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1.0 INTRODUCTION

This amendment to the Technical Area 40 (TA-40) Scrap Detonation Site (SDS) Final Closure Plan (FCP), Revision 1 [Los Alamos National Laboratory (LANL), July 1991], presents the analytical data from the Phases I through IV site investigation activities conducted in January and May 1992. In addition, this amendment outlines specific objectives for supplementary investigations and proposed remediation plans for three isolated areas where contaminants were detected during the Phases I through IV activities. The purpose of the supplementary investigations is to better define the excavation limits at each discrete area and to verify that decontamination of the affected areas is achieved during the proposed remedial activities. Data evaluation and possible additional investigations at two other areas where contaminants were detected are also presented in this amendment. This amendment to the FCP is being submitted in lieu of a revision to the plan. If approved by the New Mexico Environment Department (NMED), this approach will expedite the remedial activities at the TA-40 site.

The FCP identifies the activities necessary to achieve clean closure of a hazardous waste thermal treatment unit at LANL (see Figure 1.1 in the FCP). The thermal treatment unit was used to treat explosive scrap material by open burning and detonation until April 12, 1985. Closure will be achieved in accordance with the New Mexico Hazardous Waste Management Regulations (HWMR-5), which incorporate Code of Federal Regulations Title 40 (40 CFR), Part 265, Subpart G, Closure and Post-Closure, and Subpart P, Thermal Treatment.

Thermal treatment of hazardous wastes at TA-40 SDS eliminated the Resource Conservation and Recovery Act (RCRA) characteristics of reactivity (D003) and ignitability (D001). However, some of the treated wastes contained barium or lead compounds which may have contaminated the surrounding soil with toxicity characteristic leaching procedure (TCLP) metals. If the site soils are determined to require remediation by removal, then the TCLP results will be applied to select the appropriate disposal facility. Exceeding TCLP levels does not guide the decision to remediate; instead, it is used in waste disposal decisions. If the waste is taken to an unregulated land disposal facility, it must not exceed the TCLP value in 40 CFR Part 261.24. If it exceeds this value, the waste must be disposed according to RCRA regulations. As stated in the FCP, analytical data from an October 1985 soil sampling effort did not identify any metals formerly considered toxic using the extraction procedure (EP) test method. However, sampling and analysis data from the 1992 site investigations indicate hazardous constituents are present at five areas at TA-40 SDS. The activities conducted during January and May 1992 under the Phases I through IV site investigations and an assessment of analytical data for each phase are presented in Section 2.0.

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A Phase V investigation of the general vicinity surrounding TA-40 SDS was proposed in the FCP contingent upon an evaluation of the Phases I through IV data. The original plan required a Phase V investigation to be conducted if hazardous wastes or hazardous constituents requiring removal were identified during the earlier phase investigations. Hazardous constituents were detected at five areas at TA-40 SDS. Although the contaminants appear to be localized, it is possible that contaminants were broadly dispersed or deposited in the general vicinity of TA-40 SDS. Therefore, the originally proposed Phase V investigation will be conducted, as discussed in Section 4.1.5 of the approved FCP and reiterated in Section 3.1 of this Amendment. Should risk assessment analysis of existing data prove a problem still exists, a Phase VI investigation for the burn pit and amphitheater is proposed to determine the boundaries of concern for remediation purposes. Phase VI investigation of the five distinct areas of contamination is proposed to determine the extent of the specific contaminants at each area. The objectives of the Phase VI investigations and the Phase VI sampling and analysis plans for each of the five areas at TA-40 SDS are presented in Sections 3.2 through 3.6. Proposed remediation activities at the three isolated areas at the site are outlined in Sections 3.2 through 3.4.

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2.0 SITE INVESTIGATION ASSESSMENT

The site investigation activities at TA-40 SDS were conducted in four phases during January and May 1992 (Fresquez, 1992b). Phase I activities involved sampling the fill area south of the detonation amphitheater. Sampling the surface burn areas and the burn pit east of the amphitheater comprised the Phase II investigation. Phase III activities included sampling shallow drainages leading from the area, as well as on-site structures, scattered debris in the area, and soil beneath the debris pile located within the amphitheater. Phases I, II, and III were conducted simultaneously during the January 1992 effort. The Phase IV investigation was conducted in May 1992, and included sampling within the amphitheater after the construction debris was removed in April 1992. The general locations of the areas investigated in Phases I through IV are shown on Figure 2.1 in the FCP. Analytical data from the Phases I through IV site investigations are summarized in Appendices I through IV of this amendment, and a listing of the analytical methods used is provided in Appendix V. A complete set of original analytical data, including quality assurance and quality control (QA/QC) data, will be submitted with the final closure report. An assessment of each of the four investigations is presented in the following sections.

The preliminary assessment of each phase of the site investigations conducted to date is based primarily on action levels and background concentrations. As stated in the proposed Subpart S to 40 CFR Part 264, the action levels, if exceeded, typically trigger further analysis of potential remedies (e.g., perform a risk assessment and develop remediation alternatives) (EPA, 1990). An action level was calculated for any hazardous constituent identified during the field investigations if the concentration was above the detection limit for that constituent. Hazardous constituents considered include organics and metals listed in 40 CFR Part 261, Appendix VIII, and 40 CFR Part 264, Appendix IX (see Table 4.2 in the FCP). Action level calculations were performed using the methodology and equations presented in the proposed Subpart S. Table 2.1 lists the calculated action levels used to assess the analytical data based on a conservative residential use scenario to human health as a result of soil ingestion. Soil ingestion was the selected pathway since it provides the most conservative action levels. An explanation of the risk calculations follows Table 2.1. In addition to action levels, background levels of constituents in soil were also considered, when necessary, during the evaluation of the analytical data (Ferenbaugh et al., 1990). If the background level of a constituent was greater than the calculated action level, the background value was used to assess the data.

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TABLE 2.1
ACTION LEVEL CALCULATION TABLE

CHEMICAL	CANCER CLASS	ORAL RfD (mg/kg/day)	ORAL SF (mg/kg/day)-1	ACTION LEVEL (mg/kg)
METALS				
Antimony	ND	4E-04	ND	32
Arsenic	A	3E-04	1.75	.40
Barium	ND	7E-02	ND	5,600
Beryllium	B2	5E-03	4.3	.16
Cadmium	B1	1E-03	ND	80
Cobalt	ND	ND	ND	ND
Chromium (VI)	A	5E-03	ND	400
Copper	D	3.7E-02	ND	3,000
Lead(1)	B2	ND	ND	500 [a]
Mercury	D	3E-04	ND	24
Nickel	ND	2E-02	ND	1600
Silver	D	5E-03	ND	400
Thallium	ND	8E-05	ND	6.4
Vanadium	ND	7E-03	ND	560
Zinc	D	3E-01	ND	24,000

a The interim soil cleanup level for total lead has been set at 500 to 1000 ppm, that is considered protective for direct contact in a residential exposure setting by the Office of Emergency and Remedial Response and the Office of Waste Programs Enforcement (EPA, 1989).

ND - No Data

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TABLE 2.1 (continued)
ACTION LEVEL CALCULATION TABLE

CHEMICAL	CANCER CLASS	ORAL RfD (mg/kg/day)	ORAL SF (mg/kg/day)-1	ACTION LEVEL (mg/kg)
SVOCs				
Phenol	D	6E-01	ND	48,000
Benzo[b]fluoranthene	D	4E-02	ND	--
Fluoranthene	D	4E-02	ND	3,200
Pyrene	D	3E-02	ND	2,400
PESTICIDES				
Beta-BHC	C	ND	1.8	5.19E-01
Delta-BHC	D	ND	ND	ND
Heptachlor Epoxide	B2	1.3E-05	9.1	1.02E-01
4,4-DDE	B2	ND	3.4E-01	2.74
4,4-DDT	B2	5E-04	3.4E-01	2.74
HERBICIDES				
2,4,5-TP	ND	8E-03	ND	6.4E-02
NITRIC OXIDE	ND	1E-01	ND	8.0E+03
TPH	ND	ND	ND	ND

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EXPLANATION OF ACTION LEVEL CALCULATION TABLE

CALCULATION FOR ACTION LEVELS IN SOIL

The calculation for action levels in soil is based on the equations in the proposed Subpart S to 40 CFR 264 (EPA, 1990). Two exposure scenarios were calculated: 1) resident on-site adult (for carcinogens), and 2) resident on-site child (for systemic toxicants). Both scenarios use soil ingestion as the primary pathway.

General Equations

Carcinogens

Action Level in Soil = (R x W x LT x CF)/(CSF x I x A x ED)

Systemic Toxicant (noncarcinogens)

Action Level in Soil = (THI x RfD x W x CF)/(I x A)

Where:

R = Assumed risk level (unitless)
1.0E-06 for carcinogens

W = Body weight (kg)
70 for adults
16 for children age 1 to 6

A = Absorption factor, assumed to be one (worst case)

ED = Exposure duration
70 yrs for adult exposure

I = Intake assumption
100 mg/day adult
200 mg/day child

LT = Assumed lifetime
70 years

CF = Conversion factor (converts units from kg/kg to mg/kg)
10^{+6} mg/kg

CSF = Carcinogenic slope factor $(mg/kg\text{-}day)^{-1}$

RfD = Reference dose (mg/kg-day)

THI = Target Hazard Index; 1

References for the CSF and RfD data are "Integrated Risk Information System" (IRIS), (EPA, 1992), and "Health Effects Assessment Summary Tables" (HEAST), (EPA, 1991a). These references were used to provide the most recent available data for the CSF and the RfD.

If the chemical contains both an oral RfD and CSF, the lowest action level was reported.

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OTHER CONSIDERATIONS

The action levels were calculated as if only one chemical existed in the soil. If several chemicals exist, there may be a combined health effect of the chemicals. If the actual chemical concentrations are near the action levels, this combined effect may need to be considered.

CANCER CLASSIFICATION

- A = Human carcinogen
- B1 = Probable human carcinogen; limited human data are available
- B2 = Probable human carcinogen; sufficient evidence in animals and inadequate or no evidence in humans
- C = Possible human carcinogen
- D = Not classifiable as to human carcinogenicity

PRELIMINARY REMEDIATION GOALS

Preliminary remediation goals (PRGs) are initial cleanup levels for individual chemicals, medium, and land use scenarios that are protective of human health and the environment. The methodology described in Part B of the Risk Assessment Guidance for Superfund (EPA 1991) was used to calculate PRGs presented in Table 2.1-1. Currently, the land will continue to be used for Laboratory operations. In the future, the most probable land use would be for recreational purposes (e.g., camping). Tables 2.1-2 through 2.1-6 present the equations and the assumptions used to calculate PRGs for both land used scenarios. Most of the assumptions used are from the Part B guidance. If assumptions were not available in Part B, the rationale for selection is explained in each table.

PRGs for carcinogens were calculated using a target risk range of 1 in 10,000 (10^{-4}) and 1 in 1,000,000 (10^{-6}) that is considered by the EPA to be protective of human health. The equations used to calculate the PRGs for carcinogenic effects are presented in Tables 2.1-2 and 2.1-5. There is precedent in the State of New Mexico to choose a range and risk-based cleanup levels (NMED 1990). If the hazard quotient (HQ) is less than 1 (target hazard index for noncarcinogens), the exposure level is not likely to cause adverse health effects. Tables 2.1-3 and 2.1-6 present the methodology for calculating PRGs for noncarcinogenic effects.

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TABLE 2.1-1

PRELIMINARY REMEDIATION GOALS

Medium: Soil
Land Use: Current Worker/Future Recreational

Chemical	Current Worker Soil Ingestion + Inhalation of Particulates (ppm) [a]			Future Recreational Soil Ingestion (ppm) [a]		
	10^{-4} [b]	10^{-6} [b]	HQ = 1 [c]	10^{-4} [b]	10^{-6} [b]	HQ = 1c
Arsenic	330	3.3	610	520	5.2	780
Beryllium	130	1.3	10,000	210	2.1	13,000
Thallium	--[d]	--[d]	160	--[d]	--[d]	210

[a]Calculated using standard exposure assumptions for the worker scenario (Tables 2.3 and 2.4). Exposure assumptions for the recreational scenario are located on Tables 2.5, 2.6, and 2.7. The lower of the calculated values for each scenario is considered the appropriate risk-based PRG for any given chemical.

[b]Cleanup levels for carcinogens selected within the risk range of 1 in 10,000 (10^{-4}) and 1 in 1,000,000 (10^{-6}) are considered by EPA to be protective of human health.

c Cleanup levels for noncarcinogens are set at a level at which adverse effects would not be expected to occur. If the hazard quotient (HQ) is less than one, the exposure level is not likely to cause adverse health effects. Therefore, for thallium a concentration in soil less than 160 ppm under the current worker scenario is not likely to cause adverse effects.

d Carcinogenic toxicity values not available.

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TABLE 2.1-2

PRGs - Carcinogenic Effects
Worker Scenario
Soil Ingestion + Inhalation of Particulates

$$C = \frac{TR \times BW \times AT}{EF \times ED \times [(SF_o \times CF \times IR_{soil}) + (SF_i \times IR_{air} \times (1/PEF))]}$$

where:

C	=	Chemical concentration in soil (ppm)
TR	=	10^{-4} to 10^{-6} (target excess individual lifetime cancer risk (unitless))
SF_o	=	Chemical-specific oral cancer slope factor ((mg/kg-day)$^{-1}$). Values available in IRIS (EPA 1992)
SF_i	=	Chemical-specific inhalation cancer slope factor ((mg/kg-day)$^{-1}$). Values available in IRIS (EPA 1992)
BW	=	70 kg (adult body weight)
AT	=	70 years x 365 days/year (averaging time)
CF	=	10^{-6} kg/mg (conversion factor)
EF	=	250 days/year (exposure frequency)
ED	=	25 years (exposure duration)
IR_{soil}	=	50 mg/day (soil ingestion rate)
IR_{air}	=	20 m^3/day (workday inhalation rate)
PEF	=	4.63×10^9 m^3/kg (particulate emission factor)

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TABLE 2.1-3

PRGs - Noncarcinogenic Effects
Worker Scenario
Soil Ingestion + Inhalation of Particulates

$$C = \frac{THI \times BW \times AT}{EF \times ED \times [(1/RfD_o \times CF \times IR_{soil}) + (1/RfD_i \times IR_{air} \times (1/PEF))]}$$

where:

C	=	Chemical concentration in soil (ppm)
THI	=	1 (target hazard index (unitless))
RfD_o	=	Chemical-specific oral chronic reference dose (mg/kg-day). Values available in IRIS (EPA 1992)
RfD_i	=	Chemical-specific inhalation chronic reference dose (mg/kg-day). Values available in IRIS (EPA 1992)
BW	=	70 kg (adult body weight)
AT	=	25 years x 365 days/year (averaging time)
CF	=	10^{-6} kg/mg (conversion factor)
EF	=	250 days/year (exposure frequency)
ED	=	25 years (exposure duration)
IR_{soil}	=	50 mg/day (soil ingestion rate)
IR_{air}	=	20 m^3/day (workday inhalation rate)
PEF	=	4.63×10^9 m^3/kg (particulate emission factor)

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TABLE 2.1-4

Age-Adjusted Soil Ingestion Factor
Recreational Scenario

$$IF_{soil/adj} = \frac{IR_{soil/age(1-6)} \times ED_{age(1-6)}}{BW_{age(1-6)}} + \frac{IR_{soil/age(7-20)} \times ED_{age(7-20)}}{BW_{age(7-20)}}$$

where:

$IF_{soil/adj}$	=	Age-adjusted soil ingestion factor (mg-yr/kg-day)
$BW_{age\ 1-6}$	=	15 kg (average body weight from ages 1-6)
$BW_{age\ 7-31}$	=	70 kg (average body weight from ages 7-31)
$ED_{age\ 1-6}$	=	6 yr (exposure duration during ages 1-6)
$ED_{age\ 7-31}$	=	14 yr (exposure duration during ages 7-20)
$IR_{soil/age\ 1-6}$	=	200 mg/day (ingestion rate of soil age 1 to 6)
$IR_{soil/age\ 7-31}$	=	100 mg/day (ingestion rate of soil for all other ages)

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TABLE 2.1-5

Soil Ingestion PRGs - Carcinogenic Effects
Recreational Scenario

$$C = \frac{TR \times AT}{SF_o \times CF \times EF \times IF_{soil/adj}}$$

where:

C	=	Chemical concentration in soil (ppm)
TR	=	10^{-4} to 10^{-6} (target excess individual lifetime cancer risk (unitless))
SF_O	=	Chemical-specific oral cancer slope factor ((mg/kg-day)$^{-1}$). Values available in IRIS (EPA 1992)
CF	=	10^{-6} kg/mg (conversion factor)
AT	=	70 years x 365 days/year (averaging time)
EF	=	28 days/year (exposure frequency. Assumption is based on camping in the area for 2 weeks, 2 times a year. This assumption is based on the fact that Bandelier National Monument allows campers to stay a maximum of 2 weeks per visit.)
$IF_{soil/adj}$	=	100 mg-yr/kg-day (age-adjusted ingestion factor)(see Table 2.5).

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TABLE 2.1-6

Soil Ingestion PRGs - Noncarcinogenic Effects Recreational Scenario

$$C = \frac{THI \times AT}{1/RfD_o \times CF \times EF \times IF_{soil/adj}}$$

where:

C = Chemical concentration in soil (ppm)

THI = 1 (target hazard index (unitless))

RfD_o = Chemical-specific oral chronic reference dose (mg/kg-day). Values available in IRIS (EPA 1992)

AT = 20 years x 365 days year (averaging time. LANL default value based on best professional judgment.)

CF = 10^{-6} kg/mg (conversion factor)

EF = 28 days/year (exposure frequency. Assumption is based on camping in the area for 2 weeks, 2 times a year. This assumption is based on the fact that Bandelier National Monument allows campers to stay a maximum of 2 weeks per visit.)

$IF_{soil/adj}$= 100 mg-yr/kg-day (age-adjusted ingestion factor)(see Table 2.5)

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2.1 ASSESSMENT OF PHASE I INVESTIGATION

The Phase I investigation of the fill area extending south from the amphitheater nearly to the rim of Pajarito Canyon was conducted in January 1992. Three transects were established, radiating outward from the center of the amphitheater. On each transect, three borehole locations were randomly selected so that one borehole was located within each third of the length of the transect. This sampling design allowed selection of nine random sampling locations within the fill area, yet ensured relatively uniform coverage of the area.

Shallow borehole samples were collected with a Central Mining Equipment Model 55 (CME-55) drill rig equipped with a hollow-stem auger with a three-inch-diameter coring capability. Eight soil samples were collected to a maximum depth of 2.5 feet. Tuff (native bedrock) was collected at one location where very little fill material existed. Since the immediate surrounding area of this sampling location was similar, the tuff was sampled in order to maintain relatively uniform coverage of the fill area. The depth of fill was usually two feet or less at each sampling location; therefore, a total of nine samples was collected.

All samples were analyzed for metals and organics, as required in the FCP, to confirm or deny the presence of hazardous constituents. A summary of the analytical data for the Phase I investigation is provided in Appendix I. Table 2.2 lists the field sample identification numbers, corresponding laboratory sample identification numbers, and brief descriptions for each Phase I sample. The field sample locations are shown on Figure 2.1.

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TABLE 2.2

PHASE I SAMPLE IDENTIFICATION NUMBERS AND BOREHOLE DESCRIPTIONS

FIELD SAMPLE ID	LAB SAMPLE ID[1]	LAB SAMPLE ID[2]	BOREHOLE DESCRIPTION
PF-40-FA-1A	92.00696	92.00711	Soil, 0-2'; Tuff, >2'
PF-40-FA-4A	92.00697	92.00712	Soil, 0-2'; Tuff, >2'
PF-40-FA-5A	92.00698	92.00713	Soil, 0-2.5'; Tuff, >2.5'
PF-40-FA-2A	92.00699	92.00714	Soil, 0-2'; Tuff, >2'
PF-40-FA-15A	92.00700	92.00715	Soil, 0-2'; Tuff, >2'
PF-40-FA-13A	92.00701	92.00716	Soil, 0-1'; Tuff, >1'
PF-40-FA-16A	92.00702	92.00717	Soil, 0-2'; Tuff, >2'
PF-40-FA-18A	92.00703	92.00718	Tuff, 0-1'; Tuff, >1'
PF-40-FA-19A	92.00704	92.00719	Soil, 0-1'; Tuff, >1'
PF-40-FA-5R (Replicate of PF-40-FA-5A)	92.00770	92.00780	Soil, 0-2.5'; Tuff, >2.5'

1: Samples analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides, polychlorinated biphenyls (PCBs), nitrates, and Target Analyte List (TAL) metals.

2: Samples analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals.

No volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides, polychlorinated biphenyls (PCBs) or nitrates were detected in any of the samples collected from the fill area. Target Analyte List (TAL) lead was detected above the action level in sample PF-40-FA-5R, a replicate collected near sample PF-40-FA-5A. Lead in sample PF-40-FA-5R was present at a concentration of 2,710 µg/g (ppm). The action level for lead is 500 mg/kg (ppm). Beryllium was also detected at concentrations above the action level at each Phase I sampling location. The calculated action level for beryllium is 0.16 ppm. However, the background concentration of beryllium in soil at LANL has been measured at 2 ppm (Ferenbaugh et al., 1990). Since none of the beryllium concentrations detected during Phase I exceeded background concentrations, remediation of the fill area for beryllium will not be required. No other TAL metals were present in concentrations exceeding the calculated action levels in any of the fill area samples. A plan for further investigation and remediation of the one lead-contaminated area is presented in Section 3.2.

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2.2 ASSESSMENT OF PHASE II INVESTIGATION

The Phase II investigation of the burn area included sampling the present location of the burn cage, two other areas where evidence of surface burning is visible, and the burn pit. This investigation was conducted in January 1992.

Sampling activities at the site of the burn cage and the two burn areas (northeast and northwest of the burn cage) included collecting one charred surface debris sample at each site. The surface debris samples were comprised of charred material collected within a six-inch radius to the depth of the soil surface. Charred surface debris samples were collected with disposable inert-plastic scoops. In addition to these samples, core samples were collected from boreholes placed within the charred area adjacent to the burn cage and within the charred areas at the other two burn areas. The upper core sample at each location included charred surface debris and other material to a depth of six inches. No staining was observed deeper than six inches. The lower core sample at each location was collected at the one- to two-foot interval; native tuff was encountered at the two-foot depth. The shallow borehole samples were collected with a CME-55 drill rig equipped with a hollow-stem auger with a three-inch-diameter coring capability. Three samples were collected at each burn site (one surface and two core samples) for a total of nine samples.

The investigation at the burn pit occurred in two stages. First, the approximate location of the burn pit was identified from historical aerial photographs of TA-40. A grid was then placed over the area determined most likely to include the pit. Boreholes were drilled at several of the grid locations until the burn pit was penetrated, as evidenced by the presence of charred debris within the soil core. The borehole grid was then adjusted to more clearly define the extent of the burn pit, and a total of three boreholes were drilled into the pit. Core samples were collected from each borehole with a CME-55 drill rig equipped with a hollow-stem auger with a three-inch-diameter coring capability. Samples of the upper core material were collected from two boreholes; these samples were obtained from the material one foot above the charred debris. Samples from the core interval containing charred debris and from a one-foot interval below the charred debris were collected at all three borehole locations. A total of eight samples were submitted for analysis.

All samples were analyzed for metals and organics to confirm or deny the presence of hazardous constituents. In addition, four of the samples were analyzed for total petroleum hydrocarbons (TPH), although these analyses were not required by the closure plan. A summary of the analytical data for the Phase II investigation is provided in Appendix II. Table 2.3 lists the field

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TABLE 2.3
PHASE II SAMPLE IDENTIFICATION NUMBERS AND DESCRIPTIONS

FIELD SAMPLE ID	LAB SAMPLE ID[1]	LAB SAMPLE ID[2]	LAB SAMPLE ID[3]	SAMPLE DESCRIPTION
PF-40-BC-2 (Burn Cage)	92.00705	92.00720		Soil, 0-6"
PF-40-BC-3 (Burn Cage)	92.00706	92.00721		Soil, 1-2'
PF-40-BAE-2 (Burn Area East)	92.00707	92.00722		Soil, 0-6"
PF-40-BAE-3 (Burn Area East)	92.00708	92.00723		Soil, 1-2'
PF-40-BAW-2 (Burn Area West)	92.00709	92.00724		Soil, 0-6"
PF-40-BAW-3 (Burn Area West)	92.00710	92.00725		Soil, 1-2'
PF-40-BP-1A (Burn Pit)	92.00761	92.00771		Soil above charred debris, 1-2'
PF-40-BP-1B (Burn Pit)	92.00762	92.00772		Charred debris, 3'
PF-40-BP-1C (Burn Pit)	92.00763	92.00773		Soil below charred debris, 4-5'
PF-40-BP-2A (Burn Pit)	92.00764	92.00774		Soil above charred debris, 1-2'
PF-40-BP-2B (Burn Pit)	92.00765	92.00775		Charred debris, 4-5'
PF-40-BP-2C (Burn Pit)	92.00766	92.00776		Soil below charred debris, 5'
PF-40-BC-1 (Burn Cage)	92.00767	92.00777		Charred surface debris
PF-40-BP-3B (Burn Pit)	92.00768	92.00778	92.01110	Charred debris
PF-40-BP-3C (Burn Pit)	92.00769	92.00779	92.01111	Soil below charred debris
PF-40-BAW-1 (Burn Area West)	92.00913	92.00922		Surface soil/charred debris
PF-40-BAE-1 (Burn Area East)	92.00914	92.00923		Surface soil/charred debris

1: Samples analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides, polychlorinated biphenyls (PCBs), nitrates, Target Analyte List (TAL) metals, and total petroleum hydrocarbons (TPH).
2: Samples analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals.
3: Samples analyzed for TPH.

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sample identification numbers, corresponding laboratory sample identification numbers, and brief descriptions for each Phase II sample. Field sample locations are shown on Figure 2.1.

No target VOCs, PCBs, or nitrates were detected in any of the samples from the burn area. Three SVOCs were detected, including benzoic acid, phenol, and benzo[b]fluoranthene. Benzoic acid was detected at a concentration of 2,100 µg/kg (ppb) in the soil above the charred debris at burn pit sample PF-40-BP-2A; however, this compound is not included on the 40 CFR 261, Appendix VIII or 40 CFR 264, Appendix IX lists of hazardous substances (see Table 4.2 in the FCP). Phenol was detected in the same sample at a concentration of 1,500 µg/kg (ppb), or 1.5 ppm, which is far below the calculated action level of 48,000 mg/kg (ppm). Charred surface debris at the burn cage, sample PF-40-BC-1, contained benzo[b]fluoranthene at a concentration of 1,800 µg/kg (ppb), or 1.8 ppm. The action level for this compound is 3,200 mg/kg (ppm). Two pesticides were detected in the burn area samples submitted for analysis. Sample PF-40-BAE-2, soil from the zero- to six-inch interval at the east burn area, contained 4.6 µg/kg (ppb) delta-BHC. An action level for delta-BHC could not be calculated because no data for this compound are available in EPA's IRIS and HEAST reference documents (EPA, 1992, 1991). An action level

was calculated for beta-BHC, however. Since these compounds behave similarly, it is reasonable to assume that the action level for beta-BHC may apply to delta-BHC. The beta-BHC action level was calculated to be 0.519 mg/kg (ppm), or 519 ppb. This action level is far greater than the pesticide concentration of 4.6 ppb in PF-40-BAE-2. Another pesticide, heptachlor epoxide, was detected in sample PF-40-BP-2A. Soil above the charred debris at this burn pit location, collected at the one- to two-foot interval, contained 33 µg/kg (ppb) heptachlor epoxide, which is less than the 103 ppb action level calculated for this compound. Sample PF-40-BP-3B, collected at depth from the layer of charred debris within the burn pit, contained 4.7 µg/kg (ppb) of the herbicide 2,4,5-TP. The action level calculated for this compound is 640 mg/kg (ppm), which is much higher than the level detected in the burn pit sample. Sample PF-40-BC-1, charred surface debris collected at the burn cage, contained TAL and TCLP metals. TAL lead and antimony at 2,110 and 43 µg/g (ppm) were detected in this sample, and TCLP lead was detected at 110 mg/L. The action levels for TAL lead and antimony are 500 to 1,000 and 32 mg/kg (ppm), respectively. The regulatory level for TCLP lead, listed in 40 CFR 261, Subpart C, is 5.0 mg/L. Therefore, the levels of TAL lead and antimony and TCLP lead in sample PF-40-BC-1 exceed the action levels. PF-40-BC-1 was the only sample in the burn pit in which antimony was detected above the detection limit. The concentration of 43 ppm only slightly exceeds the screening action level of 32 ppm; therefore, antimony is not considered to be a constituent of concern (COC). TAL and TCLP lead were also detected in PF-40-BAE-2, collected from the zero- to six-inch interval at the east burn area. The TAL lead concentration in this sample was 1,470 µg/g (ppm), and the TCLP lead concentration was 13 mg/L. Both concentrations exceed the action levels for lead. Remedial activities, described in Sections 3.3 and 3.4, will be conducted at the burn cage and at the east burn area to remove soils contaminated with lead.

