AMENDMENT
TO THE
FINAL CLOSURE PLAN
TA-40 SCRAP DETONATION SITE

LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO 87544

MAY 1993

2476

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

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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 and the plans for clean-up activities based on those results. 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. As stated in the FCP, analytical data from an October 1985 soil sampling effort did not identify any metals considered toxic using the extraction procedure (EP) test method. The FCP described the sampling that would be done in Phases I through IV and proposed additional sampling if hazardous constituents were detected above levels of concern.

Section 2 of this amendment presents methods for evaluating potential contaminants of concern based on comparison with screening action levels, background information, and risk assessment. Section 3 presents the Phase I through IV data and compares these data to background concentrations, action levels, and risk-based preliminary remediation goals. Section 4 describes the proposed clean-up actions. Section 5 presents the TA-40 SDS closure schedule.

2.0 DATA EVALUATION

During the course of site investigation, environmental data may be evaluated by three criteria. Comparison of individual measurements with screening action levels is used to identify contaminants of potential concern to human or environmental receptors. Because the action levels are calculated using extremely conservative guidelines, as described in Section 2.1 below, they are below natural background concentration for a few elements, so in some cases a second comparison of observations with background distributions is required (Section 2.2). Finally, if further action is required, target preliminary remediation goals should be calculated using actual or potential site specific exposure conditions, as outlined in Section 2.3.

2.1 COMPARISON WITH SCREENING ACTION LEVELS

The preliminary assessment of each phase of the site investigations is based primarily on the comparison of site data to screening action levels (SALs). As stated in the proposed Subpart S to 40 CFR Part 264, if these SALs are exceeded, this may trigger further analysis of potential remedies (i.e., perform a risk assessment and develop remediation alternatives) (EPA, 1990).

For the TA-40 SDS data assessment, a SAL was calculated for each hazardous constituent for which the measured concentration was above the detection limit for that constituent in at least one sample. The potential hazardous constituents considered at the TA-40 SDS included 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).

Table 2.1 lists these calculated SALs. Screening action level calculations were performed using the methodology and equations presented in the proposed Subpart S. An explanation of the action level calculations follows Table 2.1.

For SAL calculations, the target risk level for carcinogens and the target hazard index for systemic toxicants are those used in proposed Subpart S. Direct soil ingestion is the selected exposure pathway because it results in the most conservative action levels for TA-40. The intake assumptions used are those proposed in Subpart S.

Toxicological information for noncarcinogens (systemic toxicants) is summarized by a reference dose (RfD), below which adverse health effects are extremely unlikely to occur in even the most sensitive members of the exposed population. Toxicological information for carcinogens is summarized by a carcinogenic slope factor (CSF), which is a measure of the rate at which cancer risk increases with dose.

Carcinogens are further classified according to "Cancer Class," which indicates the nature of the toxicological information supporting the classification of a chemical as a carcinogen, as follows:

A = Known human carcinogen

B1 = Probable human carcinogen; limited human data are available

B2 = Probable human carcinogen; sufficient evidence in animals but inadequate or no evidence in humans

C = Possible human carcinogen

D = Not classified as a human carcinogen

References for the CSF and RfD data shown in Table 2.1 are "Integrated Risk Information System" (IRIS), (EPA, 1992), and "Health Effects Assessment Summary Tables" (HEAST), (EPA, 1991). These data bases are updated quarterly as new information becomes available. For the cases where the chemical is both a systemic toxicant and a carcinogen, the action levels were computed two ways, and the lower action level is reported in Table 2.1.

Because there is currently neither RfD nor CSF data for lead, the screening action level for lead is based on additional EPA guidance. More information about the quantification of lead toxicity and the basis for lead risk assessment is given in Section 2.3.

The SALs shown in Table 2.1 were calculated assuming only one hazardous chemical is present in the soil. Where several chemicals are present, there may be a combined health effect of the chemicals. In this case, if the actual concentrations are near but still below the SALs, their combined effect may need to be considered.

TABLE 2.1

SCREENING ACTION LEVEL CALCULATION TABLE

CHEMICAL	CANCER CLASS	ORAL RfD (mg/kg/day)	ORAL SF (mg/kg/day)-1	SAL FOR SOIL (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
Chromium (VI)	A	5E-03	ND	400
Cobalt	ND	ND	ND	ND
Copper	D	3.7E-02	ND	3,000
Lead	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] Soil lead concentrations of 500 to 1000 ppm are 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

TABLE 2.1 (con't)

SCREENING ACTION LEVEL CALCULATION TABLE

CHEMICAL	CANCER CLASS	ORAL RfD (mg/kg/day)	ORAL SF (mg/kg/day)-1	SAL FOR SOIL (mg/kg)
SVOCs				
Phenol	D	6E-01	ND	48,000
Benzo[b]fluoranthene	B2	ND	ND	ND
Fluoranthene	D	4E-02	ND	3,200
Pyrene	D	3E-02	ND	2,400
PESTICIDES				
Beta-BHC	C	ND	1.8	3.9
Delta-BHC	ND	ND	ND	ND
Heptachlor Epoxide	B2	1.3E-05	9.1	0.077
4,4-DDE	B2	ND	3.4E-01	2.06
4,4-DDT	B2	5E-04	3.4E-01	2.06
HERBICIDES				
2,4,5-TP	ND	1E-01	ND	8,000
NITRATES	ND	1E-01	ND	8,000
TPH	ND	ND	ND	ND

ND - No Data

EXPLANATION OF SCREENING ACTION LEVEL CALCULATION TABLE

CALCULATION OF SCREENING ACTION LEVELS FOR SOIL

The calculation for action levels for soil is based on the equations in the proposed Subpart S to 40 CFR 264 (EPA, 1990). Two set of exposure and intake assumptions were used: 1) continuously exposed adult, and 2) continuously exposed child. Both scenarios use soil ingestion as the primary pathway.

General Equations

Carcinogens

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

Systemic Toxicant (noncarcinogens)

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

Where:

R = Target risk level for carcinogens (dimensionless)

1.0E-06

W = Body weight (kg)

70 for adults

16 for children age 1 to 6

A = Absorption factor (dimensionless)

1 (worst case)

ED = Exposure duration (years)

30 yrs for adult exposure

6 yrs for child exposure (age 1-6)

I = Soil intake assumption (mg/day)

100 mg/day adult

200 mg/day child

LT = Assumed lifetime for carcinogens (yars)

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)

2.2 BACKGROUND CONCENTRATIONS OF SELECTED CONSTITUENTS

Many of the elements included in Table 4.2 in the FCP occur as natural constituents of the soils and tuffs of the Pajarito Plateau. In most cases, the SALs described in the preceding section exceed the background concentrations of these elements by a significant margin, but there are a few exceptions, notably arsenic and beryllium, for which the calculated SALs are below the natural background range. Unsurprisingly, the TA-40 SDS data include observations of these two elements above the levels shown in Table 2.1.

Information about the natural concentrations of these elements is available from several sources. A standard reference work, covering the conterminous United States, is Shacklette and Boerngen (1984). Data from undisturbed areas of Sigma Mesa are reported by Ferenbaugh et al. (1990). A current, more thorough investigation of elemental concentrations in both soils of various types and in the underlying Bandelier tuff is currently being carried out by the LANL ER Program. Preliminary results reported by Longmire et al. (unpublished data, 1992) are comparable to the earlier observations of Ferenbaugh et. al. (1990).

As reported by Longmire et al., the natural concentrations can depend significantly on whether the sample was taken in soil or in tuff. For the purposes of comparison with TA-40 data, we present two subsets of the data collected by Longmire et al. (unpublished data, 1992):

1) 59 soil samples from five mesa-top sites
2) 24 tuff samples from Unit 1 of the Upper Bandelier Tuff, which is the unit underlying TA-40.

