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Remedial Investigation Work Plan Addendum 27

New River Unit (RAAP-044)

Radford Army Ammunition Plant
Radford, Virginia

Prepared for:
Radford Army Ammunition Plant

June 2008

Infrastructure, environment, facilities

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-REH

17 JUL 2008

MEMORANDUM FOR Office of Environmental Quality, Radford Army Ammunition Plant (SJMRF-OP-EQ/Mr. Jim McKenna), P.O. Box 2, Radford, VA 24143-0002

SUBJECT: Document Titled: "Draft Remedial Investigation Work Plan, Addendum 27, New River Unit (RAAP-044), Radford Army Ammunition Plant, Virginia, June 2008"

1. The U.S. Army Center for Health Promotion and Preventive Medicine reviewed the subject document on behalf of the Office of The Surgeon General pursuant to Army Regulation 200-1 (Environmental Protection and Enhancement). We appreciate the opportunity to review this work plan and have no additional comments.

2. The document was reviewed by Mr. Dennis Druck, Environmental Health Risk Assessment Program. He can be reached at DSN 584-2953, commercial (410) 436-2953 or electronic mail "dennis.druck@us.army.mil".

FOR THE COMMANDER:

JEFFREY S. KIRKPATRICK
Director, Health Risk Management

CF:
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June 30, 2008

Mr. James L. Cutler, Jr.
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 24143-0100

Subject: Draft Remedial Investigation Work Plan Addendum 27 New River Unit (RAAP-044) June 2008
Radford Army Ammunition Plant,
EPA ID# VA1 210020730

Dear Mr. Cutler:

This is to acknowledge that the subject document was sent to you on June 25, 2008. Enclosed is a copy of the transmittal email message.

Please coordinate with and provide any questions or comments to myself at (540) 639-8658, Jerry Redder of my staff (540) 639-7536 or Jim McKenna, ACO Staff (540) 639-8641.

Sincerely,

P.W. Holt, Environmental Manager
Alliant Techsystems Inc.

c: Durwood Willis
Virginia Department of Environmental Quality
P. O. Box 10009
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08-815-107
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08-815-107
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Greene, Anne

From: McKenna, Jim
Sent: Wednesday, June 25, 2008 11:03 AM
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Cc: Flint, Jeremy; Holt, Paige
Subject: Draft NRU RAAP-044 Work Plan (UNCLASSIFIED)

Importance: High

Classification: UNCLASSIFIED
Caveats: NONE

All:

Note the contractor will ship the subject document with a copy of this email to the POCs and tracking numbers below.

James McKenna 7989 6785 7817 (2 copies & cd); Richard Mendoza 7905 3287 8668 (1 copy); Tom Meyer 7989 6785 9990 (1 copy); Dennis Druck 7919 2096 6373 (1 copy); James Cutler 7989 6786 9475 (1 copy); Durwood Willis 7910 9313 4116 (1 copy); Elizabeth Lohman 7905 3289 1426 (1 copy);

Thank you for your support of the Radford Army Ammunition Plant Installation Restoration Program.

Jim McKenna

Classification: UNCLASSIFIED
Caveats: NONE

Virginia DEQ Meeting for the New River Unit
Radford AAP
June 20, 2008 Radford, VA
Draft Meeting Minutes

Attendees

Jim McKenna	Radford Army Ammunition Plant (RFAAP)
Paige Holt	ATK-RFAAP
Jim Cutler	Virginia Department of Environmental Quality (VADEQ)
Ahmet Bulbulkaya	VADEQ Risk Assessor
Chris Kalinowski	ARCADIS
Chris Day	ARCADIS

Purpose

This site walk at the RAAP-NRU was conducted to allow Jim Cutler and Ahmet Bulbulkaya of Virginia DEQ an opportunity to visit each of the six areas of concern at the NRU in preparation of their review of the recently prepared RI Work Plan and the upcoming Human Health and Ecological Risk Assessments.

Summary

After brief introductions, the participants traveled from Building 220 at the RAAP-MMA to the NRU. While touring the sites, Chris Kalinowski reviewed the proposed investigation activities with Jim Cutler and Ahmet Bulbulkaya. Chris Day focused his discussions with Ahmet on the protocols that will be followed during preparation of the human health and ecological risk assessments. The following presents a brief summary of the observations/discussion during the site walk:

- Jim Cutler appeared to be pleased with the proposed investigation strategy for each of the AOCs and did not indicate that further investigation would be required. However, Jim did express some concern over the potential for impacts to exist underneath the concrete pads at the BLA and IAA. Jim did not see the need to sample the utility vaults at the BLA that had intact concrete covers.

- In addition to the AOCs the participants viewed all existing monitoring wells at the site.

- VDEQ agreed with ARCADIS' assessment that the "delta" area at the downgradient extent of the BDDT is not a delta in the riverine/aquatic sense and that the material in this area should be treated as surface soils rather than sediment. It should be noted that this area is overgrown with a dense stand of annual/perennial grasses and forbs.

- Chris Day inquired about which protocol/approach should be used in the preparation of the human health risk assessment (HHRA). Ahmet responded that he would check with his supervisor and let us know whether we should use the standard USEPA RAGS approach or the VDEQ approach. He said that the VDEQ HHRA approach is essentially identical to the USEPA RAGS approach, with only some slight differences in few input parameters for some calculations, and generally includes an excavation worker scenario and associated trench model, in addition

to the standard scenarios generally required in RAGS type HHRAs (e.g., hypo future residential scenario and site worker scenario).

Note, upon consultation with the ARMY after the Site Walk, it was decided that the potential risks to human health should be evaluated following current USEPA RAGS as the CERCLA process is being followed at the NRU.

- When asked about which ecological risk assessment (ERA) approach VDEQ was looking for, Ahmet responded that VDEQ does not have any formal ERA guidance, but that he would expect to see an ERA that followed the USEPA 8-step process. Chris Day discussed with him the approach ARCADIS used recently at other DOD facilities (Fort Leavenworth; Lake City AAP; Fort Gordon, etc) which followed the USEPA Amended Guidance on Ecological Risk Assessments at Military Bases (USEPA 2000), and that this approach is the 8-step approach with a few adjustments/amendments to account for refinement of exposure parameters, EPCs, etc. Ahmet said he was familiar with that approach and that it would be acceptable for use at the NRU.

- Ahmet was also very amenable to discussing how to handle background metals in both the HHRA and ERA process. He took interest in the discussion about there being established background UTLs for the installation. He would be ok with screening out background metals in the COPC selection step of the HHRA and the ERA, as opposed to the standard USEPA approach of having to retain the metals thru the quantitative portion of the risk assessment and then discussing site risks in relation to background risks in the risk characterization and uncertainties section. He said that if ARCADIS would like to use the established background UTLs to screen out metals early in the screening/COPC selection process, that we could propose that and run it by him for review and approval.

- Ahmet indicated that he would be flexible on the definition of the depth interval for surface soil. Chris Day stated that ARCADIS generally uses 0 to 2 ft bgs to represent surface soil; although we have used a 0 to 1 ft bgs interval on some sites. Ahmet believed that either of those option would likely be OK.

- Chris Day and Ahmet agreed that they did not see any gross evidence of ecological stress at any of the NRU sites visited; all areas had viable habitat. The terrestrial habitat in all areas looked diverse and of high quality, and the pond at the WBG area appears to provide a robust resource and services area for wildlife.

- Chris Kalinowski provided Ahmet with a tabulated summary of the number of samples (by media) that have been collected from each AOC. Ahmet will review the table and evaluate whether additional sampling would be required to complete the risk assessments.

Action Items

1. ARCADIS to submit Draft RI Work Plan to VaDEQ for review and approval.
2. Ahmet Bulbulkaya to inquire with supervisor whether to use the standard USEPA RAGS approach or VDEQ approach for the HHRA protocol. NOTE, USEPA RAGS should be used to evaluated potential human health risks as NRU is being evaluated using the CERCLA process.
3. Jim Cutler to provide timely review of RI Work Plan in anticipation of starting field work in August 2008.

Christopher Kalinowski
Site Manager

Diane Wisbeck
Deputy Project Manager

Tim Llewellyn
Project Manager

Remedial Investigation Work Plan Addendum 27
New River Unit
RFAAP-044

Radford Army Ammunition Plant,
Radford, Virginia

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Our Ref.:
GP08RAAP.0044
Date:
June 25, 2008

DRAFT

Remedial Investigation Work Plan
Addendum 27

New River Unit
RAAP-044

Radford Army Ammunition Plant,
Radford, Virginia

June 2008

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Acronyms and Abbreviations

AEC	United States Army Environmental Center
amsl	Above Mean Sea Level
AOC	Area of Concern
BDDT	Building Debris Disposal Trench
bgs	Below Ground Surface
BLA	Bag Loading Area
CERCLA	Comprehensive Environmental Response and Compensation Liability Act
COI	Constituent of Interest
CSM	Site Conceptual Model
DQOs	Data Quality Objectives
FS	Feasibility Study
ft	Feet
GPS	Global Positioning System
HASP	Health and Safety Plan
HHRA	Human Health Risk Assessment
IAA	Igniter Assembly Area
IDM	Investigation Derived Materials
IRP	Installation Restoration Program
MCL	Maximum Contaminant Level
mg/kg	Milligrams per kilogram
MMA	Main Manufacturing Area
MWP	Master Work Plan
NAD	North American Datum
NBG	Northern Burning Ground
NFA	No Further Action
NROW	New River Ordinance Works
NRU	New River Unit
PAHs	Polynuclear Aromatic Hydrocarbons
PBC	Performance Based Contract
PCBs	Polychlorinated Biphenyls
QA	Quality Assurance
QAPA	Quality Assurance Plan Addendum
QAPP	Quality Assurance Project Plan
QC	Quality Control
RBC	Risk-Based Concentration
RFAAP	Radford Army Ammunition Plant
RI	Remedial Investigation

RY	Rail Yard
SLERA	Screening Level Ecological Risk Assessment
SOP	Standard Operating Procedure
SVOC	Semi-volatile Organic Compound
TAL	Target Analyte List
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOC	Total Organic Carbon
TOX	Total Organic Halides
tw-RBC	Time-weighted Risk Based Concentration
USACE	United States Army Corps of Engineers
UTL	Upper Tolerance Limit
VOC	Volatile Organic Compound
WBG	Western Burning Ground
XRF	X-ray fluorescence

1. Introduction

ARCADIS U.S, Inc. (ARCADIS) has been retained by the United States Army Environmental Command (AEC) to perform Installation Restoration Program (IRP) activities at the Radford Army Ammunition Plant (RFAAP). The RFAAP facility is located in the mountains of southwestern Virginia and consists of two noncontiguous units: the New River Unit (NRU) and the Main Manufacturing Area (MMA). The MMA is located approximately 5 miles northeast of the City of Radford, Virginia. The NRU is located about six miles west of the MMA, near the town of Dublin, Virginia (Figure 1-1). The IRP activities for both the RFAAP-MMA and the NRU are being conducted as part of a Performance Based Contract (PBC) awarded to ARCADIS under contract W91ZLK-05-D-0015: Task 0002. The RFAAP-NRU is managed under the Comprehensive Environmental Response and Compensation Liability Act (CERCLA).

ARCADIS has prepared this site specific Remedial Investigation (RI) Work Plan to complete the remedial investigation at the RFAAP-NRU. Previous site investigations completed at the RFAAP-NRU resulted in the identification of six Areas of Concern (AOCs) that require additional characterization and possible remediation: the Building Debris Disposal Trench (BDDT), the Bag Loading Area (BLA), the Igniter Assembly Area (IAA), the Northern Burning Ground (NBG), the Rail Yard (RY), and the Western Burning Ground (WBG). Figure 1-2 shows the layout of these areas within the RFAAP-NRU. These six AOCs encompass an area of approximately 800 acres.

This work plan incorporates by reference applicable sections of the Master Work Plan (URS, 2003) and Standard Operating Procedures (SOPs). The health and safety requirements for all fieldwork at the RFAAP-NRU are included in the Health and Safety Plan addendum (HSPA) (ARCADIS, 2008a), which has been provided under separate cover. ARCADIS has also prepared a Quality Assurance Plan Addendum (QAPA) (ARCADIS, 2008b) to the Master Work Plan, which has been attached as Appendix A.

1.1 Purpose

The purpose of this Work Plan is to facilitate the collection of the data necessary to finalize the remedial investigation of the RFAAP-NRU. A significant amount of data has been collected for the six RFAAP-NRU sites during previous phases of investigation. However, additional data points are necessary to complete the investigation and to assist in planning the remedial strategy for the site. The general objectives of this investigation are:

- To fill the remaining data gaps within the RFAAP-NRU site conceptual model (CSM), including completion of potential source area characterization and delineation, delineation of surface soil and sediment impacts (if any), and assessment of potential groundwater and surface water impacts;

- To collect the necessary information to design treatability/feasibility studies and perform technology evaluations of potential remedial alternatives for each of the RFAAP-NRU sites, if required; and

- To support the completion of human health risk assessment (HHRA), screening level ecological risk assessment (SLERA), and CERCLA compliant RI and Feasibility Study (FS) reports for the RFAAP-NRU.

In addition to the general objectives described above, the following sections summarize site-specific objectives of the remedial investigations at the six AOCs within the RFAAP-NRU.

1.1.1 Building Debris Disposal Trench Investigation Objectives

- Delineate polynuclear aromatic hydrocarbon (PAH) impacts to surface and subsurface soil in the area between the former disposal trench and the downgradient stream.

- Evaluate concentration trends within sediment and surface water in the unnamed stream downgradient of the BDDT.

1.1.2 Bag Loading Area Investigation Objectives

- Delineate metals,PAHs, and asbestos in surface soils surrounding site buildings.

- Delineate polychlorinated biphenyls (PCBs) in surface soils surrounding site buildings and a former transformer location.

- Quantify the overall extent and condition of conductive flooring material.

1.1.3 Igniter Assembly Area Investigation Objectives

- Delineate metals, PAHs, and asbestos in surface soils surrounding site buildings and sediments in nearby storm water drainage ditches.
- Delineate PCBs in surface soil.
- Quantify the overall extent and condition of conductive flooring material within the IAA.

1.1.4 Northern Burning Ground Investigation Objectives

This area has been adequately characterized and delineated; therefore, no additional investigation is proposed. A limited area of soils is impacted with metals and PCBs as a result of historical burning operations.

1.1.5 Rail Yard Investigation Objectives

- This area has been adequately characterized; therefore, no additional investigation is proposed.

1.1.6 Western Burning Ground Investigation Objectives

- Delineate the horizontal and vertical extent of lead impacts to sediments in the unnamed pond.
- Evaluate current levels of PAHs in surface water and sediments in the unnamed creek downgradient of the pond.

1.1.7 Groundwater Investigation Objectives

- Evaluate potential impacts to groundwater at the RFAAP-NRU from historic operations at the site.
- Establish naturally occurring concentrations of metals in groundwater at the RFAAP-NRU.

1.2 Report Organization

This document consists of the following sections:

- Section 1 introduces the report and discusses the objectives of the proposed investigation.
- Section 2 provides a general description of the operational history of the RFAAP-NRU; a summary of the AOCs, including site descriptions and constituents of interest (COIs); and a discussion of the geology and hydrogeology within the RFAAP-NRU.
- Section 3 summarizes the historical investigation activities conducted at the different AOCs.
- Section 4 presents the data gaps remaining and the proposed activities to address these data gaps.
- Section 5 presents the general approach to investigation the remedial investigation will take.
- Section 6 presents the QA/QC procedures.
- Section 7 presents the reporting procedures.
- Section 8 provides references cited in this report.

2. Site Background

This section provides a brief discussion of the relevant background information specific to the individual AOCs at the RFAAP-NRU, including brief summaries of the operational history and COIs at each AOC. Detailed historical information on the various AOCs and the overall geology, hydrogeology, and surface water hydrology of the RFAAP-NRU are provided in previous reports, including the Master Work Plan (URS, 2003).

2.1 Site Location and History

The RFAAP-NRU facility is located in the mountains of southwestern Virginia in the Great Valley subprovince of the Valley and Ridge Physiographic Province. The RFAAP-NRU is located approximately six miles west of the RFAAP MMA, near the town of Dublin, Virginia in Pulaski County (Figure 1-1). The RFAAP-NRU was established in 1940, and was originally known as the New River Ordinance Works (NROW). The NROW was incorporated into the RFAAP in 1945. The RFAAP-NRU facility operated as a bag manufacturing and loading plant for artillery, cannon, and mortar projectiles during World War II. Although active manufacturing activities at the RFAAP-NRU were reported to have ceased in the 1940's (after World War II), portions of the RFAAP-NRU are still utilized as storage facilities for operations at the MMA.

Six AOCs have been identified at the RFAAP-NRU: the BDDT, BLA, IAA, NBG, RY, and WBG. As depicted in Figure 1-2, these six areas are located in the western half of the RFAAP-NRU. Land surface elevations in the western half of the RFAAP-NRU range from 2,020 feet above mean sea level (ft amsl) to 2,115 ft amsl. Most overland runoff in the western RFAAP-NRU drains to an unnamed stream that runs through the southwest portion of the facility. This unnamed stream flows from west to east across the site before exiting the installation.

2.1.1 Physiography, Geology, and Hydrogeology

RFAAP is located in the Great Valley subprovince of the Valley and Ridge Physiographic Province, which is characterized by highly deformed carbonate bedrock with significant topographic relief. In addition to complex geologic structure, the carbonate formations demonstrate karst features including sinkholes, conduit networks, and epikarst bedrock surface features. In this hydrogeologic setting, groundwater flow is progressively channeled through karst features until discharge occurs at springs or other surface water bodies. Groundwater flow in the NRU is

controlled by karst features and is believed to discharge eventually to the New River. The NRU also contains at least one spring and several unnamed streams and tributaries that provide connection with area groundwater. Above the bedrock groundwater occurs in weathered parent rock material, colluvium, and alluvial deposits of varying permeability. The physiography, geology and hydrogeology for the RFAAP-NRU are described in futher detail within the Master Work Plan (URS, 2003).

2.1.2 Surface Water Hydrology

A series of small unnamed creeks provide immediate drainage within the RFAAP-NRU. One unnamed creek, which flows west to east through the southern portion of the RFAAP-NRU, provides drainage for all of the AOCs discussed in this report. This creek is also believed to serve as the groundwater discharge point for the southern portion of the RFAAP-NRU.

2.1.3 Soil Types

Detailed descriptions of the soil types that occur at the NRU are presented in the Facility Wide Background Study Report (IT,2001).

2.2 Areas of Concern

2.2.1 Building Debris Disposal Trench

The BDDT is a former ephemeral unlined natural drainage channel located in the southern portion of the RFAAP-NRU (Figure 1-2). The trench drains surface water into the unnamed stream, which flows off-site and eventually converges with the New River. The area between the downgradient extent of the drainage ditch and the unnamed stream contains surface soils eroded from the ditch and a thick grass groundcover. The trench was previously used as a disposal site for miscellaneous building debris, including concrete, wood, and 5 gallon buckets containing a substance believed to be roofing tar. The building debris and any visibly stained soil was removed from the trench in 1998, replaced with clean fill, lined with a geotextile fabric, and covered with riprap.