Beryllium was detected at concentrations above the action level at each burn area sampling location. An action level of 0.16 ppm was calculated for beryllium using the methods in Subpart S (EPA, 1990); however, this action level is below the range determined for background soil. The background concentration of beryllium in soil at LANL is 2 ppm (Ferenbaugh et al., 1990). Thus, the background level for beryllium should be used instead of the calculated action level. Only one burn area sample contained beryllium at a concentration exceeding background. Beryllium at 6.74 µg/g (ppm) was detected in sample PF-40-BP-2C, a sample collected at depth below the charred debris in the burn pit. The PRG range for beryllium is between 1.3 ppm to 130 ppm. A plan for further investigation of potential beryllium contamination at the burn pit is presented in Section 3.5. This plan will be carried out if it is determined that more information is required to perform an adequate risk assessment.

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Arsenic was detected at concentrations above the screening level of 0.4 ppm at the burn area, burn cage, and burn pit. Concentrations detected at these areas were below the LANL arsenic background average at 4 ppm. If the data are compared to the site-specific background level of 0.4 ppm, then concentrations exceed the site-specific background concentration and arsenic becomes a COC.

Although TPH analysis was not required in the FCP, two samples and sample replicates were collected at one location in the burn pit. Samples PF-40-BP-3B and PF-40-BP-3C, collected at depth from "oily" material in the charred debris layer and below the charred debris layer, contained 13.9 and 28.3 µg/g (ppm) TPH. Replicate samples collected near this same location contained 1,260 and 49.8 µg/g (ppm) TPH. Operating records indicate that kerosene was used to initiate burning at the pit, and LANL believes that the presence of TPH in the burn pit is due to incomplete combustion. No target VOCs were detected in any of the burn pit samples. Regulations applicable to underground storage tanks (USTs) require remediation activities if the soils are highly contaminated (i.e., free product is observable in the soil or, if the petroleum product is sufficiently liquid, the petroleum product drains from the soil when the soil is suspended on filter paper) and if the depth to ground water is less than 50 feet (NMEIB, July 1990). There was no free product observable at the burn pit, and the depth to groundwater at TA-40 is approximately 1,000 feet. Therefore, remediation to address the presence of TPH would not be required from a UST and should not be necessary for clean closure of the burn pit. Since no target organic compounds were detected above action levels in the burn pit samples, any required remedial actions will focus on the area containing above-background levels of beryllium and arsenic.

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2.3 ASSESSMENT OF PHASE III INVESTIGATION

Sampling of three shallow drainages, two electrical boxes, a steel personnel shelter, scattered debris at the site, and soil beneath the debris pile within the amphitheater comprised the Phase III investigation. This investigation was conducted in January 1992.

One location where the potential for sediment deposition was determined to be most likely in each shallow drainage was selected for sampling. These locations were biased rather than random. One surface soil sample from each drainage was collected with a disposable inert-plastic scoop, for a total of three samples.

The closure plan required sampling two electrical boxes and a steel personnel shelter only if hazardous constituents were detected in the fill area (Phase I) or surface drainages (Phase III). However, since the Phases I through III site investigations were being conducted simultaneously, sampling of these three structures was performed as part of the Phase III effort. Surface soil samples were collected with disposable inert-plastic scoops at each structure location. Scattered debris from within a 200-foot radius of the detonation area was collected and rinsed in distilled water. This rinsate was then sampled and submitted for analysis.

To determine if hazardous constituents are present beneath the debris pile located within the amphitheater, a surface soil sample was collected from the base of the debris pile. This surface soil sample was collected with a disposable inert-plastic scoop. The construction debris was removed in April 1992 before the Phase IV investigation activities were initiated.

All samples were analyzed for metals and organics to confirm or deny the presence of hazardous constituents. A summary of the analytical data for the Phase III investigation is provided in Appendix III. Table 2.4 lists the field sample identification numbers, corresponding laboratory sample identification numbers, and brief descriptions for each Phase III sample. Sampling locations for this phase are shown on Figure 2.1.

No VOCs, SVOCs, herbicides, PCBs, nitrates, or TCLP metals above action levels were detected in any of the soil or rinsate samples collected during the Phase III investigation. Pesticides were present in one sample, PF-40-EBX-W. This surface soil sample collected at the west electrical box contained p,p'-DDE at 12 µg/kg (ppb) and p,p'-DDT at 14 µg/kg (ppb). Action levels for both DDE and DDT were calculated at 2.74 mg/kg (ppm), or 2,740 ppb. Therefore, the pesticide levels in the surface sample at the west electrical box are well below the action level. Beryllium was detected at concentrations above the calculated action level in the

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TABLE 2.4

PHASE III SAMPLE IDENTIFICATION NUMBERS AND DESCRIPTIONS

FIELD SAMPLE ID	LAB SAMPLE ID[1]	LAB SAMPLE ID[2]	SAMPLE DESCRIPTION
PF-40-EBX-W (Electrical Box West)	92.00915	92.00924	Surface soil
PF-40-EBX-E (Electrical Box East)	92.00916	92.00925	Surface soil
PF-40-SPS (Steel Personnel Shelter)	92.00917	92.00926	Surface soil
PF-40-DP (Debris Pile)	92.00918	92.00927	Surface soil
PF-40-SD-W (Surface Drainage West)	92.00919	92.00928	Surface soil
PF-40-SD-M (Surface Drainage Middle)	92.00920	92.00929	Surface soil
PF-40-SD-E (Surface Drainage East)	92.00921	92.00930	Surface soil
PF-40-EW (Equipment Wash Rinsate)	92.00938	92.00940	Sampling equipment rinsate
PF-40-DEB (Debris Rinsate)	92.00939	92.00941	Surface debris rinsate

1: Samples analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides, polychlorinated biphenyls (PCBs), nitrates, and Target Analyte List (TAL) metals.

2: Samples analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals.

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seven soil samples collected during the Phase III investigation. None of the levels exceeded the background concentration of 2 ppm, however. Thallium was detected above the calculated action level in sample PF-40-DP, a soil sample collected from beneath the debris pile in the amphitheater. This sample contained 22 µg/g (ppm) thallium, which exceeds the 5.6 ppm action level, but it is well below the PRG of 160 ppm for thallium. The only area investigated during the Phase III activities that will require further investigation and remediation to achieve clean closure is the amphitheater; a proposed plan for further characterization of this area is provided in Section 3.6.

2.4 ASSESSMENT OF PHASE IV INVESTIGATION

The Phase IV investigation of the amphitheater was conducted in May 1992 after the construction debris was removed in April 1992. Construction debris was field screened for HE contamination, and all uncontaminated material was properly disposed of at the sanitary landfill. Debris that showed residual HE contamination was either decontaminated and disposed of at the landfill or was collected by the Dynamic Testing (M-7) Group for treatment and subsequent disposal (LANL, April 1992). The remaining six inches of soil-like debris material were manually removed at each sampling location to expose the original amphitheater surface. The excavated soil was containerized and stored on site, pending the outcome of the Phase IV analyses. Surface soil samples were collected with disposable inert-plastic scoops to a depth of six inches at four randomly-selected locations within the amphitheater. Surface soil samples were collected and analyzed to determine if any residual contamination from the thermal treatment process remains in the amphitheater. Random sampling of the surface soil was appropriate since the nature of the detonation process was such that all locations within the amphitheater would be equally likely to exhibit contamination, if present.

Two boreholes were randomly located within a 20-foot radius of the center of the amphitheater. Random borehole locations close to the center of the amphitheater were selected since downward explosive forces would have been the greatest close to the detonation. Core samples were collected at each borehole location to determine if explosive forces may have driven contaminants into the soil profile. Two core samples were collected at each borehole. The upper core samples were collected to a depth of two feet; lower core samples were collected from the two- to four-foot interval. A total of four soil core samples were submitted for analysis. Shallow borehole samples were collected with a CME-55 drill rig equipped with a hollow-stem auger with a three-inch-diameter coring capacity.

All samples were analyzed for metals and organics to confirm or deny the presence of hazardous constituents. A summary of the analytical data for the Phase IV investigation is provided in Appendix IV. Table 2.5 lists the field sample identification numbers, corresponding laboratory sample identification numbers, and brief descriptions for each Phase IV sample; sampling locations are shown on Figure 2.1.

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TABLE 2.5
PHASE IV SAMPLE IDENTIFICATION NUMBERS AND DESCRIPTIONS

FIELD SAMPLE ID	LAB SAMPLE ID[1]	LAB SAMPLE ID[2]	SAMPLE DESCRIPTION
PF-40-A-1 (Amphitheater)	92.06115	92.06126	Soil, 0-6"
PF-40-A-2 (Amphitheater)	92.06116	92.06127	Soil, 0-6"
PF-40-A-3 (Amphitheater)	92.06117	92.06128	Soil, 0-6"
PF-40-A-4 (Amphitheater)	92.06118	92.06129	Soil, 0-6"
PF-40-CH1-2 (Amphitheater)	92.06119	92.06130	Soil, 0-2'
PF-40-CH1-4 (Amphitheater)	92.06120	92.06131	Soil, 2-4'
PF-40-CH2-2 (Amphitheater)	92.06121	92.06132	Soil, 0-2'
PF-40-CH2-4 (Amphitheater)	92.06122	92.06133	Soil, 2-4'
PF-40-A-1-QA (Amphitheater)	92.06123	92.06134	Soil, 0-6"

1: Samples analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides, polychlorinated biphenyls (PCBs), nitrates, and Target Analyte List (TAL) metals.
2: Samples analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals.

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No herbicides, PCBs, nitrates, or TCLP metals were detected in any of the samples collected during the Phase IV investigation. Trace amounts of acetone, a VOC, were detected in five of the samples analyzed; however, this compound was detected in the blanks as well and is a common laboratory contaminant. Sample results for common laboratory contaminants (e.g., acetone) should be considered positive if the concentrations in the sample exceed ten times the maximum amount detected in any blank (National Functional Guidelines for Organic Data Review, June 1991, p. 1.9, Sec. V.E.2). Therefore, acetone is not a hazardous constituent of concern at the amphitheater. Three samples contained minor amounts of SVOCs, including benzo[b]fluoranthene, fluoranthene, and pyrene. Benzo[b]fluoranthene and fluoranthene at 460 and 380 µg/kg (ppb), respectively, were detected in sample PF-40-A-1. This soil sample was collected from the zero- to six-inch depth within the amphitheater. The action level for both compounds is 3,200 mg/kg (ppm). The concentrations of SVOCs in sample PF-40-A-1 are far below the calculated action levels. Pyrene at 350 µg/kg (ppb) was detected in sample PF-40-A-2. This zero- to six-inch-depth soil sample was also collected from within the amphitheater. The action level for pyrene is 2,400 mg/kg (ppm); therefore, the amount of pyrene detected in PF-40-

A-2 is far less than the action level calculated for this compound. Fluoranthene and pyrene were detected in a soil core sample collected within the amphitheater. Sample PF-40-CH2-4 contained 490 and 420 µg/kg (ppb) of these compounds, respectively. The corresponding action levels are 3,200 and 2,400 mg/kg (ppm). Again, the concentrations of SVOCs in sample PF-40-CH2-4 are well below the action levels calculated for these compounds. One pesticide, beta-BHC, was detected in sample PF-40-A-1, a soil sample collected from the zero- to six-inch-depth within the amphitheater. The concentration of this compound was 5.2 µg/kg (ppb), which is less than the action level of 0.519 mg/kg (ppm), or 519 ppb. Beryllium was detected above the action level in each Phase IV sample, but none of the values exceeded the background concentration of 2 ppm. Thallium was also detected above the action level in each Phase IV sample. The calculated action level for thallium is 5.6 ppm; the thallium concentrations of the amphitheater samples ranged from 21 to 28 µg/g (ppm). Therefore, the thallium concentrations exceed action levels, but are well below the PRG of 160 ppm for thallium. Arsenic was detected above the screening level of 0.4 ppm and above the site-specific background level of 0.4 ppm. A proposed plan for further investigation and characterization at the amphitheater is presented in Section 3.6.

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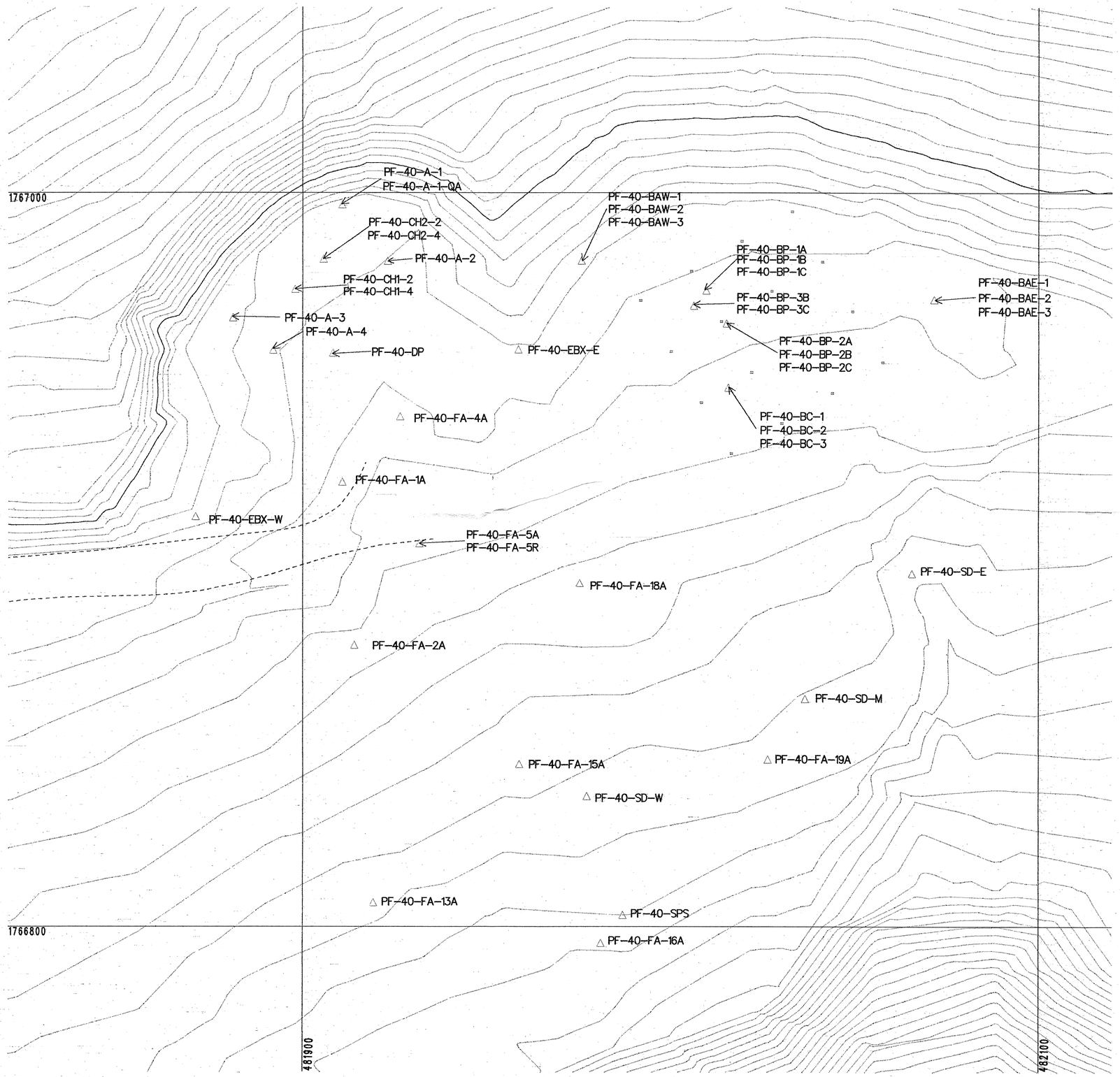
Figure 2.1 TA-40 Scrap Detonation Site Sample Locations



FIMAD G100526 01 Nov 92

LEGEND

- Contours, 10 foot
- Contours, 100 foot
- Electrical >13.2 kV
- Electrical <13.2 kV
- Fence, Industrial
- Fence, Security
- Gas Line
- Gate
- Radioactive Liquid Waste
- Roads, Dirt
- Roads, Paved
- Road/Trail
- Sewer Line
- Steam Line
- Storm Drain/Culvert
- Telephone Line
- Water Line
- Permanent Structure
- Temporary Structure
- Underground Structure
- Location of boreholes used to determine burn pit boundary
- Sample location

2472

NORTH, NM State Plane

Grid provides NMSP coordinates, in feet

Grid interval, in feet: 200

0 20 40 60 ft

NOTICE: Information on this map is provisional and has not been checked for accuracy

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Earth & Environmental Sciences Division
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3.0 PHASES V AND VI SITE INVESTIGATIONS

The preceding assessment of data from the Phases I through IV investigations indicates that five discrete areas of contamination exist at the TA-40 SDS. Total lead was detected above the action level at one site within the fill area south of the amphitheater. Hazardous substances were also identified at three sites within the burn area, east of the amphitheater: (1) Surface material at the burn cage contained total lead and arsenic and TCLP lead above the action/regulatory levels. (2) Total lead and arsenic and TCLP lead were detected above the action/regulatory levels in the near-surface soil at the east burn area. (3) A sample collected from the burn pit contained beryllium and arsenic at a level above background. Finally, thallium and arsenic were detected above the action levels and background in soil samples collected within the amphitheater. The five areas of concern are summarized below.

PHASE	LOCATION	SAMPLE ID #	CONSTITUENT OF CONCERN
I	Fill Area	PF-40-FA-5R	Total lead
II	Burn Cage	PF-40-BC-1	Total lead and arsenic, TCLP lead
II	Burn Area East	PF-40-BAE-2	Total lead and arsenic, TCLP lead
II	Burn Pit	PF-40-BP-2C	Beryllium, arsenic
III/IV	Amphitheater	PF-40-DP	Thallium, arsenic
		PF-40-A-1	
		PF-40-A-2	
		PF-40-A-3	
		PF-40-A-4	
		PF-40-CH1-2	
		PF-40-CH1-4	
		PF-40-CH2-2	
		PF-40-CH2-4	

Because hazardous constituents were identified at several areas during the Phases I through IV investigations, the Phase V investigation defined in Section 4.1.5 in the FCP will be conducted. The Phase V investigation will be implemented to determine if contaminants were broadly dispersed or deposited in the general vicinity surrounding TA-40 SDS as a result of the thermal treatment process. Sampling and analysis activities comprising the Phase V investigation are discussed in Section 3.1 of this amendment.

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Five Phase VI investigations are proposed in this amendment; they are presented in Sections 3.2 through 3.6. Supplementary investigations at three sites (the fill area, the burn cage, and the east burn area) are needed to better define the excavation limits at each site. The ultimate goal of these three Phase VI supplementary investigations is to adequately remediate the three sites in order to accomplish clean closure. The remaining two sites (the burn pit and the amphitheater) might require additional characterization to determine the extent and concentration ranges of the contamination at each site. After a review of the burn pit and amphitheater Phase VI analytical data, a risk assessment will be performed and remediation alternatives for these two sites will be developed.

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3.1 PHASE V GENERAL VICINITY INVESTIGATION

The contaminants identified during the Phases I through IV investigations at the TA-40 SDS include lead, antimony, arsenic, beryllium, and thallium (Section 3.0). Because the FCP required further sampling of the general vicinity of TA-40 SDS if contaminants were detected during the earlier investigations, the Phase V surface soil investigation will be conducted.

The surface soil in a wide area surrounding the TA-40 SDS will be randomly sampled using a two-tiered grid system. The center of the first tier grid will be established at the middle of the amphitheater (Phase III sample location PF-40-DP), and a grid with 100-foot centers will extend outward 200 feet (Figure 3.1). Samples will be collected from each 100-foot grid node only if that area was not sampled during the earlier investigations. The second tier grid will include sampling locations that are more than 200 feet from the center of the amphitheater (Figure 3.1).

A maximum of twelve samples will be collected at the first tier grid locations, and a total of sixteen samples will be collected during the Phase V investigation. If a sample cannot be obtained at the exact location of any grid node, then the closest suitable location will be sampled. Each surface soil sample will be collected from 0 to 6 inches with a disposable inert-plastic scoop and analyzed for lead, antimony, beryllium, arsenic, and thallium.

QA/QC samples will be collected at the frequency in Section 4.3.4 of the FCP. Sample handling and documentation will follow the guidelines in Section 4.4 of the FCP, and measures of personnel protection will adhere to those presented in Sections 4.5 and 5.1.2 of the FCP.

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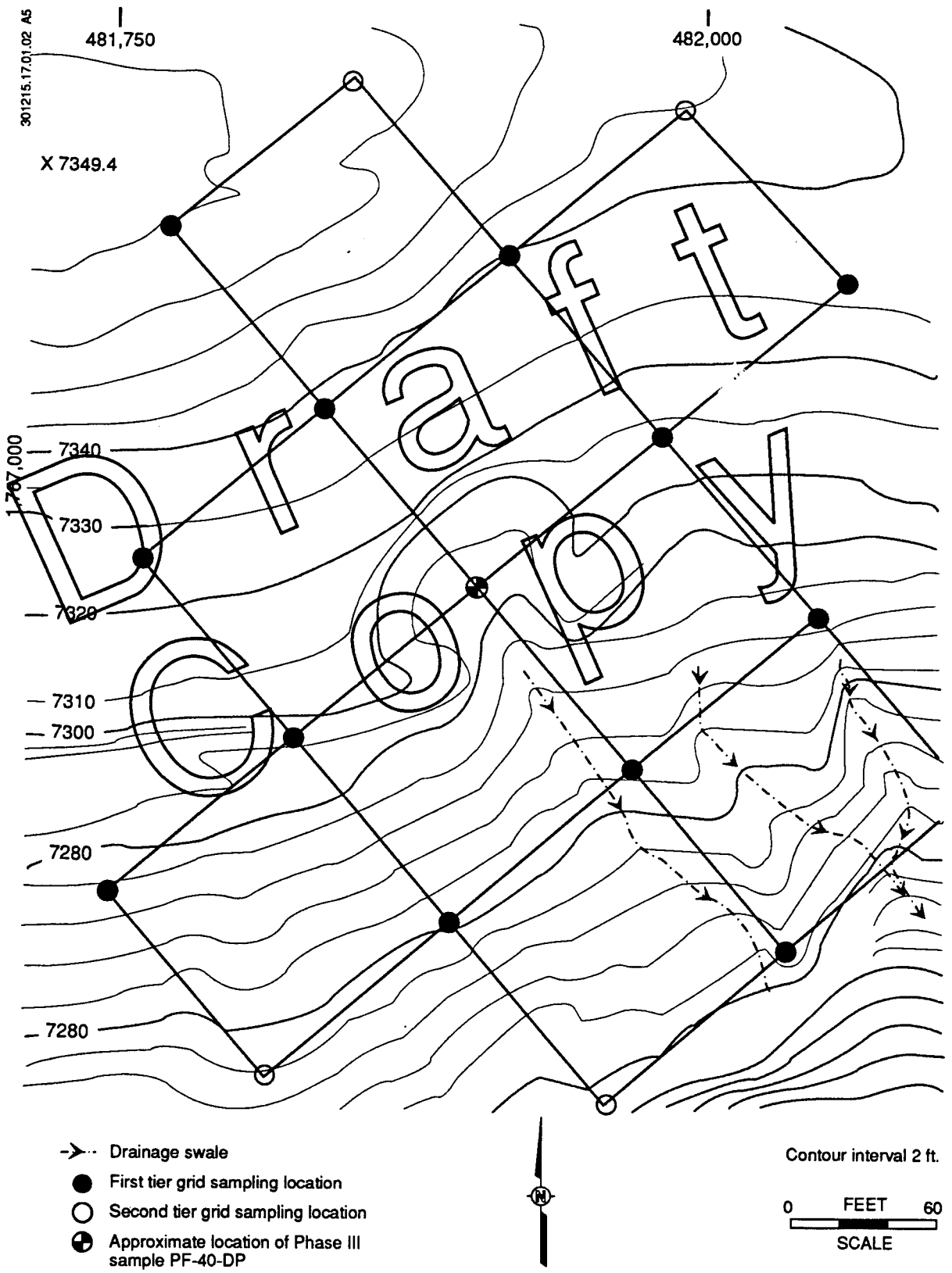

Figure 3.1. Phase V sampling locations for the general vicinity investigation.

3.2 PHASE VI FILL AREA INVESTIGATION AND REMEDIATION PLAN

Lead was detected above the action level at one isolated location within the fill area south of the detonation amphitheater. Sample PF-40-FA-5R, a replicate collected near PF-40-FA-5A, contained 2,710 ppm total lead. This amount exceeds the EPA interim soil cleanup level of 500 ppm for lead (EPA 1989). Since the contaminated area is small and localized, the affected soil will be remediated by excavation. All excavated material will be containerized and removed for proper treatment or disposal. A plan for additional investigation to ensure that remediation of this area is complete is presented below.

Field screening is proposed to determine the horizontal and vertical extent of lead contamination at the affected area. An acceptable field screening method used in characterization and remediation of contaminated soil sites is energy dispersive x-ray fluorescence (XRF). As a field instrument, an XRF analyzer provides quick and reliable in situ assays of coarse soils to provide guidance for areas of significant contamination. In addition, this analyzer makes efficient use of time and resources because it is able to detect inorganic pollutants present in soil with little or no sample preparation. Site-specific action levels of contaminants determine the usefulness of a field-portable in situ instrument. Since the site-specific soil cleanup level for lead is 500 ppm and the lower limit of lead detection for the XRF analyzer is 15 ppm, this field instrument is capable of detecting lead at levels far below the action level. Integrating the ability of in situ screening to characterize the extent of soil contamination with laboratory sampling to verify decontamination allows cost-effective site remediation.

