40	TA3/5-84E29 SS	0.3	13-OCT-94	17.3	0.236	pCi/g
RADIUM-224	TA3/5-84E29 SS	0.3	13-OCT-94	0.518	0.407	pCi/g
RADIUM-226	TA3/5-84E29 SS	0.3	13-OCT-94	1.16	0.464	pCi/g
RADIUM-228	TA3/5-84E29 SS	0.3	13-OCT-94	0.745	0.15	pCi/g
THALLIUM-208	TA3/5-84E29 SS	0.3	13-OCT-94	0.588	0.0611	pCi/g
THORIUM-228	TA3/5-84E29 SS	0.3	13-OCT-94	0.622	0.461	pCi/g
THORIUM-231	TA3/5-84E29 SS	0.3	13-OCT-94	0.502	0.354	pCi/g
THORIUM-232	TA3/5-84E29 SS	0.3	13-OCT-94	0.64	0.137	pCi/g
THORIUM-234	TA3/5-84E29 SS	0.3	13-OCT-94	1.35	0.456	pCi/g
URANIUM-238	TA3/5-84E29 SS	0.3	13-OCT-94	1.43	1.44	pCi/g
ACTINIUM-228	TA3/5-84E48 SS	0.8	13-OCT-94	0.579	0.0715	pCi/g
BISMUTH-212	TA3/5-84E48 SS	0.8	13-OCT-94	0.692	0.275	pCi/g
BISMUTH-214	TA3/5-84E48 SS	0.8	13-OCT-94	0.501	0.0389	pCi/g
LEAD-212	TA3/5-84E48 SS	0.8	13-OCT-94	0.609	0.0336	pCi/g
LEAD-214	TA3/5-84E48 SS	0.8	13-OCT-94	0.533	0.0403	pCi/g
POTASSIUM-40	TA3/5-84E48 SS	0.8	13-OCT-94	15.1	0.203	pCi/g
RADIUM-223	TA3/5-84E48 SS	0.8	13-OCT-94	0.147	0.129	pCi/g
RADIUM-224	TA3/5-84E48 SS	0.8	13-OCT-94	0.464	0.365	pCi/g
RADIUM-226	TA3/5-84E48 SS	0.8	13-OCT-94	1.91	0.455	pCi/g
RADIUM-228	TA3/5-84E48 SS	0.8	13-OCT-94	0.536	0.13	pCi/g
THALLIUM-208	TA3/5-84E48 SS	0.8	13-OCT-94	0.514	0.0552	pCi/g
THORIUM-228	TA3/5-84E48 SS	0.8	13-OCT-94	0.518	0.406	pCi/g
THORIUM-232	TA3/5-84E48 SS	0.8	13-OCT-94	0.521	0.124	pCi/g
THORIUM-234	TA3/5-84E48 SS	0.8	13-OCT-94	5.69	0.484	pCi/g
URANIUM-238	TA3/5-84E48 SS	0.8	13-OCT-94	6.15	1.53	pCi/g
ACTINIUM-227	TA3/5-84E57 SS	0.5	13-OCT-94	0.944	1.86	pCi/g
ACTINIUM-228	TA3/5-84E57 SS	0.5	13-OCT-94	0.614	0.081	pCi/g
BISMUTH-212	TA3/5-84E57 SS	0.5	13-OCT-94	0.706	0.29	pCi/g
BISMUTH-214	TA3/5-84E57 SS	0.5	13-OCT-94	0.602	0.0404	pCi/g
CESIUM-137	TA3/5-84E57 SS	0.5	13-OCT-94	0.0305	0.0208	pCi/g
LEAD-212	TA3/5-84E57 SS	0.5	13-OCT-94	0.601	0.0355	pCi/g
LEAD-214	TA3/5-84E57 SS	0.5	13-OCT-94	0.599	0.0444	pCi/g
POTASSIUM-40	TA3/5-84E57 SS	0.5	13-OCT-94	14.8	0.228	pCi/g
RADIUM-223	TA3/5-84E57 SS	0.5	13-OCT-94	0.123	0.13	pCi/g
RADIUM-224	TA3/5-84E57 SS	0.5	13-OCT-94	0.472	0.383	pCi/g
RADIUM-226	TA3/5-84E57 SS	0.5	13-OCT-94	2.21	0.458	pCi/g
RADIUM-228	TA3/5-84E57 SS	0.5	13-OCT-94	0.566	0.137	pCi/g
THALLIUM-208	TA3/5-84E57 SS	0.5	13-OCT-94	0.507	0.0588	pCi/g
THORIUM-228	TA3/5-84E57 SS	0.5	13-OCT-94	0.642	0.436	pCi/g
THORIUM-231	TA3/5-84E57 SS	0.5	13-OCT-94	0.359	0.379	pCi/g
THORIUM-232	TA3/5-84E57 SS	0.5	13-OCT-94	0.548	0.135	pCi/g
THORIUM-234	TA3/5-84E57 SS	0.5	13-OCT-94	5.5	0.483	pCi/g
URANIUM-238	TA3/5-84E57 SS	0.5	13-OCT-94	6.62	1.55	pCi/g

Appendix G. Confirmatory Gamma Spectroscopic Analyses for Surface Radiation Anomaly Removal Action

Site 240 - Radiation VCM Confirmatory Gamma Spectroscopic Analyses

Analyte	Sample ID	Depth (ft)	Sample Date	Result	Det Limit	Units
ACTINIUM-228	TA3/5-240E13-SS	0.3	11-OCT-94	0.507	0.0876	pCi/g
BISMUTH-212	TA3/5-240E13-SS	0.3	11-OCT-94	0.672	0.294	pCi/g
BISMUTH-214	TA3/5-240E13-SS	0.3	11-OCT-94	0.756	0.0415	pCi/g
CESIUM-137	TA3/5-240E13-SS	0.3	11-OCT-94	0.0684	0.0218	pCi/g
LEAD-212	TA3/5-240E13-SS	0.3	11-OCT-94	0.536	0.0361	pCi/g
LEAD-214	TA3/5-240E13-SS	0.3	11-OCT-94	0.704	0.046	pCi/g
POTASSIUM-40	TA3/5-240E13-SS	0.3	11-OCT-94	16.1	0.234	pCi/g
RADIUM-224	TA3/5-240E13-SS	0.3	11-OCT-94	0.368	0.387	pCi/g
RADIUM-226	TA3/5-240E13-SS	0.3	11-OCT-94	0.957	0.471	pCi/g
RADIUM-228	TA3/5-240E13-SS	0.3	11-OCT-94	0.553	0.141	pCi/g
THALLIUM-208	TA3/5-240E13-SS	0.3	11-OCT-94	0.534	0.0575	pCi/g
THORIUM-228	TA3/5-240E13-SS	0.3	11-OCT-94	0.57	0.442	pCi/g
THORIUM-232	TA3/5-240E13-SS	0.3	11-OCT-94	0.515	0.14	pCi/g
THORIUM-234	TA3/5-240E13-SS	0.3	11-OCT-94	0.462	0.454	pCi/g
ACTINIUM-228	TA3/5-240E29-SS	0.3	12-OCT-94	0.72	0.0749	pCi/g
BISMUTH-212	TA3/5-240E29-SS	0.3	12-OCT-94	0.728	0.287	pCi/g
BISMUTH-214	TA3/5-240E29-SS	0.3	12-OCT-94	0.594	0.0409	pCi/g
CESIUM-137	TA3/5-240E29-SS	0.3	12-OCT-94	0.0683	0.0205	pCi/g
LEAD-212	TA3/5-240E29-SS	0.3	12-OCT-94	0.596	0.0352	pCi/g