2.2.2 Bag Loading Area (BLA)

The BLA is located along the southwestern boundary of the RFAAP-NRU (Figure 1-2). The BLA ran two black powder bag loading production lines from 1941-1943. Thirteen

buildings once existed onsite; however, all process equipment, wooden roofs, and wooden walls have been removed from the buildings, leaving only concrete slabs and cinder block walls. The concrete slab floors in Buildings 404 through 413 (including the second story floors of Buildings 404 and 405) were covered in a conductive cement-like material containing various metals and asbestos. This conductive flooring was used to prevent the build-up of static charges in areas where energetic materials were handled. Removal of the walls and roofs of the buildings has exposed the conductive flooring to weather, causing it to degrade and break away from the underlying concrete. In some cases, the flooring has degraded into a red powder-like material and washed onto the surrounding soils. Buildings 414 through 416 did not have conductive flooring and are not considered an environmental concern at BLA. Surface water at the BLA generally drains to the unnamed stream located to the north of the BLA via overland flow and through series of drainage ditches/culverts.

2.2.3 Igniter Assembly Area (IAA)

The IAA is located in the western portion of the RFAAP-NRU (Figure 1-2). Buildings at the site were used for igniter assembly, as well as the shipping and receiving of materials related to the IAA. The main igniter assembly buildings (Buildings 8102 1 through 8102 8) and multiple outparcel buildings at the IAA had a conductive flooring material similar to the BLA. The conductive flooring was exposed to the weather when the wooden roof and walls were removed from the buildings. As a result, the conductive flooring has degraded into a red powder-like substance very similar to what has been observed at the BLA. In many areas, the degraded conductive flooring material has washed off the concrete pads onto surrounding surface soils.

2.2.4 Northern Burning Ground

The NBG is a former burning ground located in the northwestern portion of the RFAAP-NRU near Gate 20 (Figure 1-2). The NBG appears to have been in limited use as a burning ground. No structures appear on the site, and the burning operations were apparently confined to a small area at the center of the site. Surface water at the NBG flows toward a drainage ditch that runs parallel to a paved surface road to the north of the site.

2.2.5 Rail Yard

The RY is a former loading and unloading area for rail cars located in the southwestern portion of the RFAAP-NRU, east of the IAA and WBG (Figure 1-2). The RY consists of

three sets of tracks, three open transfer platforms, and one decommissioned sewer line. Two small streams run north to south through the RY and drain into the unnamed stream immediately upstream of the BDDT.

2.2.6 Western Burning Ground

The WBG is a former burning ground located south of the IAA in the southwestern portion of the RFAAP-NRU (Figure 1 2). The WBG was used to dispose of materials contaminated with explosives, as well as off-spec explosives. A four-foot high berm surrounds the former burn area on three sides. Impacted soils were removed from the burn area in 1998 and replaced with clean backfill.

An unnamed pond was constructed to the west of the former burn area in the early 1990s. The pond is fed by a natural spring located at the head (northern extent) of the pond. The pond drains through a constant level drain into an unnamed creek south of the WBG. An unlined drainage ditch located to the north of the former burn area directs storm water runoff from the WBG into the unnamed pond. An access road to the pond was constructed along the northern boundary of the former burn area. This road was reportedly built on top of a layer of ash from the burning area.

3. Summary of Historical Investigations

This section summarizes the results of historical investigations within the RFAAP-NRU. Characterization of the contaminant distribution in the six AOCs at RFAAP-NRU has been ongoing since 1997. The summary of the historical investigations presented below provides an overview of the data and information collected to date. In general, conclusions drawn from each phase of investigation are summarized here as they were previously presented in two earlier original reports (Shaw 2003; Shaw, 2007).

Detected constituent concentrations were compared to health-based screening levels. In addition, metals concentrations were compared to background 95-percentile Upper Tolerance Limits (UTLs) developed during a facility-wide background study (IT, 2001). The primary health-based screening levels used were the USEPA Region 3 Risk-Based Concentrations (RBCs) for residential and industrial soil (USEPA, 2007). Consistent with USEPA Region 3 guidance (USEPA, 1993) RBCs based on a non-cancer endpoint were reduced by a factor of 10. RBCs are standards developed by the USEPA considering human health exposure pathways and detected concentrations less than these standards are considered to represent a de minimis health risk. As the USEPA Region 3 RBC tables do not list lead, a residential health-based screening level of 400 mg/kg (USEPA, 1994) and an industrial screening level of 750 mg/kg (USEPA, 1999) were used for this constituent.

3.1 Building Debris Disposal Trench

Investigations at the BDDT have included surface water and sediment sampling events in 1997, 1998, and 2002; and soil sampling events in 1997, 1998, 2002, and 2004. With the exception of the 2004 soil-sampling event, the findings from these investigations are summarized in the September 2003 Internal Draft New River Unit Investigation Report: BDDT, BLA, IAA, NBG, RY & WBG (Shaw, 2003). The results from the 2004 soil-sampling event are summarized in the October 2007 NRU Additional Characterization Sampling & Groundwater Investigation Data Report (Shaw, 2007). A summary of the analytical results for historical soil, sediment, and surface samples are presented in Tables 3-1, 3-2, and 3-3, respectively. Site maps depicting historical sampling locations are presented in Figures 3-1 and 3-2.

3.1.1 Soil

Between 1997 and 2004, 57 surface soil and 27 subsurface soil samples were collected from 84 soil borings advanced in various areas at the BDDT. While the

analyte list varied between the various sampling events and locations, samples at the site were analyzed for TCL-VOCs, TCL-SVOCs, PAHs, and TAL-metals. Sampling activities focused on the soils below the debris in the trench and soils between the trench and the downgradient unnamed creek. Buried debris and impacted soil were removed from the trench in 1999. Rip-rap was backfilled in the trench after removal of the impacted soil. Impacted soils downgradient of the excavated trench area remain in place. The analytical data from the soil sampling events indicated the following:

- Several TAL metals were present in subsurface soil samples collected below the disposal trench and immediately downgradient of the disposal trench. Aluminum, arsenic, chromium, copper, iron, manganese, and vanadium have been detected in excess of residential RBCs; however, none of these constituents was detected in excess of background metals concentrations for the RFAAP-NRU.

- The PAH benzo(a)pyrene was detected in excess of the industrial-RBC in thirteen of the subsurface soil samples collected from the trench., Other PAHs including benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene were detected above industrial RBCs in three of the samples collected from subsurface soils in the trench. Impacted soils within the debris disposal trench were removed and backfilled with rip-rap in 1999.

- The PAH benzo(a)pyrene was detected in excess of the industrial-RBC in 16 surface soil samples from the area between the trench and downgradient unnamed creek. Other PAHs including benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene were detected in seven of the surface soil samples collected from the soil between the trench and unnamed creek. These four PAHs as well as benzo(k)fluoranthene and chrysene were also detected in excess of residential RBCs but below industrial RBCs in several other samples collected at the BDDT. No PAHs exceeding residential RBCs were found in any subsurface soil samples collected from the area between the trench and the unnamed creek.

- There were no VOCs, pesticides, herbicides, or other SVOCs detected above residential-RBCs in the soil samples collected from the BDDT.

3.1.2 Surface Water/Sediment

Thirteen collocated sediment and surface water samples were collected from the unnamed creek between 1998 and 2004. One additional sediment sample location

collected in 1998 is depicted on Figure 3-1 (Shaw, 2003) in an area adjacent to the unnamed creek downgradient of the BDDT discharge point. All sediment samples were collected from 0-0.5 ft below ground surface (bgs). The analyte list varied somewhat between the various sampling events and locations, but generally, surface water and sediment samples at the site were analyzed for TCL-VOCs, TCL-SVOCs, PAHs, TAL-metals, pesticides, and herbicides. The analytical data from the surface water and sediment sampling events indicated the following:

- Several TAL metals were present in sediment samples collected from the unnamed creek. Aluminum, arsenic, chromium, iron, manganese, and vanadium have been detected in excess of residential-RBCs, however, none was detected in excess of background metals concentrations for the RFAAP-NRU.

- The PAH benzo(a)pyrene was detected in excess of the industrial-RBC in one of the thirteen sediment samples (DTSD10) collected from the unnamed creek in a location near Guard Road. Benzo(a)pyrene was also detected below the industrial RBC but above the residential RBC in two sediment samples (DTSD1-2 and DTSD05). Other PAHs including benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene were detected above residential RBCs in sediment samples DTSD05 and DTSD10. All detections of PAHs in sediment samples were from locations in the unnamed creek downgradient of the disposal trench discharge point. No other PAHs exceeding residential RBCs were detected in any sediment samples collected from the unnamed creek.

- Benzo(a)pyrene was detected in excess of the industrial RBC in the sediment sample collected from adjacent the unnamed creek downstream of the BDDT discharge point. Other PAHs benzo(a)anthracene and benzo(b)fluoranthene were detected above residential RBCs but below industrial RBCs in this sample.

- A total of thirteen surface water samples have been collected during the course of the BDDT investigations. Eight samples have been collected from the unnamed creek downstream of the confluence with the BDDT and five samples collected from the unnamed creek upgradient of the confluence with the BDDT (Figure 3-1). Dieldrin was detected in one surface water sample upstream of the BDDT confluence, DTSW07 (0.00591 µg/l), and in one sample downstream of the BDDT confluence, DTSW05 (0.00548 µg/l). The detection of dieldrin in the upstream sample indicates that this constituent is not associated with the BDDT. The detected concentrations were above the Virginia Human Health Surface Water Standards (All Other Surface Waters), but were less than the Virginia Water

Quality Standards for chronic effects in freshwater (VDEQ, 2007). No other analytes were detected in excess of applicable surface water quality standards.

- No explosives, herbicides, or PCBs were detected in any of the surface water samples collected from the unnamed stream near the BDDT.

3.2 Bag Loading Area (BLA)

Investigations at the BLA have included soil sampling events in 1997, 1998, and 2002; a surface water and sediment-sampling event in 2002; conductive flooring assessment events in 1998 and 2002; and an asbestos and lead based paint sampling event in 2005. The findings from the 1997 through 2002 investigations are summarized in the Septermber 2003 Internal Draft New River Unit Investigation Report: BDDT, BLA, IAA, NBG, RY & WBG (Shaw, 204). A summary of the historical analytical results for the soil, sediment, and surface water samples collected at the BLA are provided in Tables 3-4, 3-5, and 3-6, respectively. The laboratory analytical results from the January 2005 asbestos and lead based paint sampling event are summarized in Table 3-7. A site map depicting historical sampling locations at the BLA is presented as Figure 3-3.

3.2.1 Soil

Approximately 27 surface soil samples and 13 subsurface soil samples were collected from the BLA between 1997 and 2002. The laboratory analyte list varied somewhat between the various sampling events and locations; but in general samples at the site have been analyzed for TCL-VOCs, TCL-SVOCs, PAHs, PCBs, TAL-metals, explosives, pesticides, and herbicides. Sampling activities focused on the soils around the buildings that contained the conductive flooring material and three former pole mounted transformer locations. The analytical data from the soil sampling events indicated the following:

- Several TAL metals were present in surface soil samples collected near the buildings with the conductive flooring material. Arsenic, iron, lead, and manganese have been detected in excess of industrial RBCs. However, of these constituents, only lead was detected in excess of background metals concentrations for the RFAAP-NRU.

- Lead was detected in excess of industrial RBCs in surface soil samples collected at SS-09 (1,970 mg/kg), BLASB03A (1,720 mg/kg), BLASS03 (3,850 mg/kg), and BLASS08 (8,790 mg/kg). Lead was detected in several additional soil sample

locations around BLA buildings at concentrations above background levels but less than applicable RBCs. Lead was not detected above residential (or industrial) RBCs within any subsurface soil samples.

- The PAHs benzo(a)anthracene, benzo(b)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene were detected in excess of industrial RBCs in surface soil sample BLASB02A (located in the central portion of the BLA). No PAHs were detected in excess of residential or industrial RBCs in the subsurface soil sample collected at this location (BLASB02B), or any other subsurface soil samples at the BLA. This indicates that any PAH impacts are confined to surface soils.

- Benzo(a)pyrene was also detected in excess of the industrial RBC (0.39 mg/kg) in surface soil samples collected at BLASB03A, BLASS05, BLASS07, BLASS09, BLASS10, and BLASS11. These samples were collected proximate to several of the buildings with the conductive flooring material.

- The PCB Aroclor-1254 was detected in two surface soil samples collected at the northeast corner of Building 405 (SS-09 and BLASS01). Sample SS-09 was collected in 1997 and had an Aroclor-1254 concentration of 8.3 mg/kg. Sample BLASS01 was collected in 2002 and had an Aroclor-1254 concentration of 3.23 mg/kg. These concentrations exceed the industrial RBC. Additional samples were collected to the north and east of SS-09 and BLASS01 that delineated impacts in those directions; however, no samples have been collected to the west.

- Aroclor-1254 was detected in excess of the industrial RBC in the surface soil sample collected at former transformer location BLATR02 (5.7 mg/kg). This PCB was also detected at former transformer location BLATR01; however, the detected concentration was below the residential RBC of 0.16 mg/kg. No other PCBs were detected at any of the former transformer sample locations.

- There were no VOCs, herbicides, pesticides, or explosives detected above residential RBCs.

3.2.2 Surface Water/Sediment

Sediment samples were collected from two dry storm water drainage culverts at the BLA; one located in the northeast corner of the BLA (BLASD01), the other located in the southwest corner of the BLA (BLASD02). Two surface water and sediment sample pairs were also collected from the unnamed stream located to the north of the BLA

(BLASD04/BLASW04 and BLASD05/BLASW05). All samples were collected during a June 2002 sampling event and analyzed for TCL-VOCs, SVOCs, PAHs, pesticides, PCBs, TAL metals, explosives, and herbicides. There were no constituents detected in any of the sediment samples that exceeded residential RBCs. Dieldrin was detected in both of the surface water samples; however, the concentrations were less than the Virginia Water Quality Standard for chronic effects in freshwater (VDEQ, 2007).

3.2.3 Conductive Flooring

A conductive flooring assessment was conducted at the BLA in 2002 to characterize the flooring material. During this event flooring samples were collected from Buildings 405, 407, and 413 (one sample per building) (Shaw, 2003). Each of the flooring samples was analyzed for TCL-VOCs, TCL-SVOCs, TCL-pesticides/PCBs, explosives, and asbestos. The analytical results indicated that the PCB Aroclor-1254 and eight metals (aluminum, arsenic, cadmium, chromium, copper, iron, manganese, and nickel) were present a concentrations exceeding residential RBCs. Of these, arsenic, copper, and lead were present at concentrations that also exceeded industrial RBCs. Asbestos was detected at low concentrations (approximately 2 percent) in the flooring samples. The general conclusion of the assessment events was that the conductive flooring material was similar in all of the buildings (Shaw, 2003).

3.2.4 Asbestos and Lead Based Paint Sampling

Shaw Environmental, Inc., completed a field sampling event at the BLA in January 2005 to re-evaluate the specific types and amount of asbestos contained in the flooring material, soil adjacent to the building foundations, and on the walls of the buildings at the IAA. The sampling event included the collection of 2 samples of deteriorated flooring, 2 samples of intact flooring, 6 surface soil samples, and 2 wipe samples of the red staining observed on the building walls. Shaw also collected one white paint chip sample from a BLA building to evaluate the paint for lead. A summary of the laboratory analytical results from this sampling event is included in Table 3-7. The results indicated that asbestos concentrations in the flooring material ranged from 10.5% in the deteriorated flooring to 20.8% in the intact flooring material. Asbestos concentrations in soil ranged from 3.2% to 14.2%. All asbestos material was identified as chrysotile. The white paint chip sample was found to contain lead at a concentration of 306 mg/kg.

3.3 Igniter Assembly Area (IAA)

Investigations at the IAA have included soil sampling events in 1997, 1998, and 2002; a sediment-sampling event in 2002; conductive flooring assessment events in 1998 and 2002 and an asbestos and lead based paint sampling event in 2005. The findings from the 1997 through 2002 investigations are summarized in the September 2003 Internal Draft New River Unit Investigation Report: BDDT, BLA, IAA, NBG, RY & WBG (Shaw, 2003). A summary of the historical analytical results for the soil and sediment samples collected at the IAA are provided in Tables 3-8 and 3-9, respectively. A summary of the analytical results from the January 2005 asbestos and lead based paint sampling event is included in Table 3-10. A site map depicting historical sampling locations at the IAA is presented as Figure 3-4.

3.3.1 Soil

Approximately 50 surface soil samples and 43 subsurface soil samples were collected from the IAA between 1997 and 2002. While the majority of the samples were collected at discrete boring locations, two of the surface soil samples (IATP1A, IATP2A), and six of the subsurface soil samples (IATP1B, IATP1C, IATP1D, IATP2B, IATP2C, and IATP2D) were collected from test pits IATP1 and IATP2. These test pits were located next to Building 8102-1 and 8102-7. The analyte list varied somewhat between the various sampling events and locations, but has included TCL-VOCs, TCL-SVOCs, PAHs, PCBs, TAL-metals, explosives, pesticides, and herbicides. Sampling activities focused on the soils around the buildings that contained the conductive flooring material and eight former pole mounted transformer locations at the IAA. The analytical data from the soil sampling events indicated the following:

- The results from the sampling events conducted in 1997 and 1998 indicated the presence of TAL metals (e.g., aluminum, arsenic, barium, cadmium, chromium, cobalt, copper, iron, lead, and zinc) at concentrations exceeding applicable residential RBCs. Chromium, copper, iron, lead and zinc were present at some locations at concentrations exceeding background UTLs. The samples were collected adjacent to several of the main igniter assembly buildings and from out parcel buildings located southeast of the main igniter assembly area (e.g. Building 504 and 505). The impacts were generally limited to surface soil and did not appear to exceed a depth of 2 ft bgs.

- Aroclor-1254 was detected at 10 mg/kg in 1998 subsurface soil sample 5043601224 collected 1-2 ft bgs adjacent to Building 504. This exceeds the

industrial soil RBC for Aroclor-1254 of 1.4 mg/kg. Aroclor-1254 was not detected in excess of the industrial (or residential) RBC in the other subsurface soil samples collected near Building 504 during the 1998 investigation (5043121224, 504312436, and 504361224). However, there were exceedances of the residential RBC in surface soil samples 504312012, 504336012, 504360012.

- Three soil borings (IASB13, IASB14, and IASB15 were completed during the 2002 investigation to complete the delineation of Aroclor-1254 impacts around Building 504. Aroclor-1254 was not detected in excess of residential soil RBCs at any of these boring locations.

- During the 2002 investigation, Aroclor-1254 was detected in surface soil sample IASS05 (located next to Building 8101) at a concentration of 12 mg/L. There were no other samples collected in this area to confirm or delineate the extent of impact.

- The PCB Aroclor-1260 was detected at a concentration of 0.40 mg/kg at one (IATR07) of the eight former transformer locations sampled in 2002. This concentration exceeded the residential RBC for Aroclor-1260 (0.32 mg/kg), but was well below the industrial RBC of 1.4 mg/kg. PCBs were not detected at any of the other transformer sample locations.

- Several TAL metals were detected in surface and subsurface soil samples collected at the IAA during the 2002 sampling event. Aluminum, arsenic, chromium, copper, iron, lead, manganese, thallium, and vanadium were detected at concentrations in excess of residential soil RBCs. Arsenic, copper, iron, lead, and manganese were also detected in excess of industrial RBCs at some locations. However, only arsenic at IASB12B (21.4L mg/kg) and IATP2A(28.8K mg/kg); copper at IATP2A (7,070 mg/kg)]; lead at IASB14A (1,480 mg/kg)]; and iron at IASB3A (52,60 mg/kg), IASB12B (77,600 mg/kg) and IASB12C (66,000 mg/kg) were detected at concentrations exceeding industrial RBCs and background metals concentrations for the RFAAP-NRU.