Field screening for total lead with the XRF will be conducted at locations immediately surrounding the affected area. The Standard Operating Procedure (SOP) for the XRF analyzer, "In Situ Field Screening of Metals in Soil by Radioisotope Excited X-Ray Fluorescence", will be followed (LANL, 1992). Initially, field screening will occur at four surface locations within a one-foot radius of sample location PF-40-FA-5R (Figure 3.2). Since the original sample was collected to a depth of 2.5 feet (the soil/tuff interface), field screening will be conducted at six-inch intervals within the one-foot radius to the soil/tuff interface (Figure 3.2). Each six-inch increment of soil will be excavated and containerized, field screening samples will be collected from the designated locations, and field analysis for lead contamination will be performed. If lead is detected above the action level at any sampling location, the sampling area will be expanded to a two-foot radius and, again, field screened at six-inch intervals to the soil/tuff interface (Figure 3.2). This process will be repeated, as necessary, until no lead is detected above the action level. A decontamination verification soil sample will be collected at the base of the excavated area and

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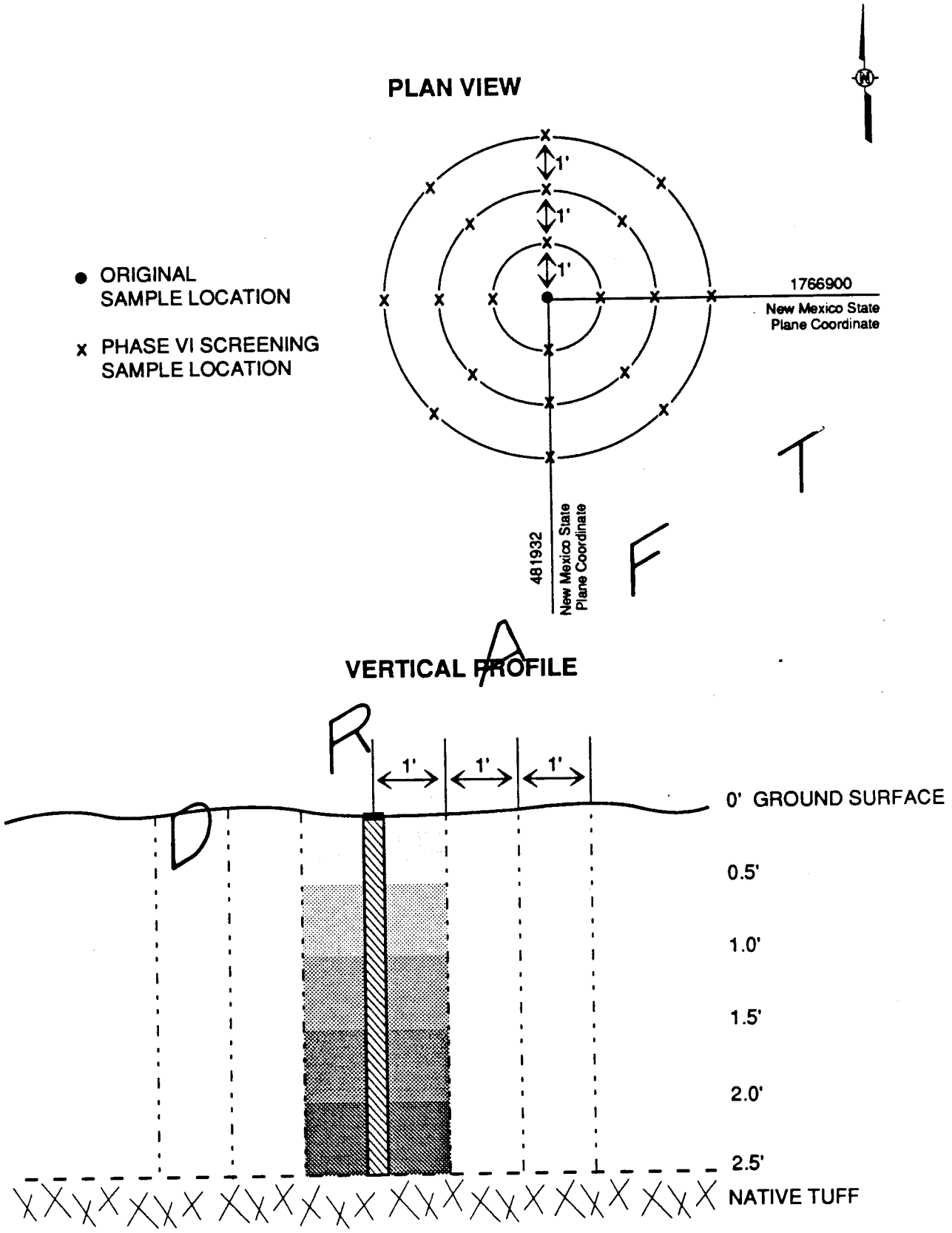

Figure 3.2. Phase VI screening locations at the fill area (PF-40-FA-5R).

analyzed in a laboratory for total lead. Screening samples and the decontamination verification sample will be collected with disposable inert-plastic scoops.

Excavation will be done manually with a hand shovel, if possible. If the ground is frozen, other equipment (e.g., jackhammer or pneumatic shovel) may be used. The excavation equipment will be decontaminated between each six-inch interval of excavation. Excavation equipment decontamination will follow the procedures presented in Section 5.1.3 of the FCP. Soil removed from the affected area will be considered hazardous waste and will be containerized in 55-gallon drums. A less-than-90-day storage area will be established on site. When a sufficient volume of waste has accumulated, the drums will be transported to TA-54 for temporary storage until transferred to a permitted treatment, storage, or disposal facility (TSDF). The excavated area will be roped off and marked with yellow warning tape. Site restoration will be done according to the steps presented in Section 5.4 of the FCP; however, this activity will be initiated only after decontamination verification data are evaluated.

QA/QC samples will be collected at the frequency discussed in Section 4.3.4 of the FCP. Sample handling and documentation will follow the guidelines in Section 4.4 of the FCP, and measures of personnel protection will adhere to those presented in Sections 4.5 and 5.1.2 of the FCP.

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3.3 PHASE VI BURN CAGE INVESTIGATION AND REMEDIATION PLAN

Total lead, TCLP lead, and arsenic were detected in a charred surface debris sample collected from the burn cage location, PF-40-BC-1. This sample contained 2,110 ppm total lead, 110 mg/L TCLP lead, and above-background concentrations of arsenic. The respective action and regulatory levels for these constituents are 500 ppm, 5.0 mg/L, and 0.4 ppm. Since the contaminated area is small and localized, the affected soil will be remediated by excavation. Like the fill area, the EPA interim soil cleanup level of 500 ppm for lead will be used. All excavated soil will be containerized and removed for proper treatment or disposal. A plan for additional investigation to ensure that remediation of this area is complete is presented below.

Because the constituents of concern at the burn cage are inorganic compounds (lead and arsenic), the same field screening technique presented in Section 3.2 is proposed for determining the horizontal and vertical extent of contamination at the affected area. Again, the site-specific action level for lead is far greater than the XRF analyzer's lower detection limit for lead, 15 ppm. Field screening with the XRF analyzer to characterize the extent of soil contamination will be integrated with laboratory sampling to verify decontamination so that site remediation can be accomplished in a cost-effective manner. Because it is believed that these two constituents were co-deposited, we believe that by removing the lead, the arsenic will also be removed. This theory will be proven during the final verification sampling.

Field screening for total lead and arsenic will be conducted at the burn cage. The SOP for the XRF will be followed (LANL 1992). Since the burn cage site is approximately four feet by four feet in area, a grid will be established over this area and samples will be collected from selected grid node locations, as shown on Figure 3.3. If lead or arsenic is detected at any of the burn cage perimeter locations, the sampling area will be expanded one foot beyond the edges of the burn cage (Figure 3.3). The sampling area will continue to be expanded if the need is indicated by the field screening results. Although the original sample was collected at the surface, field screening for lead and arsenic will also be conducted at the six-inch depth to determine if contaminants may have migrated vertically at the burn cage. After the surface field screening has been completed, the soil and material will be excavated to a depth of six inches. Field screening samples will be collected at the six-inch depth from the same nodal locations shown on Figure 3.3. If lead or arsenic is not detected above the interim soil cleanup levels at any of these shallow locations, a decontamination verification sample will be collected at the six-inch depth near the location of the original sample (PF-40-BC-1). If lead or arsenic is detected above the interim soil cleanup levels at any of the shallow locations, another six-inch increment of soil will be excavated and containerized, and a field screening sample will be collected from the grid node location where

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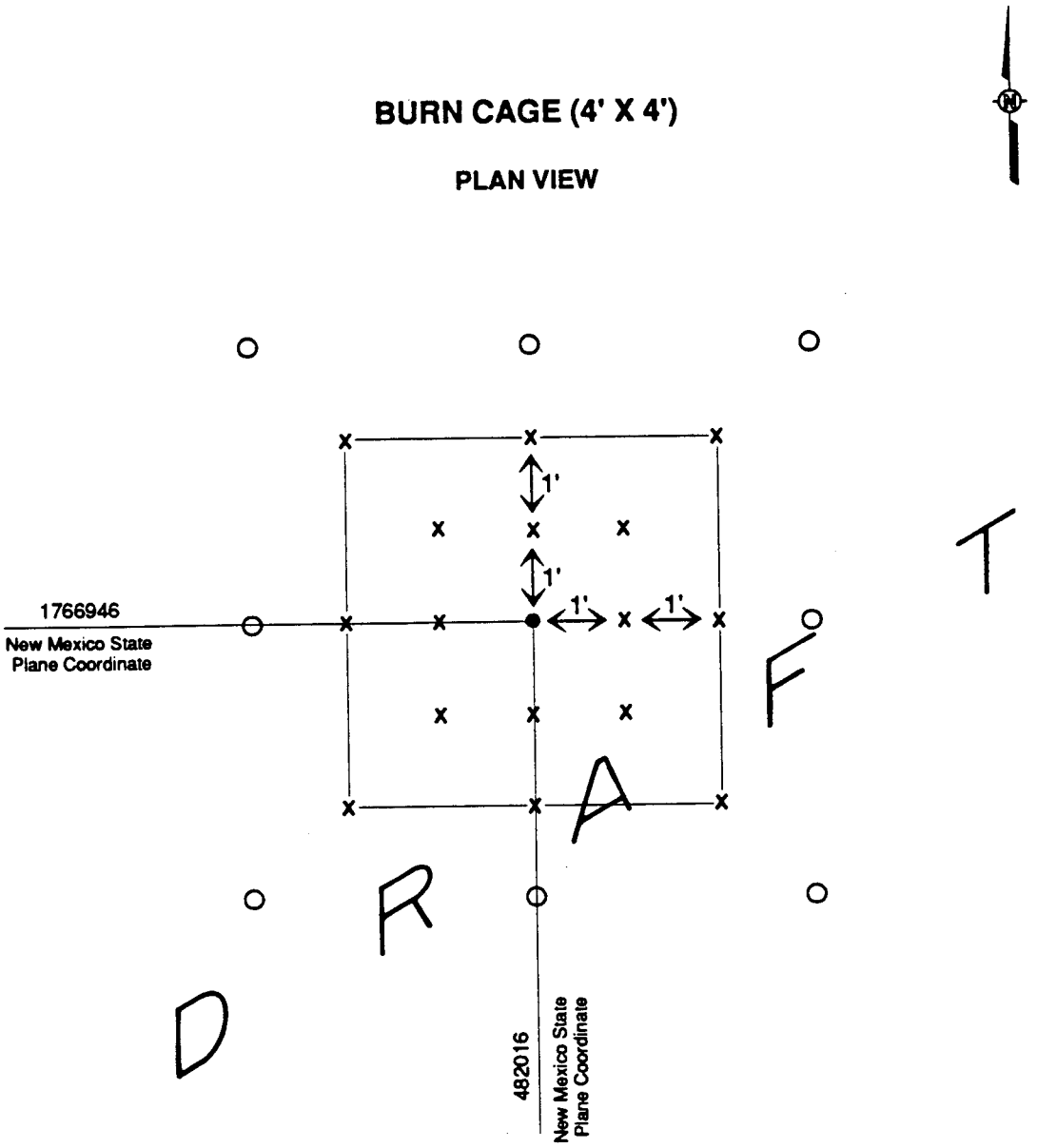
BURN CAGE (4' X 4')

PLAN VIEW



- ● ORIGINAL SAMPLE LOCATION
- x PHASE VI SCREENING SAMPLE LOCATION
- O POTENTIAL PHASE VI SCREENING SAMPLE LOCATIONS

Figure 3.3. Phase VI screening locations at the burn cage (PF-40-BC-1).

contamination above the cleanup level was detected. If no lead or arsenic is detected above the cleanup level at the 12-inch depth, a decontamination verification sample will be collected near the location of the original sample (PF-40-BC-1). If lead or arsenic above the cleanup level is detected at the 12-inch depth, another six-inch interval of soil will be excavated and containerized, and field screening will be repeated as at the six-inch depth. Excavation and field screening will continue until no lead or arsenic is detected above the action level. A decontamination verification soil sample will be collected at the final depth where no contamination above the cleanup level is detected by field screening. The decontamination verification sample will be submitted to a laboratory and analyzed for total lead, arsenic, and TCLP lead. Screening samples and the decontamination verification sample will be collected with disposable inert-plastic scoops.

If possible, excavation will be performed manually with a hand shovel. However, if the ground is frozen, other equipment (e.g., jackhammer or pneumatic shovel) may be used. Excavation equipment will be decontaminated between each six-inch interval of excavation. Equipment used during excavation will be decontaminated according to the procedures presented in Section 5.1.3 of the FCP. Soil removed from the affected area will be considered hazardous waste and will be containerized and stored in 55-gallon drums at a less-than-90-day storage area established on site. When sufficient waste has accumulated, the drums will be transported to TA-54 for temporary storage until transferred to a permitted TSDF. The excavated area will be roped off and marked with yellow warning tape. Site restoration will be done according to the steps presented in Section 5.4 of the FCP; however, this activity will be initiated only after decontamination verification data are evaluated.

QA/QC samples will be collected at the frequency discussed in Section 4.3.4 of the FCP. Sample handling and documentation will follow the guidelines in Section 4.4 of the FCP, and measures of personnel protection will adhere to those presented in Sections 4.5 and 5.1.2 of the FCP.

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3.4 PHASE VI BURN AREA EAST INVESTIGATION AND REMEDIATION PLAN

Lead was detected in a sample collected to a depth of six inches at the east burn area. Sample PF-40-BAE-2 contained 1,470 ppm total lead and 13 mg/L TCLP lead. These concentrations exceed the respective cleanup levels of 500 to 1,000 ppm and 5.0 mg/L, respectively. Again, since the contaminated area is small and localized, the affected soil will be remediated by excavation, the interim soil cleanup level of 500 to 1,000 ppm for lead will be used. Arsenic was detected above background level and screening action level. All excavated material will be containerized and removed for proper treatment or disposal. A plan for additional investigation to ensure that remediation of this area is complete is presented below.

Field screening for total lead at the east burn area will be conducted with an XRF analyzer to characterize the horizontal and vertical extent of contamination. The cleanup level for lead is much higher than the instrument's lower detection limit for total lead. Field screening will be integrated with laboratory sampling to verify decontamination. This integration of techniques will allow cost-effective site remediation to be accomplished.

Field screening for lead will be conducted at the east burn area. Screening with the XRF will be conducted according the instrument's SOP (LANL 1992). The east burn area is approximately six feet by six feet in area. A grid will be established over this area and samples will be collected from selected grid node locations, as shown on Figure 3.4. If lead is detected above the cleanup level at any of the burn area east perimeter locations, the sampling area will be expanded one foot beyond the edges of the burn area (Figure 3.4). The sampling area will continue to be expanded if the need is so indicated by the field screening results. Since lead was detected in a sample collected from the zero- to six-inch depth during Phase II, a six-inch interval of surface soil will be excavated from the burn area and containerized. Field screening for lead will be conducted at each selected grid node location at the six-inch depth. Another six-inch interval of soil will then be excavated and containerized, and samples will be collected at the same grid node locations for field screening to determine if contaminants may have migrated vertically at the east burn area. If lead is not detected above the cleanup level at any of these 12-inch-depth locations, a decontamination verification sample will be collected at this layer near the location of the original sample (PF-40-BAE-2). If lead is detected above the cleanup level, another six-inch increment of soil will be excavated and containerized. A field screening sample will be collected from any grid node location where contamination above the cleanup level was detected. If lead above the cleanup level is not detected at the 18-inch depth, a decontamination verification sample will be collected near the location of the original sample. If lead is detected above the cleanup level at this depth, excavation and field screening will continue at six-inch intervals until no lead is

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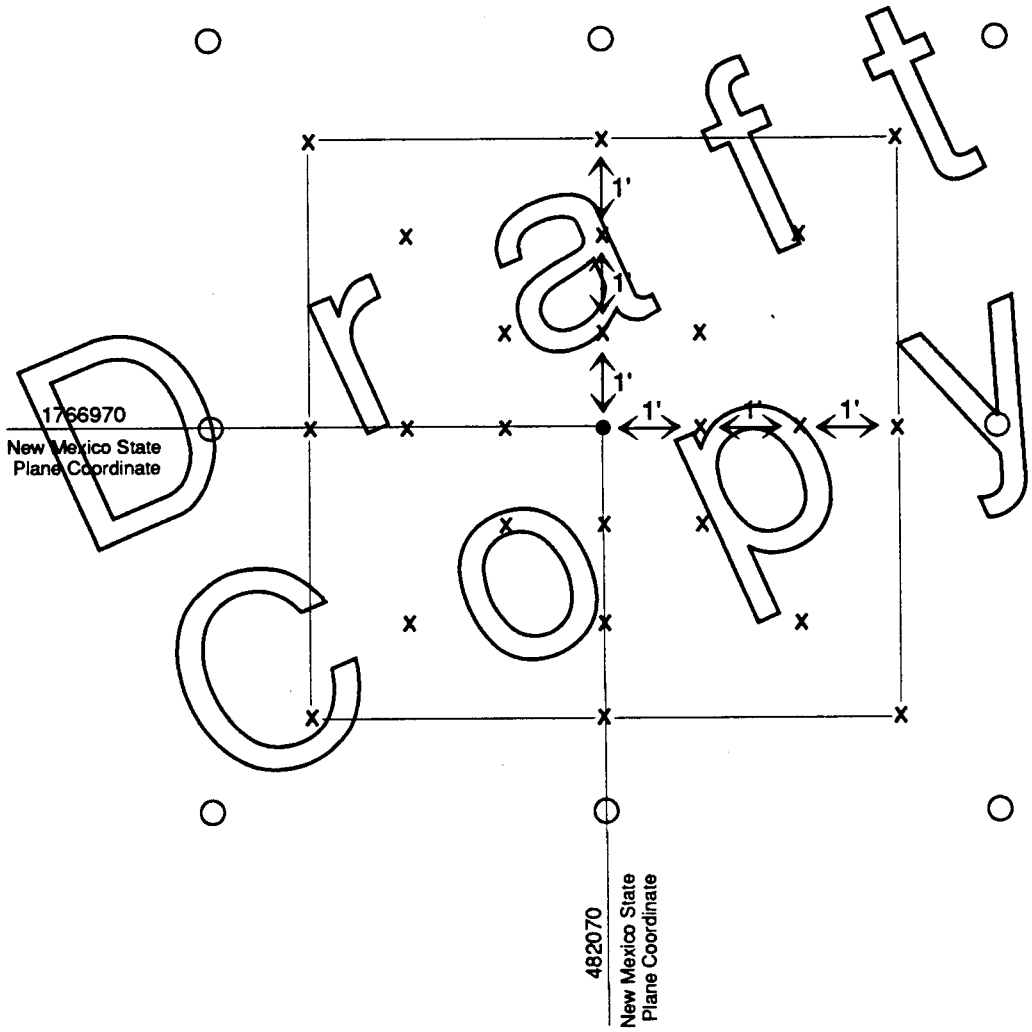
BURN AREA EAST (6' X 6')

PLAN VIEW



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- ● ORIGINAL SAMPLE LOCATION
- x PHASE VI SCREENING SAMPLE LOCATION
- ○ POTENTIAL PHASE VI SCREENING SAMPLE LOCATION

Figure 3.4. Phase VI screening locations at the east burn area (PF-40-BAE-2).

detected above the action level. A decontamination verification soil sample will be collected at the final depth where no contamination above the cleanup level is detected by field screening. The decontamination verification sample will be submitted to a laboratory for both TAL and TCLP lead analyses. Field screening and decontamination verification samples will be collected with disposable inert-plastic scoops.

Manual excavation of soil will be performed with a hand shovel, if possible. If the ground is frozen, a jackhammer or pneumatic shovel may be used for excavation. The excavation equipment will be decontaminated between each six-inch interval. Excavation equipment decontamination will follow the procedures presented in Section 5.1.3 of the FCP. Soil removed from the affected area will be considered hazardous waste and will be containerized and stored in 55-gallon drums at a less-than-90-day storage area established on site. When sufficient volumes of waste are accumulated, the drums will be transported to TA-54 for temporary storage until transferred to a permitted TSDF. The excavated area will be roped off and marked with yellow warning tape. Site restoration will be done according to the steps presented in Section 5.4 of the FCP; however, this activity will be initiated only after decontamination verification data are evaluated.

QA/QC samples will be collected at the frequency discussed in Section 4.3.4 of the FCP. Sample handling and documentation will follow the guidelines in Section 4.4 of the FCP, and measures of personnel protection will adhere to those presented in Sections 4.5 and 5.1.2 of the FCP.

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3.5 PHASE VI BURN PIT INVESTIGATION

Beryllium was detected above background level at one location within the burn pit. Arsenic was also detected above the action level and background level. Sample PF-40-BP-2C, collected at depth below the charred debris in the burn pit, contained 6.74 µg/g (ppm) beryllium. This amount exceeds the background concentration of 2 ppm (Ferenbaugh et al. 1990). Analytical data collected as part of Phase II of this investigation is sufficient to perform a baseline risk assessment. If the risk assessment indicates the need for additional data or remediation is required, a plan for additional investigation of this area will be implemented. The sampling plan that would be implemented to gather data for remedial boundaries is presented below.

No simple field screening techniques for beryllium are currently available to characterize the extent of potential beryllium contamination at the burn pit. Therefore, samples will be collected from additional borehole locations and submitted to a laboratory for beryllium analysis.

During the Phase II investigation, 11 boreholes were drilled in the vicinity of the burn pit to locate the pit and attempt to determine its boundaries. Once the burn pit was penetrated, as indicated by burnt material within a core sample, the drilling and sampling efforts were focused near the borehole that pierced the burn pit. The Phase VI investigation will involve drilling four boreholes in the immediate vicinity of sample PF-40-BP-2C and up to nine additional boreholes in the burn pit area, for a maximum total of 13 boreholes (Figure 3.5). The purpose of this investigation is to further characterize the horizontal and vertical extent of potential beryllium contamination and to better determine the boundary of the pit. An evaluation of the data resulting from this investigation will help to establish the remediation alternatives for clean closure of the unit.

Four boreholes will be drilled at a distance of two feet from the borehole where beryllium was detected above background concentration (PF-40-BP-2C) (Figure 3.5). It is anticipated that the burn pit is approximately five feet deep since native tuff was intercepted at the five-foot depth during the Phase II investigation. Soil core samples will be collected at depth from the charred debris layer and from soil one foot below the charred debris layer. A total of eight samples will be collected from the first four boreholes; these samples will be submitted to a laboratory for beryllium analysis. Up to nine more boreholes will be drilled at the locations shown on Figure 3.5. Again, core samples will be collected at depth from the charred debris layer and from soil one foot below the charred debris layer. Soil cores will be submitted to a laboratory for beryllium analysis. If the burn pit is not intercepted at a particular borehole location, no samples will be collected from that location; instead, this information will be used to help define the boundary of the pit. All soil core samples will be collected with a CME-55 drill rig equipped with a hollow-stem auger with a

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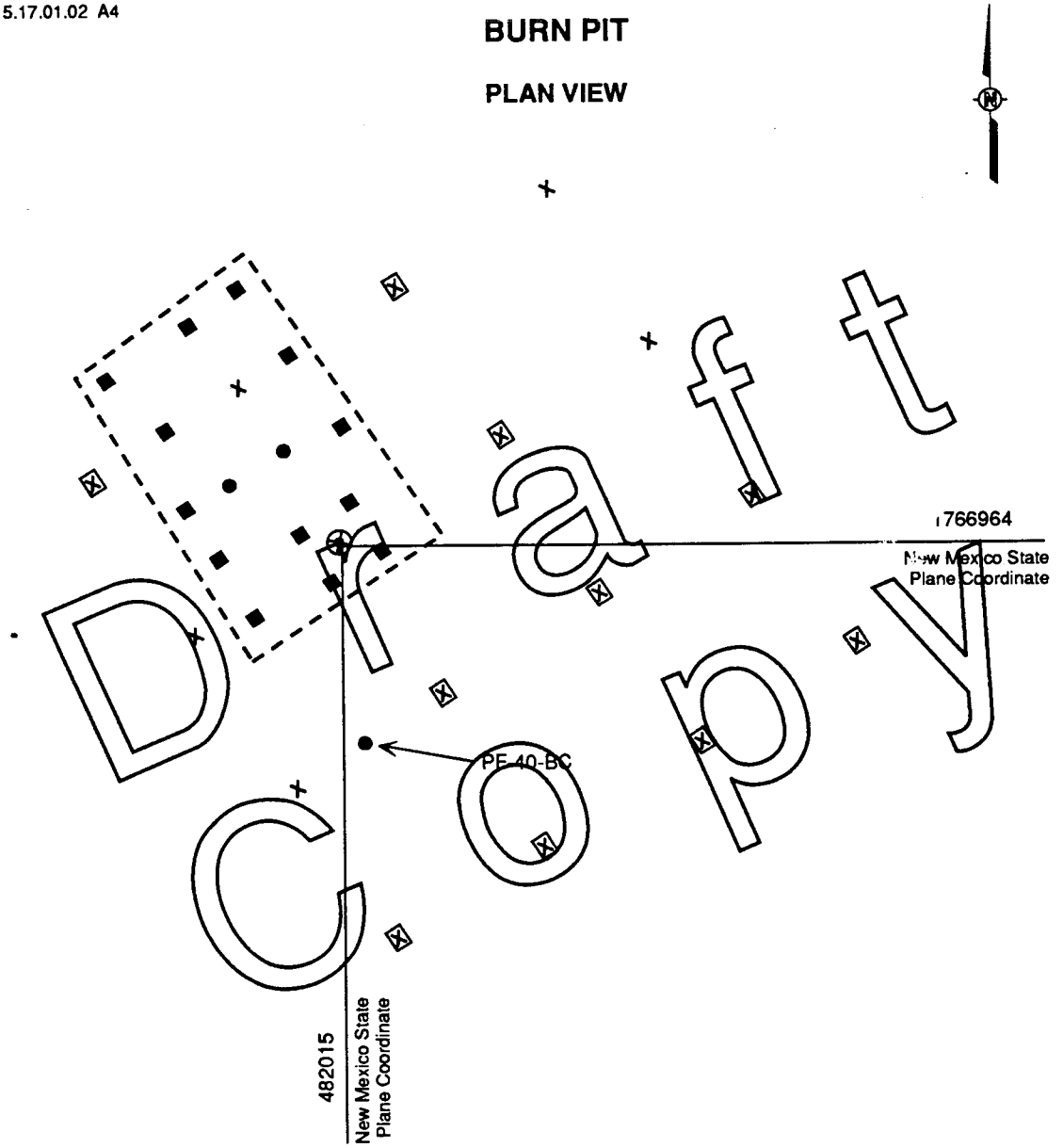
BURN PIT

PLAN VIEW



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⊠ PHASE II BOREHOLE LOCATION, BURN PIT NOT ENCOUNTERED

x PROPOSED PHASE II BOREHOLE LOCATION, NOT DRILLED

⊗ LOCATION OF PHASE II SAMPLE PF-40-BP-2C
(Beryllium at 6.74 ppm)

● PHASE II SAMPLE LOCATION

■ PROPOSED PHASE VI BOREHOLE/SAMPLING LOCATION

- - · POTENTIAL BOUNDARY OF BURN PIT

Figure 3.5. Phase VI burn pit sampling locations.

three-inch-diameter coring capability. Decontamination of sampling equipment will follow the procedures presented in Section 4.3.5 of the FCP.

QA/QC samples will be collected at the frequency discussed in Section 4.3.4 of the FCP. Sample handling and documentation will follow the guidelines in Section 4.4 of the FCP, and measures of personnel protection will adhere to those presented in Sections 4.5 and 5.1.2 of the FCP.

No excavation will be conducted during the Phase VI investigation at the burn pit. After the Phase VI analytical data have been evaluated, the risk assessment will be modified and remedial alternatives will be evaluated. If the proposed remediation activity is accepted and approved by NMED, the remedial actions will be implemented.

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3.6 PHASE VI AMPHITHEATER INVESTIGATION

Thallium was detected above the action level and below the PRG in each sample collected from within the amphitheater. The concentrations of thallium in these samples ranged from 21 to 28 µg/g (ppm). No thallium was detected in any other location during other sampling phases. The action level for thallium, as calculated according to the Subpart S equations (EPA 1990), is 6.4 ppm. The PRG is 160 ppm for thallium. Analytical data collected as part of Phase IV of this investigation are sufficient to perform a baseline risk assessment. If the risk assessment requires additional data or remediation is required, a plan for additional investigation of this area will be implemented. The sampling plan that would be implemented to gather additional data is presented below.