Figure 2.1 illustrates the natural variability in the concentrations of arsenic and beryllium in mesa-top soils and in Unit 1 of the Upper Bandelier Tuff by means of "box plots". Each distribution is represented by a central shaded box that includes the middle 50% of the observations, extended upward and downward to the extremes of the data . For example, the left box in the arsenic plot shows that half of the mesa-top soil background data fell between 3.4 and 7.4 ppm, with a quarter ranging down to below detection levels, and another quarter ranging up to almost 11 ppm. The median value, denoted by the white stripe, is just under 5 ppm. By contrast, arsenic concentrations were not observed above 3.2 ppm in tuff, and more than half of the observations were below detection levels.

Three other elements of potential interest at TA-40 are barium, lead, and zinc, although the action levels for these exceed the background concentrations by an order of magnitude or more. Background distributions for these elements are shown in Figure 2.2.

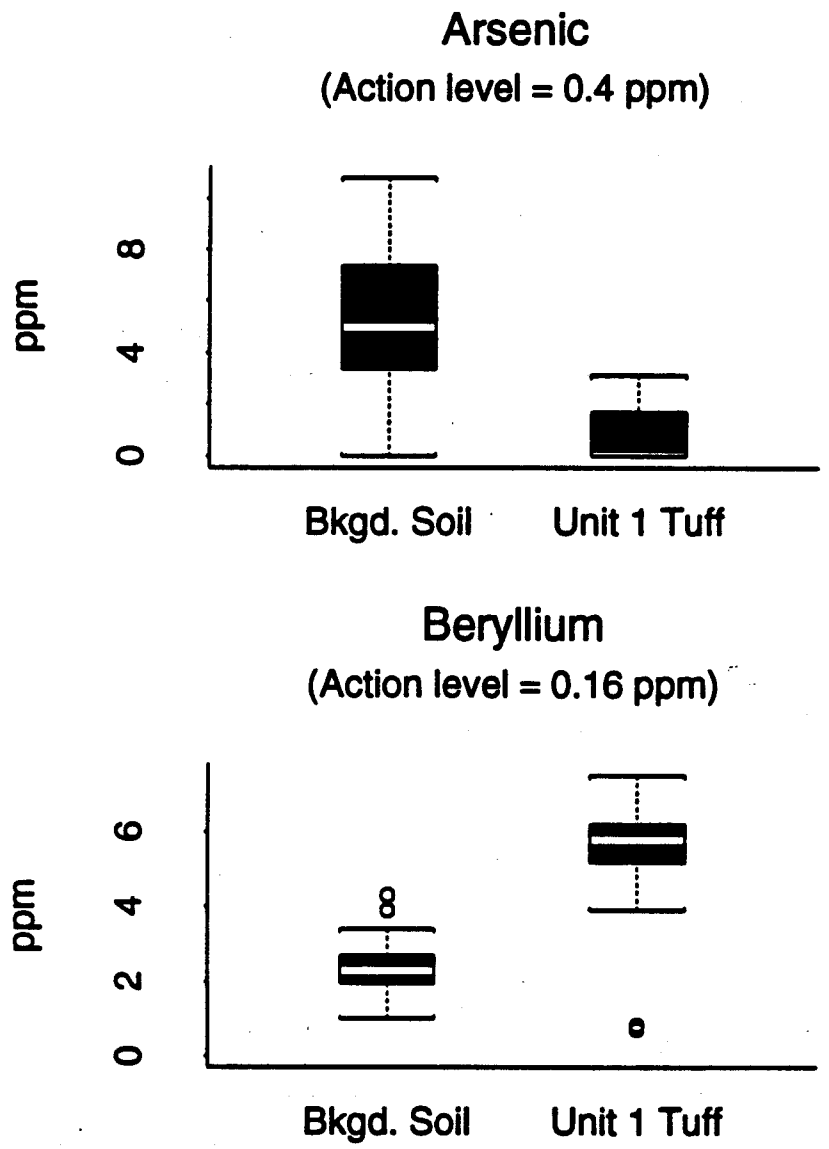


Figure 2.1. Background Concentrations for Two Elements with Low SALs

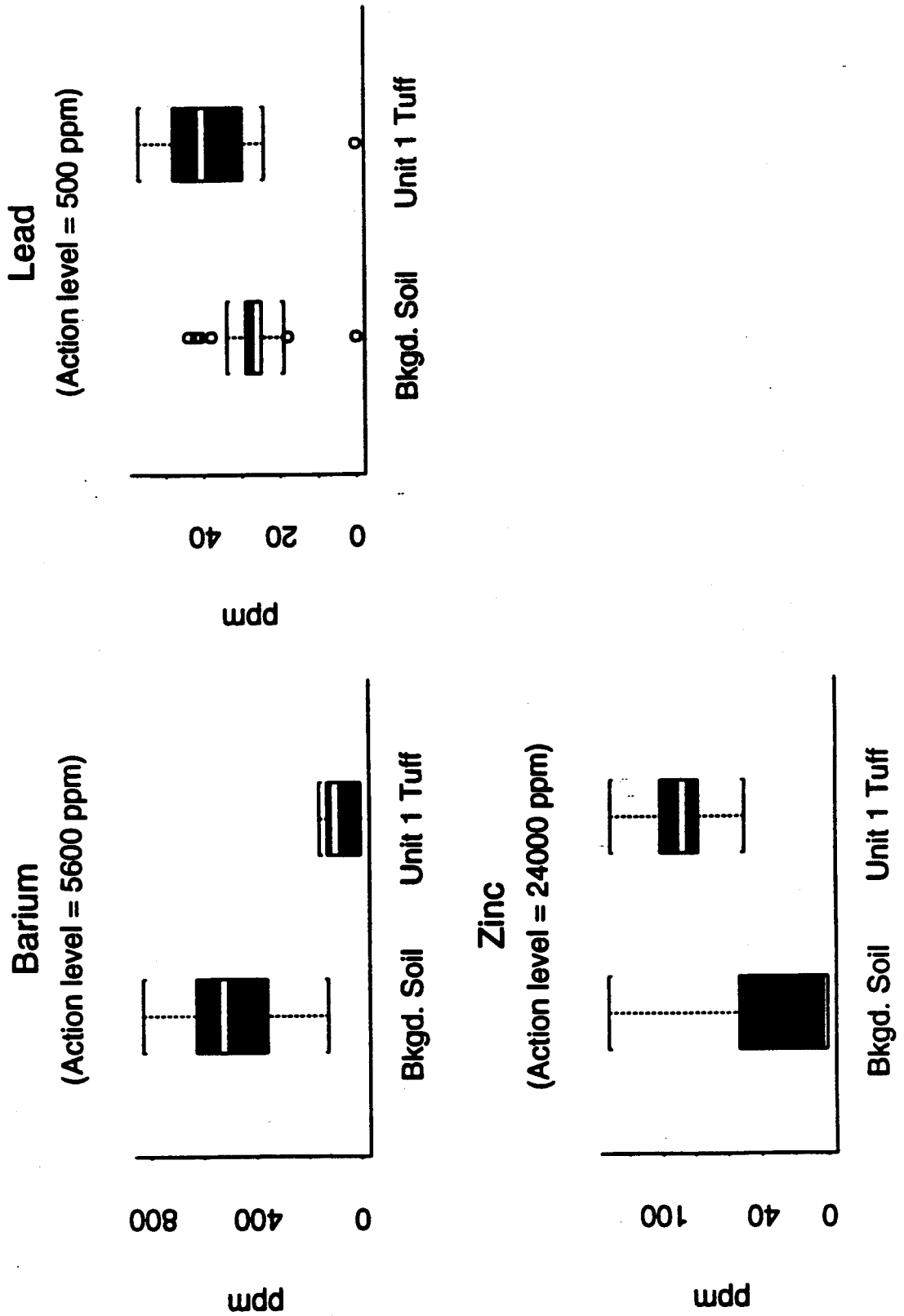


Figure 2.2. Background Concentrations for Three Elements with High SALs

2.3 RISK ASSESSMENT AND PRELIMINARY REMEDIATION GOALS

Where remediation may be required at the TA-40 SDS, risk-based Preliminary Remediation Goals are needed to guide corrective action. Risk is "the probability that the toxic properties of a chemical will be produced in populations of individuals under their actual conditions of exposure." (Rodricks, 1992, p. 48). Thus risk calculation requires not only the collating of the toxicological information about hazardous constituents of concern, but also the estimation of actual or probable exposures, present or future. The site- and media-specific concentration levels corresponding to target risk or hazard indices are called Preliminary Remediation Goals (PRGs). PRGs are not generally equal to Subpart S action levels, for a number of reasons:

- Multiple exposure pathways may be considered, not only soil ingestion. For example, inhalation of contaminants that adhere to particulates can be an important pathway during the dry and windy New Mexico springs.

- The chemical form of the constituent at the site may be different from that used in animal studies. For example, the reference dose for thallium is based on toxicity data for thallium sulfate, which is the most soluble and bioavailable form of thallium salts, while thallium oxide is much less available for absorption in the GI tract.

- The target risk level for carcinogens may not be 10^{-6}. There is precedent in the State of New Mexico for setting target risk levels in the range of 10^{-4} to 10^{-6} that is considered by EPA to be protective of human health (NMED 1990). The choice of a target risk level of 10^{-6} can not be sustained in setting PRGs for constituents for which the calculated risks associated with naturally occurring concentrations of the constituent exceed this level.

- The "actual conditions of exposure" may imply different ingestion rates than are assumed in the proposed Subpart S calculations. In particular, if the site is unsuitable or unavailable for residential use, then the Subpart S intake assumptions are far too conservative for use in calculating chronic exposure.

The methodology described in Part B of the Risk Assessment Guidance for Superfund (EPA 1991) will be used to calculate PRGs for the TA-40 SDS. Two land use scenarios are considered for the site. In the near future, TA-40 will continue to be used for Laboratory operations. In the more distant future, the most probable land use would be for recreational purposes. Table 2.2 shows PRGs for arsenic, beryllium, and thallium computed using these two scenarios. Tables 2.3 through 2.7 present the equations and the

assumptions that are proposed for calculating PRGs for each land use scenario. Most of these assumptions are taken from the Part B guidance. Where assumptions were not available in Part B, the rationale for selection is explained in each table.

Lead is currently a special case for risk assessment. Because lead is the most ubiquitous of all toxic metals, there is a great deal of information about its effects and the concentrations which cause these effects. However, this information is generally reported as a function of the concentration of lead in the blood (rather than of dose), with a no-effects level for children (the most sensitive subpopulation) of about 10 µg/dL. Therefore current EPA guidance recommends the use of the IBK Lead Risk Assessment Model to calculate the increase in blood concentration levels of lead resulting from to exposure to lead in soils as well as uptake from other sources (paint, air, water, food, etc.).

Risks from lead in soil calculated by the IBK Lead Risk Assessment Model, or by the very similar, slightly more conservative model used by the State of California, are driven almost entirely by the dietary component of these models, and a substantial fraction of the diet (more than 5%) must be grown on-site before these models will predict lead concentrations in children as high as 10 µg/dL from soil lead concentrations of 500 ppm. Inhalation is the second most important pathway, and direct soil ingestion contributes almost nothing to the predicted total.

TABLE 2.2.
PRELIMINARY REMEDIATION GOALS FOR SELECTED ELEMENTS CALCULATED USING THE SITE WORKER AND RECREATIONAL LAND USE SCENARIOS

	SITE WORKER[a]			RECREATIONAL USE[b]		
RISK CRITERION	TR=10^{-4} [c]	TR=10^{-6} [c]	THI=1 [d]	TR=10^{-4} [c]	TR=10^{-6} [c]	THI=1 [d]
Arsenic (ppm)	330	3.3	610	520	5.2	780
Beryllium (ppm)	130	1.3	10,000	210	2.1	13,000
Thallium (ppm)	--[e]	--[e]	160	--[e]	--[e]	210

a Calculated using standard exposure assumptions for the non-construction site worker scenario (Tables 2.3 and 2.4.)

b Calculated using standard exposure assumptions for the non-construction site worker scenario (Tables 2.5, 2.6 and 2.7.)

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

d Cleanup levels for noncarcinogens are set at a level at which no adverse human health effects would be expected to occur. This level is defined by the ratio of the expected dose to the reference dose, or the target hazard index (THI), being one or less.

e No carcinogenic effects have been observed.

TABLE 2.3.
EQUATION AND PARAMETERS FOR PRGs FOR CARCINOGENS
NON CONSTRUCTION SITE WORKER

The calculation of PRGs for the site worker scenario is based on two exposure pathways: soil ingestion and inhalation of particulates.

$$PRG = \frac{TR \times BW \times LT}{EF \times ED \times \left[\left(SF_o \times CF \times IR_{soil} \right) + \left(SF_i \times IR_{air} + PEF \right) \right]}$$

where:

PRG = Soil concentration (mg/kg or ppm)

TR = Target risk level for carcinogens (dimensionless)

1.0E-06 to 1.0E-04

BW = Body weight (kg)

70 kg (average for adults)

16 kg (average for children age 1 to 6)

LT = Assumed lifetime (years)

70 years

EF = Exposure frequency (days/year)

250 days/year

ED = Exposure duration (years)

25 years

SF_o = Chemical-specific oral cancer slope factor ((mg/kg-day)$^{-1}$)

SF_i = Chemical-specific inhalation cancer slope factor ((mg/kg-day)$^{-1}$)

IR_{soil} = Soil intake assumption (mg/day)

50 mg/day (at site)

IR_{air} = Inhalation rate (m^3/day)

20 m^3/day (at site)

PEF = Particulate emission factor (m^3/kg)

4.63E+09 m^3/kg

CF = Conversion factor (converts units from kg/kg to mg/kg)

10^{+6} mg/kg

TABLE 2.4.

EQUATION AND PARAMETERS FOR PRGs FOR SYSTEMIC TOXICANTS NON-CONSTRUCTION SITE WORKER

The calculation of PRGs for the site worker scenario is based on two exposure pathways: soil ingestion and inhalation of particulates.