- Lead was detected in excess of background soil concentrations (26.8 mg/kg), but below the residential soil RBC of 400 mg/kg, in several additional surface soil samples.

- With the exception of one sample collected in 1998 (TR01A), PAHs were not detected in excess of industrial RBCs in any of the soil samples collected at the IAA. Benzo(a)anthracene (3,540 mg/kg), benzo(b)pyrene (5,240 mg/kg),

benzo(b)fluoranthene (12,590 mg/kg), dibenz(a,h)anthracene (940 mg/kg), and indeno(1,2,3-cd)pyrene (6,060 mg/kg) were detected at sample location TR01A. PAHs were not detected in an adjacent sample collected at this location (TR01B); therefore, PAHs are not considered to be of concern for this area.

- The PAHs benzo(a)anthracene (0.39 mg/kg), benzo(b)pyrene (0.35 mg/kg), benzo(b)fluoranthene (0.49 mg/kg), and indeno(1,2,3-cd)pyrene (0.29 mg/kg) were detected in excess of their residential soil RBCs in surface soil sample IASS05 (located next to Building 8101). PAHs were not detected in excess of residential RBCs in any other surface or subsurface soil samples at the IAA.

- There were no VOCs, herbicides, pesticides, or explosives detected above residential RBCs at the IAA.

3.3.2 Sediment

Nine sediment samples (IASD04 through IASD12) were collected from dry surface water drainage ditches during the 2002 site investigation. Two samples (IASD11 and IASD12) were collected from the storm water drainage swales located closest to the main igniter assembly buildings, the remaining seven samples were collected from the outfalls of surface water drainage culverts that pass under surrounding IAA roads. The sediment samples were analyzed for TCL-VOCs, SVOCs, pesticides, PCBs, TAL metals, explosives, and herbicides. VOCs, pesticides, herbicides, and explosives, where detected, were all below applicable residential RBCs.

Lead was detected at sediment sample location IASD06 (884 mg/kg) in excess of the industrial RBC (750 mg/kg), and at sample location IASD12 (643 mg/kg) in excess of the residential soil RBC (400 mg/kg). These locations both receive surface water runoff from the main igniter assembly building area. All other metals detections in sediment were less than industrial RBCs and/or background UTLs.

The PAHs benzo(a)anthracene (6.9 mg/kg), benzo(a)pyrene (5.9 mg/kg), benzo(b)fluoranthene (11 mg/kg), and indeno(1,2,3-cd)pyrene (4.2 mg/kg) were detected in excess of their industrial soil RBCs at sediment sample location IASD09. Some of these constituents were also detected a concentrations slightly in excess of residential soil RBCs at IASD05, IASD10, IASD11, and IASD12. Due to the proximity of the sediment samples to roads at the IAA, the PAH detections can likely be attributed to deteriorating asphalt rather than from the buildings.

3.3.3 Conductive Flooring

Conductive flooring assessment events were conducted at the IAA in 1998 and 2002 to characterize the flooring material. Two flooring samples were collected during separate sampling events in 1998. The 2002 assessment event was more comprehensive and included the collection of 10 flooring samples. The samples were collected from IAA Buildings, 502, 504, 509, 522, 8102-A, 8102-2, 8102-7, and an unnamed building between Buildings 522 and 529. Samples were analyzed for TCL-VOCs, TCL-SVOCs, TCL-pesticides/PCBs, explosives, and asbestos. One sample was also submitted for TCLP analysis (metals, VOCs, SVOCs, pesticides, and herbicides). The analytical results indicated that five metals (arsenic, chromium, copper, iron, and lead), one PAH (benzo(a)pyrene, and one PCB (Aroclor-1254) were present in the flooring at concentrations exceeding industrial soil RBCs. The metals, aluminum, barium, cadmium, manganese, nickel, and vanadium were also detected in the flooring samples at concentrations exceeding residential soil RBCs. VOCs, pesticides, and explosives were not detected at concentrations exceeding residential RBCs. Asbestos was detected within the samples at approximately 2-percent composition. The TCLP analysis indicated that no constituents exceeded regulatory guidelines. The general conclusion of the assessment events was that the conductive flooring material was similar in all of the buildings and that the material is not a hazardous waste (Shaw, 2003).

3.3.4 Asbestos and Lead Based Paint Sampling

Shaw Environmental, Inc., completed a field sampling event at the IAA in 2005 to re-evaluate the specific types and amount of asbestos contained in the flooring material, soil adjacent to the building foundations, and on the walls of the buildings at the IAA. The sampling event included the collection of 3 samples of deteriorated flooring, 3 samples of intact flooring, 9 surface soil samples, and 3 wipe samples of the red staining observed on the building walls. Shaw also collected 3 paint chip samples from the IAA buildings to evaluate the paint for lead. A summary of the laboratory analytical results from this sampling event is included in Table 3-10. The results indicated that asbestos concentrations in the flooring material ranged from 7.1% in the deteriorated flooring to 23.7% in the intact flooring material. Asbestos concentrations in soil ranged from 0.1% to 15.0%. All asbestos material was identified as chrysotile. The lead concentrations in the paint chip samples were found to range from 1,100 mg/kg to 49,500 mg/kg.

3.4 Northern Burning Ground

Investigations at the NBG have included soil sampling events in 1997, 1998, 1999, 2002, and 2004; a geophysical survey in 1998; and sediment sampling events in 2002 and 2004. The 2004 soil investigation included on-site screening of soils with X-Ray Fluorescence (XRF) in addition to laboratory analysis for metals. With the exception of the 2004 soil and sediment sampling activities, the findings from these investigations are summarized in the February 2004 Draft New River Unit Investigation Report: BDDT, BLA, IAA, NBG, RY & WBG (Shaw, 204). The results from the 2004 sampling events are summarized in the October 2007 NRU Additional Characterization Sampling & Groundwater Investigation Data Report (Shaw, 2007). A summary of the analytical results for historical soil and sediment samples are presented in Tables 3-11 and 3-12, respectively. Site maps depicting historical sampling locations at the NBG are presented in Figures 3-5 and 3-6.

3.4.1 Soil

Between 1997 and 2004, approximately 92 soil samples (47 surface soil samples and 45 subsurface soil samples) were collected at the NBG and submitted for laboratory analysis to delineate the extent of impacts associated with the former burning ground operations. The 2004 sampling event also included the collection of 291 surface soil samples for field screening (lead) to further assist in the delineation efforts. Following is a brief summary of the observations from the historical investigation activities:

- Lead and chromium are the primary COIs for the NBG.
  - Lead was detected in excess of the industrial soil RBC (750 mg/kg) in 12 surface soil samples and 2 subsurface soil samples. Lead was detected at concentrations up to 111,000 mg/kg in surface soil (NBGSB22A) and 903 mg/kg in subsurface soil (NBGSB11C).
  - Chromium was detected in excess of its industrial RBC (306.6 mg/kg) in 8 surface soil samples and 1 subsurface soil sample. Chromium was detected at concentrations up to 25,700 mg/kg in surface soil (NBGSB11A) and 352 mg/kg in subsurface soil (NBGSB21C).
  - The lead and chromium exceedances were detected in the same samples and were confined to the main burn area.
  - While lead and chromium were detected in a limited number of subsurface soil samples, the impacts generally appear to be confined to surface soils (0-0.5 ft bgs).

- Aroclor-1254 was detected above the industrial RBC (1.4 mg/kg) in surface soil at sample locations NBGSB11A (3.4 mg/kg), NBGSB12A (2.5 mg/kg) , NBG13A (3.4 mg/kg), and NBGSB22A (4.6 mg/kg). The impacts appear to be limited to surface soil (0-0.5 ft bgs) because Aroclor-1254 was not detected in subsurface soil samples collected at these four locations. The impacted soils are located in the main burn area and coincide with lead impacts.

- TCLP analysis conducted on soil samples during the 1999 sampling event indicated that lead was present in three samples in excess of the TCLP regulatory limit of 5,000 µg/l.

- The XRF field screening confirmed the findings of previous investigations that the metals impacts are generally confined to the former burn area.

- Dioxins/furans, explosives, herbicides, pesticides, PAHs, and VOCs were not detected in soil at concentrations exceeding residential RBCs.

3.4.2 Sediment

Four sediment samples have been collected from the dry drainage ditch located to the north of the NBG, one in 2002 and three in 2004 (Shaw, 2003; Shaw, 2007). The 2002 sample (NBGSD01) was collected from the outfall of the culvert that flows underneath the paved road (Guard Road) to the north of the site. The three 2004 sediment samples (NBGSD02, NBGSD03, and NBGSD04) were collected from the portion of the ditch located between the NBG and the road. Following is a brief summary of the observations from these investigations.

- NBGSD01 contained benzo(a)pyrene (0.21mg/kg) and benzo(b)fluoranthene (0.31 mg/kg) at concentrations above their respective residential RBCs of 0.022 mg/kg and 0.22 mg/kg (but below industrial RBCs). These detections can likely be attributed to degrading asphalt from the paved road.

- Several metals, including aluminum, arsenic, chromium, iron, manganese, and vanadium were detected in NBGSD01 at concentrations above residential RBCs; however, all of the detected concentrations were below background concentrations for the RFAAP-NRU. Lead was also detected at NBGSD01 (159 mg/kg) at a concentration exceeding background concentrations, but below residential RBCs.

- Lead was detected at concentrations exceeding the industrial RBC (750 mg/kg) at sample locations NBGSD03 (3,500 mg/kg) and NBGSD04 (2,200 mg/kg). Chromium was also detected at NBGSD03 (297 mg/kg) at a concentration exceeding its industrial RBC (306 mg/kg).

- No pesticides, herbicides, explosives, PCBs, or dioxins/furans were detected above applicable residential RBCs.

3.5 Rail Yard (RY)

Investigations at the RY have included soil sampling events in 1997, 1998, 1999, and 2002; sewer sludge sampling events in 1997 and 1998; and surface water and sediment sampling events in 2002. The findings from these investigations are summarized in the February 2004 Draft New River Unit Investigation Report: BDDT, BLA, IAA, NBG, RY & WBG (Shaw, 204). A summary of the analytical results for historical soil, sediment, and surface water samples are presented in Tables 3-13, 3-14, and 3-15, respectively. A site map depicting historical sampling locations at the RY is presented in Figure 3-7.

3.5.1 Soil

Approximately 29 surface soil samples and 15 subsurface soil samples were collected from the RY between 1997 and 2002 for the purpose of characterizing the site and identifying potential impacts to the environment from historical operations. The data from the historical investigations appear to indicate that there are no significant areas of environmental concern at the RY. Following is a brief summary of the historical soil data:

- Several TAL metals (e.g., aluminum, arsenic, chromium, iron, manganese, thallium, and vanadium) were detected at concentrations exceeding residential RBCs; arsenic, and iron were also detected in several samples at concentrations exceeding industrial RBCs. However, none of the detected metals exceeded both residential RBCs and background metals concentrations for the RFAAP-NRU.

- Aroclor-1254 was detected at a concentration of 1.7 mg/kg in one surface soil sample (SS-08) collected in next to a transfer platform 1997. This detection exceeded the industrial RBC of 1.4 mg/kg. A second sample collected at this location in 1998 (SS-08a) indicated an Aroclor-1254 concentration of 1.0 mg/kg, which exceeds the residential RBC of 0.16 mg/kg, but is less than the industrial

RBC. A third sample collected at this location in 2002 (RYSS03) had an Aroclor-1254 concentration of 0.37 mg/kg, which confirms that the Aroclor-1254 concentration in this area is below the industrial RBC.

- Three surface soil samples (RYTR01, RYTR02, and RYTR03) were collected from the locations of former pole mounted transformers during the 2002 investigation. The analytical results indicated that one PCB (Aroclor-1254) was detected at sample location RYTR02 at a concentration of 0.22 mg/kg. This concentration exceeds the residential RBC for Aroclor-1254 of 0.16 mg/kg, but is an order of magnitude less than the industrial RBC. No PCBs were detected at the other transformer sample locations.

- During the 2002 sampling event, Aroclor-1254 was also detected at sample location RYSS07 at 1.2 mg/kg. This concentration exceeds the residential RBC but is less than the industrial RBC.

- The PAH benzo(a)pyrene was detected during the 2002 investigation at sample location RYSS07 at a concentration of 0.55 mg/kg using an SVOC analytical method (USEPA Method 8270); however, a separate analysis conducted on this sample using a PAH specific, low-level USEPA Method 8270 analysis indicated that the concentration of benzo(a) pyrene was 0.019 mg/kg (which is below the residential RBC of 0.022 mg/kg).

- Benzo(a)pyrene was detected in excess of the industrial RBC of 0.39 mg/kg in one soil sample collected in 1998 (TR-02A). The detected benzo(a)pyrene concentration (0.40J mg/kg) was qualified by the laboratory as estimated, and benzo(a)pyrene was not present in another sample collected at this location (TR02-C)

- No other PAHs were detected in excess of industrial screening levels at the RY.

- The pesticide dieldrin (0.27 mg/kg) and SVOC pentachlorophenol (830 mg/kg) were detected in excess of their respective industrial RBCs in one sample collected at a former transformer location (TR-02C) in 1998. The industrial RBC for dieldrin is 0.18 mg/kg, and the industrial RBC for pentachlorophenol is 24 mg/kg. These constituents, which are typically associated with wood preservatives and pesticides used on utility poles, were not present in a second sample collected at this location TR02A or within any other soil samples at the RY. Therefore,

dieldrin and pentachlorophenol are not considered an environmental concern for this site.

- No explosives, herbicides, or VOCs have been detected in soil in excess of residential (or industrial) RBCs.

3.5.2 Sediment and Sludge

A total of 14 sediment samples were collected from the RY between 1998 and 2002 from the various on-site storm water drainage ditches, downgradient stream, and storm water retention pond. The samples were analyzed for explosives, herbicides, pesticides, PAHs, PCBs, VOCs, SVOCs, and metals. The analytical data indicated that explosives, herbicides, pesticides, PCBs, and VOCs were not present at concentrations exceeding residential or industrial RBCs.

The PAH benzo(a)pyrene was detected at five sample locations (RYSD01, RYSD03, RYSD06, RYSD07, RYSD10) at concentrations exceeding the residential RBC of 0.022 mg/kg; however, the detected concentrations were low and were qualified by the laboratory as estimated. No other PAHs were detected in excess of residential RBCs. The PAHs that were detected at the RY could likely be attributed to degrading asphalt from the paved roads that surround the RY.

The metals aluminum, arsenic, chromium, iron, manganese, and vanadium were detected in excess of residential RBCs at most sample locations. The detected concentrations of iron (79,600 mg/kg) and vanadium (110 mg/kg) at RYSD08, and arsenic at all sample locations also exceeded industrial RBC. However, the reported concentrations of metals were below, or in the range of, background levels at the site; therefore it is unlikely that sediments have been impacted by the RY.

In addition to the sediment sampling activities, three sludge samples (SL05, SL08, and SL108) were collected from the RY sewer system between 1997 and 1998. The analytical data from these samples indicated that several metals (e.g. aluminum, arsenic, chromium, cobalt, iron, manganese, and vanadium) were present at concentrations exceeding residential RBCs. The detected concentrations of arsenic and iron, also exceeded industrial RBCs, but like the sediment data, the concentrations were similar to those observed in background soils. The PCB Aroclor-1254 was detected in one sludge sample (SL-08) at a concentration of 0.22 mg/kg, and the PAH benzo(a)pyrene was detected in sample SL05 at a concentration of 0.070J. These

concentrations exceeded the respective residential RBCs for these constituents, but were an order of magnitude below the industrial RBCs.

3.5.3 Surface Water

A total of eight surface water samples have been collected during the course of the RY RI activities, including seven surface water samples during the 2002 investigation. The 2002 samples were collected from the spring located downgradient of the RY (RYSW02), the storm water retention pond (RYSW03 and RYSW04), the downgradient unnamed streams (RYSW05, RYSW12, and RYSW13), and from ponded water near one of the RY transfer platforms (RYSW15). The pesticide dieldrin was detected in two samples collected RYSW12 (0.00719J µg/L) and RYSW13 (0.0065µg/L); however, the detected concentrations were less than the Virginia Water Quality Standards for chronic effects in freshwater. Low levels of dieldrin were detected in other sample collected from this stream; including a sample where the stream flows on to the RFAAP-NRU. 4,4'-DDT was also detected at sample location RYSW13 (0.01J µg/L); however, this detection was qualified by the laboratory as estimated. No other surface water samples at the RY contained 4,4'DDT; therefore, it is presumed that this detection is not associated with the RY. No other analytes were detected in excess of applicable surface water quality standards.

3.6 Western Burning Ground (WBG)

Investigations at the WBG have included soil, surface water, and sediment sampling events in 1997, 1998, 1999, 2002, and 2004; and a fish tissue/bioaccumulation study in 2004. The findings from the 1997 through 2002 investigation activities are summarized in the September 2003 Internal Draft New River Unit Investigation Report: BDDT, BLA, IAA, NBG, RY & WBG (Shaw, 2003). The results from the 2004 activities are summarized in the October 2007 NRU Additional Characterization Sampling & Groundwater Investigation Data Report (Shaw, 2007). A summary of the analytical results for historical soil, sediment, and surface water samples are presented in Tables 3-16, 3-17, and 3-18, respectively. Site maps depicting historical sampling locations at the WBG are presented in Figures 3-8 and 3-9.

3.6.1 Soil

Between 1997 and 2004, 102 surface and subsurface soil samples were collected from 53 soil borings advanced in various areas at the WBG. Additionally in 1999, 19 test pits were excavated from the burn area, 43 samples were collected from the bottoms

of the test pits, and clean fill was used to backfill the pits. The analyte list varied somewhat between the various sampling events and locations, but in general, samples at the site have been analyzed for TCL-VOCs, TCL-SVOCs, PAHs, PCBs, TAL-metals, explosives, pesticides, dioxins and herbicides. Sampling activities focused on the soils around the burn pit and associated berm, the dirt road, and areas between the burn pit and the pond. The analytical data from the soil sampling events indicated the following:

- Several TAL metals were present in surface and subsurface soil samples collected near the burn area and dirt road leading southwest from the burn area. Aluminum, antimony, arsenic, chromium, copper, iron, lead, manganese, and vanadium have been detected in excess of industrial RBCs. However, of these constituents, lead and arsenic were the only COIs detected a concentrations in excess of both the industrial RBCs and background UTLs. Copper was detected above residential-RBCs and background concentrations in two samples (WBGSB1A and WBGSB3A) and zinc was detected above residential-RBCs and background concentrations in two samples (WBGSB2A and WBGSB3A). Additionally, in sample WBGSB22B, antimony and chromium were detected above residential-RBCs and background concentrations, and arsenic and iron were detected above industrial-RBCs and background concentrations. No other metals were detected at concentrations significantly above background concentrations.

- Lead was detected in excess of industrial RBCs in four surface soil samples collected in the burn area (WBGSB1A, WBGSB2A, WBGSB3A, and WBGSB4A) and in one sub-surface soil sample collected from the dirt road (WBGSB22B).

- Lead was detected in excess of industrial RBCs in only one of the test pit soil samples (WBGTP1B2) collected from approximately 3.5 ft bgs.

- TCLP metals analysis was performed on 20 surface soil samples collected at the WBG in 1999. TCLP leaching standards were not exceeded in any of the samples.

- The PAH benzo(b)pyrene was detected in excess of the industrial RBC in one surface soil sample collected in the burn area (WBGSB24A), and in two surface soil samples from the drainage ditch northwest of the burn area (WBGSB25A and WBGSB27A). No PAHs were detected in excess of residential or industrial RBCs in the subsurface soil sample collected at these locations, or any other surface of subsurface soil sample at the BLA.