No simple field screening techniques for thallium are currently available to characterize the extent of potential thallium contamination at the amphitheater. Therefore, samples will be collected from additional locations and submitted to a laboratory for thallium analysis.

During the Phase III and IV investigations, nine samples were collected from within the amphitheater. Five samples were collected at the surface (0-6"), and four samples were collected at two locations from the zero- to two-foot and two- to four-foot depths; native tuff was encountered at the four-foot depth at the two borehole locations. Thallium was detected at concentrations above action levels in each sample. The Phase VI investigation will involve drilling 12 boreholes within the amphitheater and four boreholes adjacent to and southeast of the amphitheater. In addition, five tuff samples will be collected from the walls of the amphitheater at a height of about three feet. The locations of all proposed samples are shown on Figure 3.6. Note that samples taken previously do not include those below detection limit (beyond the amphitheater in the SE direction). The purpose of this investigation is to further characterize the horizontal and vertical extent of potential thallium contamination at the amphitheater. An evaluation of the data resulting from this investigation will help to establish the remediation alternatives for clean closure of the unit.

The proposed sampling locations were established on six transects extending radially outward from the Phase III debris pile sample location (PF-40-DP) toward the amphitheater walls. Twelve boreholes will be drilled within the amphitheater, and four will be drilled adjacent to the amphitheater, for a total of 16 boreholes. Borehole soil samples will be collected from the one-to two-foot and the three- to four-foot depths and submitted to a laboratory for thallium analyses. Once the soil-tuff interface is reached, a three-foot core sample of tuff will be collected. The upper one-foot interval of this core will be submitted to a laboratory for thallium analysis. The two

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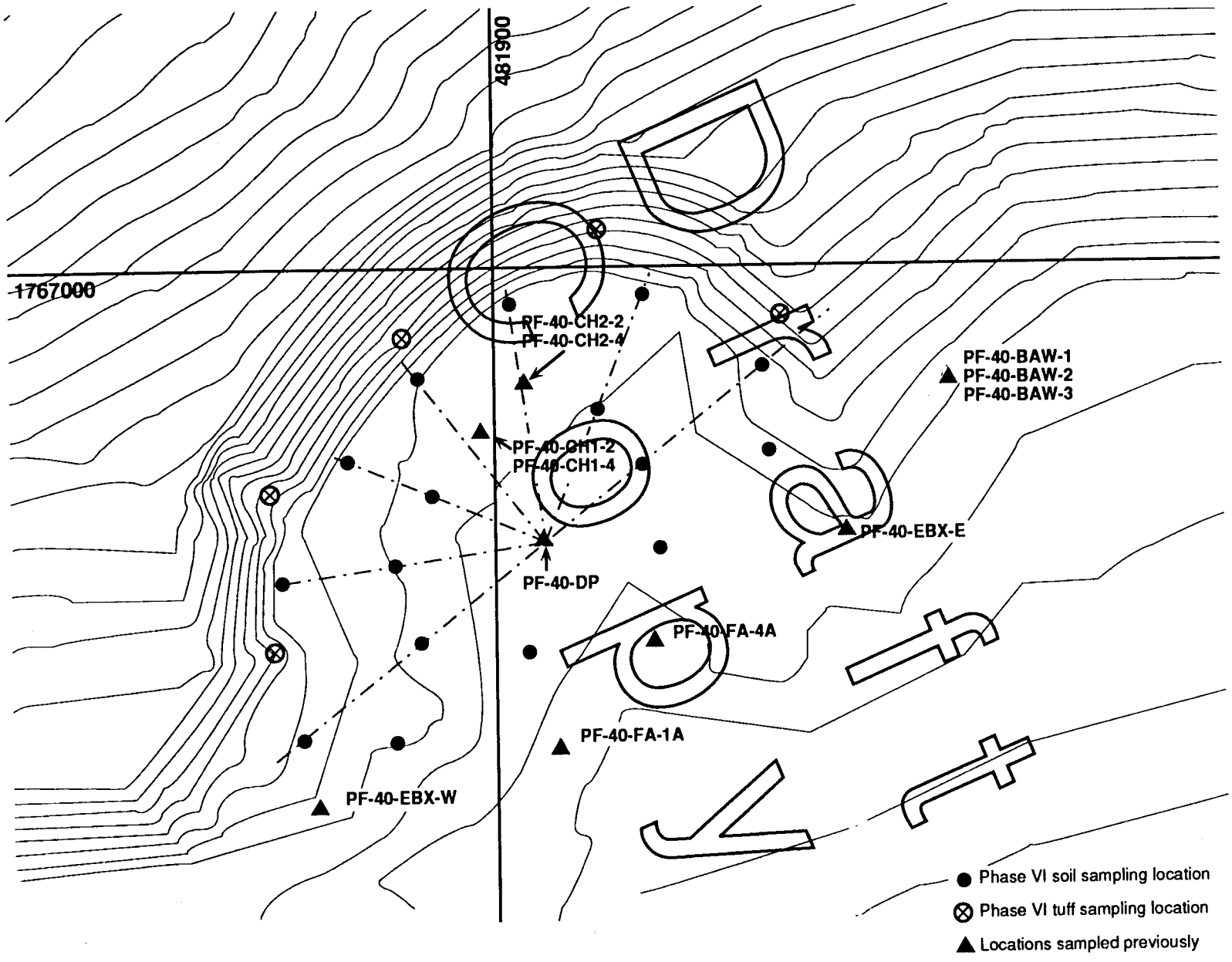

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Figure 3.6. Phase VI amphitheater sampling locations.

remaining one-foot intervals of tuff will be packaged in sample containers for subsequent laboratory analysis, depending on the results of this Phase VI investigation. A total of 48 samples will be collected from the 16 borehole locations in and near the amphitheater. In addition, five surface samples of tuff will be collected from the walls of the amphitheater and analyzed for thallium. These samples will be collected at a height of about three feet from the amphitheater floor, as conditions allow. The purpose of sampling the amphitheater wall is to determine if detonations within the amphitheater may have driven thallium into the native bedrock.

All soil core samples will be collected with a drill rig equipped with a hollow-stem auger with a three-inch-diameter coring capability. Boreholes advanced into the tuff will also be accomplished with a hollow-stem auger with a 7.625-inch outside-diameter by 4.25-inch inside-diameter auger; core samples will be collected with a 3.25-inch inside-diameter five-foot-long split barrel continuous sampling tube. Decontamination of sampling equipment will follow the procedures presented in Section 4.3.5 of the FCP.

QA/QC samples will be collected at the frequency discussed in Section 4.3.4 of the FCP. Sample handling and documentation will follow the guidelines in Section 4.4 of the FCP, and measures of personnel protection will adhere to those presented in Sections 4.5 and 5.1.2 of the FCP.

No excavation will be conducted during the Phase VI investigation at the amphitheater. After the Phase VI analytical data have been evaluated, the risk assessment will be modified and remedial alternatives will be evaluated. If the proposed remediation activity is accepted and approved by NMED, the remedial actions will be implemented.

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4.0 SCHEDULE

A certification of final closure for TA-40 SDS and a closure report will be submitted to NMED in late 1993. Supplementary sampling will be initiated during the early spring of 1993 to determine the excavation limits at three sites and to further characterize the remaining two sites and the general vicinity of TA-40 SDS. The revised schedule provided in Figure 4.1 will commence upon receipt of a notice of approval of this amendment to the FCP. The dates shown on Figure 4.1 assume that NMED approves this amendment by early March 1993.

The schedule includes supplementary Phase VI sampling and excavation at three sites, implementation of the FCP Phase V investigation, and additional Phase VI sampling at the remaining two sites. Although the FCP, Revision 1, considered the optional sampling activities as "unlikely", the Phases I through IV data indicate that further investigations are necessary. The schedule provided on Figure 4.1 attempts to recognize all of the potential tasks required to achieve clean closure of TA-40 SDS, and allows sufficient time for completion of these activities.

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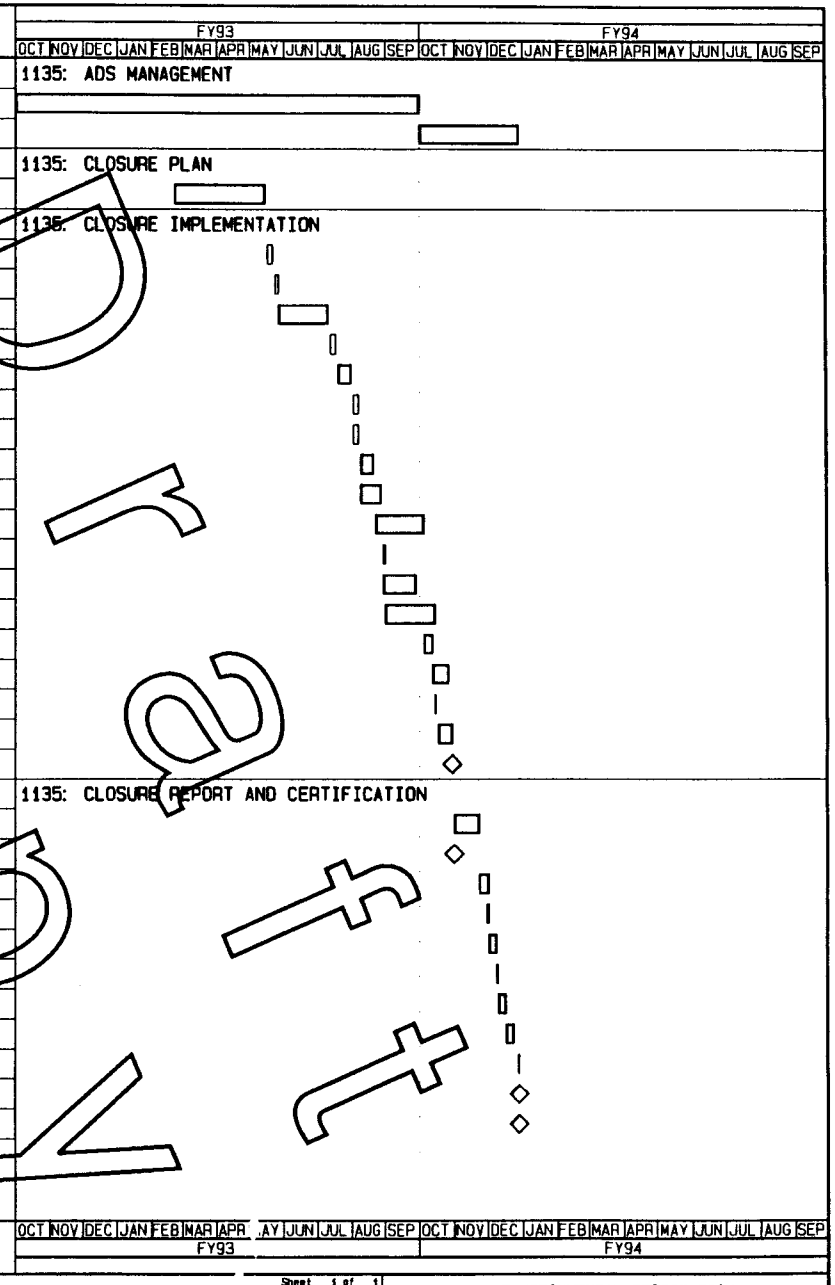
ACTIVITY ID	ACTIVITY DESCRIPTION	CAL ID	EARLY START	EARLY FINISH	ORIG DUR
210110903	1135: MANAGE ADS FY-93 (LOE)	1	10CT92	30SEP93	249
210110904	1135: MANAGE ADS FY-94 (LOE)	1	10CT93	28DEC93	57
210126399	1135: NMED REVIEW OF CLOSURE PLAN	1	22FEB93	14MAY93	60
210136400	1135: MOBILIZE FIELD TEAM FOR PHASE V	1	17MAY93	21MAY93	3
210136405	1135: PERFORM PHASE V SAMPLING	1	24MAY93	26MAY93	3
210136410	1135: PERFORM LAB ANALYSES FOR PHASE V	1	27MAY93	9JUL93	30
210136415	1135: ASSESS PHASE V DATA	1	12JUL93	16JUL93	5
210136424	1135: PERFORM BP/AMPHITHEATER RISK ASSESS	1	19JUL93	30JUL93	10
210136425	1135: MOBILIZE FOR BP/AMPHITHEATER REMED	1	2AUG93	6AUG93	5
210136432	1135: MOBILIZE FOR PHASE VI	1	2AUG93	6AUG93	5
210136420	1135: PERFORM PHASE VI FIELD SCREENING	1	9AUG93	20AUG93	10
210136426	1135: EXCAVATE/REMEDIATE BP/AMPHITHEATER	1	9AUG93	27AUG93	15
210136421	1135: PERFORM LAB ANALYSES ON PH VI VER SAMP	1	23AUG93	4OCT93	30
210136427	1135: PERFORM VER SAMPL BP/AMPHITHEATER	1	30AUG93	31AUG93	2
210136430	1135: MANAGE/DISPOSE OF EXCAVATED WASTES	1	30AUG93	27SEP93	20
210136428	1135: PERFORM LAB ANALYSES OF VERIF SAMPLES	1	1SEP93	14OCT93	30
210136422	1135: ASSESS PHASE VI VERIFICATION DATA	1	5OCT93	12OCT93	5
210136423	1135: DISPOSE/MANAGE PH VI EXCAVATED WASTES	1	13OCT93	26OCT93	10
210136429	1135: ASSESS VERIFICATION DATA	1	15OCT93	15OCT93	1
210136431	1135: RESTORE SITES	1	18OCT93	29OCT93	10
21013M450	1135: CLOSURE IMPLEMENTATION COMPLETED	1		29OCT93	0
210146425	1135: PREPARE PRELIMINARY DRAFT FOR CLOSURE	1	1NOV93	22NOV93	15
21014M430	1135: START CLOSURE REPORT	1	1NOV93		0
210146445	1135: REVIEW PRELIMINARY DRAFT CLOSURE REP	1	23NOV93	1DEC93	5
210146440	1135: OBTAIN CLOSURE CERTIFICATION	1	30NOV93	1DEC93	2
210146455	1135: PUBLISH DRAFT CLOSURE REPORT	1	2DEC93	8DEC93	5
210146460	1135: SUBMIT DRAFT CLOSURE REPORT TO DOE	1	9DEC93	9DEC93	1
210146465	1135: DOE REVIEW OF DRAFT CLOSURE REPORT	1	10DEC93	16DEC93	5
210146470	1135: PUBLISH FINAL CLOSURE REPORT	1	17DEC93	23DEC93	5
210146475	1135: TRANSMIT FINAL CLOSURE REPORT	1	28DEC93	28DEC93	1
21014M480	1135: CLOSURE COMPLETE PENDING NMED APPROVAL	1		28DEC93	0
21014M750	1135: PROJECT COMPLETE	1		28DEC93	0



Plot Date 17FEB93
Data Date 10CT92
Project Start 10CT91
Project Finish 28DEC93

(c) Primavera Systems, Inc.

Activity Bar/Early Dates
Critical Activity
Progress Bar
Milestone/Flag Activity

LOS ALAMOS NATIONAL LABORATORY
ADS 1135: TA-40
PROPOSED SCHEDULE

Sheet 1 of 1

ENVIRONMENTAL RESTORATION

Date	Revision	Checked	Approved

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Figure 4.1 Revised schedule for OU 1135.

5.0 REFERENCES

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APPENDIX I

PHASE I ANALYTICAL DATA

TABLE I-a

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00696	92.00697	92.00698	92.00699	92.00700	92.00701
Acetone	<20	<28	<20	<20	<20	<32
Benzene	<5	<7	<5	<5	<5	<8
Bromobenzene	<5	<7	<5	<5	<5	<8
Bromochloromethane	<5	<7	<5	<5	<5	<8
Bromodichloromethane	<5	<7	<5	<5	<5	<8
Bromoform	<5	<7	<5	<5	<5	<8
Bromomethane	<10	<14	<10	<10	<10	<16
2-Butanone	<20	<28	<20	<20	<20	<32
n-Butylbenzene	<5	<7	<5	<5	<5	<8
sec-Butylbenzene	<5	<7	<5	<5	<5	<8
tert-Butylbenzene	<5	<7	<5	<5	<5	<8
Carbon disulfide	<5	<7	<5	<5	<5	<8
Carbon tetrachloride	<5	<7	<5	<5	<5	<8
Chlorobenzene	<5	<7	<5	<5	<5	<8
Chlorodibromomethane	<5	<7	<5	<5	<5	<8
Chloroethane	<10	<14	<10	<10	<10	<16
Chloroform	<5	<7	<5	<5	<5	<8
Chloromethane	<10	<14	<10	<10	<10	<16
o-Chlorotoluene	<5	<7	<5	<5	<5	<8
p-Chlorotoluene	<5	<7	<5	<5	<5	<8
1,2-Dibromo-3-chloropropane	<10	<14	<10	<10	<10	<16
1,2-Dibromoethane	<5	<7	<5	<5	<5	<8
Dibromomethane	<5	<7	<5	<5	<5	<8
o-Dichlorobenzene (1,2)	<5	<7	<5	<5	<5	<8
m-Dichlorobenzene (1,3)	<5	<7	<5	<5	<5	<8
p-Dichlorobenzene (1,4)	<5	<7	<5	<5	<5	<8
Dichlorodifluoromethane	<10	<14	<10	<10	<10	<16
1,1-Dichloroethane	<5	<7	<5	<5	<5	<8
1,2-Dichloroethane	<5	<7	<5	<5	<5	<8

TABLE I-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00696	92.00697	92.00698	92.00699	92.00700	92.00701
1,1-Dichloroethene	<5	<7	<5	<5	<5	<8
trans-1,2-Dichloroethene	<5	<7	<5	<5	<5	<8
cis-1,2-Dichloroethylene	<5	<7	<5	<5	<5	<8
1,2-Dichloropropane	<5	<7	<5	<5	<5	<8
1,3-Dichloropropane	<5	<7	<5	<5	<5	<8
2,2-Dichloropropane	<5	<7	<5	<5	<5	<8
1,1-Dichloropropene	<5	<7	<5	<5	<5	<8
cis-1,3-Dichloropropene	<5	<7	<5	<5	<5	<8
trans-1,3-Dichloropropene	<5	<7	<5	<5	<5	<8
Ethylbenzene	<5	<7	<5	<5	<5	<8
2-Hexanone	<20	<28	<20	<20	<20	<32
Isopropylbenzene	<5	<7	<5	<5	<5	<8
4-Isopropyltoluene	<5	<7	<5	<5	<5	<8
Methyl iodide	<5	<7	<5	<5	<5	<8
4-Methyl-2-pentanone	<20	<28	<20	<20	<20	<32
Methylene chloride	<5	<7	<5	<5	<5	<8
Propylbenzene	<5	<7	<5	<5	<5	<8
Styrene	<5	<7	<5	<5	<5	<8
1,1,1,2-Tetrachloroethane	<5	<7	<5	<5	<5	<8
1,1,2,2-Tetrachloroethane	<5	<7	<5	<5	<5	<8
Tetrachloroethylene	<5	<7	<5	<5	<5	<8
Toluene	<5	<7	<5	<5	<5	<8
1,1,2-Trichloro-1,2,2-trifluoroethane	<5	<7	<5	<5	<5	<8
1,1,1-Trichloroethane	<5	<7	<5	<5	<5	<8
1,1,2-Trichloroethane	<5	<7	<5	<5	<5	<8
Trichloroethene	<5	<7	<5	<5	<5	<8
Trichlorofluoromethane	<5	<7	<5	<5	<5	<8
1,2,3-Trichloropropane	<5	<7	<5	<5	<5	<8

TABLE I-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00696	92.00697	92.00698	92.00699	92.00700	92.00701
1,2,4-Trimethylbenzene	<5	<7	<5	<5	<5	<8
1,3,5-Trimethylbenzene	<5	<7	<5	<5	<5	<8
Vinyl acetate	<10	<14	<10	<10	<10	<16
Vinyl chloride	<10	<14	<10	<10	<10	<16
Mixed-Xylenes (o ± m ± p)	<5	<7	<5	<5	<5	<8
Tentatively Identified Compounds (TICs)	None	None	None	None	None	None

<: Indicates volatile organic compounds (VOC) concentration is less than the given value (detection limit).
NOTE: All samples contained charcoal/burnt material.

TABLE I-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	92.00702	92.00703	92.00704	92.00770
Acetone	<20	<20	<20	<20
Benzene	<5	<5	<5	<5
Bromobenzene	<5	<5	<5	<5
Bromochloromethane	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5
Bromomethane	<10	<10	<10	<10
2-Butanone	<20	<20	<20	<20
n-Butylbenzene	<5	<5	<5	<5
sec-Butylbenzene	<5	<5	<5	<5
tert-Butylbenzene	<5	<5	<5	<5
Carbon disulfide	<5	<5	<5	<5
Carbon tetrachloride	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5
Chlorodibromomethane	<5	<5	<5	<5
Chloroethane	<10	<10	<10	<10
Chloroform	<5	<5	<5	<5
Chloromethane	<10	<10	<10	<10
o-Chlorotoluene	<5	<5	<5	<5
p-Chlorotoluene	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	<10	<10	<10	<10
1,2-Dibromoethane	<5	<5	<5	<5
Dibromomethane	<5	<5	<5	<5
o-Dichlorobenzene (1,2)	<5	<5	<5	<5
m-Dichlorobenzene (1,3)	<5	<5	<5	<5
p-Dichlorobenzene (1,4)	<5	<5	<5	<5
Dichlorodifluoromethane	<10	<10	<10	<10
1,1-Dichloroethane	<5	<5	<5	<5

TABLE I-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	92.00702	92.00703	92.00704	92.00770
1,2-Dichloroethane	<5	<5	<5	<5
1,1-Dichloroethene	<5	<5	<5	<5
trans-1,2-Dichloroethene	<5	<5	<5	<5
cis-1,2-Dichloroethylene	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5
1,3-Dichloropropane	<5	<5	<5	<5
2,2-Dichloropropane	<5	<5	<5	<5
1,1-Dichloropropene	<5	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<5
trans-1,3-Dichloropropene	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5
2-Hexanone	<20	<20	<20	<20
Isopropylbenzene	<5	<5	<5	<5
4-Isopropyltoluene	<5	<5	<5	<5
Methyl iodide	<5	<5	<5	<5
4-Methyl-2-pentanone	<20	<20	<20	<20
Methylene chloride	<5	<5	<5	<5
Propylbenzene	<5	<5	<5	<5
Styrene	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5
Tetrachloroethylene	<5	<5	<5	<5
Toluene	<5	<5	<5	<5
1,1,2-Trichloro-1,2,2-trifluoroethane	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5
Trichlorofluoromethane	<5	<5	<5	<5

TABLE I-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	92.00702	92.00703	92.00704	92.00770
1,2,3-Trichloropropane	<5	<5	<5	<5
1,2,4-Trimethylbenzene	<5	<5	<5	<5
1,3,5-Trimethylbenzene	<5	<5	<5	<5
Vinyl acetate	<10	<10	<10	<10
Vinyl chloride	<10	<10	<10	<10
Mixed-Xylenes (o ± m ± p)	<5	<5	<5	<5
Tentatively Identified Compounds (TICs)	None	None	None	None

<: Indicates volatile organic compounds (VOC) concentration is less than the given value (detection limit).
NOTE: All samples contained charcoal/burnt material.

TABLE I-b

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00696	92.00697	92.00698	92.00699	92.00700	92.00701
Acenaphthene	<330	<1300	<330	<330	<330	<330
Acenaphthylene	<330	<1300	<330	<330	<330	<330
Aniline	<330	<1300	<330	<330	<330	<330
Anthracene	<330	<1300	<330	<330	<330	<330
Azobenzene	<330	<1300	<330	<330	<330	<330
m-Benzidine	<330	<1300	<330	<330	<330	<330
Benzo[a]anthracene	<330	<1300	<330	<330	<330	<330
Benzo[a]pyrene	<330	<1300	<330	<330	<330	<330
Benzo[b]fluoranthene	<330	<1300	<330	<330	<330	<330
Benzo[g,h,i]perylene	<330	<1300	<330	<330	<330	<330
Benzo[k]fluoranthene	<330	<1300	<330	<330	<330	<330
Benzoic acid	<330	<1300	<330	<330	<330	<330
Benzyl alcohol	<330	<1300	<330	<330	<330	<330
Bis(2-chloroethoxy)methane	<330	<1300	<330	<330	<330	<330
Bis(2-chloroethyl)ether	<330	<1300	<330	<330	<330	<330
Bis(2-chloroisopropyl)ether	<330	<1300	<330	<330	<330	<330
Bis(2-ethylhexyl)phthalate	<330	<1300	<330	<330	<330	<330
4-Bromophenylphenyl ether	<330	<1300	<330	<330	<330	<330
Butyl benzyl phthalate	<330	<1300	<330	<330	<330	<330
4-Chloro-3-methylphenol	<330	<1300	<330	<330	<330	<330
4-Chloroaniline	<330	<1300	<330	<330	<330	<330
2-Chloronaphthalene	<330	<1300	<330	<330	<330	<330
o-Chlorophenol	<330	<1300	<330	<330	<330	<330
4-Chlorophenylphenyl ether	<330	<1300	<330	<330	<330	<330
Chrysene	<330	<1300	<330	<330	<330	<330
Di-n-butyl phthalate	<330	<1300	<330	<330	<330	<330
Di-n-octyl phthalate	<330	<1300	<330	<330	<330	<330
Dibenzo[a,h]anthracene	<330	<1300	<330	<330	<330	<330
Dibenzofuran	<330	<1300	<330	<330	<330	<330

TABLE I-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00696	92.00697	92.00698	92.00699	92.00700	92.00701
o-Dichlorobenzene (1,2)	<330	<1300	<330	<330	<330	<330
m-Dichlorobenzene (1,3)	<330	<1300	<330	<330	<330	<330
p-Dichlorobenzene (1,4)	<330	<1300	<330	<330	<330	<330
3,3'-Dichlorobenzidine	<330	<1300	<330	<330	<330	<330
2,4-Dichlorophenol	<330	<1300	<330	<330	<330	<330
Diethyl phthalate	<330	<1300	<330	<330	<330	<330
Dimethyl phthalate	<330	<1300	<330	<330	<330	<330
2,4-Dimethylphenol	<330	<1300	<330	<330	<330	<330
2,4-Dinitrophenol	<330	<1300	<330	<330	<330	<330
2,4-Dinitrotoluene	<330	<1300	<330	<330	<330	<330
2,6-Dinitrotoluene	<330	<1300	<330	<330	<330	<330
Fluoranthene	<330	<1300	<330	<330	<330	<330
Fluorene	<330	<1300	<330	<330	<330	<330
Hexachlorobenzene	<330	<1300	<330	<330	<330	<330
Hexachlorobutadiene	<330	<1300	<330	<330	<330	<330
Hexachlorocyclopentadiene	<330	<1300	<330	<330	<330	<330
Hexachloroethane	<330	<1300	<330	<330	<330	<330
Indeno[1,2,3-cd]pyrene	<330	<1300	<330	<330	<330	<330
Isophorone	<330	<1300	<330	<330	<330	<330
2-Methyl-4,6-dinitrophenol	<330	<1300	<330	<330	<330	<330
2-Methylnaphthalene	<330	<1300	<330	<330	<330	<330
2-Methylphenol	<330	<1300	<330	<330	<330	<330
4-Methylphenol	<330	<1300	<330	<330	<330	<330
Naphthalene	<330	<1300	<330	<330	<330	<330
2-Nitroaniline	<330	<1300	<330	<330	<330	<330
3-Nitroaniline	<330	<1300	<330	<330	<330	<330
4-Nitroaniline	<330	<1300	<330	<330	<330	<330
Nitrobenzene	<330	<1300	<330	<330	<330	<330

TABLE I-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00696	92.00697	92.00698	92.00699	92.00700	92.00701
2-Nitrophenol	<330	<1300	<330	<330	<330	<330
4-Nitrophenol	<330	<1300	<330	<330	<330	<330
N-Nitrosodi-n-propylamine	<330	<1300	<330	<330	<330	<330
N-Nitrosodimethylamine	<330	<1300	<330	<330	<330	<330
N-Nitrosodiphenylamine	<330	<1300	<330	<330	<330	<330
Pentachlorophenol	<330	<1300	<330	<330	<330	<330
Phenanthrene	<330	<1300	<330	<330	<330	<330
Phenol	<330	<1300	<330	<330	<330	<330
Pyrene	<330	<1300	<330	<330	<330	<330
1,2,4-Trichlorobenzene	<330	<1300	<330	<330	<330	<330
2,4,5-Trichlorophenol	<330	<1300	<330	<330	<330	<330
2,4,6-Trichlorophenol	<330	<1300	<330	<330	<330	<330
Tentatively Identified Compounds (TICs)	None	5600*	None	2700*	None	None

<: Indicates semivolatile organic compound (SVOC) concentration was less than the given value (detection limit).
*: TIC detected was an unknown organic compound.