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

where:

PRG = Soil concentration (mg/kg or ppm)

THI = Target hazard index for systemic toxicants (dimensionless)

1.0

BW = Body weight (kg)

70 kg (average for adults)

16 kg (average for children age 1 to 6)

CT = Averaging time for chronic exposure (years)

30 years

EF = Exposure frequency (days/year)

250 days/year

ED = Exposure duration (years)

25 years

RfD_o = Chemical-specific oral chronic reference dose (mg/kg-day)

RfD_i = Chemical-specific inhalation chronic reference dose (mg/kg-day)

IR_{soil} = Soil intake assumption (mg/day)

50 mg/day (at site)

IR_{air} = Inhalation rate (m^3/day)

20 m^3/day (at site)

PEF = Particulate emission factor (m^3/kg)

4.63E+09 m^3/kg

CF = Conversion factor (converts units from kg/kg to mg/kg)

10^{+6} mg/kg

TABLE 2.5.
CALCULATION OF AGE-ADJUSTED SOIL INGESTION FACTOR FOR THE RECREATIONAL SCENARIO

The recreational land use scenario assumes the receptor is a camper who visits the site six years as a child (ages 1-6) and 14 years as an adult.

$$IF_{soil/adj} = \frac{IR_{soil/child} \times ED_{child}}{BW_{child}} + \frac{IR_{soil/adult} \times ED_{adult}}{BW_{adult}}$$

where:

$IF_{soil/adj}$ = Age-adjusted soil ingestion factor (mg-year/kg-day)

BW_{child} = Body weight for child (kg)

16 kg (average for children 1-6)

BW_{adult}= Body weight for adults (kg)

70 (average for adults 7-31)

ED_{child} = Exposure duration as child (years)

6 years

ED_{adult} = Exposure duration as adult (years)

14 years

$IR_{soil/child}$ = Soil intake assumption for child (mg/day)

200 mg/day

$IR_{soil/adult}$ = Soil intake assumption for adult (mg/day)

100 mg/day

TABLE 2.6.
EQUATION AND PARAMETERS FOR PRGs FOR CARCINOGENS
CAMPER, RECREATIONAL SCENARIO

The calculation of PRGs for the recreational scenario is based on the soil ingestion exposure pathway and uses the age-adjusted soil ingestion factor computed in Table 2.5. It is assumed that the camper uses the site four weeks per year for a total of 20 years, six of them as a child under six.

$$PRG = \frac{TR \times LT}{EF \times SF_o \times CF \times IF_{soil/adj}}$$

where:

PRG = Soil concentration (mg/kg or ppm)

TR = Target risk level for carcinogens (dimensionless)

1.0E-06 to 1.0E-04

LT = Assumed lifetime (years)

70 years

EF = Exposure frequency (days/year)

28 days/year

SF_o = Chemical-specific oral cancer slope factor ($(mg/kg\text{-}day)^{-1}$)

$IF_{soil/adj}$ = Age-adjusted soil ingestion factor (mg-year/kg-day)

CF = Conversion factor (converts units from kg/kg to mg/kg)

10^{+6} mg/kg

TABLE 2.7.
EQUATION AND PARAMETERS FOR PRGs FOR SYSTEMIC TOXICANTS
CAMPER, RECREATIONAL SCENARIO

The calculation of PRGs for the recreational scenario is based on the soil ingestion exposure pathway and uses the age-adjusted soil ingestion factor computed in Table 2.5. It is assumed that the camper uses the site four weeks per year for a total of 20 years, six of them as a child under six.

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

where:

PRG = Soil concentration (mg/kg or ppm)

THI = Target hazard index for systemic toxicants (dimensionless)

1.0

CT = Averaging time for chronic exposure (years)

30 years

EF = Exposure frequency (days/year)

28 days/year

RfD_o = Chemical-specific oral chronic reference dose (mg/kg-day)

$IF_{soil/adj}$ = Age-adjusted soil ingestion factor (mg-year/kg-day)

CF = Conversion factor (converts units from kg/kg to mg/kg)

10^{+6} mg/kg

3.0 ASSESSMENT OF PHASES I- IV RESULTS

The site investigation activities at TA-40 SDS were conducted in four phases during January and May of 1992 (Fresquez, 1992b). Phase I activities involved sampling the fill area south of the detonation amphitheater. The Phase II investigation sampled the surface burn areas and the burn pit east of the amphitheater. 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 Figures 2.1 and 4.1 in the FCP and on the detailed map included in the pocket of this Amendment. Analytical data from the Phases I through IV site investigations are presented in Appendices I through IV of this amendment. 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.

The Phase I - IV data shows that the only constituents in debris or soil with levels above screening action levels are beryllium, thallium, lead, antimony, silver and arsenic. Table 3.1 summarizes the data for the TAL metal analyses of interest (note that mercury is in ppb while the other metals are in ppm). The observations of lead, antimony, or silver above SALs and background levels are accentuated in bold print. The beryllium and arsenic levels are all well within naturally occurring background levels (Figure 2.1).

Barium levels shown in Table 3.1 are below screening action levels and, as comparison with Figure 2.2 shows, also within the range of background. Although zinc levels are uniformly well below the screening action level, a few are elevated above background.

The details of the four investigations are presented in the following subsections, together with preliminary assessments based on comparisons with action levels and background data.

Table 3.1. Selected T. Metals at the TA-40 SDS

Phase	Area	Field #	Sample #	Media	Depth	As	Ba	Be	Hg	Ag	Pb	Sb	Th	Zn
						ppm	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm
I	fill area	PF-40-FA-13A	92.00701	soil, tuff	0-2.5'	0.2	200	1.52	18.4	<1	13	<2	<4	24
I	fill area	PF-40-FA-15A	92.00700	soil, tuff	0-2.5'	0.3	156	1.61	18.9	1.1	12.7	<2	<4	24
I	fill area	PF-40-FA-16A	92.00702	soil, tuff	0-2.5'	0.4	260	1.98	16.5	<1	12	<2	<4	24
I	fill area	PF-40-FA-16A	92.00702d	soil, tuff	0-2.5'	NA	NA	NA	NA	NA	NA	NA	NA	21
I	fill area	PF-40-FA-18A	92.00703	tuff	0-2.5'	0.4	284	1.55	17.6	<1	35	<2	<4	56
I	fill area	PF-40-FA-19A	92.00704	soil, tuff	0-2.5'	0.4	281	1.76	19.6	<1	27	<2	<4	21
I	fill area	PF-40-FA-19A	92.00704d	soil, tuff	0-2.5'	NA	NA	NA	NA	NA	24	NA	NA	33
I	fill area	PF-40-FA-1A	92.00696	soil, tuff	0-2.5'	<0.2	180	1.91	18.7	2.6	13	<2	<4	28
I	fill area	PF-40-FA-2A	92.00699	soil, tuff	0-2.5'	0.2	248	1.6	16	<1	14	<2	<4	27
I	fill area	PF-40-FA-4A	92.00697	soil, tuff	0-2.5'	0.3	183	2.08	15.3	<1	15	<2	<4	26.6
I	fill area	PF-40-FA-5A	92.00698	soil, tuff	0-2.5'	0.3	231	1.7	20.4	<1	15	<2	<4	24
I	fill area	PF-40-FA-5R	92.00770	soil, tuff	0-2.5'	0.4	313	1.72	<2	<1	***2980***	<2	<1	48
I	fill area	PF-40-FA-5R	92.00770d	soil, tuff	0-2.5'	0.4	262	1.67	<2	<1	***2710***	<2	<1	54
II	burn area	PF-40-BAE-1	92.00914	soil, debris	surface	0.7	291	1.96	16	2.3	41	<3	<4	163
II	burn area	PF-40-BAE-2	92.00707	soil	0-6"	3.1	469	1.17	85.6	10.7	***1470***	<2	<4	2750
II	burn area	PF-40-BAE-3	92.00708	soil	1-2'	0.3	186	1.29	10.6	<1	19	<2	<4	74
II	burn area	PF-40-BAW-1	92.00913	soil, debris	surface	0.6	278	1.87	<2	1.1	137	<3	<4	199
II	burn area	PF-40-BAW-2	92.00709	soil	0-6"	0.7	242	1.75	34.6	<1	22	<2	<4	64
II	burn area	PF-40-BAW-3	92.00710	soil	1-2'	0.7	194	1.89	24.8	<1	9.2	<2	<4	21
II	burn area	PF-40-BAW-3	92.00710d	soil	1-2'	NA	NA	NA	NA	NA	8.2	NA	NA	21
II	burn cage	PF-40-BC-1	92.00767	debris	surface	2.2	365	2.14	<2	21.2	***21102***	***43***	<1	6360
II	burn cage	PF-40-BC-2	92.00705	soil	0-6"	0.4	224	1.7	18.9	<1	20	<2	<4	57
II	burn cage	PF-40-BC-3	92.00706	soil	1-2'	0.2	210	1.57	16.7	<1	13	<2	<4	24
II	burn cage	PF-40-BC-3	92.00706d	soil	1-2'	NA	NA	1.61	NA	NA	NA	<2	<4	NA