- Aroclor-1254 was detected at a concentration below the industrial RBC but above the residential RBC of 0.16 mg/kg in one subsurface soil sample collected from a depth of 2 to 4 ft bgs at the dirt access road location WBGSB22B (0.87 mg/kg). No other PCBs were detected at any other sample locations.

- There were no VOCs, herbicides, pesticides, or explosives detected above residential RBCs.

- In 2004, 55 surface and 26 subsurface soil samples were collected for XRF screening to delineate the extent of lead impacts at the WBG (Shaw, 2007). The 21 surface soil and 10 subsurface soil samples as described above were collected at selected XRF locations for laboratory analysis as confirmatory samples. Laboratory confirmation results generally correlated with XRF values with the exception of six samples that had more than approximately 10-20 percent variance from the XRF concentrations. The XRF screening data indicated that lead was present a concentrations exceeding residential screening levels (400 mg/kg) in approximately 5 subsurface soil sample locations collected underneath the site access road. Screening results for soil samples collected north and south of the access road indicated lead concentrations below the residential RBC.

3.6.2 Surface Water/Sediment

Two sediment samples were collected from the pond in 1997. A total of 15 surface water and sediment sample pairs were collected from the pond and surrounding streams between 1998 and 2002. In 2004, 14 sediment samples were collected from the pond for XRF screening and laboratory confirmation samples were collected from 10 of these locations. Sediment samples were collected from 0-0.5 ft bgs. The analyte list varied somewhat between the various sampling events and locations, but generally, surface water and sediment samples at the site have been analyzed for TCL-VOCs, TCL-SVOCs, PAHs, TAL-metals, explosives, pesticides, dioxins and herbicides. The analytical data from the surface water and sediment sampling events indicated the following:

- Several TAL metals were present in sediment samples collected from the pond and nearby streams. Aluminum, arsenic, chromium, iron, lead, manganese, and vanadium have been detected in excess of industrial RBCs. Of these metals only arsenic at WBGSD13 (30.4 mg/kg); chromium at WBGSD10 (15,400 mg/kg); iron at WBGSD13 (293,000 mg/kg); and lead at WBGSD5-2 (899 mg/kg) and

WBGSD10 (109,000 mg/kg) were detected at concentrations greater than both the industrial RBCs and background UTLs.

- 14 sediment samples from the unnamed pond were collected for XRF screening to help delineate lead impacts in sediments in the pond near the access road.

- Ten sediment samples were collected at selected XRF locations for confirmatory laboratory analysis. Two samples (WBGSD05-2 and WBGSD10) collected from the northern portion of the pond, near the access road, contained lead at concentrations exceeding industrial-RBCs. No other samples contained lead above industrial RBCs; however, one sediment sample (WBGSD17) collected from the northern portion of the pond contained lead at concentrations exceeding the residential-RBC. Lead impacts in the pond were generally defined by these sample results.

- One sediment sample (WBGSD09) collected from the unnamed stream downgradient of the pond, near the railroad tracks, contained three PAH's exceeding industrial RBCs [benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene], and one exceeding the residential-RBC [indeno(1,2,3-cd)pyrene]. No other samples contained PAHs above industrial RBCs; however, two sediment samples collected from the upper arm of the pond (SD-01 and WBGSD07) contained benzo(b)pyrene at concentrations exceeding the residential RBC.

- A total of fifteen surface water samples have been collected during the course of the WBG investigations. Six samples have been collected from the unnamed pond, three additional samples from the upper arm of the unnamed pond near Wiggins Spring, three samples collected from the downstream unnamed creek, and three samples collected from remote ponded water features near the unnamed pond (Figure 3-9). Dieldrin was detected in one surface water sample WBGSW08 (0.00521 µg/l) collected from the unnamed creek and in two samples, WBGSW13 (0.00358 µg/l) and WBGSW14 (0.00901 µg/l) collected from ponded water in the vicinity of the unnamed creek. The detected concentrations were above the Virginia Human Health Surface Water Standards (All Other Surface Waters), but were less than the Virginia Water Quality Standards for chronic effects in freshwater. No other analytes were detected in excess of applicable surface water quality standards.

3.6.3 Fish Tissue

Seven bluegill and one white sucker were collected for whole body analysis and seven bluegill and one common carp were collected for fillet analysis in 2004 (Shaw, 2007). The tissue samples were analyzed for total lipids, TAL metals, and PCBs. The tissue samples indicated that PCBs were not detected in any of the samples, and metal concentrations appeared to be within natural background concentrations.

3.7 Groundwater

In order to investigate potential impacts to groundwater at the facility, a groundwater-sampling program was instituted at the RFAAP-NRU in 2007 (Shaw, 2007). This program included the installation and sampling of eleven monitoring wells within the western portion of the RFAA-NRU (Figure 3-10). Four monitoring wells were installed around the perimeter, and downgradient, of the Igniter Assembly Area; two monitoring wells were installed downgradient of the Bag Loading Area; two were installed at the Northern Burning Ground; and three were installed at the Western Burning Ground. Although groundwater is generally encountered in the bedrock, monitoring wells IAAMW-01, IAAMW-02, and IAAMW-03 were installed in the overburden. The remaining wells were installed in bedrock. A table presenting the monitoring well construction details is presented as Table 3-19. Additional details on the 2007 monitoring well installation and sampling activities are presented in the NRU Additional Characterization Sampling & Groundwater Investigation Data Report (Shaw, 2007).

Groundwater samples collected from the monitoring wells during the 2007 event were analyzed for VOCs, SVOCs, PAHs, PCBs, pesticides, herbicides, explosives, dioxins/furans, metals, perchlorate, total organic halides (TOX), and total organic carbon (TOC). The laboratory analytical results are summarized in Table 3-20. VOCs, SVOCs, PAHs, PCBs, pesticides, herbicides, explosives, and perchlorate were not detected in any of the samples at concentrations exceeding applicable USEPA Federal Maximum Contaminant Levels (MCLs) (USEPA, 2006) or the USEPA Region III RBCs.

Arsenic, beryllium, chromium and lead were detected in the groundwater sample collected from IAAMW-01 at concentrations greater than the MCLs. However, this well is a shallow well that was installed in the overburden. During the sampling event, it was noted that the well was a slow producer and insufficient groundwater could be recovered to collect the volume required to analyze for the full analytical suite. Although groundwater sampling parameters were not reported (Shaw, 2007), it is likely that the metals detected are associated with particulates in the sample due to the lack

of groundwater. Lead was also detected in the groundwater sample collected from WBGMW-01 at a concentration (34.3 µg/L) greater than the MCL (15 µg/L). Aluminum, iron, and manganese were also detected at concentrations greater than the secondary MCLs; however, the concentrations may be within naturally occurring levels for this geological formation.

The dioxin 2,3,7,8-TCDD was detected in three groundwater samples (NGBMW-01, BLAMW-02 and IAAMW-04) at concentrations greater than the USEPA Region 3 tap water RBC (0.00045 µg/L). It should be noted that 2,3,7,8-TCDD was not detected in the duplicate groundwater sample collected at NGBMW-01. In addition, while TCDD was not detected in the rinse blank, 19 other dioxin compounds were detected, indicating a potential cross contamination issue associated with the sampling or laboratory equipment. Lastly, the low-level concentrations of 2,3,7,8-TCDD were all detected below the reporting limit and were qualified as estimated.

4. Data Gaps and Proposed RI Sampling Plan

The purpose of this section is to summarize the data gaps and to present the proposed sampling plan required to fill these identified data gaps. A significant amount of characterization has been performed to date, and therefore only limited specific data gaps remain for the areas in the RFAAP-NRU. The overall objective of these data collection activities is to complete to the extent practical the characterization of the RFAAP-NRU and to gather the necessary information to support the development of an RI Report, Risk Assessment, and evaluation and selection of remedial technologies to address the areas of concern.

Data will be collected that will enable the Army to quantify the extent of contamination to both industrial and residential standards. The current, and most likely future, use of the RFAAP-NRU is military/industrial. Accordingly, consistent with CERCLA, the remediation goals will be based on military/industrial land use scenarios. However, life-cycle costs will also be evaluated during the feasibility study process and compared against clean closure (i.e., remediation to residential standards). Should clean closure be financially advantageous to the Army in the long term, then clean closure may be recommended on a case-by-case basis.

A dynamic approach has been developed for the delineation activities proposed in this Work Plan. The dynamic investigation approach presented herein streamlines the delineation process by field screening data and quick-turn laboratory analytical results to dictate the need for, and placement of, additional samples to complete the delineation process. This approach provides the opportunity to complete the final delineation activities for the AOCs in a single remaining investigation, rather than in sequential steps which could likely delay implementation of future corrective measures.

4.1 Building Debris Disposal Trench (BDDT)

4.1.1 Data Gaps

The majority of the remedial investigation work at the BDDT has been completed during previous phases of investigation, including evaluation of impacts to surface and subsurface soil, creek sediments and creek surface water. The following sections provide further details on remaining data gaps at the BDDT.

4.1.1.1 Soils

PAHs and TAL metals have been detected in excess of residential and industrial RBCs in soil at the BDDT; however, metal concentrations were within naturally occurring background levels. Previous investigations have identified PAH impacts in subsurface soil below the disposal trench and in adjacent areas downgradient of the trench. PAH impacts were also identified in surface soils between the disposal trench and the downgradient unnamed creek. PAH impacted soils within the trench were excavated during a 1999 removal action that also included the removal of the building debris material; therefore, the remaining PAH impacts in soil are limited to the area between the disposal trench and the unnamed creek. Previous sampling efforts, however, have not fully delineated the vertical extent of impacts adjacent to the former disposal trench and the lateral extent of impacts in the area between the disposal trench and the unnamed creek. Specifically, the data gaps that exist include:

- Vertical extent of PAH impacts in subsurface soils in the area immediately downgradient of the disposal trench.

- Lateral extent of PAH impacts in surface soils between the disposal trench and the unnamed creek.

4.1.1.2 Sediments

PAHs and TAL metals have been detected in excess of residential and industrial RBCs in sediment from the unnamed creek at the BDDT; however, metals concentrations were within naturally occurring background levels. PAHs were detected in excess of residential or industrial RBCs in two of the three sediment sample locations downgradient of the BDDT. Sediment samples collected from three locations in the creek, upgradient of the confluence with the BDDT did not contain PAHs. The data gaps that exist in the creek sediments at the BDDT include:

- Evaluation of PAH concentration trends within sediment in the unnamed creek downstream of the confluence with the BDDT.

4.1.1.3 Surface Water

TAL metals, VOCs, SVOCs, and pesticides have been detected in surface water samples from the unnamed creek in locations upstream and downstream of the confluence with the BDDT. However, all constituents were detected at concentrations

below the Virginia Water Quality Standards for chronic effects in freshwater and do not appear to be related to activities at the BDDT. The remaining data gaps that exist in the creek surface water at the BDDT include:

- Evaluation of current surface water conditions in the unnamed creek downstream of the confluence with the BDDT.

4.1.2 Proposed Activities

The following activities are proposed to complete the remedial investigation activities at the BDDT:

- ARCADIS will advance two hand auger borings in the area downgradient and adjacent to the former disposal trench for collection of subsurface soil samples from depths of 2-3 ft bgs, 3-4 ft bgs, and 4-5 ft bgs. Samples from 2-3 ft bgs will be analyzed for PAHs by USEPA Method 8270C SIM and the deeper samples will be placed on hold pending initial results. The locations of the two proposed borings (DTSB-83 and DTSB-84) are depicted in Figure 4-1. These samples are intended to define the vertical extent of PAH impacts to subsurface soil within the area immediately downgradient of the trench.

- ARCADIS will advance six hand auger borings approximately 10 feet away from the impacted previous sample locations or apparent outer edges of the delta shaped area downgradient of the BDDT. Surface soil samples will be collected from 0-0.5 ft bgs in each boring and sent to a laboratory for analysis of PAHs by USEPA Method 8270C SIM. The samples will be analyzed with a 48-hour turn-around time to provide rapid results and allow sampling adjustments to be made at the time of the field event. The locations of the six proposed initial borings (DTSB-85 through DTSB-90) are depicted in Figure 4-1. These samples are intended to establish the outer perimeter of PAH impacts at the delta. If PAH impacts above residential RBCs are detected in any sample, an additional sample will be collected from an area approximately 5 to 10 ft from the initial sample in a direction away from the impacted area. The collection of these additional samples are intended to refine the PAH delineation efforts at the trench delta and enable risk assessment and feasibility studies to be completed.

- ARCADIS will collect sediment and surface water sample pairs from the unnamed creek downgradient of the BDDT. The samples will be collected from the three downstream sample locations included in the 2002 BDDT investigation (DTSD05,

DTSD06, and DTSD10). The sediment and surface water samples will be analyzed for TCL-PAHs and the data will be utilized to evaluate concentration trends within the stream to determine the potential for on-going impacts to the stream from the BDDT soils. The data will also be used to assist in the HHRA and SLERA that will be presented in the RI. The locations of the proposed samples are depicted on Figure 4 1.

A summary of the proposed sampling program for the BDDT is presented in Table 4 1.

4.2 Bag Loading Area (BLA)

4.2.1 Data gaps

4.2.1.1 Conductive Flooring

Based on the results of previous investigations at the site, the degraded conductive flooring in the various BLA buildings has been identified as the source of metals and asbestos impacts to surrounding surface soils. A 2002 assessment of the conductive flooring material indicated that the degraded flooring contained elevated levels of several TAL metals, asbestos, PAHs, and PCBs. TCLP analyses have also been completed. As such, the conductive flooring material has been well characterized. However, the following information will need to be collected to assist in evaluating remedial alternatives for the conductive flooring material:

- A complete understanding of the number, location, size, and condition of the site buildings that contain the conductive flooring material.

4.2.1.2 Soils and Sediments

TAL metals, PAHs, and PCBs have been detected in excess of industrial RBCs in soils at the BLA. While some of the metals detections may be related to naturally occurring background levels, previous sampling events have confirmed that surface soils near many site buildings may have been impacted by degraded conductive flooring material. The previous investigations have indicated that the impacts are generally confined to surface soil (0 – 0.5 ft bgs) and that the contaminants have fairly low mobility (i.e. concentrations decrease rapidly with depth or distance from the structures). The degraded conductive flooring material that has impacted the soil exhibits a dark red color and based on visual observations of the site, the impacts to surface soil generally appear to be confined to the areas in the immediate vicinity of the buildings. However,

previous sampling efforts have not delineated the extent of impacts. Specifically, the data gaps that exist include:

- Lateral extent of metals and asbestos impacts surrounding buildings constructed with conductive flooring.

- Lateral extent of PAH impacts in surface soil around the buildings constructed with conductive flooring and in the central portion of the BLA.

- Lateral and vertical delineation of Aroclor-1254 in soil at a former transformer location to the west of Building 416 (sample location BLATR02).

- Lateral and vertical delineation of Aroclor-1254 in soil north of Building 405 (sample location BLASS01). All other PCB detections at the site appear to have been delineated to residential RBCs.

- Characterization of potential impacts within underground utility vaults (sediment and surface water) located adjacent to BLA buildings.

4.2.2 Proposed Activities

The following activities are proposed to complete the remedial investigation activities at the BLA:

- A complete inventory of all site buildings to identify the locations and the total footprint of conductive flooring material at the site. This data will be used to evaluate, and develop feasibility level costs for, potential remedial alternatives for the material.

- Identify the extent of metals and asbestos impacts to surface soils (0.5 ft bgs). As lead is known to be a major component of the flooring material, XRF field screening of surface soils will be used to define areas where impacts may be present. Surface soil samples will collected around the perimeter of each building identified with conductive flooring. The samples will be collected at a spacing of 1 ft, 5 ft, and 10 ft from the building footprint on approximately 20-ft centers. The exact sample locations will be selected in the field and will be biased towards preferential flow paths and areas where there are visual signs of impact (i.e., red staining from degraded flooring material). Based on the results of the XRF screening, a subset of samples (approximately 10-percent of field-screened

samples) will be selected for laboratory analysis of TAL Metals by USEPA Method 6010, PAHs by USEPA Method 8270 and asbestos by WHAT METHOD. Five samples will also be submitted for TCLP metals analysis. This dynamic field-screening program in combination with laboratory data confirmation should enable a complete delineation of impacts to surface soils from the conductive flooring material. The sampling program will be used to delineate impacts at all of the BLA buildings that contained the conductive flooring.

- ARCADIS will collect a minimum of four surface soil samples (0-0.5 ft bgs) in the vicinity of former sample location BLASB02 to delineate the extent of PAH impacts in the central portion of the BLA. The samples will be sent to a laboratory and analyzed for PAHs by USEPA Method 8270 on a 48-hour turn-around time. If PAHs are detected in excess of residential RBCs, additional sampling will be conducted to complete the delineation work.

- ARCADIS will collect one subsurface (2-3 ft bgs) soil sample and two surface soil (0-0.5 ft bgs) samples near former sample location BLATR02. These samples are intended to delineate potential PCB impacts associated with a former pole mounted transformer at this location and to assist in determining if a removal action will be necessary. The samples will be sent to a laboratory for analysis of PCBs by USEPA Method 8082.

- ARCADIS will collect two subsurface (soil samples 1-2 ft bgs and 2-3 ft bgs) and two surface soil samples (0-0.5 ft bgs) near former sample location BLASS01. These samples are intended to delineate potential PCB impacts at this location and to assist in determining if a removal action will be necessary. The samples will be sent to a laboratory for analysis of PCBs by USEPA Method 8082.

- ARCADIS will survey the BLA to locate underground utility vaults that may have been impacted by historical operations at the site. Where identified, ARCADIS will collect one sediment and one surface water sample from material that have deposited in the vaults. The sediment and surface water samples will be analyzed for TAL metals, PAHs, and VOCs.

A summary of the proposed sampling program for the BLA is presented in Table 4 2; proposed sampling locations are depicted in Figure 4-2.

4.3 Igniter Assembly Area

4.3.1 Data Gaps

4.3.1.1 Conductive Flooring

Based on the results of previous investigations at the site, the degraded conductive flooring in the various IAA buildings has been identified as the source of metals and asbestos impacts to surrounding surface soils. A 2002 and 2005 assessment of the conductive flooring material indicated that the degraded flooring contained elevated levels of several TAL metals, asbestos, PAHs, and PCBs. TCLP analyses have also been completed. As such, the conductive flooring material at the IAA has been well characterized. However, similar to the BLA the following information will need to be collected to assist in evaluating remedial alternatives for the conductive flooring material:

- A complete understanding of the number, location, size, and condition of the site buildings that contain the conductive flooring material. In addition to the main IAA buildings, there are several outparcel buildings that contain conductive flooring.

4.3.1.2 Soils and Sediments

Several TAL metals have been detected at elevated levels in soils at the IAA. While some of the metals detections may be attributed to naturally occurring background levels, previous sampling events have confirmed that surface soils adjacent to many site buildings have been impacted by metals leaching from degraded conductive flooring material. The previous investigations have indicated that the impacts are generally confined to surface soil (0 – 0.5 ft bgs) and that the contaminants have fairly low mobility (i.e., concentrations decrease rapidly with depth or distance from the structures). The degraded conductive flooring material that has impacted the soil exhibits a dark red color and based on visual observations of the site, the impacts to surface soil generally appear to be confined to the areas in the immediate vicinity of the buildings. However, previous sampling efforts have not confirmed/delineated the extent of impacts to surface soils across the site. Previous sampling events also have not fully investigated a PCB detection exceeding industrial RBCs and the extent of metals impacts within the sediments of the IAA drainage ditches/culverts. Specific data gaps that should be addressed include:

- Lateral delineation of metals and asbestos impacts surrounding buildings constructed with conductive flooring.