TABLE I-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	92.00702	92.00703	92.00704	92.00770
Acenaphthene	<330	<330	<330	<3300
Acenaphthylene	<330	<330	<330	<3300
Aniline	<330	<330	<330	<3300
Anthracene	<330	<330	<330	<3300
Azobenzene	<330	<330	<330	<3300
m-Benzidine	<330	<330	<330	<3300
Benzo[a]anthracene	<330	<330	<330	<3300
Benzo[a]pyrene	<330	<330	<330	<3300
Benzo[b]fluoranthene	<330	<330	<330	<3300
Benzo[g,h,i]perylene	<330	<330	<330	<3300
Benzo[k]fluoranthene	<330	<330	<330	<3300
Benzoic acid	<330	<330	<330	<3300
Benzyl alcohol	<330	<330	<330	<3300
Bis(2-chloroethoxy)methane	<330	<330	<330	<3300
Bis(2-chloroethyl)ether	<330	<330	<330	<3300
Bis(2-chloroisopropyl)ether	<330	<330	<330	<3300
Bis(2-ethylhexyl)phthalate	<330	<330	<330	<3300
4-Bromophenylphenyl ether	<330	<330	<330	<3300
Butyl benzyl phthalate	<330	<330	<330	<3300
4-Chloro-3-methylphenol	<330	<330	<330	<3300
4-Chloroaniline	<330	<330	<330	<3300
2-Chloronaphthalene	<330	<330	<330	<3300
o-Chlorophenol	<330	<330	<330	<3300
4-Chlorophenylphenyl ether	<330	<330	<330	<3300
Chrysene	<330	<330	<330	<3300
Di-n-butyl phthalate	<330	<330	<330	<3300
Di-n-octyl phthalate	<330	<330	<330	<3300
Dibenzo[a,h]anthracene	<330	<330	<330	<3300

TABLE I-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	92.00702	92.00703	92.00704	92.00770
Dibenzofuran	<330	<330	<330	<3300
o-Dichlorobenzene (1,2)	<330	<330	<330	<3300
m-Dichlorobenzene (1,3)	<330	<330	<330	<3300
p-Dichlorobenzene (1,4)	<330	<330	<330	<3300
3,3'-Dichlorobenzidine	<330	<330	<330	<3300
2,4-Dichlorophenol	<330	<330	<330	<3300
Diethyl phthalate	<330	<330	<330	<3300
Dimethyl phthalate	<330	<330	<330	<3300
2,4-Dimethylphenol	<330	<330	<330	<3300
2,4-Dinitrophenol	<330	<330	<330	<3300
2,4-Dinitrotoluene	<330	<330	<330	<3300
2,6-Dinitrotoluene	<330	<330	<330	<3300
Fluoranthene	<330	<330	<330	<3300
Fluorene	<330	<330	<330	<3300
Hexachlorobenzene	<330	<330	<330	<3300
Hexachlorobutadiene	<330	<330	<330	<3300
Hexachlorocyclopentadiene	<330	<330	<330	<3300
Hexachloroethane	<330	<330	<330	<3300
Indeno[1,2,3-cd]pyrene	<330	<330	<330	<3300
Isophorone	<330	<330	<330	<3300
2-Methyl-4,6-dinitrophenol	<330	<330	<330	<3300
2-Methylnaphthalene	<330	<330	<330	<3300
2-Methylphenol	<330	<330	<330	<3300
4-Methylphenol	<330	<330	<330	<3300
Naphthalene	<330	<330	<330	<3300
2-Nitroaniline	<330	<330	<330	<3300
3-Nitroaniline	<330	<330	<330	<3300
4-Nitroaniline	<330	<330	<330	<3300

TABLE I-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	92.00702	92.00703	92.00704	92.00770
Nitrobenzene	<330	<330	<330	<3300
2-Nitrophenol	<330	<330	<330	<3300
4-Nitrophenol	<330	<330	<330	<3300
N-Nitrosodi-n-propylamine	<330	<330	<330	<3300
N-Nitrosodimethylamine	<330	<330	<330	<3300
N-Nitrosodiphenylamine	<330	<330	<330	<3300
Pentachlorophenol	<330	<330	<330	<3300
Phenanthrene	<330	<330	<330	<3300
Phenol	<330	<330	<330	<3300
Pyrene	<330	<330	<330	<3300
1,2,4-Trichlorobenzene	<330	<330	<330	<3300
2,4,5-Trichlorophenol	<330	<330	<330	<3300
2,4,6-Trichlorophenol	<330	<330	<330	<3300
Tentatively Identified Compounds (TICs)	None	None	None	None

<: Indicates semivolatile organic compound (SVOC) concentration was less than the given value (detection limit).

TABLE I-c

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
PESTICIDES (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER									
COMPOUND[1]	92.00696	92.00697	92.00698	92.00699	92.00700	92.00701	92.00702	92.00703	92.00704	92.00770
alpha-BHC	<1.1	<1.1	<1.2	<1.2	<1.1	<1.1	<1.2	<1.2	<1.1	<1.1
beta-BHC	<2.2	<2.2	<2.3	<2.4	<2.2	<2.3	<2.3	<2.3	<2.2	<2.2
delta-BHC	<3.3	<3.3	<3.5	<3.5	<3.4	<3.4	<3.5	<3.5	<3.4	<3.4
Lindane	<1.5	<1.5	<1.5	<1.6	<1.5	<1.5	<1.6	<1.6	<1.5	<1.5
Heptachlor	<1.1	<1.1	<1.2	<1.2	<1.1	<1.1	<1.2	<1.2	<1.1	<1.1
Aldrin	<1.5	<1.5	<1.5	<1.6	<1.5	<1.5	<1.6	<1.6	<1.5	<1.5
Heptachlor epoxide	<31	<30	<32	<32	<31	<32	<32	<32	<31	<31
Endosulfan I	<5.2	<5.1	<5.4	<5.5	<5.2	<5.3	<5.4	<5.4	<5.2	<5.2
Dieldrin	<0.74	<0.74	<0.77	<0.78	<0.75	<0.76	<0.78	<0.78	<0.75	<0.75
p,p'-DDE	<1.5	<1.5	<1.5	<1.6	<1.5	<1.5	<1.6	<1.6	<1.5	<1.5
Endrin	<2.2	<2.2	<2.3	<2.4	<2.2	<2.3	<2.3	<2.3	<2.2	<2.2
Endosulfan II	<1.5	<1.5	<5.4	<1.6	<1.5	<1.5	<1.6	<1.6	<1.5	<1.5
p,p'-DDD	<4.1	<4	<4.2	<4.3	<4.1	<4.2	<4.3	<4.3	<4.1	<4.1
Endosulfan sulfate	<24	<24	<25	<26	<25	<25	<26	<26	<25	<25
p,p'-DDT	<4.4	<4.4	<4.6	<4.7	<4.5	<4.6	<4.6	<4.7	<4.5	<4.5
Methoxychlor	<65	<65	<68	<69	<66	<67	<68	<68	<66	<66
Endrin aldehyde	<8.5	<8.4	<8.9	<9	<8.6	<8.8	<8.9	<8.9	<8.6	<8.6
Chlordane	<5.2	<5.1	<5.4	<5.5	<5.2	<5.3	<5.4	<5.4	<5.2	<5.2
Toxaphene	<89	<88	<93	<94	<90	<91	<93	<93	<90	<90

<: Indicates pesticide concentration is less than the given value (detection limit).
1: Tentatively identified compounds (TICs) were not detected in any samples.

TABLE I-d

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
HERBICIDES (in µg/kg)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER									
COMPOUND[1]	92.00696	92.00697	92.00698	92.00699	92.00700	92.00701	92.00702	92.00703	92.00704	92.00770
2,4-D	<27	<26	<28	28	<27	<28	<28	<28	<27	<27
2,4,5-TP	<3.8	<3.7	<4	<4	<3.8	<3.9	<4	<4	<3.9	<3.9
2,4,5-T	<4.4	<4.4	<4.7	<4.7	<4.5	<4.6	<4.7	<4.7	<4.5	<4.5

<: Indicates herbicide concentration is less than the given value (detection limit).
1: Tentatively identified compounds (TICs) were not detected in any samples.

TABLE I-e

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
POLYCHLORINATED BIPHENYLS (PCBs) (in µg/g)
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER									
COMPOUND	92.00696	92.00697	92.00698	92.00699	92.00700	92.00701	92.00702	92.00703	92.00704	92.00770
Mixed-Aroclor	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Aroclor 1242	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Aroclor 1254	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Aroclor 1260	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06

<: Indicates PCB concentration is less than the given value (detection limit).

TABLE I-f

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
NITRATE-N (in µg/g)
PHASE I DATA

SAMPLE IDENTIFICATION NUMBER	NITRATE-N	NITRATE-N (DUPLICATE)
92.00696	NR	NR
92.00697	NR	NR
92.00698	NR	NR
92.00699	NR	NR
92.00700	NR	NR
92.00701	NR	NR
92.00702	NR	NR
92.00703	NR	NR
92.00704	NR	NR
92.00770	0.317	0.317

NR: Not requested.

TABLE I-g

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE I DATA

COMPOUND	SAMPLE IDENTIFICATION NUMBER										
	92.00696	92.00697	92.00698	92.00699	92.00700	92.00701	92.00702	92.00702 (Duplicate)	92.00703	92.00704	92.00704 (Duplicate)
Aluminum	5.53%	5%	5.16%	5%	5.2%	4.6%	5%	NA	5%	5.4%	NA
Arsenic	<0.2	0.3	0.3	0.2	0.3	0.2	0.4	NA	0.4	0.4	NA
Barium	180	183	231	248	156	200	260	NA	284	281	NA
Beryllium	1.91	2.08	1.7	1.6	1.61	1.52	1.98	NA	1.55	1.76	NA
Calcium	2100	1960	2700	2700	2070	1900	3840	NA	2550	3190	NA
Cadmium	<1	<1	<1	<1	<1	<1	<1	NA	<1	<1	NA
Cobalt	<1	<1	2	2	2	1	2	NA	1	2	NA
Chromium	1.7	2	2	2.4	2.1	2	2	1.7	2.8	2.1	3
Copper	16	0.85	24	3	4.4	1.4	0.6	0.6	54	59	62
Iron	8600	1.03%	1.26%	1.28%	9900	8790	1.3%	NA	8520	1.1%	NA
Potassium	2.42%	2.18%	2%	2%	2.6%	2.3%	2.4%	NA	2.4%	2.6%	NA
Magnesium	450	437	1100	1100	740	530	1410	NA	810	1140	NA
Manganese	324	379	321	365	312	265	622	NA	324	323	NA
Mercury [1]	18.7	15.3	20.4	16	18.9	18.4	16.5	NA	17.6	19.6	NA
Mercury (Duplicate)[1]	17.8	15.3	15.9	12.3	17.9	17	15.5	NA	16	16.6	NA
Selenium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	<0.2	<0.2	NA
Silver	2.6	<1	<1	<1	1.1	<1	<1	NA	<1	<1	NA

TABLE I-g (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER										
COMPOUND	92.00696	92.00697	92.00698	92.00699	92.00700	92.00701	92.00702	92.00702 (Duplicate)	92.00703	92.00704	92.00704 (Duplicate)
Silver (Duplicate)	1.1	<1	<1	<1	<1	<1	<1	NA	<1	<1	NA
Sodium	2.67%	2.38%	2.25%	22.5%	2.3%	2.2%	2.3%	NA	2.3%	2.4%	NA
Nickel	2	1.8	2	2	2.4	1.7	2.2	2	2.7	2.5	3.2
Lead	13	15	15	14	12.7	13	12	NA	35	27	24
Antimony	<2	<2	<2	<2	<2	<2	<2	NA	<2	<2	NA
Thallium	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	NA
Vanadium	3	5	9	9	6	4	8	NA	6	10	NA
Zinc	28	26.6	24	27	24	24	24	21	56	21	33

<: Indicates metal concentration is less than the given value (detection limit).
*: Concentration units are given in µg/g, unless otherwise indicated.
1: Mercury concentration units are in ng/g.
NA: Not analyzed.

TABLE I-g (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER	
COMPOUND	92.00770	92.00770 (Duplicate)
Aluminum	6%	6.07%
Arsenic	0.4	0.4
Barium	262	313
Beryllium	1.67	1.72
Calcium	3110	4070
Cadmium	<1	1
Cobalt	3	3
Chromium	5	5
Copper	40	56
Iron	1.78%	1.34%
Potassium	3%	2.91%
Magnesium	1560	1280
Manganese	424	456
Mercury[1]	<2	<2
Selenium	<0.2	<0.2
Silver	<1	<1
Sodium	2.69%	2.69%

TABLE I-g (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER	
COMPOUND	92.00770	92.00770 (Duplicate)
Nickel	5	3
Lead	2710	2980
Antimony	<2	<2
Thallium	<1	<1
Vanadium	12	12
Zinc	54	48

<: Indicates metal concentration is less than the given value (detection limit).
*: Concentration units are given in µg/g, unless otherwise indicated.
1: Mercury concentration units are in ng/g.

TABLE I-h

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) METALS
PHASE I DATA

	SAMPLE IDENTIFICATION NUMBER					
TCLP METAL	92.00711	92.00712	92.00713	92.00714	92.00715	92.00716
Arsenic[1]	<2	<2	<2	<2	<2	<2
Barium[2]	0.34	0.31	0.55	0.65	0.42	0.41
Cadmium[2]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium[2]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lead[2]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury[1]	0.1	0.1	<0.1	<0.1	<0.1	<0.1
Selenium[1]	<2	<2	<2	<2	<2	<2
Silver[1]	<10	<10	<10	<10	<10	<10

	SAMPLE IDENTIFICATION NUMBER			
TCLP METAL	92.00717	92.00718	92.00719	92.00780
Arsenic[1]	3.2	<2	<2	<2
Barium[2]	0.36	0.37	0.47	0.44
Cadmium[2]	<0.01	<0.01	<0.01	<0.02
Chromium[2]	0.01	<0.01	0.01	<0.01
Lead[2]	<0.05	<0.05	<0.05	<0.05
Mercury[1]	<0.1	<0.1	<0.1	<0.1
Selenium[1]	<2	<2	<2	<2
Silver[1]	<10	<10	<10	<10

<: Indicates TCLP metal concentration is less than the given value (detection limit).
1: Results are given in µg/L.
2: Results are given in mg/L.

APPENDIX II

PHASE II ANALYTICAL DATA

TABLE II-a

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00705	92.00706	92.00707	92.00708	92.00709	92.00710
Acetone	<20	<20	<52	<20	<20	<20
Benzene	<5	<5	<13	<5	<5	<5
Bromobenzene	<5	<5	<13	<5	<5	<5
Bromochloromethane	<5	<5	<13	<5	<5	<5
Bromodichloromethane	<5	<5	<13	<5	<5	<5
Bromoform	<5	<5	<13	<5	<5	<5
Bromomethane	<10	<10	<26	<10	<10	<10
2-Butanone	<20	<20	<52	<20	<20	<20
n-Butylbenzene	<5	<5	<13	<5	<5	<5
sec-Butylbenzene	<5	<5	<13	<5	<5	<5
tert-Butylbenzene	<5	<5	<13	<5	<5	<5
Carbon disulfide	<5	<5	<13	<5	<5	<5
Carbon tetrachloride	<5	<5	<13	<5	<5	<5
Chlorobenzene	<5	<5	<13	<5	<5	<5
Chlorodibromomethane	<5	<5	<13	<5	<5	<5
Chloroethane	<10	<10	<26	<10	<10	<10
Chloroform	<5	<5	<13	<5	<5	<5
Chloromethane	<10	<10	<26	<10	<10	<10
o-Chlorotoluene	<5	<5	<13	<5	<5	<5
p-Chlorotoluene	<5	<5	<13	<5	<5	<5
1,2-Dibromo-3-chloropropane	<10	<10	<26	<10	<10	<10
1,2-Dibromoethane	<5	<5	<13	<5	<5	<5
Dibromomethane	<5	<5	<13	<5	<5	<5
o-Dichlorobenzene (1,2)	<5	<5	<13	<5	<5	<5
m-Dichlorobenzene (1,3)	<5	<5	<13	<5	<5	<5
p-Dichlorobenzene (1,4)	<5	<5	<13	<5	<5	<5
Dichlorodifluoromethane	<10	<10	<26	<10	<10	<10
1,1-Dichloroethane	<5	<5	<13	<5	<5	<5
1,2-Dichloroethane	<5	<5	<13	<5	<5	<5

TABLE II-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00705	92.00706	92.00707	92.00708	92.00709	92.00710
1,1-Dichloroethene	<5	<5	<13	<5	<5	<5
trans-1,2-Dichloroethene	<5	<5	<13	<5	<5	<5
cis-1,2-Dichloroethylene	<5	<5	<13	<5	<5	<5
1,2-Dichloropropane	<5	<5	<13	<5	<5	<5
1,3-Dichloropropane	<5	<5	<13	<5	<5	<5
2,2-Dichloropropane	<5	<5	<13	<5	<5	<5
1,1-Dichloropropene	<5	<5	<13	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<13	<5	<5	<5
trans-1,3-Dichloropropene	<5	<5	<13	<5	<5	<5
Ethylbenzene	<5	<5	<13	<5	<5	<5
2-Hexanone	<20	<20	<52	<20	<20	<20
Isopropylbenzene	<5	<5	<13	<5	<5	<5
4-Isopropyltoluene	<5	<5	<13	<5	<5	<5
Methyl iodide	<5	<5	<13	<5	<5	<5
4-Methyl-2-pentanone	<20	<20	<52	<20	<20	<20
Methylene chloride	<5	<5	<13	<5	<5	<5
Propylbenzene	<5	<5	<13	<5	<5	<5
Styrene	<5	<5	<13	<5	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<13	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<13	<5	<5	<5
Tetrachloroethylene	<5	<5	<13	<5	<5	<5
Toluene	<5	<5	<13	<5	<5	<5
1,1,2-Trichloro-1,2,2-trifluoroethane	<5	<5	<13	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<13	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<13	<5	<5	<5
Trichloroethene	<5	<5	<13	<5	<5	<5
Trichlorofluoromethane	<5	<5	<13	<5	<5	<5
1,2,3-Trichloropropane	<5	<5	<13	<5	<5	<5

TABLE II-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00705	92.00706	92.00707	92.00708	92.00709	92.00710
1,2,4-Trimethylbenzene	<5	<5	<13	<5	<5	<5
1,3,5-Trimethylbenzene	<5	<5	<13	<5	<5	<5
Vinyl acetate	<10	<10	<26	<10	<10	<10
Vinyl chloride	<10	<10	<26	<10	<10	<10
Mixed-Xylenes (o ± m ± p)	<5	<5	<13	<5	<5	<5
Tentatively Identified Compounds (TICs)	None	None	None	None	None	None

<: Indicates volatile organic compound (VOC) concentration is less than the given value (detection limit).
NOTE: All samples contained charcoal/burnt material.

TABLE II-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00761	92.00762	92.00763	92.00764	92.00765	92.00766
Acetone	<20	<20	<20	<20	<20	<20
Benzene	<5	<5	<5	<5	<5	<5
Bromobenzene	<5	<5	<5	<5	<5	<5
Bromochloromethane	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5
Bromomethane	<10	<10	<10	<10	<10	<10
2-Butanone	<20	<20	<20	<20	<20	<20
n-Butylbenzene	<5	<5	<5	<5	<5	<5
sec-Butylbenzene	<5	<5	<5	<5	<5	<5
tert-Butylbenzene	<5	<5	<5	<5	<5	<5
Carbon disulfide	<5	<5	<5	<5	<5	<5
Carbon tetrachloride	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5
Chlorodibromomethane	<5	<5	<5	<5	<5	<5
Chloroethane	<10	<10	<10	<10	<10	<10
Chloroform	<5	<5	<5	<5	<5	<5
Chloromethane	<10	<10	<10	<10	<10	<10
o-Chlorotoluene	<5	<5	<5	<5	<5	<5
p-Chlorotoluene	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	<10	<10	<10	<10	<10	<10
1,2-Dibromoethane	<5	<5	<5	<5	<5	<5
Dibromomethane	<5	<5	<5	<5	<5	<5
o-Dichlorobenzene (1,2)	<5	<5	<5	<5	<5	<5
m-Dichlorobenzene (1,3)	<5	<5	<5	<5	<5	<5
p-Dichlorobenzene (1,4)	<5	<5	<5	<5	<5	<5
Dichlorodifluoromethane	<10	<10	<10	<10	<10	<10
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5

TABLE II-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00761	92.00762	92.00763	92.00764	92.00765	92.00766
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethylene	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5	<5	<5
1,3-Dichloropropane	<5	<5	<5	<5	<5	<5
2,2-Dichloropropane	<5	<5	<5	<5	<5	<5
1,1-Dichloropropene	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5
2-Hexanone	<20	<20	<20	<20	<20	<20
Isopropylbenzene	<5	<5	<5	<5	<5	<5
4-Isopropyltoluene	<5	<5	<5	<5	<5	<5
Methyl iodide	<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	<20	<20	<20	<20	<20	<20
Methylene chloride	<5	<5	<5	<5	<5	<5
Propylbenzene	<5	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5
1,1,2-Trichloro-1,2,2-trifluoroethane	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5	<5	<5
Trichlorofluoromethane	<5	<5	<5	<5	<5	<5

TABLE II-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00761	92.00762	92.00763	92.00764	92.00765	92.00766
1,2,3-Trichloropropane	<5	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	<5	<5	<5	<5	<5	<5
1,3,5-Trimethylbenzene	<5	<5	<5	<5	<5	<5
Vinyl acetate	<10	<10	<10	<10	<10	<10
Vinyl chloride	<10	<10	<10	<10	<10	<10
Mixed-Xylenes (o ± m ± p)	<5	<5	<5	<5	<5	<5
Tentatively Identified Compounds (TICs)	None	None	None	None	None	None

<: Indicates volatile organic compound (VOC) concentration is less than the given value (detection limit).
NOTE: All samples contained charcoal/burnt material.

TABLE II-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.00767[1]	92.00768[1]	92.00769[1]	92.00913	92.00914
Acetone	<24	<20	<20	<20	<20
Benzene	<6	<5	<5	<5	<5
Bromobenzene	<6	<5	<5	<5	<5
Bromochloromethane	<6	<5	<5	<5	<5
Bromodichloromethane	<6	<5	<5	<5	<5
Bromoform	<6	<5	<5	<5	<5
Bromomethane	<12	<10	<10	<10	<10
2-Butanone	<24	<20	<20	<20	<20
n-Butylbenzene	<6	<5	<5	<5	<5
sec-Butylbenzene	<6	<5	<5	<5	<5
tert-Butylbenzene	<6	<5	<5	<5	<5
Carbon disulfide	<6	<5	<5	<5	<5
Carbon tetrachloride	<6	<5	<5	<5	<5
Chlorobenzene	<6	<5	<5	<5	<5
Chlorodibromomethane	<6	<5	<5	<5	<5
Chloroethane	<12	<10	<10	<10	<10
Chloroform	<6	<5	<5	<5	<5
Chloromethane	<12	<10	<10	<10	<10
o-Chlorotoluene	<6	<5	<5	<5	<5
p-Chlorotoluene	<6	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	<12	<10	<10	<10	<10
1,2-Dibromoethane	<6	<5	<5	<5	<5
Dibromomethane	<6	<5	<5	<5	<5
o-Dichlorobenzene (1,2)	<6	<5	<5	<5	<5
m-Dichlorobenzene (1,3)	<6	<5	<5	<5	<5
p-Dichlorobenzene (1,4)	<6	<5	<5	<5	<5
Dichlorodifluoromethane	<12	<10	<10	<10	<10
1,1-Dichloroethane	<6	<5	<5	<5	<5

TABLE II-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.00767[1]	92.00768[1]	92.00769[1]	92.00913	92.00914
1,2-Dichloroethane	<6	<5	<5	<5	<5
1,1-Dichloroethene	<6	<5	<5	<5	<5
trans-1,2-Dichloroethene	<6	<5	<5	<5	<5
cis-1,2-Dichloroethylene	<6	<5	<5	<5	<5
1,2-Dichloropropane	<6	<5	<5	<5	<5
1,3-Dichloropropane	<6	<5	<5	<5	<5
2,2-Dichloropropane	<6	<5	<5	<5	<5
1,1-Dichloropropene	<6	<5	<5	<5	<5
cis-1,3-Dichloropropene	<6	<5	<5	<5	<5
trans-1,3-Dichloropropene	<6	<5	<5	<5	<5
Ethylbenzene	<6	<5	<5	<5	<5
2-Hexanone	<24	<20	<20	<20	<20
Isopropylbenzene	<6	<5	<5	<5	<5
4-Isopropyltoluene	<6	<5	<5	<5	<5
Methyl iodide	<6	<5	<5	<5	<5
4-Methyl-2-pentanone	<24	<20	<20	<20	<20
Methylene chloride	<6	<5	<5	<5	<5
Propylbenzene	<6	<5	<5	<5	<5
Styrene	<6	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	<6	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<6	<5	<5	<5	<5
Tetrachloroethylene	<6	<5	<5	<5	<5
Toluene	<6	<5	<5	<5	<5
1,1,2-Trichloro-1,2,2-trifluoroethane	<6	<5	<5	<5	<5
1,1,1-Trichloroethane	<6	<5	<5	<5	<5
1,1,2-Trichloroethane	<6	<5	<5	<5	<5
Trichloroethene	<6	<5	<5	<5	<5
Trichlorofluoromethane	<6	<5	<5	<5	<5

TABLE II-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.00767[1]	92.00768[1]	92.00769[1]	92.00913	92.00914
1,2,3-Trichloropropane	<6	<5	<5	<5	<5
1,2,4-Trimethylbenzene	<6	<5	<5	<5	<5
1,3,5-Trimethylbenzene	<6	<5	<5	<5	<5
Vinyl acetate	<12	<10	<10	<10	<10
Vinyl chloride	<12	<10	<10	<10	<10
Mixed-Xylenes (o ± m ± p)	<6	<5	<5	<5	<5
Tentatively Identified Compounds (TICs)	None	3400*	150*	None	None

<: Indicates volatile organic compound (VOC) concentration is less than the given value (detection limit).
*: Sample contained saturated hydrocarbons at indicated value.
1: Samples 92.00767, 92.00768, and 92.00769 contained charcoal/burnt material.