Table 3.1. Selected TAL Metals at the TA-40 SDS (continued)

Phase	Area	Field #	Sample #	Media	Depth	As	Ba	Be	Hg	Ag	Pb	Sb	Th	Zn
						ppm	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm
II	burn pit	PF-40-BP-1A	92.00761	soil	1-2'	0.7	302	2.28	<2	<1	22.5	<2	<1	54
II	burn pit	PF-40-BP-1B	92.00762	debris	3'	0.5	149	2.5	<2	<1	8	<2	<1	40
II	burn pit	PF-40-BP-1C	92.00763	soil	4-5'	0.6	129	2.41	<2	<1	10	<2	<1	42
II	burn pit	PF-40-BP-2A	92.00764	soil	1-2'	0.5	280	2.15	<2	<1	34	<2	<1	49
II	burn pit	PF-40-BP-2B	92.00765	debris	4-5'	0.5	182	1.81	98	1.4	16	<2	<1	43
II	burn pit	PF-40-BP-2B	92.00765d	debris	4-5'	NA	196	1.94	NA	NA	NA	<2	<1	54
II	burn pit	PF-40-BP-2C	92.00766	soil	5'	0.5	143	6.74	<2	<1	9	<2	<1	36
II	burn pit	PF-40-BP-3B	92.00768	debris	3-4'?	1.5	182	1.11	<2	<1	93	<2	<1	28
II	burn pit	PF-40-BP-3C	92.00769	soil	4-5'?	0.9	208	2.64	<2	<1	12	<2	<1	45
III	drainage	PF-40-SD-E	92.00921	soil	surface	0.4	204	1.84	<2	<1	<4	<3	<4	54
III	drainage	PF-40-SD-M	92.00920	soil	surface	0.4	270	1.29	<2	<1	<4	<3	<4	58
III	drainage	PF-40-SD-W	92.00919	soil	surface	0.3	231	1.9	<2	<1	5	<3	<4	75
III	elec. box	PF-40-EBX-E	92.00916	soil	surface	0.7	262	1.85	<2	<1	32	<3	<4	91
III	elec. box	PF-40-EBX-W	92.00915	soil	surface	0.6	292	2.1	<2	<1	<4	<3	<4	88
III	shelter	PF-40-SPS	92.00917	soil	surface	0.6	241	1.76	<2	<1	<4	<3	<4	70
III	amphitheater	PF-40-DP	92.00918	soil	surface	1.2	446	1.71	32	***20900***	<3	<4	22	NA
IV	amphitheater	PF-40-A-1	92.06115	soil	0-6"	1.2	414	2.5	21	1.6	48	<6	21	72.5
IV	amphitheater	PF-40-A-1-QA	92.06123	soil	0-6"	1.1	440	2.39	11	<1	44	<6	24	67.1
IV	amphitheater	PF-40-A-2	92.06116	soil	0-6"	0.9	589	2.1	10	1.5	34	<6	25	55
IV	amphitheater	PF-40-A-3	92.06117	soil	0-6"	0.8	383	2.38	10	<1	48	<6	28	79
IV	amphitheater	PF-40-A-4	92.06118	soil	0-6"	0.6	241	2.8	<10	<1	46	<6	25	77
IV	amphitheater	PF-40-A-CH1-2	92.06119	soil	0-2'	0.8	463	2.3	11	<1	36	10	26	80
IV	amphitheater	PF-40-A-CH1-4	92.06120	soil	2-4'	0.5	217	2.49	<10	<1	39	<6	24	91.6
IV	amphitheater	PF-40-A-CH2-2	92.06121	soil	0-2'	<0.2	176	2.63	<10	<1	36	<6	21	55.8
IV	amphitheater	PF-40-A-CH2-4	92.06122	soil	2-4'	0.6	663	2.21	<10	<1	30.6	<6	27	47

3.1 PHASE I INVESTIGATION, FILL AREA

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. A tenth sampling location, PF-40-FA-5R, was collocated with PF-40-FA-5A.

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. Nine soil samples were collected to a maximum depth of 2.5 feet. The depth of fill was usually two feet or less at each sampling location. 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 (i.e., there was no fill nearby), the tuff was sampled here in order to maintain relatively uniform coverage of the fill area.

TABLE 3.2. PHASE I SAMPLE IDENTIFICATION NUMBERS AND DESCRIPTIONS

FIELD SAMPLE ID	LABORATORY SAMPLE ID[1]	LABORATORY 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	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.

All samples were analyzed for metals and organics, as required in the FCP, to determine whether hazardous constituents were present. A summary of the analytical data for the Phase I investigation is provided in Appendix I. Table 3.2 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 4.1 in the FCP

No volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides, polychlorinated biphenyls (PCBs), nitrates, or TCLP metals were detected in any of the samples collected from the fill area.

One sample (PF-40-FA-5R) had a lead concentration of 2,710 µg/g (ppm), well above the action level of 500 to 1,000 mg/kg (ppm). This sample was collocated with sample PF-40-FA-5A, which had a lead concentration of 15 ppm. The laboratory measurement was closely replicated in a laboratory split (see Table 3.1). No other TAL metals were present in concentrations exceeding the calculated action levels or background levels in any of the fill area samples.

3.2 PHASE II INVESTIGATION, BURN CAGE, TWO BURN AREAS, AND BURN PIT

The Phase II investigation of the burn areass included sampling at the present location of the burn cage, at two other areas where evidence of surface burning is visible, and at the burn pit. This investigation was conducted in January 1992. All samples were analyzed for metals and organics to determine whether hazardous constituents were present. In addition, two of the samples from the burn pit and two field duplicates (collocated 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 3.3 lists the field sample identification numbers, corresponding laboratory sample identification numbers, and brief descriptions for each Phase II sample. Field sample locations are shown on Figure 4.2 in the FCP. This investigation showed that the burn pit and burn area west had no constituents above screening action levels or background levels for those TAL metals with action levels below background levels. Lead in one surface sample below the debris was above the screening action level in the burn area east. The burn cage had a debris sample with elevated lead and antimony .

TABLE 3.3. PHASE II SAMPLE IDENTIFICATION NUMBERS AND DESCRIPTIONS

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

1 The area from where each sample was collected is identified in the Field Sample Id:

BC	Burn Cage
BAE	Burn Area East
BAW	Burn Area West
BP	Burn Pit

2 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).

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

4 Samples analyzed for TPH.

3.2.1 BURN CAGE AND TWO BURN AREAS

Sampling activities at the current site of the burn cage and at the two burn areas, burn area east (northeast of the burn cage) and burn area west (northwest of the burn cage), included collecting one charred surface debris sample and core samples at each site. The surface debris samples were contained 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.

The 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.

No target VOCs, PCBs, or nitrates were detected in any of the samples from these areas. Other results are enumerated below for each area.

3.2.1.1 BURN CAGE RESULTS

Semivolatiles. 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 SAL for this compound is 3,200 mg/kg (ppm).

Pesticides. No pesticides were detected in this area

Metals. 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 screening action levels for TAL lead and antimony are 500 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. No other TAL or TCLP metals were present in concentrations exceeding the SALs or background levels in any of the burn cage samples.

3.2.1.2 BURN AREA EAST RESULTS

Semivolatiles. No semi-volatiles were detected in the burn area east.