- Characterization of potential impacts within underground utility vaults (sediment and surface water) located adjacent to IAA buildings.

- Delineation of PCB impacts to surface soil near Building 8101.

- Delineation of metals impacts to sediments within the drainage ditch located to the northeast of the BLA. Lead was detected at 2002 sediment sample location IASD06 in excess of industrial RBCs.

4.3.2 Proposed Activities

The following activities are proposed to complete the remedial investigation activities at the IAA:

- ARCADIS will perform a complete inventory and survey of all site buildings to identify the location and total footprint of conductive flooring material at the site.

- ARCADIS will survey the IAA to locate underground utility vaults that may have been impacted by historical operations at the site. Where identified, ARCADIS will collect one sediment and one surface water sample from material that has deposited in the vaults. The sediment and surface water samples will be analyzed for TAL metals, PAHs, and VOCs.

- ARCADIS will conduct a sampling program to identify the extent of metals and asbestos impacts to surface soils surrounding buildings with conductive flooring. As lead is known to be a major component of the flooring material, XRF field screening of surface soils will be used to define areas where impacts may be present. Surface soil samples will collected around the perimeter of each building identified with conductive flooring. The samples will be collected at a spacing of 1 ft, 5 ft, and 10 ft from the building footprint on approximately 20-ft centers. The exact sample locations will be selected in the field and will be biased towards preferential flow paths and areas where there are visual signs of impact (i.e., red staining from degraded flooring material). Based on the results of the XRF screening, a subset of samples (approximately 10-percent of field-screened samples) will be selected for laboratory analysis of TAL Metals and asbestos. Five samples will also be submitted for TCLP analysis (metals). This dynamic field-

screening program in combination with laboratory data confirmation should enable a complete delineation of impacts to surface soils from the conductive flooring material.

- ARCADIS will conduct a sampling program to delineate the extent of lead impacts to the main IAA drainage ditches. In particular, the drainage ditches where sediment samples IASD06 and IASD12 were collected in 2002. ARCADIS will use XRF to field screen sediments at 20 ft spacing downgradient of IASD06 and IASD12. ARCADIS will continue to collect samples for field screening at 20-ft spacing until the XRF field screening indicates lead concentrations below 150 mg/kg. A minimum of 2 samples will also be submitted from each ditch for laboratory analysis of lead by USEPA Method 6010.

- ARCADIS will collect one subsurface (2-3 ft bgs) soil sample and two surface soil (0-0.5 ft bgs) samples near former sample location IASS05. These samples are intended to delineate potential PCB and PAH impacts near Building 8101, and to assist in determining if a removal action will be required for the impacted soil. The samples will be sent to a laboratory for analysis of PCBs by USEPA Method 8082 and PAHs by USEPA Method 8270.

A summary of the proposed sampling program for the IAA is presented in Table 4 3; proposed sample locations are depicted in Figure 4-3.

4.4 Northern Burning Ground (NBG)

Data collected during previous phases of investigation at the NBG have indicated that the site has been well characterized and the extent of contamination delineated. This work was performed through the collection of 90 surface and subsurface soil samples for laboratory analysis and 291 surface samples for field screening using XRF. As such, additional investigation at the NBG is not required and will not be included during this phase of investigation. Adequate data exist to move forward with remedy selection at this site.

4.5 Rail Yard (RY)

Based on the findings of previous investigations conducted at the RY, the site has been well characterized and there is minimal risk to human health or the environment. The limited number of organic constituents detected in soil have been delineated to concentrations below industrial RBCs. While several metals were detected in excess

of residential soil screening levels (arsenic and iron were also detected at concentrations exceeding industrial RBCs), no metals were detected at concentrations exceeding the both the background UTLs and residential RBCs. As such, additional investigation at the RY is not required and will not be performed during this phase of activity at the site. Adequate data exists to move forward with the remedy selection at this site, which is anticipated to be No Further Action.

4.6 Western Burning Ground (WBG)

4.6.1 Data Gaps

The majority of the remedial investigation work at the WBG has been completed during previous phases of investigation, including evaluation of impacts to surface soil, subsurface soil, pond sediments, surface water, and ecological receptors (i.e. fish tissues). The following sections provide further details on remaining data gaps at the WBG.

4.6.1.1 Soils

TAL metals have been detected in excess of industrial RBCs in soils at the WBG. While some of the metals detections may be related to naturally occurring background levels, previous sampling events have identified lead impacts in excess of industrial RBCs to subsurface soils below the dirt access road west of the former burning area. These identified lead impacts below the access road are generally confined to a layer of ashy material identified between 2 and 4.5 ft bgs. Soil impacted with lead was previously removed from the burning area. Lead has not been detected above the residential RBC in soil from other areas of the WBG. Therefore, no data gaps for lead impacts in soil are currently apparent.

PAH detections exceeding industrial RBCs were limited to one surface soil sample collected from an area in the northwestern portion of the burning area (WBGSB24A) and two surface soil samples collected from the unlined drainage ditch northwest of the burn area (WBGSB25 and WBGSB27). Two other surface soil samples collected from the drainage ditch and one subsurface soil sample collected from the access road contained PAH concentrations above residential RBCs, but below industrial RBCs. Otherwise at the WBG, soil samples did not contain PAHs above residential RBCs. Therefore, PAH impacts appear to be limited in extent and well defined by the existing sampling array. No current data gaps for PAH impacts are apparent at the WBG.

4.6.1.2 Sediments

TAL metals have been detected above residential and industrial RBCs in sediments collected from the unnamed pond at the WBG; however, only lead has been detected above naturally occurring background sediment concentrations. Based on previous sampling, lead impacts to pond sediments appear to be limited to an approximately 2,000 sq ft area in the northeastern edge of the pond near the burning area. .

PAH concentrations exceeding industrial RBCs were detected in one sediment sample collected from the downgradient unnamed stream near the railroad tracks. Specifically, the remaining data gaps that exist include:

- Refining the lateral and vertical extent of lead impacts in the northeastern portion of the unnamed pond.

- Verification of previous PAH concentrations detected within sediment in the unnamed creek into which the WBG pond discharges.

4.6.1.3 Surface Water

Previous sampling of surface water at the WBG has detected TAL metals, herbicides, pesticides, and VOCs below the Virginia Water Quality Standards for chronic effects in freshwater standards. Metals concentrations were within naturally occurring background levels, and herbicide and pesticide detections do not appear related to operations at the WBG. Therefore, no data gaps have been identified for surface water at the WBG.

4.6.2 Proposed Activities

The following activities are proposed to complete the remedial investigation activities at the WBG:

- ARCADIS will probe the pond to determine the overall depth of the bottom sediments. These activities will be focused on the northeastern portion of the pond where there are known lead impacts within the sediment.

- ARCADIS will collect additional sediment samples within the northeast portion of the pond with known lead impacts for the purpose of vertical delineation. The vertical profiling will be performed at four separate locations within the impacted

area. The samples will be collected at one foot depth intervals and will extend from top of sediment to pond bottom. All samples will be field screened for lead using XRF and submitted for laboratory analysis of lead. Approximate locations of the proposed samples are presented in Figure 4-4.

- ARCADIS will collect surface water samples from the pond at each of the four sediment sample locations discussed above to evaluate potential impacts from the underlying sediment. The samples will be submitted for laboratory analysis of lead by USEPA Method 6010.

- Sediment and surface water samples will be collected from two locations in the unnamed creek downgradient of the WBG pond for analysis of PAHs. One proposed sediment/surface water sample location corresponds with the historic sampling location (WBGSD09/WBGSW09) and is intended to verify PAH concentrations observed in the previous sediment sample. The second sediment/surface water samples will correspond with the historic sampling location (WBGSD08/WBGSW08) and is intended to verify the absence of PAH concentrations observed in the previous sediment sample. If these data sets confirm historical results that concentrations are higher in the downgradient samples, this may demonstrate that the constituents are related to the railroad tracks downgradient of the WBG rather than from historical operations at the WBG. Approximate locations of the proposed samples are presented in Figure 4-4.

A summary of the proposed sampling program for the WBG is presented in Table 4 4.

4.7 Groundwater Monitoring

4.7.1 Data Gaps

For the purposes of this Work Plan, potential impacts to groundwater at the RFAAP-NRU will be investigated as a facility wide issue rather than specific to any of the individual AOCs. The results of the 2007 groundwater investigation at the RFAAP-NRU indicated the presence of several TAL metals in groundwater at concentrations exceeding the Federal Drinking Water MCLs. No other constituents were detected at concentrations exceeding the applicable MCLs. Based on the presence of naturally occurring metals within the formation at the RFAAP-NRU, it is likely that the detections can be attributed to background. However, background groundwater data has not been collected at the RFAAP-NRU. Of the 11 total monitoring wells installed at the RFAAP-NRU, three are located at the WBG, two are at the NBG, four are in the vicinity

of the IAA and two are at the BLA. No wells have been installed at the BDDT. Therefore, this phase of investigation at the RFAAP-NRU will include:

- The collection of background groundwater quality data for the RFAAP-NRU utilizing spring water samples.

- The collection of groundwater data at the BDDT to evaluate potential impacts from historic operations at the site.

- Low-flow sampling of the wells included during the 2007 groundwater investigation to verify the presence of metals at concentrations exceeding Federal MCLs.

4.7.2 Proposed Field Investigation

The following activities will be conducted to complete the groundwater investigation program at the RFAAP-NRU:

- One monitoring well will be installed at the BDDT in conformance with the guidance presented in the Master Work Plan (URS, 2003) and ARCADIS QAPA (2008b). As with other monitoring wells at the RFAAP-NRU, this monitoring well will be installed in the shallow bedrock zone where groundwater is typically first encountered. This new monitoring well will be installed immediately downgradient of the BDDT near the unnamed stream. This location was selected so that the well may serve a dual purpose. First, the well will enable ARCADIS to evaluate potential impacts to groundwater from the BDDT. Secondly, this well will be located next to the unnamed stream that appears to be the main groundwater discharge point for the western portion of the RFAAP-NRU; therefore, this point may enable ARCADIS to evaluate any gross impacts to groundwater quality at the RFAAP-NRU. The location of the proposed monitoring well is depicted on Figure 4-1.

- All twelve RFAAP-NRU monitoring wells, including the new well at the BDDT, will be sampled for TAL metals to confirm the metals detections from the 2007 sampling event. The groundwater sampling activities will be conducted using low-flow techniques to minimize interference from suspended solids and to provide an accurate representation of groundwater quality.

- In addition to TAL metals, the new BDDT monitoring well will be sampled for PAHs.

- ARCADIS will review surface water maps and conduct field reconnaissance activities to identify any natural springs within the western portion of the RFAAP-NRU. Springs are known to exist at the headwaters of the unnamed ponds at the WBG and RY.

- Samples will be collected from all identified springs and analyzed for TAL metals. The spring samples should provide an excellent indicator of background groundwater quality and natural metals concentrations at the RFAAP-NRU as springs tend to be representative of overall groundwater conditions (more so than individual monitoring well locations).

A summary of the proposed groundwater sampling program is presented in Table 4 5.

5. Field Investigation

5.1 Sampling Procedures

All sampling activities proposed within this RI Work Plan will be conducted in accordance with the procedures outlined in the approved Master Work Plan (URS 2003), SOPs, and ARCADIS' project specific Health and Safety Plan (HASP).

5.2 Preliminary Site Inspection and Utility Mark-Out

Prior to any subsurface investigation, ARCADIS will complete a preliminary site inspection and utility mark-out. Field personnel will perform the following activities:

- Consult with installation personnel about the location of above and below ground utilities, tanks, foundations, or process lines that may be drilling hazards.
- Obtain, if feasible, installation utility maps.
- Evaluate potential subsurface investigation locations with respect to access and potential hazards.
- If appropriate, supervise a professional utility locator for the mark-out of the anticipated investigation locations.
- Obtain any necessary site-specific work permits.

5.3 Surveying

Horizontal coordinates and ground surface elevations for soil, sediment, and spring water sample locations during this phase of investigation will be obtained using a global positioning system (GPS) unit. Horizontal coordinates and vertical elevations of any new monitoring well will be surveyed by a Virginia licensed surveyor experienced in working at the RFAAP. Horizontal coordinates (northing and easting) will be surveyed using the North American Datum (NAD) of 1983. At each monitoring well location, the ground surface elevation and elevation of the top of the inner well casing used for measuring water levels will be surveyed to the nearest 0.01 ft.

5.4 Investigation Derived Materials

Investigation derived materials (IDM) generated during the proposed activities will be managed in accordance with SOP 70.1 in the Master Work Plan (URS, 2003). Investigation derived materials include soil cuttings, purge water, decontamination water, and disposable supplies that have contacted impacted media. All drummed IDM generated at the RFAAP-NRU will be temporarily staged in the designated drum staging area located at the front gate to the facility pending off-site disposal. All IDW will be removed from the RFAAP-NRU within a period not to exceed 45-days of generation.

6. Quality Control

Quality control/quality assurance (QA/QC) for this investigation will be handled in accordance with the Master QAPP (URS, 2003) as amended by ARCADIS' QAPA, included within this work plan as Appendix A. The ARCADIS QAPA describes sample management, analytical procedures (including reporting limits and laboratory control limits), quality control checks, and data validation.

6.1 Data Quality Objectives for Measurement Data

Data Quality Objectives (DQOs) for the investigation activities discussed in this Work Plan have been designed to characterize the nature and extent of contamination at the RFAAP-NRU. Additional analyses have been included that will provide for data of particular use to the various AOCs at RFAAP-NRU. In addition to the qualitative DQOs, the analyses conducted will also conform to the project DQOs pertaining to field sampling methodology and laboratory-specific DQOs referenced in the Master QAPP.

6.2 Measurement/Data Acquisition

Field, laboratory, and data handling procedures relating to activities performed at RFAAP-NRU will conform to the specific requirements detailed in the Master Work Plan (MWP) or in the SOPs as identified below.

Subject	MWP Section	SOP(s)
Sample management	5.1	50.1, 50.2, 50.3
Documentation	4.3	10.1, 10.2, 10.3, 10.4
XRF Screening	-	30.11
Sediment Sampling	5.4	30.4, 30.5, 30.7, 30.12
Well Drilling/Installation	5.2	20.1, 20.2, 20.11

Boring Logs / Stratigraphic Characterization	5.2.5	10.3
Soil Sampling	5.2.8	30.1, 30.7, 30.9
Groundwater Sampling	5.2.10.3	20.12, 30.2
Decontamination Requirements	5.12	80.1
Investigation Derived Materials	5.13	70.1

In accordance with the project requirements, duplicate samples, will be collected at a rate of one sample per 20 for each sample matrix (minimum of one sample per AOC), equipment blanks will be collected at a rate of 1 per 20 per medium where dedicated equipment is not used (minimum of one sample per AOC), trip blanks will accompany every cooler containing aqueous VOC samples, and temperature blanks will be provided in every shipping container requiring controlled temperatures.

6.3 Assessment/Oversight

Assessment and oversight activities for this site will be conducted in accordance with the ARCADIS QAPA.

6.4 Data Validation and Usability

Level III data validation for samples collected and analyzed from RFAAP-NRU will be conducted in accordance with Section 9.5 of the Master Work Plan (URS, 2003) and the ARCADIS QAPA in Appendix A.

7. Schedule and Reporting

ARCADIS anticipates conducting the field investigation activities discussed in this report in August/September 2008. The results of the field investigations proposed within this Work Plan will be incorporated into the site conceptual model and presented within an RI Report for the NRU (RAAP-044). The RI Report will include a comprehensive Human Health Risk Assessment (HHRA) and Screening Level Ecological Risk Assessment (SLERA) based on the complete body of data collected throughout the multiple phases of investigation at the site. The RI Report will serve as the basis for developing future corrective action strategies for the site and detail the remaining steps to achieve closure for the various areas of concern under the CERCLA process.