TABLE II-b

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00705	92.00706	92.00707	92.00708	92.00709	92.00710
Acenaphthene	<330	<330	<330	<330	<330	<330
Acenaphthylene	<330	<330	<330	<330	<330	<330
Aniline	<330	<330	<330	<330	<330	<330
Anthracene	<330	<330	<330	<330	<330	<330
Azobenzene	<330	<330	<330	<330	<330	<330
m-Benzidine	<330	<330	<330	<330	<330	<330
Benzo[a]anthracene	<330	<330	<330	<330	<330	<330
Benzo[a]pyrene	<330	<330	<330	<330	<330	<330
Benzo[b]fluoranthene	<330	<330	<330	<330	<330	<330
Benzo[g,h,i]perylene	<330	<330	<330	<330	<330	<330
Benzo[k]fluoranthene	<330	<330	<330	<330	<330	<330
Benzoic acid	<330	<330	<330	<330	<330	<330
Benzyl alcohol	<330	<330	<330	<330	<330	<330
Bis(2-chloroethoxy)methane	<330	<330	<330	<330	<330	<330
Bis(2-chloroethyl)ether	<330	<330	<330	<330	<330	<330
Bis(2-chloroisopropyl)ether	<330	<330	<330	<330	<330	<330
Bis(2-ethylhexyl)phthalate	<330	<330	<330	<330	<330	<330
4-Bromophenylphenyl ether	<330	<330	<330	<330	<330	<330
Butyl benzyl phthalate	<330	<330	<330	<330	<330	<330
4-Chloro-3-methylphenol	<330	<330	<330	<330	<330	<330
4-Chloroaniline	<330	<330	<330	<330	<330	<330
2-Chloronaphthalene	<330	<330	<330	<330	<330	<330
o-Chlorophenol	<330	<330	<330	<330	<330	<330
4-Chlorophenylphenyl ether	<330	<330	<330	<330	<330	<330
Chrysene	<330	<330	<330	<330	<330	<330
Di-n-butyl phthalate	<330	<330	<330	<330	<330	<330
Di-n-octyl phthalate	<330	<330	<330	<330	<330	<330
Dibenzo[a,h]anthracene	<330	<330	<330	<330	<330	<330
Dibenzofuran	<330	<330	<330	<330	<330	<330

TABLE II-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00705	92.00706	92.00707	92.00708	92.00709	92.00710
o-Dichlorobenzene (1,2)	<330	<330	<330	<330	<330	<330
m-Dichlorobenzene (1,3)	<330	<330	<330	<330	<330	<330
p-Dichlorobenzene (1,4)	<330	<330	<330	<330	<330	<330
3,3'-Dichlorobenzidine	<330	<330	<330	<330	<330	<330
2,4-Dichlorophenol	<330	<330	<330	<330	<330	<330
Diethyl phthalate	<330	<330	<330	<330	<330	<330
Dimethyl phthalate	<330	<330	<330	<330	<330	<330
2,4-Dimethylphenol	<330	<330	<330	<330	<330	<330
2,4-Dinitrophenol	<330	<330	<330	<330	<330	<330
2,4-Dinitrotoluene	<330	<330	<330	<330	<330	<330
2,6-Dinitrotoluene	<330	<330	<330	<330	<330	<330
Fluoranthene	<330	<330	<330	<330	<330	<330
Fluorene	<330	<330	<330	<330	<330	<330
Hexachlorobenzene	<330	<330	<330	<330	<330	<330
Hexachlorobutadiene	<330	<330	<330	<330	<330	<330
Hexachlorocyclopentadiene	<330	<330	<330	<330	<330	<330
Hexachloroethane	<330	<330	<330	<330	<330	<330
Indeno[1,2,3-cd]pyrene	<330	<330	<330	<330	<330	<330
Isophorone	<330	<330	<330	<330	<330	<330
2-Methyl-4,6-dinitrophenol	<330	<330	<330	<330	<330	<330
2-Methylnaphthalene	<330	<330	<330	<330	<330	<330
2-Methylphenol	<330	<330	<330	<330	<330	<330
4-Methylphenol	<330	<330	<330	<330	<330	<330
Naphthalene	<330	<330	<330	<330	<330	<330
2-Nitroaniline	<330	<330	<330	<330	<330	<330
3-Nitroaniline	<330	<330	<330	<330	<330	<330
4-Nitroaniline	<330	<330	<330	<330	<330	<330
Nitrobenzene	<330	<330	<330	<330	<330	<330

TABLE II-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00705	92.00706	92.00707	92.00708	92.00709	92.00710
2-Nitrophenol	<330	<330	<330	<330	<330	<330
4-Nitrophenol	<330	<330	<330	<330	<330	<330
N-Nitrosodi-n-propylamine	<330	<330	<330	<330	<330	<330
N-Nitrosodimethylamine	<330	<330	<330	<330	<330	<330
N-Nitrosodiphenylamine	<330	<330	<330	<330	<330	<330
Pentachlorophenol	<330	<330	<330	<330	<330	<330
Phenanthrene	<330	<330	<330	<330	<330	<330
Phenol	<330	<330	<330	<330	<330	<330
Pyrene	<330	<330	<330	<330	<330	<330
1,2,4-Trichlorobenzene	<330	<330	<330	<330	<330	<330
2,4,5-Trichlorophenol	<330	<330	<330	<330	<330	<330
2,4,6-Trichlorophenol	<330	<330	<330	<330	<330	<330
Tentatively Identified Compounds (TICs)	None	None	See Below[1]	None	None	None

<: Indicates semivolatile organic compound (SVOC) concentration was less than the given value (detection limit).

1: TICs detected in 92.00707 (in µg/kg) include: esters (6500); oxygenated hydrocarbon (1000); saturated hydrocarbons (410, 430, and 410); and an unknown organic compound (490).

TABLE II-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00761	92.00762	92.00763	92.00764	92.00765	92.00766
Acenaphthene	<330	<330	<330	<660	<330	<330
Acenaphthylene	<330	<330	<330	<660	<330	<330
Aniline	<330	<330	<330	<660	<330	<330
Anthracene	<330	<330	<330	<660	<330	<330
Azobenzene	<330	<330	<330	<660	<330	<330
m-Benzidine	<330	<330	<330	<660	<330	<330
Benzo[a]anthracene	<330	<330	<330	<660	<330	<330
Benzo[a]pyrene	<330	<330	<330	<660	<330	<330
Benzo[b]fluoranthene	<330	<330	<330	<660	<330	<330
Benzo[g,h,i]perylene	<330	<330	<330	<660	<330	<330
Benzo[k]fluoranthene	<330	<330	<330	<660	<330	<330
Benzoic acid	<330	<330	<330	2100	<330	<330
Benzyl alcohol	<330	<330	<330	<660	<330	<330
Bis(2-chloroethoxy)methane	<330	<330	<330	<660	<330	<330
Bis(2-chloroethyl)ether	<330	<330	<330	<660	<330	<330
Bis(2-chloroisopropyl)ether	<330	<330	<330	<660	<330	<330
Bis(2-ethylhexyl)phthalate	<330	<330	<330	<660	<330	<330
4-Bromophenylphenyl ether	<330	<330	<330	<660	<330	<330
Butyl benzyl phthalate	<330	<330	<330	<660	<330	<330
4-Chloro-3-methylphenol	<330	<330	<330	<660	<330	<330
4-Chloroaniline	<330	<330	<330	<660	<330	<330
2-Chloronaphthalene	<330	<330	<330	<660	<330	<330
o-Chlorophenol	<330	<330	<330	<660	<330	<330
4-Chlorophenylphenyl ether	<330	<330	<330	<660	<330	<330
Chrysene	<330	<330	<330	<660	<330	<330
Di-n-butyl phthalate	<330	<330	<330	<660	<330	<330
Di-n-octyl phthalate	<330	<330	<330	<660	<330	<330
Dibenzo[a,h]anthracene	<330	<330	<330	<660	<330	<330

TABLE II-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00761	92.00762	92.00763	92.00764	92.00765	92.00766
Dibenzofuran	<330	<330	<330	<660	<330	<330
o-Dichlorobenzene (1,2)	<330	<330	<330	<660	<330	<330
m-Dichlorobenzene (1,3)	<330	<330	<330	<660	<330	<330
p-Dichlorobenzene (1,4)	<330	<330	<330	<660	<330	<330
3,3'-Dichlorobenzidine	<330	<330	<330	<660	<330	<330
2,4-Dichlorophenol	<330	<330	<330	<660	<330	<330
Diethyl phthalate	<330	<330	<330	<660	<330	<330
Dimethyl phthalate	<330	<330	<330	<660	<330	<330
2,4-Dimethylphenol	<330	<330	<330	<660	<330	<330
2,4-Dinitrophenol	<330	<330	<330	<660	<330	<330
2,4-Dinitrotoluene	<330	<330	<330	<660	<330	<330
2,6-Dinitrotoluene	<330	<330	<330	<660	<330	<330
Fluoranthene	<330	<330	<330	<660	<330	<330
Fluorene	<330	<330	<330	<660	<330	<330
Hexachlorobenzene	<330	<330	<330	<660	<330	<330
Hexachlorobutadiene	<330	<330	<330	<660	<330	<330
Hexachlorocyclopentadiene	<330	<330	<330	<660	<330	<330
Hexachloroethane	<330	<330	<330	<660	<330	<330
Indeno[1,2,3-cd]pyrene	<330	<330	<330	<660	<330	<330
Isophorone	<330	<330	<330	<660	<330	<330
2-Methyl-4,6-dinitrophenol	<330	<330	<330	<660	<330	<330
2-Methylnaphthalene	<330	<330	<330	<660	<330	<330
2-Methylphenol	<330	<330	<330	<660	<330	<330
4-Methylphenol	<330	<330	<330	<660	<330	<330
Naphthalene	<330	<330	<330	<660	<330	<330
2-Nitroaniline	<330	<330	<330	<660	<330	<330
3-Nitroaniline	<330	<330	<330	<660	<330	<330
4-Nitroaniline	<330	<330	<330	<660	<330	<330

TABLE II-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00761	92.00762	92.00763	92.00764	92.00765	92.00766
Nitrobenzene	<330	<330	<330	<660	<330	<330
2-Nitrophenol	<330	<330	<330	<660	<330	<330
4-Nitrophenol	<330	<330	<330	<660	<330	<330
N-Nitrosodi-n-propylamine	<330	<330	<330	<660	<330	<330
N-Nitrosodimethylamine	<330	<330	<330	<660	<330	<330
N-Nitrosodiphenylamine	<330	<330	<330	<660	<330	<330
Pentachlorophenol	<330	<330	<330	<660	<330	<330
Phenanthrene	<330	<330	<330	<660	<330	<330
Phenol	<330	<330	<330	1500	<330	<330
Pyrene	<330	<330	<330	<660	<330	<330
1,2,4-Trichlorobenzene	<330	<330	<330	<660	<330	<330
2,4,5-Trichlorophenol	<330	<330	<330	<660	<330	<330
2,4,6-Trichlorophenol	<330	<330	<330	<660	<330	<330
Tentatively Identified Compounds (TICs)	None	See Below[1]	None	None	See Below[2]	None

<: Indicates semivolatile organic compound (SVOC) concentration was less than the given value (detection limit).

1: TICs detected in 92.00762 (in µg/kg) include thirteen saturated hydrocarbons (820, 1300, 2800, 1000, 2800, 690, 2800, 620, 580, 1100, 1500, 2100, and 600); and an unknown polynuclear aromatic hydrocarbon (830).

2: TICs detected in 92.00765 include 15 saturated hydrocarbons (2000, 820, 1100, 820, 1200, 2600, 370, 3700, 3000, 1700, 530, 3700, 640, 1000, and 650).

TABLE II-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.00767	92.00768	92.00769	92.00913	92.00914
Acenaphthene	<1300	<330	<330	<330	<330
Acenaphthylene	<1300	<330	<330	<330	<330
Aniline	<1300	<330	<330	<330	<330
Anthracene	<1300	<330	<330	<330	<330
Azobenzene	<1300	<330	<330	<330	<330
m-Benzidine	<1300	<330	<330	<330	<330
Benzo[a]anthracene	<1300	<330	<330	<330	<330
Benzo[a]pyrene	<1300	<330	<330	<330	<330
Benzo[b]fluoranthene	1800	<330	<330	<330	<330
Benzo[g,h,i]perylene	<1300	<330	<330	<330	<330
Benzo[k]fluoranthene	<1300	<330	<330	<330	<330
Benzoic acid	<1300	<330	<330	<330	<330
Benzyl alcohol	<1300	<330	<330	<330	<330
Bis(2-chloroethoxy)methane	<1300	<330	<330	<330	<330
Bis(2-chloroethyl)ether	<1300	<330	<330	<330	<330
Bis(2-chloroisopropyl)ether	<1300	<330	<330	<330	<330
Bis(2-ethylhexyl)phthalate	<1300	<330	<330	<330	<330
4-Bromophenylphenyl ether	<1300	<330	<330	<330	<330
Butyl benzyl phthalate	<1300	<330	<330	<330	<330
4-Chloro-3-methylphenol	<1300	<330	<330	<330	<330
4-Chloroaniline	<1300	<330	<330	<330	<330
2-Chloronaphthalene	<1300	<330	<330	<330	<330
o-Chlorophenol	<1300	<330	<330	<330	<330
4-Chlorophenylphenyl ether	<1300	<330	<330	<330	<330
Chrysene	<1300	<330	<330	<330	<330
Di-n-butyl phthalate	<1300	<330	<330	<330	<330
Di-n-octyl phthalate	<1300	<330	<330	<330	<330
Dibenzo[a,h]anthracene	<1300	<330	<330	<330	<330

TABLE II-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.00767	92.00768	92.00769	92.00913	92.00914
Dibenzofuran	<1300	<330	<330	<330	<330
o-Dichlorobenzene (1,2)	<1300	<330	<330	<330	<330
m-Dichlorobenzene (1,3)	<1300	<330	<330	<330	<330
p-Dichlorobenzene (1,4)	<1300	<330	<330	<330	<330
3,3'-Dichlorobenzidine	<1300	<330	<330	<330	<330
2,4-Dichlorophenol	<1300	<330	<330	<330	<330
Diethyl phthalate	<1300	<330	<330	<330	<330
Dimethyl phthalate	<1300	<330	<330	<330	<330
2,4-Dimethylphenol	<1300	<330	<330	<330	<330
2,4-Dinitrophenol	<1300	<330	<330	<330	<330
2,4-Dinitrotoluene	<1300	<330	<330	<330	<330
2,6-Dinitrotoluene	<1300	<330	<330	<330	<330
Fluoranthene	<1300	<330	<330	<330	<330
Fluorene	<1300	<330	<330	<330	<330
Hexachlorobenzene	<1300	<330	<330	<330	<330
Hexachlorobutadiene	<1300	<330	<330	<330	<330
Hexachlorocyclopentadiene	<1300	<330	<330	<330	<330
Hexachloroethane	<1300	<330	<330	<330	<330
Indeno[1,2,3-cd]pyrene	<1300	<330	<330	<330	<330
Isophorone	<1300	<330	<330	<330	<330
2-Methyl-4,6-dinitrophenol	<1300	<330	<330	<330	<330
2-Methylnaphthalene	<1300	<330	<330	<330	<330
2-Methylphenol	<1300	<330	<330	<330	<330
4-Methylphenol	<1300	<330	<330	<330	<330
Naphthalene	<1300	<330	<330	<330	<330
2-Nitroaniline	<1300	<330	<330	<330	<330
3-Nitroaniline	<1300	<330	<330	<330	<330
4-Nitroaniline	<1300	<330	<330	<330	<330

TABLE II-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.00767	92.00768	92.00769	92.00913	92.00914
Nitrobenzene	<1300	<330	<330	<330	<330
2-Nitrophenol	<1300	<330	<330	<330	<330
4-Nitrophenol	<1300	<330	<330	<330	<330
N-Nitrosodi-n-propylamine	<1300	<330	<330	<330	<330
N-Nitrosodimethylamine	<1300	<330	<330	<330	<330
N-Nitrosodiphenylamine	<1300	<330	<330	<330	<330
Pentachlorophenol	<1300	<330	<330	<330	<330
Phenanthrene	<1300	<330	<330	<330	<330
Phenol	<1300	<330	<330	<330	<330
Pyrene	<1300	<330	<330	<330	<330
1,2,4-Trichlorobenzene	<1300	<330	<330	<330	<330
2,4,5-Trichlorophenol	<1300	<330	<330	<330	<330
2,4,6-Trichlorophenol	<1300	<330	<330	<330	<330
Tentatively Identified Compounds (TICs)	None	None	None	See Below[1]	None

<: Indicates semivolatile organic compound (SVOC) concentration was less than the given value (detection limit).
1: TICs detected in 92.00913 (in µg/kg) include two saturated hydrocarbons (860 and 670).

TABLE II-c

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
PESTICIDES (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER										
COMPOUND[1]	92.00705	92.00706	92.00707	92.00708	92.00709	92.00710	92.00761	92.00762	92.00763	92.00764	92.00765
alpha-BHC	<1.3	<1.2	<1.2	<1.1	<1.2	<1.1	<1.2	<1.1	<1.1	<1.2	<1.3
beta-BHC	<2.6	<2.3	<2.5	<2.2	<2.4	<2.3	<2.5	<2.2	<2.2	<2.4	<2.6
delta-BHC	<3.9	<3.5	4.6	<3.3	<3.6	<3.4	<3.7	<3.4	<3.3	<3.6	<3.9
Lindane	<1.7	<1.5	<1.7	<1.5	<1.6	<1.5	<1.6	<1.5	<1.5	<1.6	<1.7
Heptachlor	<1.3	<1.2	<1.2	<1.1	<1.2	<1.1	<1.2	<1.1	<1.1	<1.2	<1.3
Aldrin	<1.7	<1.5	<1.7	<1.5	<1.6	<1.5	<1.6	<1.5	<1.5	<1.6	<1.7
Heptachlor epoxide	<36	<32	<34	<30	<34	<32	<34	<31	<31	33	<36
Endosulfan I	<6.1	<5.4	<5.8	<5.2	<5.7	<5.3	<5.8	<5.2	<5.2	<5.5	<6.1
Dieldrin	<0.87	<0.77	<0.83	<0.74	<0.81	<0.76	<0.83	<0.75	<0.74	<0.79	<0.87
p,p'-DDE	<1.7	<1.5	<1.7	<1.5	<1.6	<1.5	<1.6	<1.5	<1.5	<1.6	<1.7
Endrin	<2.6	<2.3	<2.5	<2.2	<2.4	<2.3	<2.5	<2.2	<2.2	<2.4	<2.6
Endosulfan II	<1.7	<1.5	<1.7	<1.5	<1.6	<1.5	<1.6	<1.5	<1.5	<1.6	<1.7
p,p'-DDD	<4.8	<4.2	<4.6	<4	<4.4	<4.2	<4.5	<4.1	<4	<4.3	<4.8
Endosulfan sulfate	<29	<26	<27	<24	<27	<25	<27	<25	<24	<4.7	<29
p,p'-DDT	<5.2	<4.6	<5	<4.4	<4.8	<4.6	<5	<4.5	<4.4	<4.7	<5.2
Methoxychlor	<76	<68	<73	<65	<71	<67	<73	<66	<65	<69	<76
Endrin aldehyde	<10	<8.9	<9.5	<8.5	<9.3	<8.8	<9.5	<8.6	<8.5	<9.1	<10
Chlordane	<6.1	<5.4	<5.8	<5.2	<5.7	<5.3	<5.8	<5.2	<5.2	<5.5	<6.1
Toxaphene	<100	<93	<100	<88	<97	<91	<99	<90	<88	<95	<100

<: Indicates pesticide concentration is less than the given value (detection limit).
1: Tentatively identified compounds (TICs) were not detected in any samples.

TABLE II-c (Continued)

LOS ALAMOS NATIONAL LABORATORY,
TECHNICAL AREA 40,
SCRAP DETONATION SITE
PESTICIDES (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND[1]	92.00766	92.00767	92.00768	92.00769	92.00913	92.00914
alpha-BHC	<1.2	<1.3	<1.1	<1.1	<1.3	<1.3
beta-BHC	<2.4	<2.6	<2.2	<2.2	<2.6	<2.6
delta-BHC	<3.6	<3.9	<3.3	<3.4	<4	<3.8
Lindane	<1.6	<1.7	<1.4	<1.5	<1.8	<1.7
Heptachlor	<1.2	<1.3	<1.1	<1.1	<1.3	<1.3
Aldrin	<1.6	<1.7	<1.4	<1.5	<1.8	<1.7
Heptachlor epoxide	<33	<36	<30	<31	<36	<35
Endosulfan I	<5.6	<6	<5.1	<5.2	<6.2	<6
Dieldrin	<0.81	<0.86	<0.72	<0.75	<0.88	<0.86
p,p'-DDE	<1.6	<1.7	<1.4	<1.5	<1.8	<1.7
Endrin	<2.4	<2.6	<2.2	<2.2	<2.6	<2.6
Endosulfan II	<1.6	<1.7	<1.4	<1.5	<1.8	<1.7
p,p'-DDD	<4.4	<4.7	<4	<4.1	<4.8	<4.7
Endosulfan sulfate	<27	<28	<24	<25	<29	<28
p,p'-DDT	<4.8	<5.2	<4.4	<4.5	<5.3	<5.1
Methoxychlor	<71	<76	<64	<66	<78	<75
Endrin aldehyde	<9.3	<9.9	<8.3	<8.6	<10	<9.8
Chlordane	<5.6	<6	<5.1	<5.2	<6.2	<6
Toxaphene	<97	<100	<87	<90	<100	<100

<: Indicates pesticide concentration is less than the given value (detection limit).
1: Tentatively identified compounds (TICs) were not detected in any samples.

TABLE II-d

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
HERBICIDES (in µg/kg)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND[1]	92.00705	92.00706	92.00707	92.00708	92.00709	92.00710	92.00761	92.00762	92.00763
2,4-D	<32	<28	<30	<27	<29	<28	<30	<27	<27
2,4,5-TP	<4.5	<4	<4.3	<3.8	<4.1	<3.9	<4.2	<3.8	<3.8
2,4,5-T	<5.3	<4.6	<5	<4.5	<4.9	<4.6	<5	<4.5	<4.5

	SAMPLE IDENTIFICATION NUMBER							
COMPOUND[1]	92.00764	92.00765	92.00766	92.00767	92.00768	92.00769	92.00913	92.00914
2,4-D	<28	<31	<29	<31	<26	<27	<32	<31
2,4,5-TP	<4	<4.4	<4.2	<4.4	4.7	<3.8	<4.5	<4.4
2,4,5-T	<4.8	<5.2	<4.9	<5.2	<4.4	<4.5	<5.3	<5.2

<: Indicate herbicide concentration is less than the given value (detection limit).
1: Tentatively identified compounds (TICs) were not detected in any samples.

TABLE II-e

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
POLYCHLORINATED BIPHENYLS (PCBs) (in µg/g)
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND	92.00705	92.00706	92.00707	92.00708	92.00709	92.00710	92.00761	92.00762	92.00763
Mixed-Aroclor	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Aroclor 1242	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Aroclor 1254	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Aroclor 1260	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06

	SAMPLE IDENTIFICATION NUMBER							
COMPOUND	92.00764	92.00765	92.00766	92.00767	92.00768	92.00769	92.00913	92.00914
Mixed-Aroclor	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05
Aroclor 1242	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05
Aroclor 1254	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05
Aroclor 1260	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05

<: Indicates PCB concentration is less than the given value (detection limit).

TABLE II-f

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
NITRATE-N (in µg/g)
PHASE II DATA

SAMPLE IDENTIFICATION NUMBER	NITRATE-N	NITRATE-N (DUPLICATE)
92.00705	NR	NR
92.00706	NR	NR
92.00707	NR	NR
92.00708	NR	NR
92.00709	NR	NR
92.00710	NR	NR
92.00761	0.079	0.079
92.00762	2.02	2.02
92.00763	2.27	2.28
92.00764	0.069	NA
92.00765	<0.04	NA
92.00766	0.158	0.158
92.00767	0.287	0.287
92.00768	0.069	0.069
92.00769	0.487	0.487
92.00913	0.079	0.079
92.00914	0.327	0.337

<: Indicates nitrate-N concentration is below the given value (detection limit).
NA: Not analyzed.
NR: Not requested.

TABLE II-g

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER										
COMPOUND	92.00705	92.00706	92.00706 (Duplicate)	92.00707	92.00708	92.00709	92.00710	92.00710 (Duplicate)	92.00761	92.00762	92.00763
Aluminum	4.3%	4.6%	5%	4.1%	5.3%	5.1%	5%	NA	5.97%	5.52%	5.33%
Arsenic	0.4[2]	0.2	NA	3.1	0.3	0.7	0.7	NA	0.7	0.5	0.6
Barium	224	210	NA	469	186	242	194	NA	302	149	129
Beryllium	1.7	1.57	1.61	1.17	1.29	1.75	1.89	NA	2.28	2.5	2.41
Calcium	2550	2390	2410	4410	1630	4280	9720	NA	5070	425	1700
Cadmium	<1	<1	<1	<1	<1	<1	<1	NA	<1	<1	<1
Cobalt	1	2	1	4	<1	2	2	NA	3.4	2.26	1.74
Chromium	2.9	1.6	NA	20	2.3	3.6	3.7	4	6.5	2.9	3.72
Copper	68	3.1	NA	584	3.5	33	2.4	2.7	57	1.78	1.27
Iron	9450	9100	9700	1.3%	6770	1.1%	1.1%	NA	1.55%	1.09%	1.05%
Potassium	1.9%	2.3%	2.4%	1.9%	2.7%	2.2%	2.1%	NA	2.73%	2.91%	2.74%
Magnesium	1180	810	750	1660	280	1470	1900	NA	2130	606	626
Manganese	322	310	350	350	232	310	270	NA	455	302	330
Mercury[1]	18.9	16.7	NA	85.6	10.6	34.6	24.8	NA	<2	<2	<2
Mercury (Duplicate)[1]	16.6	15.4	NA	67.2	10.4	31.1	22.6	NA	NA	NA	NA
Selenium	<0.2	<0.2	NA	<0.2	<0.2	<0.2	<0.2	NA	<2	<0.2	<0.2
Silver	<1	<1	NA	10.7	<1	<1	<1	NA	<1	<1	<1

TABLE II-g (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER										
COMPOUND	92.00705	92.00706	92.00706 (Duplicate)	92.00707	92.00708	92.00709	92.00710	92.00710 (Duplicate)	92.00761	92.00762	92.00763
Silver (Duplicate)	<1	<1	NA	27.7	<1	<1	<1	NA	NA	NA	NA
Sodium	1.8%	2.1%	2.4%	1.8%	2.6%	2.1%	2%	NA	2.42%	2.54%	2.31
Nickel	4.4	1.7	NA	45	1.7	3.7	3.7	3.5	4	<2	2
Lead	20	13	NA	1470	19	22	9.2	8.2	22.5	8	10
Antimony	<2	<2	<2	<2	<2	<2	<2	NA	<2	<2	<2
Thallium	<4	<4	<4	<4	<4	<4	<4	NA	<1	<1	<1
Vanadium	8	5	6	8	2	13	13	NA	14.7	6	8
Zinc	57	24	NA	2750	74	64	21	21	54	40	42

<: Indicates metal concentration is less than the given value (detection limit).
*: Concentration units are given in µg/g, unless otherwise indicated.
1: Mercury concentration units are in ng/g.
2: Arsenic duplicate concentration was 0.5 µg/g
NA: Not analyzed.

TABLE II-g (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND	92.00764	92.00765	92.00765 (Duplicate)	92.00766	92.00767	92.00768	92.00769	92.00913	92.00914
Aluminum	5.93%	5.45%	5.44%	5.28%	3.75%	4.97%	6%	4.98%	5.73%
Arsenic	0.5	0.5	NA	0.5	2.2	1.5	0.9	0.6	0.7
Barium	280	182	196	143	365	182	208	278	291
Beryllium	2.15	1.81	1.94	6.74	2.14	1.11	2.64	1.87	1.96
Calcium	4350	1960	2320	1500	2920	2430	2580	3940	4410
Cadmium	<1	<1	<1	5	5	<1	<1	<1	<1
Cobalt	3	2	2	6.62	18	2	3	3	2
Chromium	5	2	2	7	40	6	8	6	7
Copper	68	43	31	6	2880	8	8	61	83
Iron	1.38%	8800	1.06%	8230	6.19%	1.04%	1.37%	1.19%	1.41%
Potassium	2.86%	2.98%	2.91%	2.89%	1.69%	2.29%	2.69%	2.19%	2.56%
Magnesium	1730	450	620	436	4960	1390	2120	1510	1760
Manganese	418	300	312	377	513	186	260	417	412
Mercury[1]	<2	98	NA	<2	<2	<2	<2	<2	16
Selenium	<0.2	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	<1	1.4	NA	<1	21.2	<1	<1	1.1	2.3
Sodium	2.48%	2.56%	2.55%	2.48%	1.48%	2%	2.22%	2.04%	2.56%

TABLE II-g (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND	92.00764	92.00765	92.00765 (Duplicate)	92.00766	92.00767	92.00768	92.00769	92.00913	92.00914
Nickel	3	5	6	6	68	3	6	5.81	8.47
Lead	34	16	NA	9	2110[2]	9[3]	12	137	41
Antimony	<2	<2	<2	<2	43	<2	<2	<3	<3
Thallium	<1	<1	<1	<1	<1	<1	<1	<4	<4
Vanadium	13	6	6	10	11	12	15	13	11
Zinc	49	43	54	36	6360	28	45	199	163

<: Indicates metal concentration is less than the given value (detection limit).
*: Concentration units are given in µg/g, unless otherwise indicated.
1: Mercury concentration units are in ng/g.
2: Lead duplicate concentration was 3340 µg/g.
3: Lead duplicate concentration was 7 µg/g.
NA: Not analyzed.