LEAD-214	TA3/5-240E29-SS	0.3	12-OCT-94	0.581	0.042	pCi/g
POTASSIUM-40	TA3/5-240E29-SS	0.3	12-OCT-94	15.5	0.219	pCi/g
RADIUM-224	TA3/5-240E29-SS	0.3	12-OCT-94	0.781	0.383	pCi/g
RADIUM-226	TA3/5-240E29-SS	0.3	12-OCT-94	0.824	0.451	pCi/g
RADIUM-228	TA3/5-240E29-SS	0.3	12-OCT-94	0.639	0.132	pCi/g
THALLIUM-208	TA3/5-240E29-SS	0.3	12-OCT-94	0.576	0.0582	pCi/g
THORIUM-228	TA3/5-240E29-SS	0.3	12-OCT-94	0.475	0.434	pCi/g
THORIUM-232	TA3/5-240E29-SS	0.3	12-OCT-94	0.674	0.125	pCi/g
THORIUM-234	TA3/5-240E29-SS	0.3	12-OCT-94	0.723	0.437	pCi/g
ACTINIUM-228	TA3/5-240E46 SS	0	17-AUG-94	0.742	No Data	pCi/g
BISMUTH-212	TA3/5-240E46 SS	0	17-AUG-94	0.537	No Data	pCi/g
BISMUTH-214	TA3/5-240E46 SS	0	17-AUG-94	0.486	No Data	pCi/g
CESIUM-137	TA3/5-240E46 SS	0	17-AUG-94	0.0489	No Data	pCi/g
LEAD-210	TA3/5-240E46 SS	0	17-AUG-94	0.605	No Data	pCi/g
LEAD-212	TA3/5-240E46 SS	0	17-AUG-94	0.745	No Data	pCi/g
LEAD-214	TA3/5-240E46 SS	0	17-AUG-94	0.561	No Data	pCi/g
POTASSIUM-40	TA3/5-240E46 SS	0	17-AUG-94	13.2	No Data	pCi/g
RADIUM-226	TA3/5-240E46 SS	0	17-AUG-94	0.452	No Data	pCi/g
RADIUM-228	TA3/5-240E46 SS	0	17-AUG-94	0.823	No Data	pCi/g
THALLIUM-208	TA3/5-240E46 SS	0	17-AUG-94	0.577	No Data	pCi/g
THORIUM-228	TA3/5-240E46 SS	0	17-AUG-94	0.742	No Data	pCi/g
THORIUM-232	TA3/5-240E46 SS	0	17-AUG-94	0.823	No Data	pCi/g
THORIUM-234	TA3/5-240E46 SS	0	17-AUG-94	0.802	No Data	pCi/g
URANIUM-238	TA3/5-240E46 SS	0	17-AUG-94	0.8	No Data	pCi/g
ACTINIUM-228	TA3/5-240E55 SD	0	16-AUG-94	1.26	No Data	pCi/g
BERYLLIUM-7	TA3/5-240E55 SD	0	16-AUG-94	0.967	No Data	pCi/g
BISMUTH-212	TA3/5-240E55 SD	0	16-AUG-94	0.814	No Data	pCi/g
BISMUTH-214	TA3/5-240E55 SD	0	16-AUG-94	0.431	No Data	pCi/g
CESIUM-137	TA3/5-240E55 SD	0	16-AUG-94	0.0559	No Data	pCi/g
LEAD-212	TA3/5-240E55 SD	0	16-AUG-94	0.969	No Data	pCi/g
LEAD-214	TA3/5-240E55 SD	0	16-AUG-94	0.57	No Data	pCi/g
POTASSIUM-40	TA3/5-240E55 SD	0	16-AUG-94	12.9	No Data	pCi/g
RADIUM-224	TA3/5-240E55 SD	0	16-AUG-94	2.62	No Data	pCi/g
RADIUM-226	TA3/5-240E55 SD	0	16-AUG-94	0.354	No Data	pCi/g
RADIUM-228	TA3/5-240E55 SD	0	16-AUG-94	1.39	No Data	pCi/g
SODIUM-22	TA3/5-240E55 SD	0	16-AUG-94	0.0126	No Data	pCi/g
THALLIUM-208	TA3/5-240E55 SD	0	16-AUG-94	0.887	No Data	pCi/g
THORIUM-228	TA3/5-240E55 SD	0	16-AUG-94	0.965	No Data	pCi/g
THORIUM-232	TA3/5-240E55 SD	0	16-AUG-94	1.39	No Data	pCi/g
ACTINIUM-228	TA3/5-240E55 SS	0	16-AUG-94	0.522	No Data	pCi/g
BERYLLIUM-7	TA3/5-240E55 SS	0	16-AUG-94	0.137	No Data	pCi/g
BISMUTH-212	TA3/5-240E55 SS	0	16-AUG-94	0.314	No Data	pCi/g
BISMUTH-214	TA3/5-240E55 SS	0	16-AUG-94	0.376	No Data	pCi/g
CESIUM-137	TA3/5-240E55 SS	0	16-AUG-94	0.062	No Data	pCi/g
LEAD-212	TA3/5-240E55 SS	0	16-AUG-94	0.461	No Data	pCi/g
LEAD-214	TA3/5-240E55 SS	0	16-AUG-94	0.381	No Data	pCi/g
POTASSIUM-40	TA3/5-240E55 SS	0	16-AUG-94	12.4	No Data	pCi/g
RADIUM-224	TA3/5-240E55 SS	0	16-AUG-94	0.642	No Data	pCi/g
RADIUM-226	TA3/5-240E55 SS	0	16-AUG-94	0.293	No Data	pCi/g
RADIUM-228	TA3/5-240E55 SS	0	16-AUG-94	0.578	No Data	pCi/g
THALLIUM-208	TA3/5-240E55 SS	0	16-AUG-94	0.472	No Data	pCi/g
THORIUM-228	TA3/5-240E55 SS	0	16-AUG-94	0.459	No Data	pCi/g
THORIUM-232	TA3/5-240E55 SS	0	16-AUG-94	0.578	No Data	pCi/g
ACTINIUM-228	TA3/5-240E58 SS	0	16-AUG-94	1.18	No Data	pCi/g
BERYLLIUM-7	TA3/5-240E58 SS	0	16-AUG-94	0.137	No Data	pCi/g
BISMUTH-212	TA3/5-240E58 SS	0	16-AUG-94	0.63	No Data	pCi/g
BISMUTH-214	TA3/5-240E58 SS	0	16-AUG-94	0.508	No Data	pCi/g
LEAD-212	TA3/5-240E58 SS	0	16-AUG-94	1.07	No Data	pCi/g
LEAD-214	TA3/5-240E58 SS	0	16-AUG-94	0.534	No Data	pCi/g
POTASSIUM-40	TA3/5-240E58 SS	0	16-AUG-94	12.6	No Data	pCi/g
RADIUM-224	TA3/5-240E58 SS	0	16-AUG-94	3.29	No Data	pCi/g
RADIUM-226	TA3/5-240E58 SS	0	16-AUG-94	0.477	No Data	pCi/g
RADIUM-228	TA3/5-240E58 SS	0	16-AUG-94	1.3	No Data	pCi/g
THALLIUM-208	TA3/5-240E58 SS	0	16-AUG-94	1	No Data	pCi/g
THORIUM-228	TA3/5-240E58 SS	0	16-AUG-94	1.07	No Data	pCi/g
THORIUM-232	TA3/5-240E58 SS	0	16-AUG-94	1.3	No Data	pCi/g