8. References

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Tables

Table 3-1
Historical Soil Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	DTSS1 0 - 0.5 08/11/98	DTSS2 0 - 0.5 08/11/98	DTSS3 0 - 0.5 08/11/98	DTSB1 0.5 - 1 08/12/98	DTSB2 2.5 - 3 08/12/98	DTSB3 2.5 - 3 08/12/98	DTSB4 2.5 - 3 08/12/98	DTSB5 0.5 - 1 08/12/98	DTSB6 1 - 1.5 08/12/98	DTSB7 2 - 2.5 08/12/98	DTSB8 1 - 1.5 08/12/98	DTSB9 3 - 3.5 08/12/98	DTSB10 3.5 - 4 08/12/98	DTSB11 3.5 - 4 08/12/98	DTSB12 3.5 - 4 08/12/98	DTSB13 0.5 - 1 08/12/98	DTSB14 3.5 - 4 08/12/98	DTSB15 2 - 2.5 08/13/98
Explosives																						
None Detected	- -	- -	- -	- -	- -	- -	- -	- -	- -	- - [- -]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Herbicides																						
2,4-D	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																						
4,4'-DDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																						
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	<0.02	<0.02	<0.02 [<0.02]	<0.02	<0.02	<0.02	<0.02	<0.42	<0.43	<0.41	<0.43	<0.02	<0.41	<0.02	<0.02
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	<0.04	<0.04	<0.04 [<0.04]	<0.04	<0.04	<0.04	<0.04	<0.84	<0.85	<0.82	<0.86	<0.04	<0.82	<0.04	<0.04
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	0.0087	<0.0022	<0.0021 [0.0018 J]	<0.002	<0.002	<0.002	<0.002	0.33	0.54	0.25	0.02 J	0.0008 J	0.09	0.02	0.0056
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	0.02	<0.0022	<0.0021 [0.0028]	<0.002	<0.002	<0.002	<0.002	**0.8**	**0.88**	**0.34**	0.02 J	0.0011 J	**0.27**	0.04	0.0077
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	**0.03**	<0.0022	<0.0021 [0.0039]	0.003	<0.002	<0.002	0.002	**0.83**	**0.85**	**0.41**	0.02 J	0.0021	**0.23**	**0.05**	0.0071
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	0.04	<0.0044	<0.0041 [0.0043]	<0.004	<0.004	<0.004	0.0007 J	**0.94**	**1.2**	**0.44**	0.04 J	0.0043	**0.36**	0.06	0.0089
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	0.0098 J	<0.0044	<0.0041 [<0.004]	<0.004	<0.004	<0.004	<0.004	0.29 J	0.56 J	0.14 J	<0.08	0.0017 J	0.09 J	0.03 J	0.0025 J
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	0.02	<0.0022	<0.0021 [0.0022]	<0.002	<0.002	<0.002	0.0012 J	0.67	0.43	0.16	0.02 J	0.0018 J	0.15	0.02	0.008
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	0.03	<0.0022	<0.0021 [<0.002]	<0.002	<0.002	<0.002	0.0005 J	0.87	1	0.42	0.04	0.003	0.34	0.06	0.01
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	0.0018 J	<0.0044 J	<0.0041 J [<0.004 J]	<0.004 J	<0.004 J	<0.004 J	<0.004 J	0.08 J	<0.08 J	<0.08 J	<0.08 J	<0.0041 J	<0.08 J	0.0035 J	<0.0041 J
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	0.07	0.0025 J	<0.0041 [0.0097]	0.0018 J	<0.004	<0.004	0.0016 J	2.6	3.2	1.2	0.12	0.0056	0.86	0.16	0.02
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	<0.0043	<0.0044	<0.0041 [<0.004]	<0.004	<0.004	<0.004	<0.004	0.11	0.19	0.05 J	<0.08	<0.0041	<0.08	0.01	0.0026 J
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	0.02	<0.0022	<0.0021 [0.003]	<0.002	<0.002	<0.002	0.0008 J	**0.43**	**0.57**	**0.24**	0.02 J	0.0021	0.2	0.03	0.0055
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	<0.02	<0.02	<0.02 [<0.02]	<0.02	<0.02	<0.02	<0.02	<0.42	<0.43	<0.41	<0.43	<0.02	<0.41	<0.02	<0.02
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	0.04	<0.0022	<0.0021 [0.0068]	<0.002	<0.002	<0.002	<0.002	1.8	2.5	1.1	0.13	0.0028	0.37	0.13	0.02
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	0.07	0.0026	0.005 [0.01]	<0.002	<0.002	<0.002	0.0016 J	1.9	2.4	0.94	0.12	0.0053	0.69	0.12	0.02
PCBs																						
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organics																						
1,2,3-Trichloropropane	mg/kg	- -	- -	- -	<0.0030	<0.0030 J	R	<0.0040	<0.0030	R [<0.0030 J]	<0.0030	<0.0030	<0.0030	R	R	R	<0.0030 J	R	<0.0030 J	<0.0030 J	<0.0030 J	<0.0030
1,2,4-Trimethylbenzene	mg/kg	- -	- -	- -	0.0040	<0.0020 J	0.0030 J	<0.0020	<0.0020	R [<0.0020 J]	<0.0020	<0.0020	<0.0020	R	R	R	<0.0020 J	R	<0.0020 J	<0.0020 J	<0.0020 J	<0.0020
m,p-Xylene	mg/kg	- -	- -	- -	0.0030	<0.0030 J	R	<0.0030	<0.0030	<0.0030 [<0.0030 J]	<0.0030	<0.0030	<0.0030	R	R	R	<0.0030 J	R	<0.0030 J	<0.0030 J	<0.0030 J	<0.0030
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	<0.0010	<0.0010 J	R	<0.0010	<0.0010	<0.0010 [<0.0010 J]	<0.0010	0.0040	0.0030	R	R	R	<0.0010 J	R	0.0030 J	0.0050 J	<0.0010 J	0.15
Semivolatile Organics																						
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	<0.42	<0.43	<0.40	<0.46	<0.39	<0.38 [<0.38]	<0.39	<0.41	<0.41	<0.41	0.060 J	0.090 J	<0.42	<0.43	<0.42	<0.43	<0.42	<0.42
3,3'-Dichlorobenzidine	mg/kg	- -	- -	- -	<0.82	<0.86	<0.79	<0.90	<0.76	<0.76 [<0.76]	<0.77	<0.81	<0.80	<0.80	<0.83	0.12 J	<0.82	<0.83	<0.82	<0.83	<0.81	<0.82
4-Methylphenol	mg/kg	- -	- -	- -	<0.42	<0.43	<0.40	<0.46	<0.39	<0.38 [<0.38]	<0.39	<0.41	<0.41	<0.41	<0.43	<0.43	<0.42	<0.43	<0.42	<0.43	<0.42	<0.42
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	0.56	0.61	0.060	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	<0.42	<0.43	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	0.61	0.86	0.14 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	**2.9**	**1.8**	**0.27 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	**2.1**	**2.0**	**0.31 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	**6.2 J**	**3.0 J**	**0.51 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	0.84 J	0.75 J	0.14 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	**2.7**	1.2	0.39 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	mg/kg	- -	- -	- -	1.9 J	1.4 J	0.17 J	<0.46	<0.39	<0.38 [<0.38]	<0.39	<0.41	<0.41	<0.41	0.57 J	0.45 J	<0.42	0.11 J	<0.42	<0.43	<0.42	0.070 J
Chrysene	mg/kg	22 {C}	390 {C}	- -	3.9	2.1	0.43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	0.40 J	0.38 J	0.040 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	mg/kg	- -	- -	- -	0.28 J	0.29 J	<0.40	<0.46	<0.39	<0.38 [<0.38]	<0.39	<0.41	<0.41	<0.41	0.23 J	1.1	<0.42	<0.43	<0.42	<0.43	<0.42	<0.42
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	<0.42	<0.43	<0.40	<0.46	<0.39	<0.38 [<0.38]	<0.39	<0.41	<0.41	0.070 J	0.050 J	0.17 J	0.090 J	0.12 J	0.060 J	0.21 J	0.11 J	<0.42
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	<0.42	<0.43	<0.40	0.12 B	<0.39	<0.38 [<0.38]	<0.39	<0.41	<0.41	<0.41	<0.43	<0.43	<0.42	<0.43	<0.42	<0.43	<0.42	<0.42
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	6.8	4.8	0.87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	0.54	0.56	0.050 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	**0.82 J**	**0.77 J**	0.14 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	0.12 J	0.12 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	mg/kg	5.3 {C}	24 {C}	- -	<2.1	<2.2	<2.0	<2.3	<1.9	<1.9 [<1.9]	<2.0	<2.1	<2.0	<2.1	<2.2	<2.2	<2.1	<2.2	<2.1	<2.2	<2.1	<2.1
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	6.3	4.7	0.68	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	5.8	4.7	0.63	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-1
Historical Soil Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	DTSS1 0 - 0.5 08/11/98	DTSS2 0 - 0.5 08/11/98	DTSS3 0 - 0.5 08/11/98	DTSB1 0.5 - 1 08/12/98	DTSB2 2.5 - 3 08/12/98	DTSB3 2.5 - 3 08/12/98	DTSB4 2.5 - 3 08/12/98	DTSB5 0.5 - 1 08/12/98	DTSB6 1 - 1.5 08/12/98	DTSB7 2 - 2.5 08/12/98	DTSB8 1 - 1.5 08/12/98	DTSB9 3 - 3.5 08/12/98	DTSB10 3.5 - 4 08/12/98	DTSB11 3.5 - 4 08/12/98	DTSB12 3.5 - 4 08/12/98	DTSB13 0.5 - 1 08/12/98	DTSB14 3.5 - 4 08/12/98	DTSB15 2 - 2.5 08/13/98
Inorganics																						
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**15,000**	**15,800**	**20,100**	**11,600**	**11,800**	**11,200 [10,900]**	**12,900**	**11,000**	**16,000**	**10,700**	**9,990**	**11,100**	**10,100**	7,770	**11,800**	**10,100**	**12,600**	**10,600**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	<0.610	<0.660	<0.590	<0.670	<0.570	**4.80 K [<0.560]**	<0.580	<0.620	<0.610	1.50 B	1.80 B	1.70 B	1.90 B	2.10 B	2.00 B	2.00 B	2.10 B	**4.80 J**
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**4.30**	**7.90**	**11.6**	**4.80**	**4.50**	**7.00 [3.90]**	**6.10**	**6.10**	**6.10**	**7.30**	**6.30**	**7.30**	**6.50**	**6.40**	**7.20**	**7.10**	**7.00**	**4.40**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	72.0 K	63.0 K	73.5 K	53.3 K	54.9 K	48.9 K [39.2 K]	47.3 K	32.4 K	41.7 K	46.2 B	65.7 K	44.6 B	43.2 K	41.3 B	42.4 B	48.7 B	61.9 B	47.9 L
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	1.10	0.760	1.50	0.900	0.720	0.570 B [0.460 B]	0.660	0.610 B	0.590 B	0.590 B	1.10 B	0.670 B	0.560 B	0.720 B	0.670 B	0.970 B	1.10 B	0.710 B
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.120	<0.130	<0.120	<0.130	<0.110	<0.110 [<0.110]	<0.120	<0.120	<0.120	<0.240	<0.250	<0.260	<0.250	<0.260	<0.240	<0.260	<0.240	<0.120
Calcium	mg/kg	- -	- -	- -	1,440 B	1,890 B	2,560 B	4,600 B	773 B	734 B [630 B]	729 B	662 B	908 B	786 B	874 B	966 B	901 B	769 B	961 B	1,060 B	638 B	934 B
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**37.0**	**33.4**	**60.8**	**30.1**	**37.6**	**27.2 [22.3]**	**31.4**	**33.9**	**32.3**	**28.3**	**40.5**	**33.8**	**25.1**	**35.0**	**37.5**	**27.8**	**29.4**	**40.0**
Cobalt	mg/kg	- -	- -	72.3	29.8	446	40.8 L	14.5	19.0	11.3 [9.20]	18.1	15.6	17.6	15.3	26.3	17.2	13.7	13.8	8.40 J	15.4	19.1	12.9 L
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	33.9 L	138 L	40.8	17.2 B	31.1 L	**68.0 L [20.0 L]**	21.3 L	10.4 B	35.3 L	40.5 L	20.0 B	113 L	11.6 B	37.4 L	21.6 B	108 L	6.20 B	25.9 K
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**37,200**	**32,700**	**58,100**	**29,100**	**32,000**	**29,000 [21,400]**	**30,500**	**30,800**	**32,100**	**28,600**	**32,100**	**29,700**	**23,500**	**29,400**	**32,500**	**28,600**	**36,900**	**29,100**
Lead	mg/kg	400	750	26.8	157	336	82.5	22.6	15.1	12.5 [9.00]	13.2	13.5	13.2	14.0	19.9	12.1	12.4	19.5	11.1	18.4	20.0	16.1
Magnesium	mg/kg	- -	- -	- -	12,800	6,700	13,500	6,850	4,930	2,700 [2,450 B]	3,290	3,950	3,120	3,000 B	3,610	4,040 B	2,550	2,930 B	4,330 B	2,830 B	4,430 B	3,360
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**1,580**	**3,430**	**2,030**	**408**	**812**	**515 [405]**	**790**	**543**	**587**	**815**	**1,660**	**536**	**847**	**612**	**303**	**620**	**1,040**	**712**
Mercury	mg/kg	2.35	30.66	0.13	<0.130	<0.130	<0.120	<0.140	<0.120	<0.120 [<0.120]	<0.120	<0.130	<0.120	<0.120	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130	<0.130
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	19.4 K	41.3 K	20.1 K	38.4 K	10.3 K	8.40 K [7.30 K]	9.40 K	9.50 K	11.3 K	7.90 K	9.80 K	11.2 K	7.70 K	7.40 K	10.0 K	11.6 K	10.5 K	9.00 K
Potassium	mg/kg	- -	- -	- -	2,280 J	1,670 J	3,980 J	1,070 J	843 J	917 J [832 J]	1,180 J	1,210 J	1,440 J	721 B	593 B	711 B	654 J	611 B	974 B	766 B	859 B	917 K
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<0.610 J	<0.660 J	<0.590 J	<0.670 J	<0.570 J	<0.560 J [<0.560 J]	<0.580 J	<0.620 J	<0.610 J	<1.20 J	<1.20 J	<1.30 J	<1.30 J	<1.30 J	<1.20 J	<1.30 J	<1.20 J	<0.620 L
Sodium	mg/kg	- -	- -	- -	126 B	119 B	119 B	120 B	106 B	95.2 B [162 B]	96.2 B	107 B	103 B	47.2 B	57.7 B	68.3 B	42.7 B	45.6 B	42.3 B	27.4 B	25.4 B	86.2 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	<0.240 L	<0.260 L	<0.240 L	<0.270 J	<0.230 L	<0.220 L [<0.230 L]	<0.230 L	<0.250 L	<0.240 L	**2.00 B**	**0.990 B**	<0.520 L	**0.890 B**	<0.510 L	**0.630 B**	**0.810 B**	<0.490 L	<0.250 L
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**60.9 J**	**64.1 J**	**108 J**	**45.3 J**	**52.3 J**	**44.6 J [36.0 J]**	**55.8 J**	**50.7 J**	**56.3 J**	**47.2 J**	**52.4 J**	**50.1 J**	**38.3 J**	**48.7 J**	**52.8 J**	**47.6 J**	**53.2 J**	**52.4 K**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	178	137 B	109 B	**271 L**	34.9 B	35.0 B [25.1 B]	22.8 B	20.5 B	31.7 B	28.0 B	38.7 B	26.3 B	31.4 B	34.0 B	22.3 B	50.7 B	22.6 B	36.1 B
Miscellaneous																						
Percent Solids	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-1
Historical Soil Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	DTSB16 2 - 2.5 08/18/98	DTSB17 3 - 3.5 08/18/98	DTSB18 2 - 2.5 08/18/98	DTSB19 2 - 2.5 08/18/98	DTSB20 2 - 2.5 08/18/98	DTSB21 2 - 2.5 08/18/98	DTSB22 2 - 2.5 08/18/98	DTSB23 2 - 2.5 08/18/98	DTSB35 0.5 - 1 08/18/98	DTSB36 0.5 - 1 08/18/98	DTSB37 0.5 - 1 08/18/98	DTSB38 0.5 - 1 08/18/98	DTSB39 0.5 - 1 08/18/98	DTSB40 0.5 - 1 08/18/98	DTSB41 0.5 - 1 08/18/98	DTSB42 0.5 - 1 08/18/98	DTSB43 0.5 - 1 08/18/98
Explosives																					
None Detected	- -	- -	- -	- -	- -	- - [- -]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Herbicides																					
2,4-D	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																					
4,4'-DDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																					
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	4 J	1.6 J [5.3 J]	<0.21	<0.02	<0.11	<0.6	0.46 J	<0.02	0.4 J	<0.02	<0.02	<0.02	<0.02	<0.11	<0.02	0.26 J	0.38 J
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	<17	<8.8 [<42]	<0.41	<0.04	<0.21	<1.2	<1.6	<0.04	<0.85	<0.04	<0.04	<0.04	<0.04	<0.21	<0.04	<0.83	<1.2
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	11	4.9 [23.1]	0.06	0.0046	0.08	0.92	1.3	<0.0021	0.71	<0.002	0.0008 J	<0.0022	<0.0021	<0.01	0.0044	0.64	1.3
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	**19.58**	**6.6 [27.8]**	0.11	0.0024	0.18	**1.5**	**2**	0.0007 J	**1.7**	<0.002	0.0006 J	0.0009 J	0.0011 J	0.13	0.006	**1.4**	**1.9**
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	**21.88**	**7.4 [28.3]**	**1.6**	0.0032	**0.21**	**1.7**	**2.1**	<0.0021	**1.8 J**	<0.002	0.0018 J	0.0021 J	0.0024 J	**0.15 J**	0.01 J	**1.7 J**	**1.9 J**
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	**27**	**8.4 [34.9]**	0.18	0.0049	**0.26**	**2.1**	**2.8**	<0.0042	**2.3**	<0.004	0.0021 J	0.0031 J	0.0039 J	**0.37**	0.01	**2.3**	**2.5**
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	10.1 J	3.2 J [10.9 J]	<0.04	0.0024 J	0.11 J	0.88 J	1.1 J	<0.0042	0.8 J	<0.004	0.0006 J	0.001 J	<0.0041	0.17 J	0.0049 J	0.81 J	0.77 J
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	**10.4**	**3.5 [13.7]**	1.5	0.0024	0.12	0.81	1.1	<0.0021	0.93	<0.002	0.0011 J	0.0019 J	0.0034	0.14	0.01	1	1.2
Chrysene	mg/kg	22 {C}	390 {C}	- -	**25.59**	**7.1 [33.1]**	0.13	0.004	0.24	1.7	2.3	0.0019 J	2	<0.002	0.0015 J	0.0025	0.0032	0.22	0.01	1.8	2.2
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	1.3 J	0.43 J [1.6 J]	<0.04	<0.0041	0.01 J	0.11 J	0.15 J	<0.0042	0.12	<0.004	<0.0042	<0.0043	<0.0041	0.09	<0.0042	0.09	0.09 J
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	76.11	23.18 [108.7]	0.4	0.01	0.57	5.3	7.2	0.005	5.8 J	<0.004 J	0.0046 J	0.0052 J	0.0073 J	0.21 J	0.02 J	4.9 J	6.5 J
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	6.2	2.3 [10]	<0.04	0.0042	0.04	0.51	0.75	<0.0042	<0.08	<0.004	<0.0042	<0.0043	<0.0041	<0.02	<0.0042	0.29	0.69
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	**11.6**	**4.1 [15]**	0.15	0.0035	0.12	**0.97**	**1.2**	0.0028	**1**	<0.002	0.001 J	0.002 J	0.0021	<0.01	0.0076	**0.9**	**0.93**
Naphthalene	mg/kg	- -	- -	- -	<8.5	7.8 [<21]	<0.21	0.006 J	<0.11	<0.6	<0.8	<0.02	<0.43	<0.02	<0.02	<0.02	<0.02	<0.11	<0.02	<0.42	<0.6
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	67.13	21.31 [105.9]	0.28	0.02	0.41	4.3	6	0.0033	4	<0.002	0.0036	0.0043	0.0038	0.09	0.02	3.7	5.6
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	56.25	17.65 [80.35]	0.33	0.01	0.45	4	5.3	0.0047	4.2	<0.002	0.004	0.0055	0.0062	0.21	0.02	3.8	5
PCBs																					
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organics																					
1,2,3-Trichloropropane	mg/kg	- -	- -	- -	R	<0.0030 [<0.0030 J]	<0.0030 J	<0.0030	<0.0030 J	<0.0030 J	R	<0.0030	<0.0030 J	<0.0030	<0.0030 J	<0.0030 J	0.080 J	R	<0.0030 J	<0.0030 J	<0.0030 J
1,2,4-Trimethylbenzene	mg/kg	- -	- -	- -	R	<0.0020 [<0.0020 J]	<0.0020 J	<0.0020	<0.0020 J	<0.0020 J	R	<0.0020	<0.0020 J	<0.0020	<0.0020 J	<0.0020 J	<0.0020 J	R	<0.0020 J	<0.0020 J	<0.0020 J
m,p-Xylene	mg/kg	- -	- -	- -	R	<0.0030 [<0.0030 J]	<0.0030 J	<0.0030	<0.0030 J	<0.0030 J	R	<0.0030	<0.0030	<0.0030	<0.0030 J	<0.0030 J	<0.0030 J	<0.0030	<0.0030 J	<0.0030	<0.0030
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	R	<0.0010 [0.0060 J]	0.0040 J	<0.0010	<0.0010 J	<0.0010	0.0040 J	<0.0010	<0.0010	<0.0010	<0.0010 J	<0.0010 J	<0.0010 J	<0.0010	<0.0010 J	<0.0010	0.0050 K
Semivolatile Organics																					
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	0.070 J	0.29 J [<0.42]	0.090 J	<0.41	<0.41	1.2	<0.41	<0.42	0.090 J	<0.41	<0.41	<0.42	<0.45	<0.42	<0.41	<0.43	<0.42
3,3'-Dichlorobenzidine	mg/kg	- -	- -	- -	<0.93	<0.83 J [<0.83]	<0.81	<0.81	<0.80	<170	<0.80	<0.82	<0.86 J	<0.80	<0.81	<0.83	<0.89	<0.82	<0.81	<0.84	<0.83
4-Methylphenol	mg/kg	- -	- -	- -	<0.47	<0.42 [<0.42]	<0.41	<0.41	<0.41	0.10 J	<0.41	<0.42	<0.43	<0.41	<0.41	<0.42	<0.45	<0.42	<0.41	<0.43	<0.42
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	mg/kg	- -	- -	- -	1.4 J	1.7 J [0.17 J]	1.3 J	<0.41	0.50 J	<86	0.29 J	<0.42	3.5 J	<0.41	<0.41	<0.42	0.080 J	<0.42	0.35 J	0.070 J	<0.42
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	mg/kg	- -	- -	- -	0.44 J	0.74 [<0.42]	0.43	<0.41	0.15 J	2.0	0.060 J	<0.42	0.80	<0.41	<0.41	<0.42	<0.45	<0.42	0.090 J	<0.43	<0.42
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	<0.47	<0.42 [<0.42]	<0.41	<0.41	<0.41	<0.43	<0.41	<0.42	<0.43	<0.41	<0.41	<0.42	<0.45	<0.42	<0.41	<0.43	<0.42
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	<0.47	<0.42 [<0.42]	<0.41	<0.41	<0.41	<86	<0.41	<0.42	<0.43	<0.41	<0.41	<0.42	<0.45	<0.42	0.10 B	0.070 B	<0.42
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	32 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	mg/kg	5.3 {C}	24 {C}	- -	<2.4	<2.1 [<2.1]	<2.1	<2.1	<2.0	0.47 J	<2.0	<2.1	<2.2	<2.0	<2.1	<2.1	<2.3	<2.1	<2.1	<2.1	<2.1
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-1
Historical Soil Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Sample Depth (ft): / Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	DTSB16 2 - 2.5 08/18/98	DTSB17 3 - 3.5 08/18/98	DTSB18 2 - 2.5 08/18/98	DTSB19 2 - 2.5 08/18/98	DTSB20 2 - 2.5 08/18/98	DTSB21 2 - 2.5 08/18/98	DTSB22 2 - 2.5 08/18/98	DTSB23 2 - 2.5 08/18/98	DTSB35 0.5 - 1 08/18/98	DTSB36 0.5 - 1 08/18/98	DTSB37 0.5 - 1 08/18/98	DTSB38 0.5 - 1 08/18/98	DTSB39 0.5 - 1 08/18/98	DTSB40 0.5 - 1 08/18/98	DTSB41 0.5 - 1 08/18/98	DTSB42 0.5 - 1 08/18/98	DTSB43 0.5 - 1 08/18/98
Inorganics																					
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**14,700**	**15,400 [13,000]**	**15,100**	**17,000**	**16,300**	**8,560**	**13,600**	**12,500**	**14,600**	**15,000**	**15,900**	**14,000**	**19,900**	**15,600**	**10,700**	**13,200**	**16,000**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	<0.610	<0.620 [<0.640]	<0.600	<0.630	<0.610	<0.630	<0.600	<0.640	<0.660	<0.620	<0.620	<0.640	<0.680	<0.630	<0.630	<0.650	<0.640
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**5.80**	**9.60 [5.50]**	**5.70**	**5.70**	**7.10**	**2.60**	**5.40**	**3.40**	**4.60**	**7.00**	**6.70**	**5.20**	**6.10**	**5.20**	**3.30**	**7.60**	**7.40**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	48.0 L	72.0 L [52.7 L]	45.2 L	48.5 L	49.3 L	62.8 L	48.4 L	63.6 L	73.8 K	47.2 K	58.4 K	60.8 K	71.4 K	70.6 K	39.1 K	64.8 K	60.3 K
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.910 B	1.30 B [0.930 B]	0.790 B	0.960 B	1.00 B	0.780 B	0.890 B	0.920 B	1.10 B	1.00 B	1.30 B	0.990 B	1.40 B	1.10 B	0.860 B	1.20 B	1.10 B
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.120	<0.120 [<0.130]	<0.120	<0.130	<0.120	<0.120	<0.120	<0.130	<0.130	<0.120	<0.120	<0.130	<0.140	<0.130	<0.130	<0.130	<0.130
Calcium	mg/kg	- -	- -	- -	1,370 B	1,680 B [1,430 B]	1,350 B	1,550 B	1,300 B	1,330 B	1,250 B	1,160 B	1,650 B	1,280 B	1,510 B	1,580 B	1,460 B	1,290 B	1,210 B	1,680 B	1,280 B
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**38.1**	**53.5 [36.8]**	**32.8**	**32.5**	**38.0**	**38.4**	**40.7**	**29.3**	**47.2**	**51.9**	**58.0**	**43.6**	**38.3**	**41.2**	19.8	**63.4**	**50.2**
Cobalt	mg/kg	- -	- -	72.3	15.9 L	20.3 L [20.5 L]	15.3 L	15.2 L	15.4 L	12.3 L	12.0 L	16.4 L	16.9	17.0	28.7	20.6	15.6	19.4	10.7	21.1	22.1
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	99.4 K	233 K [31.0 K]	25.1 K	12.9 B	33.3 K	**110 K**	23.8 K	10.0 B	**136**	12.7 B	14.9 B	47.1	21.9	20.2	14.0 B	30.9	26.3
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**30,800**	**47,800 [34,700]**	**31,400**	**30,000**	**38,900**	**23,900**	**34,800**	**26,200**	**29,600**	**41,300**	**41,600**	**29,500**	**37,400**	**31,900**	**23,200**	**43,500**	**42,600**
Lead	mg/kg	400	750	26.8	32.9	47.1 [14.5]	13.5	11.4	18.9	62.7	13.0	11.8	66.9	13.6	17.9	72.8	12.8	16.4	10.3	34.4	39.2
Magnesium	mg/kg	- -	- -	- -	5,700	5,810 [5,080]	5,270	6,630	5,790	3,310	7,890	5,870	5,090	6,670	8,930	6,080	11,400	7,610	2,950	5,390	9,120
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**553**	**1,110 [733]**	**462**	**470**	**564**	**541**	**437**	**918**	**746**	**815**	**1,490**	**1,070**	**703**	**1,060**	**390**	**1,170**	**1,190**
Mercury	mg/kg	2.35	30.66	0.13	<0.130	<0.130 [<0.130]	<0.120	<0.130	<0.120	<0.130	<0.120	<0.130	<0.130	<0.120	<0.120	<0.130	<0.140	<0.130	<0.130	<0.130	<0.130
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	15.1 K	14.8 K [13.4 K]	13.8 K	16.2 K	13.5 K	9.00 K	14.8 K	13.8 K	15.4	14.4	17.1	14.1	25.5	17.1	11.8	14.0	16.1
Potassium	mg/kg	- -	- -	- -	1,550 K	1,890 K [1,260 K]	1,540 K	1,850 K	1,720 K	839 K	1,880 K	1,380 K	1,430 K	1,710 K	1,870 K	1,770	2,880 K	2,190 K	974 K	1,590 K	2,370 K
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<0.610 L	<0.620 L [<0.640 L]	<0.600 L	<0.630 L	<0.610 L	<0.630 L	<0.600 L	<0.640 L	<0.660 L	<0.620 L	<0.620 L	<0.640 L	<0.680 L	<0.630 L	<0.630 L	<0.650 L	<0.640 L
Sodium	mg/kg	- -	- -	- -	105 B	108 B [104 B]	103 B	104 B	99.8 B	86.9 B	107 B	91.0 B	173 B	193 B	165 B	168 B	166 B	141 B	94.3 B	123 B	114 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.360 B	**1.00 B [0.380 B]**	0.470 B	<0.250 L	<0.240 L	0.310 B	0.530 B	**0.990 B**	0.510 B	<0.250 L	<0.250 L	<0.260 L	<0.270 L	<0.250 L	<0.250 L	<0.260 L	<0.260 L
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**53.6 K**	**85.0 K [59.6 K]**	**54.8 K**	**53.7 K**	**70.2 K**	**40.6 K**	**59.4 K**	**47.9 K**	**52.6 K**	**69.7 J**	**71.6 J**	**53.4 J**	**63.4 J**	**59.5 J**	**38.1 J**	**77.0 J**	**75.7 J**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	81.7 B	101 B [39.3 B]	40.1 B	32.0 B	40.4 B	60.3 B	34.9 B	29.5 B	157 B	78.8 B	35.2 B	119 B	46.6 B	67.8 B	36.0 B	102 B	137 B
Miscellaneous																					
Percent Solids	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-1
Historical Soil Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	DTSB44 0.5 - 1 08/18/98	DTSB45 0.5 - 1 08/18/98	DTSB46A 0 - 0.5 06/12/02	DTSB46B 1 - 3 06/12/02	DTSB47A 0 - 0.5 06/12/02	DTSB47B 1 - 3 06/12/02	DTSB48A 0 - 0.5 07/13/04	DTSB48B 1 - 3 07/20/04	DTSB50A 0 - 0.5 07/13/04	DTSB51A 0 - 0.5 07/13/04	DTSB52A 0 - 0.5 07/13/04	DTSB54A 0 - 0.5 07/13/04	DTSB55A 0 - 0.5 07/13/04	DTSB55B 1 - 3 07/20/04	DTSB56A 0 - 0.5 07/13/04	DTSB57A 0 - 0.5 07/13/04	DTSB58A 0 - 0.5 07/13/04
Explosives																					
None Detected	- -	- -	- -	- -	- - [- -]	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																					
2,4-D	mg/kg	- -	- -	- -	NA	NA	0.171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	- -	- -	- -	NA	NA	0.099 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba	mg/kg	- -	- -	- -	NA	NA	0.00849 K	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	- -	- -	- -	NA	NA	13.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																					
4,4'-DDD	mg/kg	- -	- -	- -	NA	NA	0.0034 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	mg/kg	- -	- -	- -	NA	NA	0.0291 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																					
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	5.1	0.0012 B	0.054 B	0.00095 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	2.4 J [<2.2]	<0.43	27	0.0066 B	1.5	0.002 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	<8.3 [<4.3]	<0.85	0.24 J	0.0021 J	<0.0026	0.00087 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	6.4 [1.3]	0.49	37	0.0091	2.7	0.0036	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	**9.6 [2]**	**1.2**	**66**	0.03	**7.6**	0.016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	**10.4 J [2.1 J]**	**1.3 J**	**57**	0.021	**6.5**	0.013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	**12.74 [3]**	**1.9**	**81**	0.046	**10**	0.022	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	3.9 J [0.93 J]	0.72 J	38	0.02	4.2	0.012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	**6 [1.6]**	0.82	**26**	0.011	**3.1**	0.0062	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	11.11 [2.4]	1.6	**61**	0.033	7.6	0.015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	0.7 J [0.11 J]	0.09	9.9	0.005	1.1	0.0027	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	34.09 J [7.5 J]	4.1 J	180	0.097	20	0.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	4.8 [0.52]	<0.08	28	0.0073	1.6	0.002 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	**4.9 [1]**	**0.76**	**47**	0.025	**5.2**	0.013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	<4.2 [<2.2]	<0.43	29	0.0023 B	0.14 B	0.0011 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	32.8 [6.9]	2.6	160	0.077	16	0.023	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	25.6 [5.7]	3.2	130	0.078 J	16	0.033 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																					
None Detected	- -	- -	- -	- -	NA	NA	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Volatile Organics																					
1,2,3-Trichloropropane	mg/kg	- -	- -	- -	<0.0030 [<0.0030]	<0.0030 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	mg/kg	- -	- -	- -	<0.0020 [<0.0020]	<0.0020 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m,p-Xylene	mg/kg	- -	- -	- -	<0.0030 [<0.0030]	<0.0030 J	<0.014	<0.011	<0.013	<0.011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	<0.0010 [0.0050 K]	0.0050 J	<0.0069	<0.0056	<0.0067	<0.0056	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																					
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	0.19 K [0.090 J]	<0.43	NA	NA	NA	NA	0.092	0.089	<0.0087	0.051	<0.043	<0.0091	0.51 J	0.024	0.011	<0.0088	<0.010 L
3,3'-Dichlorobenzidine	mg/kg	- -	- -	- -	<8.8 [<0.88 J]	<0.84	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	mg/kg	- -	- -	- -	<0.45 [<0.45]	<0.43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	0.73	1.8	0.026	0.82	0.64	<0.0091	13	0.078	0.30	<0.0088	0.062 L
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	0.15 J	<0.081	0.016	0.083 J	<0.043	<0.0091	0.31 J	<0.0083	0.072 J	<0.0088	0.011 J
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	1.6	3.1	0.094	1.9	1.1	<0.0091	23	0.073	0.65	<0.0088	0.15 L
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	**3.7**	**5.9**	0.21	**3.5**	**2.2**	<0.0091	**43**	0.15	**1.3**	<0.0088	**0.35 L**
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	**2.8**	**5.0**	**0.18**	**2.7**	**2.0**	<0.0091	**32**	**0.12**	**0.97**	<0.0088	**0.27 L**
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	**4.7**	**7.7**	**0.33**	**4.4**	**3.0**	0.012	**54**	0.18	**2.3**	<0.0088	**0.43 L**
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	1.5 J	3.0	0.13	1.3 J	1.0	<0.0091	15 J	0.061	0.54 J	<0.0088	0.18 L
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	1.6	**2.4**	0.084	1.6	0.94	<0.0091	**16**	0.056	**2.3**	<0.0088	0.15 L
Carbazole	mg/kg	- -	- -	- -	6.3 J [1.4 J]	<0.43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	3.4	5.2	0.23	3.4	2.1	<0.0091	**43**	0.14	1.3	<0.0088	0.38 L
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	0.55 J	<0.081	0.037	<0.33	0.31	<0.0091	<3.4	0.020	0.21 J	<0.0088	<0.010 L
Dibenzofuran	mg/kg	- -	- -	- -	1.4 K [0.44 J]	<0.43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	<0.45 [<0.45]	<0.43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	<0.45 J [<0.45]	0.12 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	9.9	17	0.54	9.8	6.7	0.013	130	0.47	3.4	<0.0088	0.94
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	0.69	1.8	0.024	0.84	0.59	<0.0091	13	0.072	0.27	<0.0088	0.069 L
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	**1.4 J**	**2.9**	0.12	**1.2 J**	**1.0**	<0.0091	**15 J**	0.068	**0.55 J**	<0.0088	0.17 J
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	0.40 J	0.32	<0.0087	0.15 J	0.086	<0.0091	1.3 J	0.16	0.024 J	<0.0088	<0.010 L
Pentachlorophenol	mg/kg	5.3 {C}	24 {C}	- -	<2.2 J [<2.2]	<2.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	7.4 J	14	0.30	8.3 J	5.5	<0.0091	110 J	0.43	2.5 J	<0.0088	0.73 J
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	7.6	9.8	0.37	7.9	4.3	0.012	99	0.28 J	2.7	<0.0088	0.70