Pesticides. Sample PF-40-BAE-2, a soil sample from the zero- to six-inch interval at the east burn area, contained 4.6 µg/kg (ppb) delta-BHC. An screening 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). A SAL 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 calculated screening action level is far greater than the observed pesticide concentration of 4.6 ppb in PF-40-BAE-2.

Metals. TAL and TCLP lead were also detected in PF-40-BAE-2. The TAL lead concentration in this sample was 1,470 µg/g (ppm), and the TCLP lead concentration was 13 mg/L. These concentrations exceed the screening action and regulatory levels for lead. No other TAL or TCLP metals were present in concentrations exceeding the SALs or background levels in any of the burn area east samples.

3.2.1.3 BURN AREA WEST RESULTS;

Semivolatiles. No semivolatiles were detected in the burn area west.

Pesticides. No pesticides were detected in this area.

Metals. No TAL or TCLP metals were present in concentrations exceeding the SALs in any of the burn area west samples. The debris sample had lead above background levels but well below the SAL.

3.2.2 BURN PIT RESULTS;

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.

VOCs, PCBs, Nitrates. No target VOCs, PCBs, or nitrates were detected in any of the samples from these areas.

Semivolatiles. 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 screening action level of 48,000 mg/kg (ppm).

Pesticides. Soil above the charred debris at burn pit location PF-40-BP-2A, collected at the one- to two-foot interval, contained 33 µg/kg (ppb) heptachlor epoxide, which is less than the 103 ppb screening action level 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 SAL for this compound is 640 mg/kg (ppm), which is much higher than the level detected in the burn pit sample.

Metals. No TAL or TCLP metals were present in concentrations exceeding the SALs in any of the burn pit samples. One of the debris samples had lead above background levels but well below the SAL.

TPH. 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. As mentioned above, 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 (NMEID, 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.

3.3 PHASE III INVESTIGATION, DRAINAGES AND OTHER SURFACE SAMPLES

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. The selection of sampling locations was 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 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. In addition, 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 were 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 determine whether hazardous constituents were present. A summary of the analytical data for the Phase III investigation is provided in Appendix III. Table 3.4 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 4.1 in the FCP.

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). Screening 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 SAL.

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. The PF-40-DP sample also contained silver at a level (20900 ppm or 2.09%) above background levels and above the screening action level (400 ppm).

TABLE 3.4. PHASE III SAMPLE IDENTIFICATION NUMBERS AND DESCRIPTIONS

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

3.4 PHASE IV INVESTIGATION, AMPHITHEATER

Construction debris was removed from the detonation area (the amphitheater) 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 Phase IV investigation of the amphitheater was conducted in May 1992. Surface soil samples and core samples were collected and analyzed to determine if any residual contamination from the thermal treatment process remains in the amphitheater. Sampling locations were selected at random within the amphitheater, because the nature of the detonation process was such that all locations within the amphitheater would be equally likely to exhibit contamination, if present.

Surface soil samples were collected with disposable inert-plastic scoops to a depth of six inches at four randomly-selected locations within the amphitheater, and a field duplicate sample was collocated with one of these four samples.

Two boreholes were randomly located within a 20-foot radius of the center of the amphitheater. Borehole locations close to the center of the amphitheater were selected because downward explosive forces would have been the greatest close to the detonation. Core samples were collected from each borehole to determine if explosive forces had 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 determine whether hazardous constituents were present. A summary of the analytical data for the Phase IV investigation is provided in Appendix IV. Table 3.5 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 4.1 in the FCP.

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. Therefore, acetone is probably 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 screening 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 SALs.

TABLE 3.5

PHASE IV SAMPLE IDENTIFICATION NUMBERS AND DESCRIPTIONS

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

- 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 screening 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 SAL 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 screening 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 SALs 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 screening action level of 0.519 mg/kg (ppm), or 519 ppb.

Thallium was detected above the action level in each Phase IV sample at the amphitheater, which is also consistent with the observation from the Phase III sample PF-40-DP collected before the construction debris was removed. Measured thallium concentrations are consistently in the range of 21 to 28 ppm. This is well below the preliminary remediation goals for thallium shown in Table 2.2. The data also show clearly that thallium contamination affects only the amphitheater area, which with a diameter of about 60 ft is less than 300 m^2.

3.5 ASSESSMENT OF SITE-WIDE LEAD DATA

Figure 3.1 is a log-normal probability plot of all of the lead data (including debris samples) collected in Phases I through IV, to which a mixture distribution (about 87% "background", 13% "contaminated") has been fitted. As the Phase I through IV samples certainly do not represent a random sample of the TA-40 SDS (most were deliberately selected from areas where higher than average concentrations could be expected—the amphitheater, the burn sites, and the fill area)—the fitted distribution is probably biased upward. In particular, four of the five observations above the background range shown in Figure 2.2 were from samples of debris, debris mixed with soil, or soil collected immediately below debris.

Section 4.0 describes proposed corrective action to remove debris and surface soils that will significantly reduce the average lead level at the site. Even without this corrective action, the estimate of the mean level of contamination at the site, based on the fitted mixture distribution, is 97 ppm, with a 95% upper confidence bound of about 113 ppm. The fitted log-normal distribution suggests that less than 7% of the site (about 300 m^2) is contaminated above 500 ppm even without further corrective action.

As indicated in the brief discussion at the end of Section 2.3, human health risks associated with lead in soils are due primarily to ingestion of food grown on the site. Because the total potentially lead-contaminated area is so small and unsuited for agriculture, residual lead contamination following the corrective action proposed in the following section is expected to pose no risk to human health or to the environment.