ACTINIUM-228	TA3/5-240E59 SS	0	17-AUG-94	0.866	No Data	pCi/g
BISMUTH-212	TA3/5-240E59 SS	0	17-AUG-94	0.449	No Data	pCi/g
BISMUTH-214	TA3/5-240E59 SS	0	17-AUG-94	0.416	No Data	pCi/g
LEAD-210	TA3/5-240E59 SS	0	17-AUG-94	1.24	No Data	pCi/g
LEAD-212	TA3/5-240E59 SS	0	17-AUG-94	0.747	No Data	pCi/g
LEAD-214	TA3/5-240E59 SS	0	17-AUG-94	0.497	No Data	pCi/g
POTASSIUM-40	TA3/5-240E59 SS	0	17-AUG-94	12.6	No Data	pCi/g
RADIUM-226	TA3/5-240E59 SS	0	17-AUG-94	0.5	No Data	pCi/g
RADIUM-228	TA3/5-240E59 SS	0	17-AUG-94	0.959	No Data	pCi/g
STRONTIUM-85	TA3/5-240E59 SS	0	17-AUG-94	0.0162	No Data	pCi/g
THALLIUM-208	TA3/5-240E59 SS	0	17-AUG-94	0.714	No Data	pCi/g
THORIUM-228	TA3/5-240E59 SS	0	17-AUG-94	0.744	No Data	pCi/g
THORIUM-232	TA3/5-240E59 SS	0	17-AUG-94	0.959	No Data	pCi/g
ACTINIUM-228	TA3/5-240E72 SS	0	16-AUG-94	0.712	No Data	pCi/g
BISMUTH-212	TA3/5-240E72 SS	0	16-AUG-94	0.307	No Data	pCi/g
BISMUTH-214	TA3/5-240E72 SS	0	16-AUG-94	0.44	No Data	pCi/g
LEAD-212	TA3/5-240E72 SS	0	16-AUG-94	0.637	No Data	pCi/g
LEAD-214	TA3/5-240E72 SS	0	16-AUG-94	0.533	No Data	pCi/g
POTASSIUM-40	TA3/5-240E72 SS	0	16-AUG-94	13.3	No Data	pCi/g
RADIUM-224	TA3/5-240E72 SS	0	16-AUG-94	1.3	No Data	pCi/g
RADIUM-226	TA3/5-240E72 SS	0	16-AUG-94	0.637	No Data	pCi/g
RADIUM-228	TA3/5-240E72 SS	0	16-AUG-94	0.789	No Data	pCi/g
THALLIUM-208	TA3/5-240E72 SS	0	16-AUG-94	0.666	No Data	pCi/g
THORIUM-228	TA3/5-240E72 SS	0	16-AUG-94	0.634	No Data	pCi/g
THORIUM-232	TA3/5-240E72 SS	0	16-AUG-94	0.789	No Data	pCi/g
ACTINIUM-228	TA3/5-240E90 SS	0	17-AUG-94	0.814	No Data	pCi/g
BISMUTH-212	TA3/5-240E90 SS	0	17-AUG-94	0.445	No Data	pCi/g
BISMUTH-214	TA3/5-240E90 SS	0	17-AUG-94	0.487	No Data	pCi/g
LEAD-210	TA3/5-240E90 SS	0	17-AUG-94	1.28	No Data	pCi/g
LEAD-212	TA3/5-240E90 SS	0	17-AUG-94	0.904	No Data	pCi/g
LEAD-214	TA3/5-240E90 SS	0	17-AUG-94	0.52	No Data	pCi/g
POTASSIUM-40	TA3/5-240E90 SS	0	17-AUG-94	12.8	No Data	pCi/g
RADIUM-224	TA3/5-240E90 SS	0	17-AUG-94	0.445	No Data	pCi/g
RADIUM-226	TA3/5-240E90 SS	0	17-AUG-94	0.472	No Data	pCi/g
RADIUM-228	TA3/5-240E90 SS	0	17-AUG-94	0.902	No Data	pCi/g
THALLIUM-208	TA3/5-240E90 SS	0	17-AUG-94	0.839	No Data	pCi/g
THORIUM-228	TA3/5-240E90 SS	0	17-AUG-94	0.9	No Data	pCi/g
THORIUM-231	TA3/5-240E90 SS	0	17-AUG-94	0.39	No Data	pCi/g
THORIUM-232	TA3/5-240E90 SS	0	17-AUG-94	0.902	No Data	pCi/g
THORIUM-234	TA3/5-240E90 SS	0	17-AUG-94	0.913	No Data	pCi/g
URANIUM-238	TA3/5-240E90 SS	0	17-AUG-94	0.911	No Data	pCi/g
ACTINIUM-228	TA3/5-240E106-SS	0.3	12-OCT-94	0.774	0.0763	pCi/g
BISMUTH-212	TA3/5-240E106-SS	0.3	12-OCT-94	0.683	0.274	pCi/g
BISMUTH-214	TA3/5-240E106-SS	0.3	12-OCT-94	0.442	0.0408	pCi/g
LEAD-212	TA3/5-240E106-SS	0.3	12-OCT-94	0.717	0.0338	pCi/g
LEAD-214	TA3/5-240E106-SS	0.3	12-OCT-94	0.466	0.0433	pCi/g
POTASSIUM-40	TA3/5-240E106-SS	0.3	12-OCT-94	14.3	0.227	pCi/g
RADIUM-224	TA3/5-240E106-SS	0.3	12-OCT-94	0.69	0.364	pCi/g
RADIUM-226	TA3/5-240E106-SS	0.3	12-OCT-94	0.932	0.451	pCi/g
RADIUM-228	TA3/5-240E106-SS	0.3	12-OCT-94	0.733	0.12	pCi/g
THALLIUM-208	TA3/5-240E106-SS	0.3	12-OCT-94	0.697	0.057	pCi/g
THORIUM-228	TA3/5-240E106-SS	0.3	12-OCT-94	0.391	0.449	pCi/g
THORIUM-232	TA3/5-240E106-SS	0.3	12-OCT-94	0.694	0.131	pCi/g
THORIUM-234	TA3/5-240E106-SS	0.3	12-OCT-94	0.61	0.43	pCi/g
ACTINIUM-228	TA3/5-240E108-SS	0.3	12-OCT-94	1.36	0.0923	pCi/g
BERYLLIUM-7	TA3/5-240E108-SS	0.3	12-OCT-94	0.146	0.176	pCi/g
BISMUTH-212	TA3/5-240E108-SS	0.3	12-OCT-94	1.29	0.352	pCi/g
BISMUTH-214	TA3/5-240E108-SS	0.3	12-OCT-94	0.701	0.0474	pCi/g
LEAD-212	TA3/5-240E108-SS	0.3	12-OCT-94	1.17	0.0409	pCi/g
LEAD-214	TA3/5-240E108-SS	0.3	12-OCT-94	0.625	0.0514	pCi/g
POTASSIUM-40	TA3/5-240E108-SS	0.3	12-OCT-94	13.4	0.246	pCi/g
RADIUM-223	TA3/5-240E108-SS	0.3	12-OCT-94	0.145	0.147	pCi/g
RADIUM-224	TA3/5-240E108-SS	0.3	12-OCT-94	1.37	0.439	pCi/g
RADIUM-226	TA3/5-240E108-SS	0.3	12-OCT-94	0.832	0.554	pCi/g
RADIUM-228	TA3/5-240E108-SS	0.3	12-OCT-94	1.44	0.147	pCi/g