TABLE II-h

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) METALS
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER					
TCLP METAL	92.00720	92.00721	92.00722	92.00723	92.00724	92.00725
Arsenic[1]	2.3	2	<2	<2	2.5	2.4
Barium[2]	0.43	0.24	1.9	8.8	14	0.92
Cadmium[2]	<0.01	<0.01	0.06	0.15	0.15	<0.01
Chromium[2]	<0.01	<0.01	0.03	0.23	0.39	0.05
Lead[2]	<0.05	<0.05	13	1.6	0.31	<0.05
Mercury[1]	0.2	0.2	<0.1	0.2	0.2	0.2
Selenium[1]	<2	<2	<2	<2	<2	<2
Silver[1]	<10	<10	<10	<10	<10	12

	SAMPLE IDENTIFICATION NUMBER					
TCLP METAL	92.00771	92.00772	92.00773	92.00774	92.00775	92.00776
Arsenic[1]	<2	<2	<2	<2	<2	<2
Barium[2]	0.41	0.87	0.44	0.38	0.27	0.33
Cadmium[2]	<0.01	<0.01	0.04	<0.01	<0.01	<0.01
Chromium[2]	0.01	0.03	<0.01	<0.01	<0.01	<0.01
Lead[2]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury[1]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium[1]	<2	<2	<2	<2	<2	<2
Silver[1]	<10	<10	<10	<10	<10	12

TABLE II-h (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) METALS
PHASE II DATA

	SAMPLE IDENTIFICATION NUMBER				
TCLP METAL	92.00777	92.00778	92.00779	92.00922	92.00923
Arsenic[1]	<2	<2	<2	<2	<2
Barium[2]	2.2	0.79	0.88	1.14	1.11
Cadmium[2]	0.04	<0.01	<0.01	<0.01	0.01
Chromium[2]	<0.01	<0.01	0.01	<0.01	0.01
Lead[2]	110	<0.05	<0.05	0.2	1.03
Mercury[1]	<0.1	<0.1	<0.1	<0.1	0.1
Selenium[1]	<2	<2	<2	<2	<2
Silver[1]	10	<10	<10	<10	<10

<: Indicates TCLP metal concentration is less than the given value (detection limit).
1: Results are given in µg/L.
2: Results are given in mg/L.

TABLE II-i

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (in µg/g)
PHASE II DATA

SAMPLE IDENTIFICATION NUMBER	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
92.00768 (92.00768-A)	13.9 ± 3.4
92.01110 (92.00768-B)	1260 ± 320
92.00769 (92.00769-A)	28.3 ± 7.1
92.01111 (92.00769-B)	49.8 ± 12.4

APPENDIX III

PHASE III ANALYTICAL DATA

TABLE III-a

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00915	92.00916	92.00917	92.00918	92.00919	92.00920
Acetone	<20	<20	<20	<40	<20	<20
Benzene	<5	<5	<5	<10	<5	<5
Bromobenzene	<5	<5	<5	<10	<5	<5
Bromochloromethane	<5	<5	<5	<10	<5	<5
Bromodichloromethane	<5	<5	<5	<10	<5	<5
Bromoform	<5	<5	<5	<10	<5	<5
Bromomethane	<10	<10	<10	<20	<10	<10
2-Butanone	<20	<20	<20	<40	<20	<20
n-Butylbenzene	<5	<5	<5	<10	<5	<5
sec-Butylbenzene	<5	<5	<5	<10	<5	<5
tert-Butylbenzene	<5	<5	<5	<10	<5	<5
Carbon disulfide	<5	<5	<5	<10	<5	<5
Carbon tetrachloride	<5	<5	<5	<10	<5	<5
Chlorobenzene	<5	<5	<5	<10	<5	<5
Chlorodibromomethane	<5	<5	<5	<10	<5	<5
Chloroethane	<10	<10	<10	<20	<10	<10
Chloroform	<5	<5	<5	<10	<5	<5
Chloromethane	<10	<10	<10	<20	<10	<10
o-Chlorotoluene	<5	<5	<5	<10	<5	<5
p-Chlorotoluene	<5	<5	<5	<10	<5	<5
1,2-Dibromo-3-chloropropane	<10	<10	<10	<20	<10	<10
1,2-Dibromoethane	<5	<5	<5	<10	<5	<5
Dibromomethane	<5	<5	<5	<10	<5	<5
o-Dichlorobenzene (1,2)	<5	<5	<5	<10	<5	<5
m-Dichlorobenzene (1,3)	<5	<5	<5	<10	<5	<5
p-Dichlorobenzene (1,4)	<5	<5	<5	<10	<5	<5
Dichlorodifluoromethane	<10	<10	<10	<20	<10	<10
1,1-Dichloroethane	<5	<5	<5	<10	<5	<5
1,2-Dichloroethane	<5	<5	<5	<10	<5	<5

TABLE III-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00915	92.00916	92.00917	92.00918	92.00919	92.00920
1,1-Dichloroethene	<5	<5	<5	<10	<5	<5
trans-1,2-Dichloroethene	<5	<5	<5	<10	<5	<5
cis-1,2-Dichloroethylene	<5	<5	<5	<10	<5	<5
1,2-Dichloropropane	<5	<5	<5	<10	<5	<5
1,3-Dichloropropane	<5	<5	<5	<10	<5	<5
2,2-Dichloropropane	<5	<5	<5	<10	<5	<5
1,1-Dichloropropene	<5	<5	<5	<10	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<10	<5	<5
trans-1,3-Dichloropropene	<5	<5	<5	<10	<5	<5
Ethylbenzene	<5	<5	<5	<10	<5	<5
2-Hexanone	<20	<20	<20	<40	<20	<20
Isopropylbenzene	<5	<5	<5	<10	<5	<5
4-Isopropyltoluene	<5	<5	<5	<10	<5	<5
Methyl iodide	<5	<5	<5	<10	<5	<5
4-Methyl-2-pentanone	<20	<20	<20	<40	<20	<20
Methylene chloride	<5	<5	<5	<10	<5	<5
Propylbenzene	<5	<5	<5	<10	<5	<5
Styrene	<5	<5	<5	<10	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<5	<10	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<10	<5	<5
Tetrachloroethylene	<5	<5	<5	<10	<5	<5
Toluene	<5	<5	<5	<10	<5	<5
1,1,2-Trichloro-1,2,2-trifluoroethane	<5	<5	<5	<10	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<10	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<10	<5	<5
Trichloroethene	<5	<5	<5	<10	<5	<5
Trichlorofluoromethane	<5	<5	<5	<10	<5	<5
1,2,3-Trichloropropane	<5	<5	<5	<10	<5	<5

TABLE III-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00915	92.00916	92.00917	92.00918	92.00919	92.00920
1,2,4-Trimethylbenzene	<5	<5	<5	<10	<5	<5
1,3,5-Trimethylbenzene	<5	<5	<5	<10	<5	<5
Vinyl acetate	<10	<10	<10	<20	<10	<10
Vinyl chloride	<10	<10	<10	<20	<10	<10
Mixed-Xylenes (o ± m ± p)	<5	<5	<5	<10	<5	<5
Tentatively Identified Compounds (TICs)	None	None	None	None	None	None

<: Indicates volatile organic compounds (VOC) concentration is less than the given value (detection limit).

TABLE III-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER		
COMPOUND	92.00921[1]	92.00938[2]	92.00939[2]
Acetone	<20	<20	<20
Benzene	<5	<5	<5
Bromobenzene	<5	<5	<5
Bromochloromethane	<5	<5	<5
Bromodichloromethane	<5	<5	<5
Bromoform	<5	<5	<5
Bromomethane	<10	<10	<10
2-Butanone	<20	<20	<20
n-Butylbenzene	<5	<5	<5
sec-Butylbenzene	<5	<5	<5
tert-Butylbenzene	<5	<5	<5
Carbon disulfide	<5	<5	<5
Carbon tetrachloride	<5	<5	<5
Chlorobenzene	<5	<5	<5
Chlorodibromomethane	<5	<5	<5
Chloroethane	<10	<10	<10
Chloroform	<5	<5	<5
Chloromethane	<10	<10	<10
o-Chlorotoluene	<5	<5	<5
p-Chlorotoluene	<5	<5	<5
1,2-Dibromo-3-chloropropane	<10	<10	<10
1,2-Dibromoethane	<5	<5	<5
Dibromomethane	<5	<5	<5
o-Dichlorobenzene (1,2)	<5	<5	<5
m-Dichlorobenzene (1,3)	<5	<5	<5
p-Dichlorobenzene (1,4)	<5	<5	<5
Dichlorodifluoromethane	<10	<10	<10
1,1-Dichloroethane	<5	<5	<5

TABLE III-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER		
COMPOUND	92.00921[1]	92.00938[2]	92.00939[2]
1,2-Dichloroethane	<5	<5	<5
1,1-Dichloroethene	<5	<5	<5
trans-1,2-Dichloroethene	<5	<5	<5
cis-1,2-Dichloroethylene	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5
1,3-Dichloropropane	<5	<5	<5
2,2-Dichloropropane	<5	<5	<5
1,1-Dichloropropene	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5
trans-1,3-Dichloropropene	<5	<5	<5
Ethylbenzene	<5	<5	<5
2-Hexanone	<20	<20	<20
Isopropylbenzene	<5	<5	<5
4-Isopropyltoluene	<5	<5	<5
Methyl iodide	<5	<5	<5
4-Methyl-2-pentanone	<20	<20	<20
Methylene chloride	<5	<5	<5
Propylbenzene	<5	<5	<5
Styrene	<5	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5
Tetrachloroethylene	<5	<5	<5
Toluene	<5	<5	<5
1,1,2-Trichloro-1,2,2-trifluoroethane	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5
Trichloroethene	<5	<5	<5
Trichlorofluoromethane	<5	<5	<5

TABLE III-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER		
COMPOUND	92.00921[1]	92.00938[2]	92.00939[2]
1,2,3-Trichloropropane	<5	<5	<5
1,2,4-Trimethylbenzene	<5	<5	<5
1,3,5-Trimethylbenzene	<5	<5	<5
Vinyl acetate	<10	<10	<10
Vinyl chloride	<10	<10	<10
Mixed-Xylenes (o ± m ± p)	<5	<5	<5
Tentatively Identified Compounds (TICs)	None	None	None

<: Indicates volatile organic compounds (VOC) concentration is less than the given value (detection limit).
1: Units are µg/kg.
2: Units are µg/L.

TABLE III-b

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00915	92.00916	92.00917	92.00918	92.00919	92.00920
Acenaphthene	<330	<330	<330	<3300	<330	<330
Acenaphthylene	<330	<330	<330	<3300	<330	<330
Aniline	<330	<330	<330	<3300	<330	<330
Anthracene	<330	<330	<330	<3300	<330	<330
Azobenzene	<330	<330	<330	<3300	<330	<330
m-Benzidine	<330	<330	<330	<3300	<330	<330
Benzo[a]anthracene	<330	<330	<330	<3300	<330	<330
Benzo[a]pyrene	<330	<330	<330	<3300	<330	<330
Benzo[b]fluoranthene	<330	<330	<330	<3300	<330	<330
Benzo[g,h,i]perylene	<330	<330	<330	<3300	<330	<330
Benzo[k]fluoranthene	<330	<330	<330	<3300	<330	<330
Benzoic acid	<330	<330	<330	<3300	<330	<330
Benzyl alcohol	<330	<330	<330	<3300	<330	<330
Bis(2-chloroethoxy)methane	<330	<330	<330	<3300	<330	<330
Bis(2-chloroethyl)ether	<330	<330	<330	<3300	<330	<330
Bis(2-chloroisopropyl)ether	<330	<330	<330	<3300	<330	<330
Bis(2-ethylhexyl)phthalate	<330	<330	<330	<3300	<330	<330
4-Bromophenylphenyl ether	<330	<330	<330	<3300	<330	<330
Butyl benzyl phthalate	<330	<330	<330	<3300	<330	<330
4-Chloro-3-methylphenol	<330	<330	<330	<3300	<330	<330
4-Chloroaniline	<330	<330	<330	<3300	<330	<330
2-Chloronaphthalene	<330	<330	<330	<3300	<330	<330
o-Chlorophenol	<330	<330	<330	<3300	<330	<330
4-Chlorophenylphenyl ether	<330	<330	<330	<3300	<330	<330
Chrysene	<330	<330	<330	<3300	<330	<330
Di-n-butyl phthalate	<330	<330	<330	<3300	<330	<330
Di-n-octyl phthalate	<330	<330	<330	<3300	<330	<330
Dibenzo[a,h]anthracene	<330	<330	<330	<3300	<330	<330
Dibenzofuran	<330	<330	<330	<3300	<330	<330

TABLE III-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00915	92.00916	92.00917	92.00918	92.00919	92.00920
o-Dichlorobenzene (1,2)	<330	<330	<330	<3300	<330	<330
m-Dichlorobenzene (1,3)	<330	<330	<330	<3300	<330	<330
p-Dichlorobenzene (1,4)	<330	<330	<330	<3300	<330	<330
3,3'-Dichlorobenzidine	<330	<330	<330	<3300	<330	<330
2,4-Dichlorophenol	<330	<330	<330	<3300	<330	<330
Diethyl phthalate	<330	<330	<330	<3300	<330	<330
Dimethyl phthalate	<330	<330	<330	<3300	<330	<330
2,4-Dimethylphenol	<330	<330	<330	<3300	<330	<330
2,4-Dinitrophenol	<330	<330	<330	<3300	<330	<330
2,4-Dinitrotoluene	<330	<330	<330	<3300	<330	<330
2,6-Dinitrotoluene	<330	<330	<330	<3300	<330	<330
Fluoranthene	<330	<330	<330	<3300	<330	<330
Fluorene	<330	<330	<330	<3300	<330	<330
Hexachlorobenzene	<330	<330	<330	<3300	<330	<330
Hexachlorobutadiene	<330	<330	<330	<3300	<330	<330
Hexachlorocyclopentadiene	<330	<330	<330	<3300	<330	<330
Hexachloroethane	<330	<330	<330	<3300	<330	<330
Indeno[1,2,3-cd]pyrene	<330	<330	<330	<3300	<330	<330
Isophorone	<330	<330	<330	<3300	<330	<330
2-Methyl-4,6-dinitrophenol	<330	<330	<330	<3300	<330	<330
2-Methylnaphthalene	<330	<330	<330	<3300	<330	<330
2-Methylphenol	<330	<330	<330	<3300	<330	<330
4-Methylphenol	<330	<330	<330	<3300	<330	<330
Naphthalene	<330	<330	<330	<3300	<330	<330
2-Nitroaniline	<330	<330	<330	<3300	<330	<330
3-Nitroaniline	<330	<330	<330	<3300	<330	<330
4-Nitroaniline	<330	<330	<330	<3300	<330	<330
Nitrobenzene	<330	<330	<330	<3300	<330	<330

TABLE III-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER					
COMPOUND	92.00915	92.00916	92.00917	92.00918	92.00919	92.00920
2-Nitrophenol	<330	<330	<330	<3300	<330	<330
4-Nitrophenol	<330	<330	<330	<3300	<330	<330
N-Nitrosodi-n-propylamine	<330	<330	<330	<3300	<330	<330
N-Nitrosodimethylamine	<330	<330	<330	<3300	<330	<330
N-Nitrosodiphenylamine	<330	<330	<330	<3300	<330	<330
Pentachlorophenol	<330	<330	<330	<3300	<330	<330
Phenanthrene	<330	<330	<330	<3300	<330	<330
Phenol	<330	<330	<330	<3300	<330	<330
Pyrene	<330	<330	<330	<3300	<330	<330
1,2,4-Trichlorobenzene	<330	<330	<330	<3300	<330	<330
2,4,5-Trichlorophenol	<330	<330	<330	<3300	<330	<330
2,4,6-Trichlorophenol	<330	<330	<330	<3300	<330	<330
Tentatively Identified Compounds (TICs)	See Below[1]	See Below[2]	See Below[3]	See Below[4]	See Below[5]	See Below[6]

<: Indicates semivolatile organic compound (SVOC) concentration was less than the given value (detection limit).
1: TICs detected in 92.00915 (in µg/kg) include: esters (620) and saturated hydrocarbons (370).
2: TICs detected in 92.00916 (in µg/kg) include three saturated hydrocarbons (1800, 1500, and 3100).
3: TICs detected in 92.00917 (in µg/kg) include oxygenated hydrocarbon (720) and an unknown alcohol (540).
4: TICs detected in 92.00918 (in µg/kg) include one unknown organic compound (8900).
5: TICs detected in 92.00919 (in µg/kg) include saturated hydrocarbons (510).
6: TICs detected in 92.00920 (in µg/kg) include saturated hydrocarbons (540).

TABLE III-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER		
COMPOUND	92.00921[1]	92.00938[2]	92.00939[2]
Acenaphthene	<330	<10	<11
Acenaphthylene	<330	<10	<11
Aniline	<330	<10	<11
Anthracene	<330	<10	<11
Azobenzene	<330	<10	<11
m-Benzidine	<330	<10	<11
Benzo[a]anthracene	<330	<10	<11
Benzo[a]pyrene	<330	<10	<11
Benzo[b]fluoranthene	<330	<10	<11
Benzo[g,h,i]perylene	<330	<10	<11
Benzo[k]fluoranthene	<330	<10	<11
Benzoic acid	<330	<10	<11
Benzyl alcohol	<330	<10	<11
Bis(2-chloroethoxy)methane	<330	<10	<11
Bis(2-chloroethyl)ether	<330	<10	<11
Bis(2-chloroisopropyl)ether	<330	<10	<11
Bis(2-ethylhexyl)phthalate	<330	<10	<11
4-Bromophenylphenyl ether	<330	<10	<11
Butyl benzyl phthalate	<330	<10	<11
4-Chloro-3-methylphenol	<330	<10	<11
4-Chloroaniline	<330	<10	<11
2-Chloronaphthalene	<330	<10	<11
o-Chlorophenol	<330	<10	<11
4-Chlorophenylphenyl ether	<330	<10	<11
Chrysene	<330	<10	<11
Di-n-butyl phthalate	<330	<10	<11
Di-n-octyl phthalate	<330	<10	<11
Dibenzo[a,h]anthracene	<330	<10	<11

TABLE III-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER		
COMPOUND	92.00921[1]	92.00938[2]	92.00939[2]
Dibenzofuran	<330	<10	<11
o-Dichlorobenzene (1,2)	<330	<10	<11
m-Dichlorobenzene (1,3)	<330	<10	<11
p-Dichlorobenzene (1,4)	<330	<10	<11
3,3'-Dichlorobenzidine	<330	<10	<11
2,4-Dichlorophenol	<330	<10	<11
Diethyl phthalate	<330	<10	<11
Dimethyl phthalate	<330	<10	<11
2,4-Dimethylphenol	<330	<10	<11
2,4-Dinitrophenol	<330	<10	<11
2,4-Dinitrotoluene	<330	<10	<11
2,6-Dinitrotoluene	<330	<10	<11
Fluoranthene	<330	<10	<11
Fluorene	<330	<10	<11
Hexachlorobenzene	<330	<10	<11
Hexachlorobutadiene	<330	<10	<11
Hexachlorocyclopentadiene	<330	<10	<11
Hexachloroethane	<330	<10	<11
Indeno[1,2,3-cd]pyrene	<330	<10	<11
Isophorone	<330	<10	<11
2-Methyl-4,6-dinitrophenol	<330	<10	<11
2-Methylnaphthalene	<330	<10	<11
2-Methylphenol	<330	<10	<11
4-Methylphenol	<330	<10	<11
Naphthalene	<330	<10	<11
2-Nitroaniline	<330	<10	<11
3-Nitroaniline	<330	<10	<11
4-Nitroaniline	<330	<10	<11

TABLE III-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER		
COMPOUND	92.00921[1]	92.00938[2]	92.00939[2]
Nitrobenzene	<330	<10	<11
2-Nitrophenol	<330	<10	<11
4-Nitrophenol	<330	<10	<11
N-Nitrosodi-n-propylamine	<330	<10	<11
N-Nitrosodimethylamine	<330	<10	<11
N-Nitrosodiphenylamine	<330	<10	<11
Pentachlorophenol	<330	<10	<11
Phenanthrene	<330	<10	<11
Phenol	<330	<10	<11
Pyrene	<330	<10	<11
1,2,4-Trichlorobenzene	<330	<10	<11
2,4,5-Trichlorophenol	<330	<10	<11
2,4,6-Trichlorophenol	<330	<10	<11
Tentatively Identified Compounds (TICs)	See Below[3]	None	None

<: Indicates semivolatile organic compound (SVOC) concentration was less than the given value (detection limit).
1: Concentrations in µg/kg.
2: Concentrations in µg/L.
3: TICs detected in 92.00921 include saturated hydrocarbons (630) and an unknown organic compound (900).

TABLE III-c

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
PESTICIDES*
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND[1]	92.00915	92.00916	92.00917	92.00918	92.00919	92.00920	92.00921	92.00938[2]	92.00939[2]
alpha-BHC	<1.2	<1.2	<1.1	<1.2	<1.3	<1.2	<1.3	<0.09	<0.09
beta-BHC	<2.3	<2.5	<2.2	<2.4	<2.5	<2.4	<2.5	<0.18	<0.18
delta-BHC	<3.5	<3.7	<3.3	<3.6	<3.8	<3.6	<3.8	<0.27	<0.26
Lindane	<1.5	<1.6	<1.5	<1.6	<1.7	<1.6	<1.7	<0.12	<0.12
Heptachlor	<1.2	<1.2	<1.1	<1.2	<1.3	<1.2	<1.3	<0.09	<0.09
Aldrin	<1.5	<1.6	<1.5	<1.6	<1.7	<1.6	<1.7	<0.12	<0.12
Heptachlor epoxide	<32	<34	<30	<33	<35	<34	<35	<2.5	<2.4
Endosulfan I	<5.4	<5.8	<5.2	<5.6	<5.9	<5.7	<5.9	<0.42	<0.41
Dieldrin	<0.77	<0.82	<0.74	<0.79	<0.84	<0.81	<0.84	<0.06	<0.06
p,p'-DDE	12	<1.6	<1.5	<1.6	<1.7	<1.6	<1.7	<0.12	<0.12
Endrin	<2.3	<2.5	<2.2	<2.4	<2.5	<2.4	<2.5	<0.18	<0.18
Endosulfan II	<1.6	<1.6	<1.5	<1.6	<1.7	<1.6	<1.7	<0.12	<0.12
p,p'-DDD	<4.2	<4.5	<4	<4.4	<4.6	<4.4	<4.6	<0.33	<0.32
Endosulfan sulfate	<25	<27	<24	<26	<28	<27	<28	<2	<1.9
p,p'-DDT	14	<5	<4.4	<4.8	<5	<4.8	<5	<0.36	<0.35
Methoxychlor	<68	<73	<65	<70	<74	<71	<74	<5.3	<5.2
Endrin aldehyde	<8.9	<9.5	<8.5	<9.1	<9.7	<9.3	<9.7	<0.7	<0.68
Chlordane	<5.4	<5.8	<5.2	<5.6	<5.9	<5.7	<5.9	<0.42	<0.41
Toxaphene	<92	<99	<88	<95	<100	<97	<100	<7.3	<7.1

<: Indicates pesticide concentration is less than the given value (detection limit).
*: Concentration units are in µg/kg, unless otherwise indicated.
1: Tentatively identified compounds (TICs) were not detected in any samples.
2: Concentration units are in µg/L.

TABLE III-d

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
HERBICIDES*
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND[1]	92.00915	92.00916	92.00917	92.00918	92.00919	92.00920	92.00921	92.00938[2]	92.00939[2]
2,4-D	<28	<30	<27	<29	<30	<29	<30	<1.2	<1.2
2,4,5-TP	<4	<4.2	<3.8	<4.1	<4.3	<4.2	<4.3	<0.17	<0.17
2,4,5-T	<4.7	<5	<4.4	<4.8	<5.1	<4.9	<5.1	<0.2	<0.2

<: Indicates herbicide concentration is less than the given value (detection limit).
*: Concentration units are in µg/kg, unless otherwise indicated.
1: Tentatively identified compounds (TICs) were not detected in any samples.
2: Concentration units are in µg/L.

TABLE III-e

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
POLYCHLORINATED BIPHENYLS (PCBs)*
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND	92.00915	92.00916	92.00917	92.00918	92.00919	92.00920	92.00921	92.00938[1]	92.00939[1]
Mixed-Aroclor	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5
Aroclor 1242	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5
Aroclor 1254	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5
Aroclor 1260	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5

<: Indicates PCB concentration is less than the given value (detection limit).
*: Concentration units are in µg/g, unless otherwise indicated.
1: Concentration units are in µg/L.

TABLE III-f

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
NITRATE-N*
PHASE III DATA

SAMPLE IDENTIFICATION NUMBER	NITRATE-N	NITRATE-N (DUPLICATE)
92.00915	13.9	14.2
92.00916	7.42	7.42
92.00917	1.83	1.83
92.00918	0.417	0.407
92.00919	0.04	0.04
92.00920	0.04	0.04
92.00921	0.043	0.043
92.00938[1]	0.307	0.307
92.00939[1]	1.02	1.02

*: Concentrations given in µg/g, unless otherwise specified.
1: Concentrations are given in mg/L.

TABLE III-g

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND	92.00915	92.00916	92.00917	92.00918	92.00919	92.00920	92.00921	92.00938[2]	92.00939[2]
Aluminum	5.99%	5.21%	5.86%	5.56%	5.13%	5.39%	5.44%	<0.02	0.08
Arsenic	0.6	0.7	0.6	1.2	0.3	0.4	0.4	<2	<2
Barium	292	262	241	446	231	270	204	0.11	0.149
Beryllium	2.1	1.85	1.76	1.71	1.9	1.29	1.84	<0.03	0.07
Calcium	4210	3810	2960	5700	3510	3000	2720	10.6	14.6
Cadmium	<1	<1	<1	<1	<1	<1	<1	<0.003	<0.003
Cobalt	3	2.2	2	4	2	1	1	<0.01	<0.01
Chromium	5	5	3	9	5	2	3	<0.01	<0.01
Copper	55	128	20	9	34	174	15	<0.01	<0.01
Iron	1.28%	1.19%	1.52%	1.43%	1.37%	1.14%	1.03%	<0.01	0.03
Potassium	2.63%	2.17%	2.59%	1.96%	2.14%	2.25%	2.27%	<1	2
Magnesium	1430	1570	873	2200	1270	751	909	3.47	3.07
Manganese	410	342	445	344	479	404	300	0.004	0.02
Mercury[1]	<2	<2	<2	32	<2	<2	<2	<0.1	<0.1
Mercury (Duplicate)[1]	NA	NA	NA	<0.2	NA	NA	<2	NA	NA
Selenium	<0.2	<0.2	<0.2	<1	<0.2	<0.2	<0.2	2	<2
Silver	<1	<1	<1	2.09%	<1	<1	<1	<10	<10
Sodium	2.52%	2.08%	2.6%	8.1	2.21%	2.57%	2.4%	13	13

TABLE III-g (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND	92.00915	92.00916	92.00917	92.00918	92.00919	92.00920	92.00921	92.00938[2]	92.00939[2]
Nickel	4	4	3.7	<4	6	3	3	<0.01	<0.01
Lead	<4	32	<4	<3	5	<4	<4	<0.05	<0.05
Antimony	<3	<3	<3	<4	<3	<3	<3	<0.02	<0.02
Thallium	<4	<4	<4	22	<4	<4	<4	<0.03	<0.03
Vanadium	11	13	10	48	11	8	8	0.01	<0.006
Zinc	88	91	70	NA	75	58	54	0.014	0.03
Cyanide	NR	NR	NR	NR	NR	NR	NR	<0.01	<0.01

<: Indicates metal concentration is less than the given value (detection limit).
*: Concentration units are given in µg/g, unless otherwise indicated.
1: Mercury concentration units except 92.00938 and 92.00939 are in ng/g.
2: Concentrations are in mg/L.
NA: Not analyzed.
NR: Not requested.