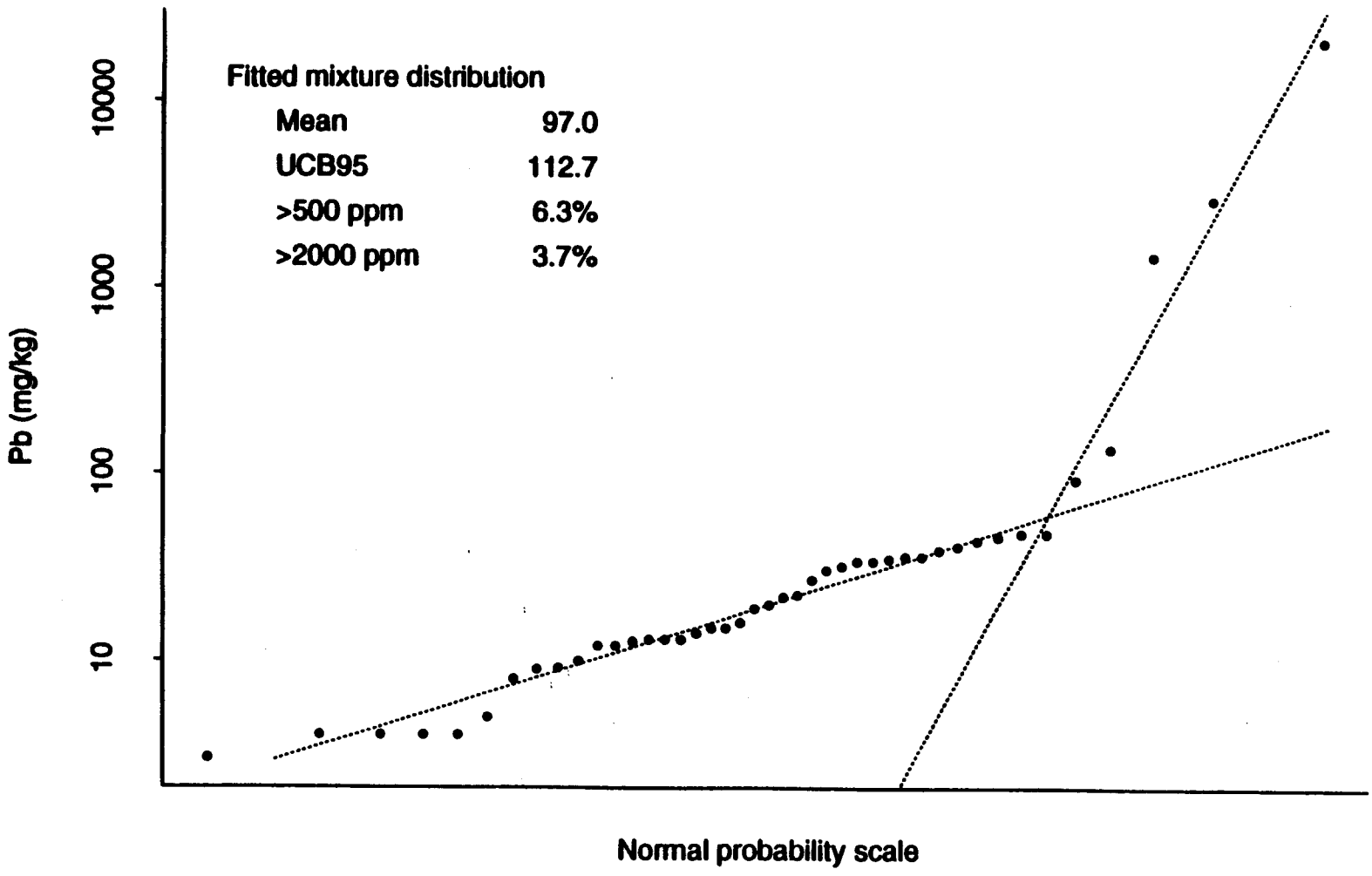


Figure 3.1. Lead Concentrations in Phase I through IV Samples

4.0 CORRECTIVE ACTION AT SURFACE BURN AREAS

The data from the Phases I through IV investigations indicate elevated levels of several hazardous constituents, including lead and antimony above SALs, in some debris samples and surface soil samples from the surface burn areas. Corrective action is proposed at the burn cage and the east burn area, to remove visible surface debris and stained soil, followed by field screening and confirmatory sampling for metals. Based on the Phase I-IV observations, this action is expected to remove most of the hazardous materials remaining at the site.

Other observations above SALs were elevated silver in the Phase III sample from the amphitheater, collected before the removal of construction debris from that area, and lead above its SAL at the fill area in one of a pair of collocated samples (PF-40-FA-5R), of which the other had only background levels. No further actions are proposed for these areas.

Total lead and antimony and TCLP lead 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, 43 ppm total antimony, and 110 mg/L TCLP lead. The respective screening action and regulatory levels for these constituents are 500 ppm, 32 ppm, and 5.0 mg/L. Lead was also 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 screening action levels of 500 ppm and 5.0 mg/L. The debris sample PF-40-BAW-1 from the west burn area contained 137 ppm total lead, below the SAL but above background levels.

The contaminated areas are small and localized. Visible debris and debris mixed with soil at the surface of these three areas will be containerized and removed for proper treatment or disposal.

As the principal contaminants of concern at the burn cage are inorganic compounds (particularly lead and antimony), energy dispersive x-ray fluorescence (EDXRF) is an acceptable field screening method. The EDXRF analyzer can provide quick and reliable assays of lead in coarse soils down to concentration levels of 15 ppm with little or no sample preparation. In addition, the instrument can detect a number of other inorganic contaminants in the same samples. (The instrument's lower detection limit for antimony is 33 ppm, which is slightly greater than the screening action level of 32 ppm.) It can be used either in-situ or as a bench instrument.

Measurements of lead, which is the most widespread contaminant of concern at the surface burn areas, will be used as the principal field indicator for determining the extent of remediation required. Field

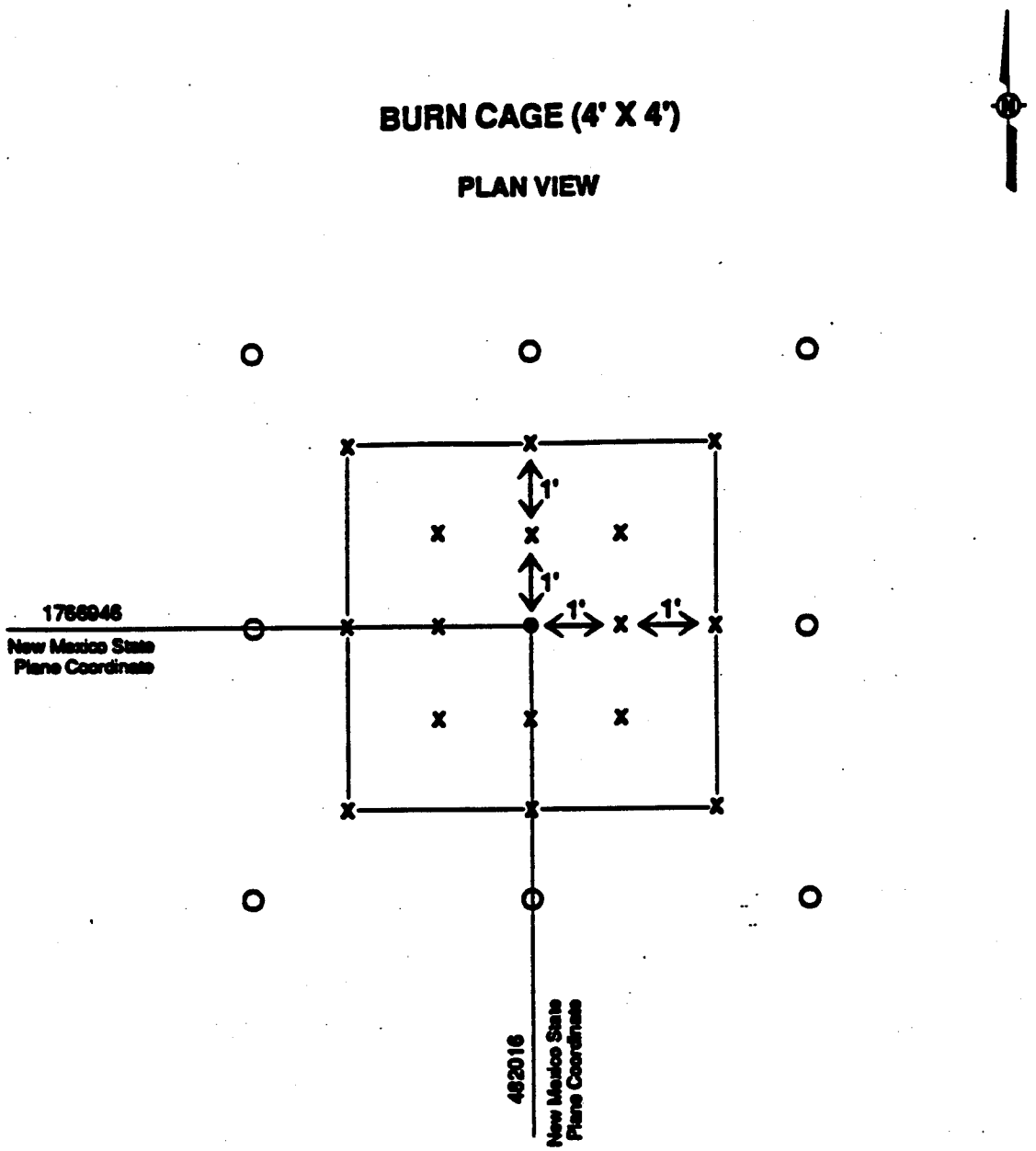
screening with the EDXRF analyzer to characterize the extent of soil contamination will be integrated with laboratory sampling to verify decontamination so that site remediation can be accomplished in a cost-effective manner. The Standard Operating Procedure (SOP) for the EDXRF analyzer, "In Situ Field Screening of Metals in Soil by Radioisotope Excited X-Ray Fluorescence", will be followed (LANL, 1992).