THALLIUM-208	TA3/5-240E108-SS	0.3	12-OCT-94	1.05	0.0677	pCi/g
THORIUM-228	TA3/5-240E108-SS	0.3	12-OCT-94	0.955	0.496	pCi/g
THORIUM-231	TA3/5-240E108-SS	0.3	12-OCT-94	0.384	0.399	pCi/g
THORIUM-232	TA3/5-240E108-SS	0.3	12-OCT-94	1.29	0.157	pCi/g
THORIUM-234	TA3/5-240E108-SS	0.3	12-OCT-94	0.696	0.516	pCi/g
URANIUM-238	TA3/5-240E108-SS	0.3	12-OCT-94	1.05	1.63	pCi/g
ACTINIUM-228	TA3/5-240E112 SS	0	17-AUG-94	0.638	No Data	pCi/g
BISMUTH-212	TA3/5-240E112 SS	0	17-AUG-94	0.497	No Data	pCi/g
BISMUTH-214	TA3/5-240E112 SS	0	17-AUG-94	0.457	No Data	pCi/g
LEAD-210	TA3/5-240E112 SS	0	17-AUG-94	0.833	No Data	pCi/g
LEAD-212	TA3/5-240E112 SS	0	17-AUG-94	0.623	No Data	pCi/g
LEAD-214	TA3/5-240E112 SS	0	17-AUG-94	0.549	No Data	pCi/g
POTASSIUM-40	TA3/5-240E112 SS	0	17-AUG-94	13.1	No Data	pCi/g
RADIUM-226	TA3/5-240E112 SS	0	17-AUG-94	0.428	No Data	pCi/g
RADIUM-228	TA3/5-240E112 SS	0	17-AUG-94	0.707	No Data	pCi/g
THALLIUM-208	TA3/5-240E112 SS	0	17-AUG-94	0.654	No Data	pCi/g
THORIUM-228	TA3/5-240E112 SS	0	17-AUG-94	0.62	No Data	pCi/g
THORIUM-232	TA3/5-240E112 SS	0	17-AUG-94	0.707	No Data	pCi/g
THORIUM-234	TA3/5-240E112 SS	0	17-AUG-94	0.52	No Data	pCi/g
URANIUM-238	TA3/5-240E112 SS	0	17-AUG-94	0.519	No Data	pCi/g
ACTINIUM-228	TA3/5-240E125-SD	0.3	11-OCT-94	0.942	0.085	pCi/g
BISMUTH-212	TA3/5-240E125-SD	0.3	11-OCT-94	0.857	0.333	pCi/g
BISMUTH-214	TA3/5-240E125-SD	0.3	11-OCT-94	0.523	0.0484	pCi/g
CESIUM-137	TA3/5-240E125-SD	0.3	11-OCT-94	0.0624	0.0237	pCi/g
LEAD-212	TA3/5-240E125-SD	0.3	11-OCT-94	0.74	0.039	pCi/g
LEAD-214	TA3/5-240E125-SD	0.3	11-OCT-94	0.552	0.0488	pCi/g
POTASSIUM-40	TA3/5-240E125-SD	0.3	11-OCT-94	15.3	0.248	pCi/g
RADIUM-224	TA3/5-240E125-SD	0.3	11-OCT-94	0.634	0.406	pCi/g
RADIUM-226	TA3/5-240E125-SD	0.3	11-OCT-94	1.03	0.489	pCi/g
RADIUM-228	TA3/5-240E125-SD	0.3	11-OCT-94	0.76	0.142	pCi/g
THALLIUM-208	TA3/5-240E125-SD	0.3	11-OCT-94	0.672	0.0676	pCi/g
THORIUM-228	TA3/5-240E125-SD	0.3	11-OCT-94	0.827	0.508	pCi/g
THORIUM-232	TA3/5-240E125-SD	0.3	11-OCT-94	0.736	0.151	pCi/g
THORIUM-234	TA3/5-240E125-SD	0.3	11-OCT-94	0.663	0.484	pCi/g
ACTINIUM-228	TA3/5-240E125-SS	0.3	11-OCT-94	0.829	0.0973	pCi/g
BISMUTH-212	TA3/5-240E125-SS	0.3	11-OCT-94	0.747	0.322	pCi/g
BISMUTH-214	TA3/5-240E125-SS	0.3	11-OCT-94	0.511	0.0496	pCi/g
CESIUM-137	TA3/5-240E125-SS	0.3	11-OCT-94	0.0698	0.0254	pCi/g
LEAD-212	TA3/5-240E125-SS	0.3	11-OCT-94	0.729	0.0389	pCi/g
LEAD-214	TA3/5-240E125-SS	0.3	11-OCT-94	0.53	0.0493	pCi/g
POTASSIUM-40	TA3/5-240E125-SS	0.3	11-OCT-94	15.3	0.271	pCi/g
RADIUM-224	TA3/5-240E125-SS	0.3	11-OCT-94	0.6	0.418	pCi/g
RADIUM-226	TA3/5-240E125-SS	0.3	11-OCT-94	1.16	0.509	pCi/g
RADIUM-228	TA3/5-240E125-SS	0.3	11-OCT-94	0.778	0.154	pCi/g
THALLIUM-208	TA3/5-240E125-SS	0.3	11-OCT-94	0.638	0.0658	pCi/g
THORIUM-232	TA3/5-240E125-SS	0.3	11-OCT-94	0.748	0.151	pCi/g
THORIUM-234	TA3/5-240E125-SS	0.3	11-OCT-94	0.818	0.491	pCi/g
ACTINIUM-228	TA3/5-240E137-SD	0.3	11-OCT-94	0.853	0.0822	pCi/g
BISMUTH-212	TA3/5-240E137-SD	0.3	11-OCT-94	0.795	0.299	pCi/g
BISMUTH-214	TA3/5-240E137-SD	0.3	11-OCT-94	0.565	0.0422	pCi/g
CESIUM-137	TA3/5-240E137-SD	0.3	11-OCT-94	0.113	0.0219	pCi/g
LEAD-212	TA3/5-240E137-SD	0.3	11-OCT-94	0.791	0.0351	pCi/g
LEAD-214	TA3/5-240E137-SD	0.3	11-OCT-94	0.558	0.043	pCi/g
POTASSIUM-40	TA3/5-240E137-SD	0.3	11-OCT-94	16.9	0.22	pCi/g
RADIUM-224	TA3/5-240E137-SD	0.3	11-OCT-94	0.693	0.378	pCi/g
RADIUM-226	TA3/5-240E137-SD	0.3	11-OCT-94	0.958	0.463	pCi/g
RADIUM-228	TA3/5-240E137-SD	0.3	11-OCT-94	0.937	0.141	pCi/g
THALLIUM-208	TA3/5-240E137-SD	0.3	11-OCT-94	0.642	0.0597	pCi/g
THORIUM-228	TA3/5-240E137-SD	0.3	11-OCT-94	0.466	0.452	pCi/g
THORIUM-232	TA3/5-240E137-SD	0.3	11-OCT-94	0.789	0.133	pCi/g
THORIUM-234	TA3/5-240E137-SD	0.3	11-OCT-94	0.456	0.467	pCi/g
ACTINIUM-228	TA3/5-240E137-SS	0.3	11-OCT-94	0.833	0.0808	pCi/g
BISMUTH-212	TA3/5-240E137-SS	0.3	11-OCT-94	0.923	0.297	pCi/g
BISMUTH-214	TA3/5-240E137-SS	0.3	11-OCT-94	0.557	0.0424	pCi/g