See footnotes on last page.

Table 3-1
Historical Soil Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	DTSB44 0.5 - 1 08/18/98	DTSB45 0.5 - 1 08/18/98	DTSB46A 0 - 0.5 06/12/02	DTSB46B 1 - 3 06/12/02	DTSB47A 0 - 0.5 06/12/02	DTSB47B 1 - 3 06/12/02	DTSB48A 0 - 0.5 07/13/04	DTSB48B 1 - 3 07/20/04	DTSB50A 0 - 0.5 07/13/04	DTSB51A 0 - 0.5 07/13/04	DTSB52A 0 - 0.5 07/13/04	DTSB54A 0 - 0.5 07/13/04	DTSB55A 0 - 0.5 07/13/04	DTSB55B 1 - 3 07/20/04	DTSB56A 0 - 0.5 07/13/04	DTSB57A 0 - 0.5 07/13/04	DTSB58A 0 - 0.5 07/13/04
Inorganics																					
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**28,500 [13,000]**	**8,890**	**15,400**	**15,700**	**15,500**	**16,500**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	<0.670 [<0.670]	<0.650	0.220 B	<0.610 L	0.330 B	<0.620 L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**5.70 [7.60 K]**	**3.60**	**4.00**	**2.11**	**3.65**	**4.51**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	63.6 K [56.2 B]	45.5 K	58.2	61.5	78.7	56.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	1.60 K [1.20]	0.740 B	1.11 K	1.11 K	1.20 K	1.38 K	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.130 [<0.140]	<0.130	0.100 J	<0.120	<0.120	<0.120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	- -	- -	- -	1,530 B [1,160 B]	920 B	1,340 J	1,120 J	850 J	988 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**36.0 [58.5]**	**27.3**	**27.4 J**	23.2 J	**39.3 J**	**42.7 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	- -	- -	72.3	13.3 [21.8]	13.3	19.2 J	10.7 J	24.3 J	26.1 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	24.3 [27.9]	19.4	83.4 L	19.8 L	25.9 L	19.3 L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**47,500 [43,600]**	**20,000**	**23,300 J**	**21,100 J**	**40,000 J**	**35,600 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	400	750	26.8	7.90 [55.6]	22.7	37.7 K	14.1 K	18.2 K	18.4 K	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	mg/kg	- -	- -	- -	19,100 [6,680]	4,000	4,040	4,300	5,000	5,680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**571 [1,250]**	**746**	**946 J**	**484 J**	**1,490 J**	**981 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.35	30.66	0.13	<0.130	<0.130	0.0300 J	0.0300 J	0.0300 J	0.0200 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	24.2 [12.1]	9.60	15.1	17.0	17.2	17.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	- -	- -	- -	3,890 K [1,390 K]	886 K	1,530	1,370	1,630	1,630	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<0.670 L [<0.670 L]	<0.650 L	0.430 L	<1.23 L	<1.22 L	<1.24 L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	- -	- -	- -	138 B [108 B]	97.6 B	22.0 B	18.0 B	18.0 B	18.0 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.300 B [<0.270 L]	**1.00 B**	0.350 J	0.210 J	0.230 J	0.200 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**72.5 J [76.7 J]**	**36.6 J**	**44.6 J**	**38.4 J**	**65.3 J**	**66.2 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	58.6 B [87.5 B]	54.4 B	91.7 J	42.6 J	41.2 J	39.5 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																					
Percent Solids	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	83	82	77	81	77	74	78	80	74	75	64
pH	pH Units	- -	- -	- -	NA	NA	6.68 J	6.3 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	17,300 K	12,500 K	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-1
Historical Soil Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	DTSB59A 0 - 0.5 07/13/04	DTSB59B 1 - 3 07/20/04	DTSB60A 0 - 0.5 07/13/04	DTSB62A 0 - 0.5 07/13/04	DTSB63A 0 - 0.5 07/13/04	DTSB64A 0 - 0.5 07/13/04	DTSB65A 0 - 0.5 07/13/04	DTSB66A 0 - 0.5 07/13/04	DTSB67A 0 - 0.5 07/13/04	DTSB67B 1 - 3 07/20/04	DTSB68A 0 - 0.5 07/13/04	DTSB69A 0 - 0.5 07/13/04	DTSB70A 0 - 0.5 07/13/04	DTSB71A 0 - 0.5 07/13/04	DTSB72A 0 - 0.5 07/13/04	DTSB73A 0 - 0.5 07/13/04	DTSB74A 0 - 0.5 07/13/04	DTSB75A 0 - 0.5 07/13/04
Explosives																						
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																						
2,4-D	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																						
4,4'-DDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																						
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																						
None Detected	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Volatile Organics																						
1,2,3-Trichloropropane	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m,p-Xylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																						
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	0.054 J	<0.0083	<0.011	<0.0091	<0.0087	<0.030	<0.010	<0.0084	2.0	<0.0081	<0.0092	<0.0085	<0.0092	<0.0095	<0.0087	<0.0089	<0.0081	<0.0090
3,3'-Dichlorobenzidine	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	0.69 J	<0.0083	<0.011	<0.0091	0.049 J	0.16	<0.010	<0.0084	10	<0.0081	0.11	0.022	0.013	0.028	0.011	<0.0089	<0.0081	0.063 J
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	0.099 J	<0.0083	<0.011	<0.0091	0.013 J	<0.030	<0.010	<0.0084	0.21 J	<0.0081	0.043 J	<0.0085	<0.0092	<0.0095	<0.0087	<0.0089	<0.0081	0.011
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	1.5	<0.0083	<0.011	<0.0091	0.13 J	0.34	0.021	<0.0084	17	<0.0081	0.29	0.043	0.037	0.068	0.030	0.018	<0.0081	0.20 J
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	**2.9**	<0.0083	<0.011	<0.0091	**0.34 J**	**0.96**	0.058	<0.0084	**27**	<0.0081	**0.69**	0.16	0.10	0.20	0.069	0.040	0.0093	**0.45 J**
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	**2.2**	<0.0083	<0.011	<0.0091	**0.28 J**	**0.88**	**0.058**	<0.0084	**22**	<0.0081	**0.60**	**0.15**	**0.11 L**	**0.19**	**0.067**	**0.034**	0.0089	**0.42 J**
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	**3.7**	<0.0083	<0.011	<0.0091	**0.46 J**	**1.5**	0.11	<0.0084	**36**	<0.0081	**1.1**	**0.25**	0.13	0.21	0.097	0.039	0.014	**0.45 J**
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	1.1 J	<0.0083	<0.011	<0.0091	0.19 J	0.49	0.041	<0.0084	11 J	<0.0081	0.35 J	0.085	0.076	0.12	0.052	0.024	<0.0081	0.28 J
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	1.0	<0.0083	<0.011	<0.0091	0.14	0.33	0.031	<0.0084	**9.3**	<0.0081	0.26	0.066	0.087 L	0.16	0.048	0.035	<0.0081	0.32 J
Carbazole	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	2.7	<0.0083	<0.011	<0.0091	0.38 J	0.97	0.066	<0.0084	**25**	<0.0081	0.77	0.16	0.13 L	0.24	0.084	0.048	0.0089	0.55 J
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	0.37 J	<0.0083	<0.011	<0.0091	<0.0087	<0.030	0.012	<0.0084	3.6 J	<0.0081	0.12 J	0.023	<0.0092	0.056 J	0.024 J	<0.0089	<0.0081	0.13 J
Dibenzofuran	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	8.3	<0.0083	0.012	0.0091	0.84 J	2.6	0.15	<0.0084	78	<0.0081	1.7	0.42	0.35 L	0.65	0.19	0.11	0.015	1.4 J
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	0.67	<0.0083	<0.011	<0.0091	0.045 J	0.14	<0.010	<0.0084	10	<0.0081	0.096	0.018	0.012	0.026	0.011	<0.0089	<0.0081	0.070 J
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	**1.1 J**	<0.0083	<0.011	<0.0091	0.17 J	**0.49**	0.035	<0.0084	**10 J**	<0.0081	**0.34 J**	0.078	0.076	0.12	0.052	0.024	<0.0081	**0.28 J**
Naphthalene	mg/kg	- -	- -	- -	0.15 J	<0.0083	<0.011	<0.0091	<0.0087	0.042	<0.010	<0.0084	11 J	<0.0081	0.015 J	<0.0085	<0.0092	<0.0095	<0.0087	<0.0089	<0.0081	0.013 J
Pentachlorophenol	mg/kg	5.3 {C}	24 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	6.7 J	<0.0083	<0.011	<0.0091	0.43 J	1.5	0.067	<0.0084	74 J	<0.0081	1.1 J	0.24	0.16	0.33	0.13	0.072	<0.0081	0.83 J
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	6.2	<0.0083	<0.011	<0.0091	0.69 J	1.5	0.10	<0.0084	60	<0.0081	1.4	0.27	0.22	0.40	0.14	0.076	0.013	0.82 J