The burn cage site is approximately four feet by four feet in area. A grid will be established over this area and in-situ observations will be made at each grid node locations, as shown on Figure 4.1. If lead is measured above the PRG of 500 ppm at any of the burn cage perimeter locations, the sampling area will be expanded one foot beyond the edges of the burn cage (Figure 4.1). The sampling area will continue to be expanded if the need is indicated by the field screening results.

The east and west burn areas are approximately six feet by six feet each in area. Grids will be established over these areas and in-situ observations will be made at selected grid node location, as shown on Figure 4.2. If lead is measured above 500 ppm at any of the perimeter locations, the sampling area will be expanded one foot beyond the edges of the burn area (Figure 4.2). The sampling area will continue to be expanded if the need is so indicated by the field screening results.

After the surface field screening has been completed, if lead has been measured above 500 ppm, the soil and material will be excavated to a depth of six inches within the affected areas. Additional field screening measurements will then be collected at the exposed six-inch depth from the nodal locations shown on Figure 4.1 or Figure 4.2. Additional soil will be excavated as required.

When lead is not measured above 500 ppm at any of the exposed locations, one 0-6" decontamination verification sample will be collected at the six-inch depth near the location of the original Phase II core hole at the final depth where lead contamination as measured by field screening is below 500 ppm. The decontamination verification samples will be analyzed for total lead and TCLP lead, and for antimony. Decontamination verification samples will be collected with disposable inert-plastic scoops.



● ORIGINAL SAMPLE LOCATION

x PHASE VI SCREENING SAMPLE LOCATION

O POTENTIAL PHASE VI SCREENING SAMPLE LOCATIONS

Figure 4.1. Sampling Grid for Corrective Action Investigation of Burn Cage

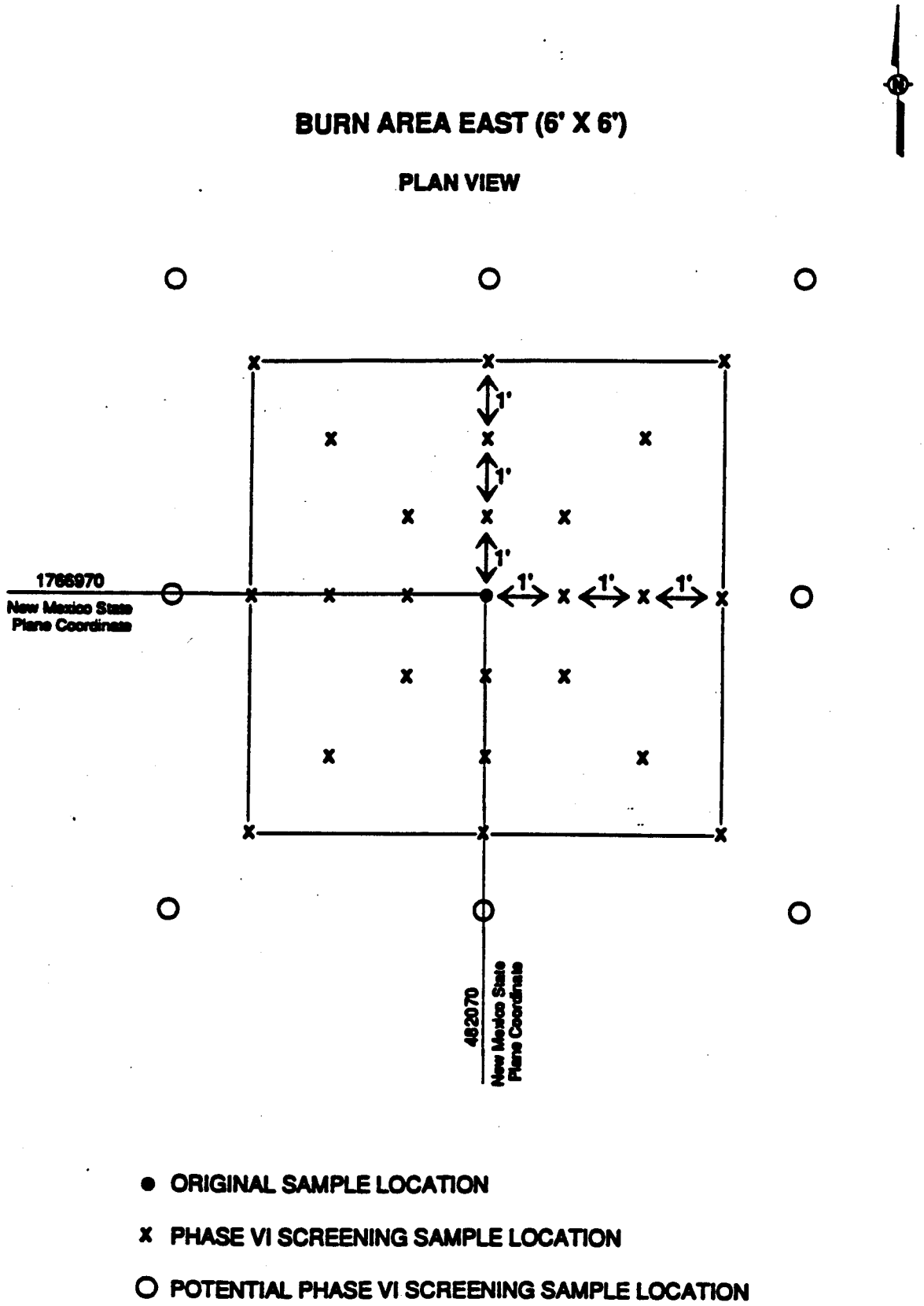


Figure 4.2. Sampling Grid for Corrective Action Investigation of Burn Area East and Burn Area West

Required excavations should 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.

5.0 SCHEDULE

If this amendment is approved, a certification of final closure for TA-40 SDS and a closure report will be submitted to NMED in early 1994. The corrective actions will be conducted in the summer of 1993. The revised schedule provided in Figure 5.1 will commence upon receipt of a notice of approval of this amendment to the FCP. The dates shown on Figure 5.1 assume that NMED approves this amendment by August 1993.

The schedule includes supplementary sampling and excavation at two sites. The schedule provided on Figure 5.1 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.

CLOSURE SCHEDULE

	Early Start	Early Finish	Duration (Days)
NMED Review of Closure Plan Amendment	5/20/93	8/20/93	90
Corrective Action at Surface Burn Areas	8/23/93	--	
Field Screening/Soil Removal	8/23/93	9/3/93	10
Dispose/Manage Excavated Waste	9/6/93	9/17/93	10
Verification Sampling	9/6/93	9/10/93	5
Laboratory Analysis	9/13/93	11/12/93	45
Assess Clean-up Verification Data	11/15/93	11/19/93	5
Restore Site	11/22/93	12/3/93	10
Closure Implementation Complete	--	12/3/93	
Prepare Closure Report and Certification	11/22/93	12/17/93	20
Submit Final Closure Report to NMED	12/20/93	1/7/94	15

Figure 5.1. TA-40 Scrap Detonation Site Revised Closure Schedule

6.0 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 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 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

	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)
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-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

COMPOUND	SAMPLE IDENTIFICATION NUMBER								
	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

	SAMPLE IDENTIFICATION NUMBER			
COMPOUND	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	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