CESIUM-137	TA3/5-240E137-SS	0.3	11-OCT-94	0.113	0.0217	pCi/g
LEAD-212	TA3/5-240E137-SS	0.3	11-OCT-94	0.682	0.0347	pCi/g
LEAD-214	TA3/5-240E137-SS	0.3	11-OCT-94	0.595	0.0426	pCi/g
POTASSIUM-40	TA3/5-240E137-SS	0.3	11-OCT-94	15.6	0.213	pCi/g
RADIUM-224	TA3/5-240E137-SS	0.3	11-OCT-94	0.68	0.377	pCi/g
RADIUM-226	TA3/5-240E137-SS	0.3	11-OCT-94	1.02	0.447	pCi/g
RADIUM-228	TA3/5-240E137-SS	0.3	11-OCT-94	0.83	0.131	pCi/g
THALLIUM-208	TA3/5-240E137-SS	0.3	11-OCT-94	0.568	0.0592	pCi/g
THORIUM-228	TA3/5-240E137-SS	0.3	11-OCT-94	0.484	0.416	pCi/g
THORIUM-232	TA3/5-240E137-SS	0.3	11-OCT-94	0.814	0.13	pCi/g
THORIUM-234	TA3/5-240E137-SS	0.3	11-OCT-94	0.573	0.439	pCi/g
URANIUM-238	TA3/5-240E137-SS	0.3	11-OCT-94	0.983	1.37	pCi/g
ACTINIUM-228	TA3/5-240E142-SD	0.3	11-OCT-94	0.743	0.0829	pCi/g
BISMUTH-212	TA3/5-240E142-SD	0.3	11-OCT-94	0.679	0.291	pCi/g
BISMUTH-214	TA3/5-240E142-SD	0.3	11-OCT-94	0.475	0.0418	pCi/g
CESIUM-137	TA3/5-240E142-SD	0.3	11-OCT-94	0.0436	0.0205	pCi/g
LEAD-212	TA3/5-240E142-SD	0.3	11-OCT-94	0.632	0.0356	pCi/g
LEAD-214	TA3/5-240E142-SD	0.3	11-OCT-94	0.533	0.0416	pCi/g
POTASSIUM-40	TA3/5-240E142-SD	0.3	11-OCT-94	17.1	0.222	pCi/g
RADIUM-224	TA3/5-240E142-SD	0.3	11-OCT-94	0.487	0.385	pCi/g
RADIUM-226	TA3/5-240E142-SD	0.3	11-OCT-94	0.939	0.454	pCi/g
RADIUM-228	TA3/5-240E142-SD	0.3	11-OCT-94	0.678	0.138	pCi/g
THALLIUM-208	TA3/5-240E142-SD	0.3	11-OCT-94	0.602	0.061	pCi/g
THORIUM-228	TA3/5-240E142-SD	0.3	11-OCT-94	0.638	0.432	pCi/g
THORIUM-232	TA3/5-240E142-SD	0.3	11-OCT-94	0.669	0.125	pCi/g
THORIUM-234	TA3/5-240E142-SD	0.3	11-OCT-94	0.627	0.448	pCi/g
URANIUM-238	TA3/5-240E142-SD	0.3	11-OCT-94	1.22	1.39	pCi/g
ACTINIUM-228	TA3/5-240E142-SS	0.3	11-OCT-94	0.777	0.0847	pCi/g
BISMUTH-212	TA3/5-240E142-SS	0.3	11-OCT-94	1.03	0.284	pCi/g
BISMUTH-214	TA3/5-240E142-SS	0.3	11-OCT-94	0.546	0.044	pCi/g
CESIUM-137	TA3/5-240E142-SS	0.3	11-OCT-94	0.0566	0.0225	pCi/g
LEAD-212	TA3/5-240E142-SS	0.3	11-OCT-94	0.72	0.0358	pCi/g
LEAD-214	TA3/5-240E142-SS	0.3	11-OCT-94	0.568	0.0435	pCi/g
POTASSIUM-40	TA3/5-240E142-SS	0.3	11-OCT-94	17.2	0.235	pCi/g
RADIUM-224	TA3/5-240E142-SS	0.3	11-OCT-94	0.714	0.384	pCi/g
RADIUM-226	TA3/5-240E142-SS	0.3	11-OCT-94	1.08	0.471	pCi/g
RADIUM-228	TA3/5-240E142-SS	0.3	11-OCT-94	0.72	0.144	pCi/g
THALLIUM-208	TA3/5-240E142-SS	0.3	11-OCT-94	0.652	0.0568	pCi/g
THORIUM-228	TA3/5-240E142-SS	0.3	11-OCT-94	0.554	0.463	pCi/g
THORIUM-232	TA3/5-240E142-SS	0.3	11-OCT-94	0.824	0.132	pCi/g
THORIUM-234	TA3/5-240E142-SS	0.3	11-OCT-94	0.545	0.46	pCi/g
ACTINIUM-228	TA3/5-240E153-SS	0.3	11-OCT-94	0.743	0.0915	pCi/g
BISMUTH-212	TA3/5-240E153-SS	0.3	11-OCT-94	0.888	0.308	pCi/g
BISMUTH-214	TA3/5-240E153-SS	0.3	11-OCT-94	0.617	0.0475	pCi/g
LEAD-212	TA3/5-240E153-SS	0.3	11-OCT-94	0.662	0.0391	pCi/g
LEAD-214	TA3/5-240E153-SS	0.3	11-OCT-94	0.614	0.0489	pCi/g
POTASSIUM-40	TA3/5-240E153-SS	0.3	11-OCT-94	16.2	0.253	pCi/g
RADIUM-224	TA3/5-240E153-SS	0.3	11-OCT-94	0.59	0.42	pCi/g
RADIUM-226	TA3/5-240E153-SS	0.3	11-OCT-94	1.16	0.506	pCi/g
RADIUM-228	TA3/5-240E153-SS	0.3	11-OCT-94	0.683	0.16	pCi/g
THALLIUM-208	TA3/5-240E153-SS	0.3	11-OCT-94	0.665	0.0656	pCi/g
THORIUM-232	TA3/5-240E153-SS	0.3	11-OCT-94	0.67	0.149	pCi/g
THORIUM-234	TA3/5-240E153-SS	0.3	11-OCT-94	0.324	0.497	pCi/g
ACTINIUM-228	TA3/5-240E162-SS	0.3	11-OCT-94	0.809	0.0898	pCi/g
BERYLLIUM-7	TA3/5-240E162-SS	0.3	11-OCT-94	0.136	0.168	pCi/g
BISMUTH-212	TA3/5-240E162-SS	0.3	11-OCT-94	0.887	0.325	pCi/g
BISMUTH-214	TA3/5-240E162-SS	0.3	11-OCT-94	0.65	0.046	pCi/g
CESIUM-137	TA3/5-240E162-SS	0.3	11-OCT-94	0.021	0.0246	pCi/g
LEAD-212	TA3/5-240E162-SS	0.3	11-OCT-94	0.667	0.0377	pCi/g
LEAD-214	TA3/5-240E162-SS	0.3	11-OCT-94	0.68	0.0462	pCi/g
POTASSIUM-40	TA3/5-240E162-SS	0.3	11-OCT-94	15.1	0.252	pCi/g
RADIUM-224	TA3/5-240E162-SS	0.3	11-OCT-94	0.586	0.405	pCi/g
RADIUM-226	TA3/5-240E162-SS	0.3	11-OCT-94	1.05	0.5	pCi/g
RADIUM-228	TA3/5-240E162-SS	0.3	11-OCT-94	0.762	0.152	pCi/g
THALLIUM-208	TA3/5-240E162-SS	0.3	11-OCT-94	0.586	0.0582	pCi/g