TABLE III-h

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) METALS
PHASE III DATA

	SAMPLE IDENTIFICATION NUMBER				
TCLP METAL	92.00924	92.00925	92.00926	92.00927	92.00928
Arsenic[1]	<2	<2	<2	<2	<2
Barium[2]	0.85	0.79	0.13	0.93	0.52
Cadmium[2]	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium[2]	<0.01	<0.01	<0.01	0.01	<0.01
Lead[2]	<0.05	0.05	0.05	<0.05	<0.05
Mercury[1]	0.1	<0.1	<0.1	<0.1	<0.1
Selenium[1]	<2	<2	<2	<2	<2
Silver[1]	<10	<10	<10	<10	<10

	SAMPLE IDENTIFICATION NUMBER			
TCLP METAL	92.00929	92.00930	92.00940	92.00941
Arsenic[1]	<2	2.3	<2	<2
Barium[2]	0.65	0.59	0.2	0.22
Cadmium[2]	<0.01	<0.01	<0.01	<0.01
Chromium[2]	<0.01	<0.01	<0.01	<0.01
Lead[2]	0.06	<0.05	<0.05	<0.05
Mercury[1]	<0.1	<0.1	<0.1	<0.1
Selenium[1]	<2	<2	<2	<2
Silver[1]	<10	<10	<10	<10

<: Indicates TCLP metal concentration is less than the given value (detection limit).
1: Results are given in µg/L.
2: Results are given in mg/L.

APPENDIX IV

PHASE IV ANALYTICAL DATA

TABLE IV-a

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.06115	92.06116	92.06117	92.06118	92.06119
Acetone[1]	<20	<20	<20	<20	25
Benzene	<5	<5	<5	<5	<5
Bromobenzene	<5	<5	<5	<5	<5
Bromochloromethane	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5
Bromomethane	<10	<10	<10	<10	<10
2-Butanone	<20	<20	<20	<20	<20
n-Butylbenzene	<5	<5	<5	<5	<5
sec-Butylbenzene	<5	<5	<5	<5	<5
tert-Butylbenzene	<5	<5	<5	<5	<5
Carbon disulfide	<5	<5	<5	<5	<5
Carbon tetrachloride	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5
Chlorodibromomethane	<5	<5	<5	<5	<5
Chloroethane	<10	<10	<10	<10	<10
Chloroform	<5	<5	<5	<5	<5
Chloromethane	<10	<10	<10	<10	<10
o-Chlorotoluene	<5	<5	<5	<5	<5
p-Chlorotoluene	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	<10	<10	<10	<10	<10
1,2-Dibromoethane	<5	<5	<5	<5	<5
Dibromomethane	<5	<5	<5	<5	<5
o-Dichlorobenzene (1,2)	<5	<5	<5	<5	<5
m-Dichlorobenzene (1,3)	<5	<5	<5	<5	<5
p-Dichlorobenzene (1,4)	<5	<5	<5	<5	<5
Dichlorodifluoromethane	<10	<10	<10	<10	<10
1,1-Dichloroethane	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5

TABLE IV-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.06115	92.06116	92.06117	92.06118	92.06119
1,1-Dichloroethene	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	<5	<5	<5	<5	<5
cis-1,2-Dichloroethylene	<5	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5	<5
1,3-Dichloropropane	<5	<5	<5	<5	<5
2,2-Dichloropropane	<5	<5	<5	<5	<5
1,1-Dichloropropene	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<5	<5
trans-1,3-Dichloropropene	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5
Ethylene dibromide	<5	<5	<5	<5	<5
2-Hexanone	<20	<20	<20	<20	<20
Isopropylbenzene	<5	<5	<5	<5	<5
4-Isopropyltoluene	<5	<5	<5	<5	<5
Methyl iodide	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	<20	<20	<20	<20	<20
Methylene chloride	<5	<5	<5	<5	<5
Propylbenzene	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5
Tetrachloroethylene	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5
1,1,2-Trichloro-1,2,2-trifluoroethane	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5	<5
Trichlorofluoromethane	<5	<5	<5	<5	<5

TABLE IV-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.06115	92.06116	92.06117	92.06118	92.06119
1,2,3-Trichloropropane	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	<5	<5	<5	<5	<5
1,3,5-Trimethylbenzene	<5	<5	<5	<5	<5
Vinyl acetate	<10	<10	<10	<10	<10
Vinyl chloride	<10	<10	<10	<10	<10
Mixed-Xylenes (o ± m ± p)	<5	<5	<5	<5	<5
Tentatively Identified Compounds (TICs)	None	None	None	None	None

<: Indicates volatile organic compound (VOC) concentration is less than the given value (detection limit).
1: Acetone was detected in each blank analyzed with samples 92.06115 through 92.06119. Possible laboratory contamination is suspected.

TABLE IV-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	92.06120	92.06121	92.06122	92.06123
Acetone[1]	33	33	25	26
Benzene	<5	<5	<5	<5
Bromobenzene	<5	<5	<5	<5
Bromochloromethane	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5
Bromomethane	<10	<10	<10	<10
2-Butanone	<20	<20	<20	<20
n-Butylbenzene	<5	<5	<5	<5
sec-Butylbenzene	<5	<5	<5	<5
tert-Butylbenzene	<5	<5	<5	<5
Carbon disulfide	<5	<5	<5	<5
Carbon tetrachloride	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5
Chlorodibromomethane	<5	<5	<5	<5
Chloroethane	<10	<10	<10	<10
Chloroform	<5	<5	<5	<5
Chloromethane	<10	<10	<10	<10
o-Chlorotoluene	<5	<5	<5	<5
p-Chlorotoluene	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	<10	<10	<10	<10
1,2-Dibromoethane	<5	<5	<5	<5
Dibromomethane	<5	<5	<5	<5
o-Dichlorobenzene (1,2)	<5	<5	<5	<5
m-Dichlorobenzene (1,3)	<5	<5	<5	<5
p-Dichlorobenzene (1,4)	<5	<5	<5	<5
Dichlorodifluoromethane	<10	<10	<10	<10
1,1-Dichloroethane	<5	<5	<5	<5

TABLE IV-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	92.06120	92.06121	92.06122	92.06123
1,2-Dichloroethane	<5	<5	<5	<5
1,1-Dichloroethene	<5	<5	<5	<5
trans-1,2-Dichloroethene	<5	<5	<5	<5
cis-1,2-Dichloroethylene	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5
1,3-Dichloropropane	<5	<5	<5	<5
2,2-Dichloropropane	<5	<5	<5	<5
1,1-Dichloropropene	<5	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<5
trans-1,3-Dichloropropene	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5
Ethylene dibromide	<5	<5	<5	<5
2-Hexanone	<20	<20	<20	<20
Isopropylbenzene	<5	<5	<5	<5
4-Isopropyltoluene	<5	<5	<5	<5
Methyl iodide	<5	<5	<5	<5
4-Methyl-2-pentanone	<20	<20	<20	<20
Methylene chloride	<5	<5	<5	<5
Propylbenzene	<5	<5	<5	<5
Styrene	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5
Tetrachloroethylene	<5	<5	<5	<5
Toluene	<5	<5	<5	<5
1,1,2-Trichloro-1,2,2-trifluoroethane	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5

TABLE IV-a (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
VOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	92.06120	92.06121	92.06122	92.06123
Trichlorofluoromethane	<5	<5	<5	<5
1,2,3-Trichloropropane	<5	<5	<5	<5
1,2,4-Trimethylbenzene	<5	<5	<5	<5
1,3,5-Trimethylbenzene	<5	<5	<5	<5
Vinyl acetate	<10	<10	<10	<10
Vinyl chloride	<10	<10	<10	<10
Mixed-Xylenes (o ± m ± p)	<5	<5	<5	<5
Tentatively Identified Compounds (TICs)	None	None	None	None

<: Indicates volatile organic compound (VOC) concentration is less than the given value (detection limit).
1: Acetone was detected in the blanks analyzed with these samples. Probable laboratory contamination is suspected.

TABLE IV-b

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.06115	92.06116	92.06117	92.06118	92.06119
Acenaphthene	<330	<330	<330	<330	<330
Acenaphthylene	<330	<330	<330	<330	<330
Aniline	<330	<330	<330	<330	<330
Anthracene	<330	<330	<330	<330	<330
Azobenzene	<330	<330	<330	<330	<330
m-Benzidine	<330	<330	<330	<330	<330
Benzo[a]anthracene	<330	<330	<330	<330	<330
Benzo[a]pyrene	<330	<330	<330	<330	<330
Benzo[b]fluoranthene	460	<330	<330	<330	<330
Benzo[g,h,i]perylene	<330	<330	<330	<330	<330
Benzo[k]fluoranthene	<330	<330	<330	<330	<330
Benzoic acid	<330	<330	<330	<330	<330
Benzyl alcohol	<330	<330	<330	<330	<330
Bis(2-chloroethoxy)methane	<330	<330	<330	<330	<330
Bis(2-chloroethyl)ether	<330	<330	<330	<330	<330
Bis(2-chloroisopropyl)ether	<330	<330	<330	<330	<330
Bis(2-ethylhexyl)phthalate	<330	<330	<330	<330	<330
4-Bromophenylphenyl ether	<330	<330	<330	<330	<330
Butyl benzyl phthalate	<330	<330	<330	<330	<330
4-Chloro-3-methylphenol	<330	<330	<330	<330	<330
4-Chloroaniline	<330	<330	<330	<330	<330
2-Chloronaphthalene	<330	<330	<330	<330	<330
o-Chlorophenol	<330	<330	<330	<330	<330
4-Chlorophenylphenyl ether	<330	<330	<330	<330	<330
Chrysene	<330	<330	<330	<330	<330
Di-n-butyl phthalate	<330	<330	<330	<330	<330
Di-n-octyl phthalate	<330	<330	<330	<330	<330
Dibenzo[a,h]anthracene	<330	<330	<330	<330	<330

TABLE IV-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.06115	92.06116	92.06117	92.06118	92.06119
Dibenzofuran	<330	<330	<330	<330	<330
o-Dichlorobenzene (1,2)	<330	<330	<330	<330	<330
m-Dichlorobenzene (1,3)	<330	<330	<330	<330	<330
p-Dichlorobenzene (1,4)	<330	<330	<330	<330	<330
3,3'-Dichlorobenzidine	<330	<330	<330	<330	<330
2,4-Dichlorophenol	<330	<330	<330	<330	<330
Diethyl phthalate	<330	<330	<330	<330	<330
Dimethyl phthalate	<330	<330	<330	<330	<330
2,4-Dimethylphenol	<330	<330	<330	<330	<330
2,4-Dinitrophenol	<330	<330	<330	<330	<330
2,4-Dinitrotoluene	<330	<330	<330	<330	<330
2,6-Dinitrotoluene	<330	<330	<330	<330	<330
Fluoranthene	380	<330	<330	<330	<330
Fluorene	<330	<330	<330	<330	<330
Hexachlorobenzene	<330	<330	<330	<330	<330
Hexachlorobutadiene	<330	<330	<330	<330	<330
Hexachlorocyclopentadiene	<330	<330	<330	<330	<330
Hexachloroethane	<330	<330	<330	<330	<330
Indeno[1,2,3-cd]pyrene	<330	<330	<330	<330	<330
Isophorone	<330	<330	<330	<330	<330
2-Methyl-4,6-dinitrophenol	<330	<330	<330	<330	<330
2-Methylnaphthalene	<330	<330	<330	<330	<330
2-Methylphenol	<330	<330	<330	<330	<330
4-Methylphenol	<330	<330	<330	<330	<330
Naphthalene	<330	<330	<330	<330	<330
2-Nitroaniline	<330	<330	<330	<330	<330
3-Nitroaniline	<330	<330	<330	<330	<330

TABLE IV-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER				
COMPOUND	92.06115	92.06116	92.06117	92.06118	92.06119
4-Nitroaniline	<330	<330	<330	<330	<330
Nitrobenzene	<330	<330	<330	<330	<330
2-Nitrophenol	<330	<330	<330	<330	<330
4-Nitrophenol	<330	<330	<330	<330	<330
N-Nitrosodi-n-propylamine	<330	<330	<330	<330	<330
N-Nitrosodimethylamine	<330	<330	<330	<330	<330
N-Nitrosodiphenylamine	<330	<330	<330	<330	<330
Pentachlorophenol	<330	<330	<330	<330	<330
Phenanthrene	<330	<330	<330	<330	<330
Phenol	<330	<330	<330	<330	<330
Pyrene	<330	350	<330	<330	<330
1,2,4-Trichlorobenzene	<330	<330	<330	<330	<330
2,4,5-Trichlorophenol	<330	<330	<330	<330	<330
2,4,6-Trichlorophenol	<330	<330	<330	<330	<330
Tentatively Identified Compounds (TICs)	None	None	See Below[1]	See Below[2]	See Below[3]

<: Indicates semivolatile organic compound (SVOC) concentration was less than the given value (detection limit).
1: TICs detected in 92.06117 (in µg/kg) include two nitrogenous hydrocarbons (660 and 380) and an oxygenated hydrocarbon (680).
2: TICs detected in 92.06118 (in µg/kg) include benzenes (substituted) (850) and bisphenol A (1030).
3: TICs detected in 92.06119 (in µg/kg) include benzenes (substituted) (660) and bisphenol A (2500).

TABLE IV-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	92.06120	92.06121	92.06122	92.06123
Acenaphthene	<330	<330	<330	<1700
Acenaphthylene	<330	<330	<330	<1700
Aniline	<330	<330	<330	<1700
Anthracene	<330	<330	<330	<1700
Azobenzene	<330	<330	<330	<1700
m-Benzidine	<330	<330	<330	<1700
Benzo[a]anthracene	<330	<330	<330	<1700
Benzo[a]pyrene	<330	<330	<330	<1700
Benzo[b]fluoranthene	<330	<330	<330	<1700
Benzo[g,h,i]perylene	<330	<330	<330	<1700
Benzo[k]fluoranthene	<330	<330	<330	<1700
Benzoic acid	<330	<330	<330	<1700
Benzyl alcohol	<330	<330	<330	<1700
Bis(2-chloroethoxy)methane	<330	<330	<330	<1700
Bis(2-chloroethyl)ether	<330	<330	<330	<1700
Bis(2-chloroisopropyl)ether	<330	<330	<330	<1700
Bis(2-ethylhexyl)phthalate	<330	<330	<330	<1700
4-Bromophenylphenyl ether	<330	<330	<330	<1700
Butyl benzyl phthalate	<330	<330	<330	<1700
4-Chloro-3-methylphenol	<330	<330	<330	<1700
4-Chloroaniline	<330	<330	<330	<1700
2-Chloronaphthalene	<330	<330	<330	<1700
o-Chlorophenol	<330	<330	<330	<1700
4-Chlorophenylphenyl ether	<330	<330	<330	<1700
Chrysene	<330	<330	<330	<1700
Di-n-butyl phthalate	<330	<330	<330	<1700
Di-n-octyl phthalate	<330	<330	<330	<1700

TABLE IV-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	92.06120	92.06121	92.06122	92.06123
Dibenzo[a,h]anthracene	<330	<330	<330	<1700
Dibenzofuran	<330	<330	<330	<1700
o-Dichlorobenzene (1,2)	<330	<330	<330	<1700
m-Dichlorobenzene (1,3)	<330	<330	<330	<1700
p-Dichlorobenzene (1,4)	<330	<330	<330	<1700
3,3'-Dichlorobenzidine	<330	<330	<330	<1700
2,4-Dichlorophenol	<330	<330	<330	<1700
Diethyl phthalate	<330	<330	<330	<1700
Dimethyl phthalate	<330	<330	<330	<1700
2,4-Dimethylphenol	<330	<330	<330	<1700
2,4-Dinitrophenol	<330	<330	<330	<1700
2,4-Dinitrotoluene	<330	<330	<330	<1700
2,6-Dinitrotoluene	<330	<330	<330	<1700
Fluoranthene	<330	<330	490	<1700
Fluorene	<330	<330	<330	<1700
Hexachlorobenzene	<330	<330	<330	<1700
Hexachlorobutadiene	<330	<330	<330	<1700
Hexachlorocyclopentadiene	<330	<330	<330	<1700
Hexachloroethane	<330	<330	<330	<1700
Indeno[1,2,3-cd]pyrene	<330	<330	<330	<1700
Isophorone	<330	<330	<330	<1700
2-Methyl-4,6-dinitrophenol	<330	<330	<330	<1700
2-Methylnaphthalene	<330	<330	<330	<1700
2-Methylphenol	<330	<330	<330	<1700
4-Methylphenol	<330	<330	<330	<1700
Naphthalene	<330	<330	<330	<1700
2-Nitroaniline	<330	<330	<330	<1700

TABLE IV-b (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
SEMIVOLATILE ORGANIC COMPOUNDS (in µg/kg)
PHASE IV DATA

COMPOUND	SAMPLE IDENTIFICATION NUMBER			
	92.06120	92.06121	92.06122	92.06123
3-Nitroaniline	<330	<330	<330	<1700
4-Nitroaniline	<330	<330	<330	<1700
Nitrobenzene	<330	<330	<330	<1700
2-Nitrophenol	<330	<330	<330	<1700
4-Nitrophenol	<330	<330	<330	<1700
N-Nitrosodi-n-propylamine	<330	<330	<330	<1700
N-Nitrosodimethylamine	<330	<330	<330	<1700
N-Nitrosodiphenylamine	<330	<330	<330	<1700
Pentachlorophenol	<330	<330	<330	<1700
Phenanthrene	<330	<330	<330	<1700
Phenol	<330	<330	<330	<1700
Pyrene	<330	<330	420	<1700
1,2,4-Trichlorobenzene	<330	<330	<330	<1700
2,4,5-Trichlorophenol	<330	<330	<330	<1700
2,4,6-Trichlorophenol	<330	<330	<330	<1700
Tentatively Identified Compounds (TICs)	See Below[1]	None	None	None

<: Indicates semivolatile organic compound (SVOC) is less than the given value (detection limit).
1: TICs detected in 92.06120 (in µg/kg) include bisphenol A (1700) and diethylene glycol (1100).

TABLE IV-c

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
PESTICIDES (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND	92.06115	92.06116	92.06117	92.06118	92.06119	92.06120	92.06121	92.06122	92.06123
alpha-BHC	<1.1	<1.1	<1.1	<1.2	<1.1	<1.1	<1.1	<1.0	<1.1
beta-BHC	5.2	<2.1	<2.2	<2.3	<2.2	<2.2	<2.1	<2.1	<2.2
delta-BHC	<3.2	<3.2	<3.4	<3.5	<3.2	<3.3	<3.2	<3.2	<3.2
Lindane	<1.4	<1.4	<1.5	<1.6	<1.4	<1.4	<1.4	<1.4	<1.4
Heptachlor	<1.1	<1.1	<1.1	<1.2	<1.1	<1.1	<1.1	<1.0	<1.1
Aldrin	<1.4	<1.4	<1.5	<1.6	<1.4	<1.4	<1.4	<1.4	<1.4
Heptachlor epoxide	<30	<29	<31	<32	<30	<30	<30	<29	<30
Endosulfan I	<5.0	<5.0	<5.3	<5.5	<5.0	<5.1	<5.0	<4.9	<5.1
Dieldrin	<0.72	<0.71	<0.75	<0.78	<0.72	<0.73	<0.72	<0.70	<0.72
4,4'-DDE	<1.4	<1.4	<1.5	<1.6	<1.4	<1.4	<1.4	<1.4	<1.4
Endrin	<2.2	<2.1	<2.2	<2.3	<2.2	<2.2	<2.1	<2.1	<2.2
Endosulfan II	<1.4	<1.4	<1.5	<1.6	<1.4	<1.4	<1.4	<1.4	<1.4
4,4'-DDD	<4.0	<3.9	<4.1	<4.3	<4.0	<4.0	<3.9	<3.9	<4.0
Endosulfan sulfate	<24	<23	<25	<26	<24	<24	<24	<23	<24
4,4'-DDT	<4.3	<4.3	<4.5	<4.7	<4.3	<4.4	<4.3	<4.2	<4.3
Methoxychlor	<64	<62	<66	<69	<63	<64	<63	<62	<64
Endrin aldehyde	<8.3	<8.2	<8.6	<9.0	<8.3	<8.4	<8.2	<8.1	<8.3
Chlordane, technical	<5.0	<5.0	<5.3	<5.5	<5.0	<5.1	<5.0	<4.9	<5.1
Toxaphene	<87	<84	<90	<94	<86	<87	<86	<84	<87

<: Indicates pesticide concentration is less than the given value (detection limit).

TABLE IV-d

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
HERBICIDES (in µg/kg)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND[1]	92.06115	92.06116	92.06117	92.06118	92.06119	92.06120	92.06121	92.06122	92.06123
2,4-D	<26	<26	<27	<28	<26	<26	<26	<26	<26
2,4,5-TP	<3.7	<3.6	<3.9	<4.0	<3.7	<3.8	<3.7	<3.6	<3.7
2,4,5-T	<4.4	<4.3	<4.6	<4.7	<4.4	<4.4	<4.3	<4.3	<4.4

<: Indicates herbicide concentration is less than the given value (detection limit).
1: Tentatively identified compounds (TICs) were not detected in any samples.

TABLE IV-e

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
POLYCHLORINATED BIPHENYLS (PCBs) (in µg/g)
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND	92.06115	92.06116	92.06117	92.06118	92.06119	92.06120	92.06121	92.06122	92.06123
Mixed-Aroclor	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Aroclor 1242	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Aroclor 1254	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Aroclor 1260	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17

<: Indicates PCB concentration is less than the given value (detection limit).

TABLE IV-f

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
NITRATE-N (in µg/g)
PHASE IV DATA

SAMPLE IDENTIFICATION NUMBER	NITRATE-N	NITRATE-N (DUPLICATE)
92.06115	3.8	NA
92.06116	<0.08	NA
92.06117	4	NA
92.06118	0.81	NA
92.06119	1.04	NA
92.06120	1.57	1.57
92.06121	0.39	NA
92.06122	<0.08	NA
92.06123	4.84	4.7

<: Indicates nitrate-N concentration is below the given value (detection limit).
NA: Not analyzed.

TABLE IV-g

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND	92.06115	92.06116	92.06117	92.06118	92.06119	92.06120	92.06121	92.06122	92.06123
Aluminum	7.39%	7.24%	7.04%	7.37%	7.02%	6.9%	6.49%	7.24%	7.1%
Arsenic	1.2[2]	0.9	0.8	0.6	0.8	0.5	<0.2	0.6	1.1
Barium	414	589	383	241	463	217	176	663	440
Beryllium	2.5	2.1	2.38	2.8	2.3	2.49	2.63	2.21[1]	2.39
Calcium	0.66%	0.95%	0.5%	0.34%	0.7%	0.31%	0.24%	1.25%	0.63%
Cadmium	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	5	4.8	3.5	3.2	4.9	2.1	3.1	5.8	4.1
Chromium	12	12	7.6	5.4	9.8	4.4	3.2	13.6	9.6
Copper	304	63	212	45	153	16.3	2.2	17.8	90.8
Iron	1.58%	1.46%	1.58%	1.41%	1.45%	1.21%	1.09%	1.63%	1.58%
Potassium	3.58%	3.32%	3.58%	4.05%	3.31%	3.8%	3.71%	3.12%	3.35%
Magnesium	0.24%	0.32%	0.2%	0.14%	0.25%	933	562	0.44%	0.24%
Manganese	394	368	458	362	398	391	334	412	387
Mercury[1]	21	10	10	<10	11	<10	<10	<10	11
Selenium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	1.6	1.5	<1	<1	<1	<1	<1	<1	<1
Sodium	2.76%	2.8%	2.91%	3.04%	2.75%	3.09%	2.95%	2.7%	2.71%
Nickel	8	12	6	25	5	4	4	12	8

TABLE IV-g (Continued)

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TARGET ANALYTE LIST (TAL) METALS*
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER								
COMPOUND	92.06115	92.06116	92.06117	92.06118	92.06119	92.06120	92.06121	92.06122	92.06123
Lead	48	34	48	46	36	39	36	30.6	44
Antimony	<6	<6	<6	<6	10	<6	<6	<6	<6
Thallium	21	25	28	25	26	24	21	27	24
Vanadium	19	20	13	10	19	6	4	26	19
Zinc	72.5	55	79	77	80	91.6	55.8	47	67.1
Cyanide	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02[3]	<0.02

<: Indicates metal concentration is less than the given value (detection limit).
*: Concentration units are given in µg/g, unless otherwise indicated.
1: Mercury concentration units are in ng/g.
2: Arsenic was detected at 0.9 µg/g and 1.1 µg/g in duplicate samples.
3: Cyanide duplicate was <0.02 µg/g.

TABLE IV-h

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 40
SCRAP DETONATION SITE
TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) METALS
PHASE IV DATA

	SAMPLE IDENTIFICATION NUMBER				
TCLP METAL	92.06126	92.06127	92.06128	92.06129	92.06130
Arsenic[1]	2	3	<2	<2	<2
Barium[2]	0.68	0.83	0.77	0.28	0.62
Cadmium[2]	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium[2]	<0.01	<0.01	<0.01	<0.01	<0.01
Lead[2]	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury[1]	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium[1]	9	8	<2	<2	<2
Silver[1]	<10	<10	<10	<10	<10

	SAMPLE IDENTIFICATION NUMBER			
TCLP METAL	92.06131	92.06132	92.06133	92.06134
Arsenic[1]	<2	<2	<2	<2
Barium[2]	0.25	0.17	0.62	0.71
Cadmium[2]	<0.01	<0.01	<0.01	<0.01
Chromium[2]	<0.01	<0.01	<0.01	<0.01
Lead[2]	<0.05	<0.05	<0.05	<0.05
Mercury[1]	<0.1	<0.1	<0.1	0.1
Selenium[1]	<2	<2	<2	<2
Silver[1]	<10	<10	<10	<10

<: Indicates TCLP metal concentration is less than the given value (detection limit).
1: Results are given in µg/L.
2: Results are given in mg/L.

APPENDIX V

ANALYTICAL METHODS

ANALYTICAL METHODS

The following analytical methods were used for the analyses of samples collected during Phases I through IV. The same applicable methods will be employed for the Phase VI laboratory analyses.

PARAMETER	ANALYTE	EPA/SW-846 METHOD
Volatile Organic Compounds		8260
Semivolatile Organic Compounds		8270, 3540
Pesticides		8080
Herbicides		8150
Polychlorinated Biphenyls		8080
Nitrate		353.2
Target Analyte List Metals		6010 (ICPES) 3050 (acid digestion, soil)
	Arsenic	7060 (AA)
	Selenium	7740 (AA)
	Antimony	7040 (AA)
	Thallium	7840 (AA)
	Mercury	7470 (CVAA, liquid) 7471 (CVAA, soil)
	Silver	7760 (AA)
Toxicity Characteristic Leaching Procedure Metals		1311, 3010
	Arsenic	7060 (AA)
	Selenium	7740 (AA)
	Antimony	7040 (AA)
	Thallium	7840 (AA)
	Mercury	7470 (CVAA, liquid)
	Silver	7760 (AA)
Total Petroleum Hydrocarbons		418.1