THORIUM-228	TA3/5-240E162-SS	0.3	11-OCT-94	0.678	0.456	pCi/g
THORIUM-232	TA3/5-240E162-SS	0.3	11-OCT-94	0.664	0.142	pCi/g
THORIUM-234	TA3/5-240E162-SS	0.3	11-OCT-94	0.855	0.489	pCi/g
ACTINIUM-228	TA3/5-240E165-SS	0	19-AUG-94	0.91	No Data	pCi/g
BERYLLIUM-7	TA3/5-240E165-SS	0	19-AUG-94	0.238	No Data	pCi/g
BISMUTH-212	TA3/5-240E165-SS	0	19-AUG-94	0.538	No Data	pCi/g
BISMUTH-214	TA3/5-240E165-SS	0	19-AUG-94	0.552	No Data	pCi/g
LEAD-210	TA3/5-240E165-SS	0	19-AUG-94	1.83	No Data	pCi/g
LEAD-212	TA3/5-240E165-SS	0	19-AUG-94	0.798	No Data	pCi/g
LEAD-214	TA3/5-240E165-SS	0	19-AUG-94	0.527	No Data	pCi/g
POTASSIUM-40	TA3/5-240E165-SS	0	19-AUG-94	13.2	No Data	pCi/g
RADIUM-226	TA3/5-240E165-SS	0	19-AUG-94	0.601	No Data	pCi/g
RADIUM-228	TA3/5-240E165-SS	0	19-AUG-94	1.01	No Data	pCi/g
THALLIUM-208	TA3/5-240E165-SS	0	19-AUG-94	0.758	No Data	pCi/g
THORIUM-228	TA3/5-240E165-SS	0	19-AUG-94	0.794	No Data	pCi/g
THORIUM-232	TA3/5-240E165-SS	0	19-AUG-94	1.01	No Data	pCi/g
THORIUM-234	TA3/5-240E165-SS	0	19-AUG-94	1.13	No Data	pCi/g
URANIUM-238	TA3/5-240E165-SS	0	19-AUG-94	1.12	No Data	pCi/g
ACTINIUM-228	TA3/5-240E174-SS	0	19-AUG-94	1.19	No Data	pCi/g
BISMUTH-212	TA3/5-240E174-SS	0	19-AUG-94	0.569	No Data	pCi/g
BISMUTH-214	TA3/5-240E174-SS	0	19-AUG-94	0.432	No Data	pCi/g
CESIUM-137	TA3/5-240E174-SS	0	19-AUG-94	0.0399	No Data	pCi/g
LEAD-210	TA3/5-240E174-SS	0	19-AUG-94	1.27	No Data	pCi/g
LEAD-212	TA3/5-240E174-SS	0	19-AUG-94	1.09	No Data	pCi/g
LEAD-214	TA3/5-240E174-SS	0	19-AUG-94	0.506	No Data	pCi/g
POTASSIUM-40	TA3/5-240E174-SS	0	19-AUG-94	12.2	No Data	pCi/g
RADIUM-224	TA3/5-240E174-SS	0	19-AUG-94	0.621	No Data	pCi/g
RADIUM-226	TA3/5-240E174-SS	0	19-AUG-94	0.56	No Data	pCi/g
RADIUM-228	TA3/5-240E174-SS	0	19-AUG-94	1.32	No Data	pCi/g
THALLIUM-208	TA3/5-240E174-SS	0	19-AUG-94	0.987	No Data	pCi/g
THORIUM-228	TA3/5-240E174-SS	0	19-AUG-94	1.09	No Data	pCi/g
THORIUM-232	TA3/5-240E174-SS	0	19-AUG-94	1.32	No Data	pCi/g
ACTINIUM-228	TA3/5-240E188-SS	0	19-AUG-94	0.521	No Data	pCi/g
BISMUTH-212	TA3/5-240E188-SS	0	19-AUG-94	0.421	No Data	pCi/g
BISMUTH-214	TA3/5-240E188-SS	0	19-AUG-94	0.426	No Data	pCi/g
LEAD-210	TA3/5-240E188-SS	0	19-AUG-94	0.807	No Data	pCi/g
LEAD-212	TA3/5-240E188-SS	0	19-AUG-94	0.622	No Data	pCi/g
LEAD-214	TA3/5-240E188-SS	0	19-AUG-94	0.5	No Data	pCi/g
POTASSIUM-40	TA3/5-240E188-SS	0	19-AUG-94	12.8	No Data	pCi/g
RADIUM-226	TA3/5-240E188-SS	0	19-AUG-94	0.326	No Data	pCi/g
RADIUM-228	TA3/5-240E188-SS	0	19-AUG-94	0.577	No Data	pCi/g
THALLIUM-208	TA3/5-240E188-SS	0	19-AUG-94	0.537	No Data	pCi/g
THORIUM-228	TA3/5-240E188-SS	0	19-AUG-94	0.62	No Data	pCi/g
THORIUM-232	TA3/5-240E188-SS	0	19-AUG-94	0.577	No Data	pCi/g
ACTINIUM-228	TA3/5-240E196-SS	0.3	11-OCT-94	0.739	0.0878	pCi/g
BERYLLIUM-7	TA3/5-240E196-SS	0.3	11-OCT-94	0.137	0.171	pCi/g
BISMUTH-212	TA3/5-240E196-SS	0.3	11-OCT-94	0.759	0.309	pCi/g
BISMUTH-214	TA3/5-240E196-SS	0.3	11-OCT-94	0.732	0.0432	pCi/g
CESIUM-137	TA3/5-240E196-SS	0.3	11-OCT-94	0.0559	0.0216	pCi/g
LEAD-212	TA3/5-240E196-SS	0.3	11-OCT-94	0.732	0.0383	pCi/g
LEAD-214	TA3/5-240E196-SS	0.3	11-OCT-94	0.724	0.0436	pCi/g
POTASSIUM-40	TA3/5-240E196-SS	0.3	11-OCT-94	16.5	0.219	pCi/g
RADIUM-224	TA3/5-240E196-SS	0.3	11-OCT-94	0.404	0.414	pCi/g
RADIUM-226	TA3/5-240E196-SS	0.3	11-OCT-94	1.16	0.491	pCi/g
RADIUM-228	TA3/5-240E196-SS	0.3	11-OCT-94	0.848	0.147	pCi/g
THALLIUM-208	TA3/5-240E196-SS	0.3	11-OCT-94	0.691	0.0624	pCi/g
THORIUM-228	TA3/5-240E196-SS	0.3	11-OCT-94	0.624	0.47	pCi/g
THORIUM-232	TA3/5-240E196-SS	0.3	11-OCT-94	0.738	0.137	pCi/g
THORIUM-234	TA3/5-240E196-SS	0.3	11-OCT-94	0.614	0.469	pCi/g
ACTINIUM-228	TA3/5-240E229-SS	1	12-OCT-94	0.698	0.122	pCi/g
BISMUTH-212	TA3/5-240E229-SS	1	12-OCT-94	0.782	0.402	pCi/g
BISMUTH-214	TA3/5-240E229-SS	1	12-OCT-94	0.745	0.0536	pCi/g
CESIUM-137	TA3/5-240E229-SS	1	12-OCT-94	0.567	0.0278	pCi/g
COBALT-60	TA3/5-240E229-SS	1	12-OCT-94	1.12	0.0283	pCi/g
LEAD-212	TA3/5-240E229-SS	1	12-OCT-94	0.649	0.0408	pCi/g
LEAD-214	TA3/5-240E229-SS	1	12-OCT-94	0.672	0.0545	pCi/g
POTASSIUM-40	TA3/5-240E229-SS	1	12-OCT-94	14.9	0.235	pCi/g
RADIUM-224	TA3/5-240E229-SS	1	12-OCT-94	0.693	0.439	pCi/g
RADIUM-226	TA3/5-240E229-SS	1	12-OCT-94	1.04	0.549	pCi/g
RADIUM-228	TA3/5-240E229-SS	1	12-OCT-94	0.666	0.206	pCi/g
THALLIUM-208	TA3/5-240E229-SS	1	12-OCT-94	0.525	0.0752	pCi/g
THORIUM-231	TA3/5-240E229-SS	1	12-OCT-94	0.332	0.386	pCi/g
THORIUM-232	TA3/5-240E229-SS	1	12-OCT-94	0.65	0.164	pCi/g
THORIUM-234	TA3/5-240E229-SS	1	12-OCT-94	0.859	0.501	pCi/g
URANIUM-238	TA3/5-240E229-SS	1	12-OCT-94	1.11	1.55	pCi/g
ACTINIUM-228	TA3/5-240E232-SD	1	30-NOV-94	0.538	No Data	pCi/g
BISMUTH-212	TA3/5-240E232-SD	1	30-NOV-94	0.371	No Data	pCi/g
BISMUTH-214	TA3/5-240E232-SD	1	30-NOV-94	0.442	No Data	pCi/g
CESIUM-137	TA3/5-240E232-SD	1	30-NOV-94	0.0758	No Data	pCi/g
COBALT-60	TA3/5-240E232-SD	1	30-NOV-94	0.178	No Data	pCi/g
LEAD-212	TA3/5-240E232-SD	1	30-NOV-94	0.544	No Data	pCi/g
LEAD-214	TA3/5-240E232-SD	1	30-NOV-94	0.51	No Data	pCi/g
POTASSIUM-40	TA3/5-240E232-SD	1	30-NOV-94	13.6	No Data	pCi/g
RADIUM-226	TA3/5-240E232-SD	1	30-NOV-94	0.963	No Data	pCi/g
RADIUM-228	TA3/5-240E232-SD	1	30-NOV-94	0.596	No Data	pCi/g
THALLIUM-208	TA3/5-240E232-SD	1	30-NOV-94	0.617	No Data	pCi/g
THORIUM-228	TA3/5-240E232-SD	1	30-NOV-94	0.541	No Data	pCi/g
THORIUM-232	TA3/5-240E232-SD	1	30-NOV-94	0.596	No Data	pCi/g
ACTINIUM-228	TA3/5-240E232-SS	1	30-NOV-94	0.686	No Data	pCi/g
BISMUTH-212	TA3/5-240E232-SS	1	30-NOV-94	0.323	No Data	pCi/g
BISMUTH-214	TA3/5-240E232-SS	1	30-NOV-94	0.472	No Data	pCi/g
CESIUM-137	TA3/5-240E232-SS	1	30-NOV-94	0.0591	No Data	pCi/g
COBALT-60	TA3/5-240E232-SS	1	30-NOV-94	0.247	No Data	pCi/g
LEAD-212	TA3/5-240E232-SS	1	30-NOV-94	0.604	No Data	pCi/g
LEAD-214	TA3/5-240E232-SS	1	30-NOV-94	0.577	No Data	pCi/g
POTASSIUM-40	TA3/5-240E232-SS	1	30-NOV-94	13.7	No Data	pCi/g
RADIUM-224	TA3/5-240E232-SS	1	30-NOV-94	0.864	No Data	pCi/g
RADIUM-226	TA3/5-240E232-SS	1	30-NOV-94	1.4	No Data	pCi/g
RADIUM-228	TA3/5-240E232-SS	1	30-NOV-94	0.76	No Data	pCi/g
THALLIUM-208	TA3/5-240E232-SS	1	30-NOV-94	0.545	No Data	pCi/g
THORIUM-228	TA3/5-240E232-SS	1	30-NOV-94	0.602	No Data	pCi/g
THORIUM-232	TA3/5-240E232-SS	1	30-NOV-94	0.76	No Data	pCi/g
ACTINIUM-227	TA3/5-240E235-SS	0.3	12-OCT-94	0.098	2.07	pCi/g
ACTINIUM-228	TA3/5-240E235-SS	0.3	12-OCT-94	0.689	0.0834	pCi/g
BISMUTH-212	TA3/5-240E235-SS	0.3	12-OCT-94	0.843	0.306	pCi/g
BISMUTH-214	TA3/5-240E235-SS	0.3	12-OCT-94	0.471	0.0417	pCi/g
CESIUM-137	TA3/5-240E235-SS	0.3	12-OCT-94	0.129	0.0225	pCi/g
LEAD-212	TA3/5-240E235-SS	0.3	12-OCT-94	0.687	0.037	pCi/g
LEAD-214	TA3/5-240E235-SS	0.3	12-OCT-94	0.514	0.0436	pCi/g
POTASSIUM-40	TA3/5-240E235-SS	0.3	12-OCT-94	16.2	0.213	pCi/g
RADIUM-224	TA3/5-240E235-SS	0.3	12-OCT-94	0.778	0.398	pCi/g
RADIUM-226	TA3/5-240E235-SS	0.3	12-OCT-94	3.2	0.5	pCi/g
RADIUM-228	TA3/5-240E235-SS	0.3	12-OCT-94	0.758	0.144	pCi/g
THALLIUM-208	TA3/5-240E235-SS	0.3	12-OCT-94	0.615	0.0578	pCi/g
THORIUM-228	TA3/5-240E235-SS	0.3	12-OCT-94	0.448	0.45	pCi/g
THORIUM-232	TA3/5-240E235-SS	0.3	12-OCT-94	0.68	0.138	pCi/g
THORIUM-234	TA3/5-240E235-SS	0.3	12-OCT-94	9.08	0.545	pCi/g
URANIUM-238	TA3/5-240E235-SS	0.3	12-OCT-94	9.41	1.74	pCi/g
ACTINIUM-228	TA3/5-240E239-SS	0.3	12-OCT-94	0.553	0.0762	pCi/g
BISMUTH-212	TA3/5-240E239-SS	0.3	12-OCT-94	0.768	0.249	pCi/g
BISMUTH-214	TA3/5-240E239-SS	0.3	12-OCT-94	0.529	0.038	pCi/g
CESIUM-137	TA3/5-240E239-SS	0.3	12-OCT-94	0.148	0.0181	pCi/g
LEAD-212	TA3/5-240E239-SS	0.3	12-OCT-94	0.536	0.0324	pCi/g
LEAD-214	TA3/5-240E239-SS	0.3	12-OCT-94	0.488	0.0404	pCi/g
POTASSIUM-40	TA3/5-240E239-SS	0.3	12-OCT-94	14.2	0.213	pCi/g
RADIUM-224	TA3/5-240E239-SS	0.3	12-OCT-94	0.393	0.348	pCi/g
RADIUM-226	TA3/5-240E239-SS	0.3	12-OCT-94	0.768	0.426	pCi/g
RADIUM-228	TA3/5-240E239-SS	0.3	12-OCT-94	0.586	0.13	pCi/g
THALLIUM-208	TA3/5-240E239-SS	0.3	12-OCT-94	0.495	0.0538	pCi/g
THORIUM-228	TA3/5-240E239-SS	0.3	12-OCT-94	0.463	0.393	pCi/g
THORIUM-232	TA3/5-240E239-SS	0.3	12-OCT-94	0.544	0.122	pCi/g
THORIUM-234	TA3/5-240E239-SS	0.3	12-OCT-94	0.706	0.405	pCi/g
URANIUM-238	TA3/5-240E239-SS	0.3	12-OCT-94	1.07	1.23	pCi/g
ACTINIUM-228	TA3/5-240E260-SS	0.3	11-OCT-94	0.816	0.0855	pCi/g
BISMUTH-212	TA3/5-240E260-SS	0.3	11-OCT-94	0.898	0.285	pCi/g
BISMUTH-214	TA3/5-240E260-SS	0.3	11-OCT-94	0.609	0.041	pCi/g
CESIUM-137	TA3/5-240E260-SS	0.3	11-OCT-94	0.0324	0.0218	pCi/g
LEAD-212	TA3/5-240E260-SS	0.3	11-OCT-94	0.706	0.036	pCi/g
LEAD-214	TA3/5-240E260-SS	0.3	11-OCT-94	0.585	0.0426	pCi/g
POTASSIUM-40	TA3/5-240E260-SS	0.3	11-OCT-94	14.5	0.22	pCi/g
RADIUM-224	TA3/5-240E260-SS	0.3	11-OCT-94	0.89	0.391	pCi/g
RADIUM-226	TA3/5-240E260-SS	0.3	11-OCT-94	1.06	0.462	pCi/g
RADIUM-228	TA3/5-240E260-SS	0.3	11-OCT-94	0.769	0.136	pCi/g
THALLIUM-208	TA3/5-240E260-SS	0.3	11-OCT-94	0.652	0.0561	pCi/g
THORIUM-232	TA3/5-240E260-SS	0.3	11-OCT-94	0.73	0.134	pCi/g
THORIUM-234	TA3/5-240E260-SS	0.3	11-OCT-94	0.819	0.437	pCi/g

Appendix G. Confirmatory Gamma Spectroscopic Analyses for Surface Radiation Anomaly Removal Action									
Site 241 - Radiation VCM Confirmatory Gamma Spectroscopic Analyses									
Analyte	Sample ID	Depth (ft)	Sample Date	Result	Det Limit	Units			
ACTINIUM-228	241E1-SS	0	28-JUL-95	0.562	0.156	pCi/g			
BISMUTH-212	241E1-SS	0	28-JUL-95	0.698	0.498	pCi/g			
CESIUM-137	241E1-SS	0	28-JUL-95	0.0608	0.0329	pCi/g			
LEAD-212	241E1-SS	0	28-JUL-95	0.515	0.0886	pCi/g			
LEAD-214	241E1-SS	0	28-JUL-95	0.443	0.0872	pCi/g			
POTASSIUM-40	241E1-SS	0	28-JUL-95	15	0.594	pCi/g			
RADIUM-224	241E1-SS	0	28-JUL-95	0.924	0.608	pCi/g			
RADIUM-226	241E1-SS	0	28-JUL-95	1.11	0.739	pCi/g			
RADIUM-228	241E1-SS	0	28-JUL-95	0.567	0.192	pCi/g			
THALLIUM-208	241E1-SS	0	28-JUL-95	0.491	0.126	pCi/g			
THORIUM-228	241E1-SS	0	28-JUL-95	0.703	0.702	pCi/g			
THORIUM-232	241E1-SS	0	28-JUL-95	0.543	0.245	pCi/g			
ACTINIUM-228	241E2-SS	0	28-JUL-95	0.704	0.151	pCi/g			
BISMUTH-212	241E2-SS	0	28-JUL-95	0.458	0.521	pCi/g			
BISMUTH-214	241E2-SS	0	28-JUL-95	0.513	0.0937	pCi/g			
CESIUM-137	241E2-SS	0	28-JUL-95	0.0697	0.0499	pCi/g			
LEAD-212	241E2-SS	0	28-JUL-95	0.577	0.0831	pCi/g			
LEAD-214	241E2-SS	0	28-JUL-95	0.581	0.0852	pCi/g			
POTASSIUM-40	241E2-SS	0	28-JUL-95	16.7	0.336	pCi/g			
RADIUM-224	241E2-SS	0	28-JUL-95	0.861	0.605	pCi/g			
RADIUM-226	241E2-SS	0	28-JUL-95	1.53	1.19	pCi/g			
RADIUM-228	241E2-SS	0	28-JUL-95	0.597	0.182	pCi/g			
THALLIUM-208	241E2-SS	0	28-JUL-95	0.637	0.112	pCi/g			
THORIUM-228	241E2-SS	0	28-JUL-95	0.705	0.737	pCi/g			
THORIUM-232	241E2-SS	0	28-JUL-95	0.451	0.257	pCi/g			
ACTINIUM-228	241E3-SS	0	28-JUL-95	0.79	0.198	pCi/g			
BISMUTH-212	241E3-SS	0	28-JUL-95	1.24	0.569	pCi/g			
BISMUTH-214	241E3-SS	0	28-JUL-95	0.465	0.081	pCi/g			
CESIUM-137	241E3-SS	0	28-JUL-95	0.099	0.0489	pCi/g			
LEAD-212	241E3-SS	0	28-JUL-95	0.679	0.0641	pCi/g			
LEAD-214	241E3-SS	0	28-JUL-95	0.569	0.107	pCi/g			
POTASSIUM-40	241E3-SS	0	28-JUL-95	18.2	0.509	pCi/g			
RADIUM-224	241E3-SS	0	28-JUL-95	0.78	0.509	pCi/g			
RADIUM-228	241E3-SS	0	28-JUL-95	0.838	0.203	pCi/g			
THALLIUM-208	241E3-SS	0	28-JUL-95	0.56	0.131	pCi/g			
THORIUM-228	241E3-SS	0	28-JUL-95	0.723	0.769	pCi/g			
THORIUM-232	241E3-SS	0	28-JUL-95	0.494	0.271	pCi/g			
ACTINIUM-228	241E4-SS	0	28-JUL-95	0.734	0.151	pCi/g			
BISMUTH-212	241E4-SS	0	28-JUL-95	0.697	0.545	pCi/g			
BISMUTH-214	241E4-SS	0	28-JUL-95	0.436	0.0988	pCi/g			
CESIUM-137	241E4-SS	0	28-JUL-95	0.0836	0.042	pCi/g			
LEAD-210	241E4-SS	0	28-JUL-95	1.02	0.59	pCi/g			
LEAD-212	241E4-SS	0	28-JUL-95	0.621	0.0684	pCi/g			
LEAD-214	241E4-SS	0	28-JUL-95	0.512	0.0696	pCi/g			
POTASSIUM-40	241E4-SS	0	28-JUL-95	18.1	0.441	pCi/g			
RADIUM-226	241E4-SS	0	28-JUL-95	0.821	1.41	pCi/g			
RADIUM-228	241E4-SS	0	28-JUL-95	0.605	0.241	pCi/g			
THALLIUM-208	241E4-SS	0	28-JUL-95	0.548	0.143	pCi/g			
THORIUM-232	241E4-SS	0	28-JUL-95	0.506	0.286	pCi/g			