See footnotes on last page.

Table 3-1
Historical Soil Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	DTSB59A 0 - 0.5 07/13/04	DTSB59B 1 - 3 07/20/04	DTSB60A 0 - 0.5 07/13/04	DTSB62A 0 - 0.5 07/13/04	DTSB63A 0 - 0.5 07/13/04	DTSB64A 0 - 0.5 07/13/04	DTSB65A 0 - 0.5 07/13/04	DTSB66A 0 - 0.5 07/13/04	DTSB67A 0 - 0.5 07/13/04	DTSB67B 1 - 3 07/20/04	DTSB68A 0 - 0.5 07/13/04	DTSB69A 0 - 0.5 07/13/04	DTSB70A 0 - 0.5 07/13/04	DTSB71A 0 - 0.5 07/13/04	DTSB72A 0 - 0.5 07/13/04	DTSB73A 0 - 0.5 07/13/04	DTSB74A 0 - 0.5 07/13/04	DTSB75A 0 - 0.5 07/13/04
Inorganics																						
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	- -	- -	72.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	400	750	26.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.35	30.66	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																						
Percent Solids	%	- -	- -	- -	77	81	58	73	77	66	66	79	76	82	73	79	72	71	76	75	83	74
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-1
Historical Soil Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	DTSB76A 0 - 0.5 07/13/04	DTSB77A 0 - 0.5 07/13/04	DTSB77B 1 - 3 07/20/04	DTSB78A 0 - 0.5 07/13/04	DTSB80A 0 - 0.5 07/20/04	DTSB81A 0 - 0.5 07/20/04	DTSB82A 0 - 0.5 07/20/04	DTSB83A 0 - 0.5 07/20/04	DTSB84A 0 - 0.5 07/20/04	DTSB85A 0 - 0.5 07/20/04	DTSB86A 0 - 0.5 07/20/04	DTSB87A 0 - 0.5 07/20/04	DTSB88A 0 - 0.5 07/20/04	DTSB89A 0 - 0.5 07/23/04
Explosives																		
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																		
2,4-D	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																		
4,4'-DDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																		
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																		
None Detected	- -	- -	- -	- -	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	- -
Volatile Organics																		
1,2,3-Trichloropropane	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m,p-Xylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																		
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	<0.0081	<0.18	<0.0080	<0.0092	<0.0081	<0.0091	<0.0085	<0.0085	<0.0086	<0.0088	<0.0082	<0.0081	<0.0083	<0.0074
3,3'-Dichlorobenzidine	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	0.11 J	2.5	<0.0080	<0.0092	<0.0081	<0.0091	<0.0085	<0.0085	<0.0086	<0.0088	<0.0082	<0.0081	<0.0083	0.013
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	0.0089	<0.18	<0.0080	<0.0092	<0.0081	0.020	<0.0085	<0.0085	<0.0086	<0.0088	<0.0082	<0.0081	<0.0083	0.0081
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	0.22 J	4.8	<0.0080	0.018	<0.0081	0.056	<0.0085	<0.0085	<0.0086	<0.0088	<0.0082	<0.0081	0.015	0.038
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	**0.46 J**	**6.5**	<0.0080	0.074	0.024 K	0.11	<0.0085	0.014	<0.0086	<0.0088	0.023	0.0097	0.061	0.076
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	**0.39 J**	**6.3**	<0.0080	**0.079**	**0.024 K**	**0.093**	<0.0085	0.011	<0.0086	<0.0088	**0.025**	0.010	**0.052**	**0.068**
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	**0.59 J**	**6.8**	<0.0080	0.12	0.041 K	0.22	<0.0085	0.017	<0.0086	<0.0088	0.045	0.018	0.084	0.12
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	0.21 J	4.3	<0.0080	0.050	0.018	0.071	<0.0085	<0.0085	<0.0086	<0.0088	0.020	0.0085	0.038	0.055
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	0.18 J	**4.8**	<0.0080	0.034	0.0085 K	0.069	<0.0085	<0.0085	<0.0086	<0.0088	0.014	<0.0081	0.024	0.037
Carbazole	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	0.43 J	7.1	<0.0080	0.072	0.024 K	0.13	<0.0085	0.014	<0.0086	<0.0088	0.027	0.011	0.051	0.076
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	0.060 J	<0.18	<0.0080	0.015	<0.0081	<0.0091	<0.0085	<0.0085	<0.0086	<0.0088	<0.0082	<0.0081	<0.0083	0.016
Dibenzofuran	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	1.2 J	27	<0.0080	0.16	0.050 K	0.21	<0.0085	0.037	<0.0086	<0.0088	0.061	0.023	0.15	0.21
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	0.11 J	2.8	<0.0080	<0.0092	<0.0081	<0.0091	<0.0085	<0.0085	<0.0086	<0.0088	<0.0082	<0.0081	<0.0083	0.010
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	0.21 J	**4.2**	<0.0080	0.043	0.017 K	0.069	<0.0085	<0.0085	<0.0086	<0.0088	0.019	<0.0081	0.036	0.050
Naphthalene	mg/kg	- -	- -	- -	<0.0081	0.25	<0.0080	<0.0092	<0.0081	<0.0091	<0.0085	<0.0085	<0.0086	<0.0088	<0.0082	<0.0081	<0.0083	<0.0074
Pentachlorophenol	mg/kg	5.3 {C}	24 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.95 J	22	<0.0080	0.077	0.022 K	0.073	<0.0085	0.026	<0.0086	<0.0088	0.021	0.0085	0.076	0.11
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.81 J	7.7 J	<0.0080	0.12	0.035 K	0.16	<0.0085	0.022	<0.0086	<0.0088	0.040	0.015	0.094	0.13

See footnotes on last page.

Table 3-1
Historical Soil Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Sample Depth (ft): / Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	DTSB76A 0 - 0.5 07/13/04	DTSB77A 0 - 0.5 07/13/04	DTSB77B 1 - 3 07/20/04	DTSB78A 0 - 0.5 07/13/04	DTSB80A 0 - 0.5 07/20/04	DTSB81A 0 - 0.5 07/20/04	DTSB82A 0 - 0.5 07/20/04	DTSB83A 0 - 0.5 07/20/04	DTSB84A 0 - 0.5 07/20/04	DTSB85A 0 - 0.5 07/20/04	DTSB86A 0 - 0.5 07/20/04	DTSB87A 0 - 0.5 07/20/04	DTSB88A 0 - 0.5 07/20/04	DTSB89A 0 - 0.5 07/23/04
Inorganics																		
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	- -	- -	72.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	400	750	26.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.35	30.66	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																		
Percent Solids	%	- -	- -	- -	83	74	84	72	82	73	79	79	78	76	81	83	80	91
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

RBC Risk Based Concentration.
{C} Carcinogen.
{N} Noncarcinogen.
B (Inorganics) Constituent concentration quanitified as estimated.
B (Organics) Constituent was detected in the associated method blank.
J Constituent concentration quanitified as estimated.
K Estimated concentration bias high.
L Estimated concentration bias low.
R Constituent concentration rejected.
NA Not Analyzed.
24,400 Constituent concentration exceeds Adjusted Soil RBC (Residential).
10.6 J Constituent concentration exceeds Adjusted Soil RBC (Industrial).
3,980 Inorganics constituent concentration exceeds Background Point Estimate.
Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report* , IT Corporation, 2001.

Table 3-2
Historical Sediment Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	DTSD1 0 - 0.5 07/17/98	DTSD1-2 0 - 0.5 08/17/98	DTSD2 0 - 0.5 07/17/98	DTSD2-2 0 - 0.5 08/17/98	DTSD3 0 - 0.5 07/17/98	DTSD3-2 0 - 0.5 08/17/98	DTSD4 0 - 0.5 08/17/98	DTSD05 0 - 0.5 06/20/02	DTSD06 0 - 0.5 06/20/02	DTSD07 0 - 0.5 06/20/02	DTSD08 0 - 0.5 06/20/02	DTSD09 0 - 0.5 06/20/02	DTSD10 0 - 0.5 06/20/02
Explosives																	
None Detected	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA
Herbicides																	
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	- -	NA	- -	NA	NA	NA
Organochlorine Pesticides																	
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.00115 J	NA	0.0011 J	NA	NA	NA
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.00212 B	NA	0.00169 B	NA	NA	NA
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.00123 B	NA	0.00069 B	NA	NA	NA
Alpha-Chlordane	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.00037 J	NA	0.00039 J	NA	NA	NA
Delta-BHC	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	<0.00134	NA	0.00354	NA	NA	NA
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.00159	NA	0.0014	NA	NA	NA
PAHs																	
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.03	0.025	0.015	0.0042 B	0.006 B	0.074
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	<0.03	<0.6	<0.02	<0.49	<0.02	<0.47 J	<0.5	0.13	0.0025 B	0.0036 B	0.0018 B	0.0023 B	0.24
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	<0.06	<1.2	<0.05	<0.97	<0.05	<0.94 J	<1	<0.0068	0.0017 J	<0.0034	<0.0032	<0.0041	<0.0061
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	<0.0031	<0.06	<0.0026	<0.04	<0.0028	<0.04 J	0.03 J	0.19	0.0044	0.0053	0.0023 J	0.0029 J	0.41
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.0031	0.01 J	<0.0026	<0.04	<0.0028	<0.04 J	0.03 J	**0.41**	0.02	0.015	0.013	0.015	**0.88**
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.0031	**0.03 J**	<0.0026	<0.04	<0.0028	<0.04 J	0.02 J	**0.35**	0.017	0.013	0.013	0.014	**0.71**
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.0061	<0.12	<0.0052	<0.09	<0.0056	<0.09 J	<0.1	**0.62**	0.034	0.023	0.026	0.025	**1.2**
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	<0.0061	<0.12	<0.0052	<0.09	<0.0056	<0.09 J	0.04 J	0.17 J	0.011 J	0.0069 J	0.0082 J	0.0088 J	0.28 J
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	<0.0031	<0.06	<0.0026	<0.04	<0.0028	<0.04 J	0.01 J	0.17	0.013	0.008	0.0076	0.009	0.37
Chrysene	mg/kg	22 {C}	390 {C}	- -	<0.0031	0.02 J	0.0044	<0.04	<0.0028	<0.04 J	0.09	0.4	0.022	0.014	0.015	0.015	0.8
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.0061	<0.12	<0.0052	<0.09	<0.0056	<0.09 J	<0.1	0.041	0.0029 J	<0.0034	<0.0032	<0.0041	0.076
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.01	0.03 J	0.01	<0.09	0.01	0.01 J	0.2	1	0.034	0.024	0.024	0.024	2
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	<0.0061	<0.12	<0.0052	<0.09	<0.0056	<0.09 J	<0.1	0.13	0.003 J	0.0038	0.0024 J	0.0028 J	0.24
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.0031	<0.06	<0.0026	<0.04	<0.0028	<0.04 J	0.04 J	0.2	0.012	0.008	0.0099	0.011	**0.36**
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	<0.03	<0.6	<0.02	<0.49	<0.02	<0.47 J	<0.5	0.053 B	0.024 B	0.019 B	0.014 B	0.014 B	0.091
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.0049	0.04 J	0.0042	<0.04	0.0048	0.02 J	0.21	1	0.034	0.022	0.012	0.013	1.9
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.01	0.02 J	0.01	<0.04	0.01	<0.04 J	0.1	0.94 J	0.035 J	0.027 J	0.025 J	0.025 J	1.7 J
PCBs																	
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	- -	- -	- -	- -	- -	- -
Volatile Organics																	
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	<0.0080 J	<0.0090 J	<0.0090	<0.0070 J	<0.0090	<0.0070 J	<0.0080 J	0.030 B	0.022 B	0.032 B	0.028 B	<0.012	0.025 B
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	<0.0080 J	<0.0090	<0.0090	<0.0070 J	<0.0090	<0.0070	<0.0080	0.00099 B	0.0010 B	0.0012 B	0.0014 B	0.0014 B	0.0013 B
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	<0.0020 J	<0.0020	<0.0020	<0.0010 J	<0.0020	0.0050	<0.0020	<0.010	<0.0090	<0.0099	<0.0094	<0.012	<0.0089
p-Isopropyltoluene	mg/kg	- -	- -	- -	<0.0010 J	0.0040 J	<0.0020	<0.0010 J	<0.0020	<0.0010	<0.0010	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	<0.0020 J	<0.0020	<0.0020	<0.0020 J	<0.0020	<0.0020	<0.0020	0.00094 B	<0.0090 L	0.0011 B	<0.0094 L	<0.012 L	0.0027 B
Trichloroethene	mg/kg	1.6 {C}	7.2 {C}	- -	<0.0040 J	<0.0040	<0.0040	0.0030 J	<0.0050	<0.0040	<0.0040	<0.010	<0.0090	<0.0099	<0.0094	<0.012	<0.0089
Semivolatile Organics																	
4-Methylphenol	mg/kg	39 {N}	510 {N}	- -	<0.50	<0.57	<0.58	<0.46	0.060 J	<0.47	<0.52	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	<0.50	0.080 B	<0.58	<0.46	<0.59	<0.47	0.090 B	NA	NA	NA	NA	NA	NA
Inorganics																	
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**17,200**	**8,690**	**15,200**	**8,980**	**10,800**	**9,250**	**8,970**	**17,100**	**14,900**	**15,500**	**18,600**	**20,200**	**12,500**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	<0.740	<0.860	<0.870	<0.690	<0.880	<0.690	<0.780	0.890 L	0.470 B	<0.980 L	<0.930 L	<1.19 L	0.370 B
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**6.50**	**5.00 J**	**8.00**	**11.6 J**	**4.20**	**13.2**	**5.40 J**	**2.59 J**	**1.96 J**	<0.980	**3.59 J**	**3.08 J**	**4.37 J**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	93.5 K	75.0 K	92.0 K	104 K	72.5 K	358 L	80.7 K	95.3	76.9	85.3	98.8	99.1	90.7
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.960 B	0.750 J	1.20 B	1.10	0.700 B	1.30 B	0.740 J	**1.03 J**	0.940 J	0.880 J	1.12 J	0.970 J	1.09 J
Calcium	mg/kg	- -	- -	- -	59,900	60,400 J	50,800	88,100 J	64,100	62,600	98,600 J	78,000	46,100	52,600	72,100	76,200	89,500
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**43.8**	22.3	**52.5**	**56.2**	**24.9**	**73.0**	**33.6**	**29.6 J**	**29.0 J**	**24.0 J**	**32.2 J**	**31.1 J**	**48.7 J**
Cobalt	mg/kg	- -	- -	72.3	15.4 K	8.80 L	15.0 K	27.6 L	8.80 K	26.2 L	10.9 L	10.6 L	11.4 L	10.7 L	12.7 L	11.0 L	13.5 L
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	15.0 B	10.1 B	14.8 B	4.40 B	11.7 B	13.3 B	10.3 B	12.9 J	11.1 J	11.1 J	11.2 J	12.1 J	12.7 J
Iron	mg/kg	5,500 {N}	72,000 {N}	50,962 {N}	**29,900**	**20,400**	**32,300**	**44,900**	**17,300**	**56,200**	**20,200**	**19,800**	**24,500**	**18,500**	**22,900**	**19,500**	**22,700**
Lead	mg/kg	400	750	26.8	18.1	17.8	21.2	23.5	14.2	28.6	15.3	19.0 J	14.9 J	10.7 J	17.7 J	21.4 J	18.2 J
Magnesium	mg/kg	- -	- -	- -	6,620	3,070 B	6,790	7,720	3,750	4,560	6,130	5,010	3,950	5,140	5,320	4,810	7,010
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**468**	**904 J**	**614**	**1,640 J**	**387**	**3,340**	**539 J**	**641**	**510**	**589**	**829**	**627**	**555**
Mercury	mg/kg	2.35	30.66	0.13	<0.150	<0.170	<0.180	<0.140	<0.170	<0.140	<0.160	0.0400 L	0.0300 L	<0.0900 L	<0.0900 L	<0.110 L	<0.0800 L
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	16.3 K	7.90 J	16.4 K	8.00 J	10.6 K	20.8 K	8.70 J	13.2	12.1	14.0	14.6	14.0	13.1
Potassium	mg/kg	- -	- -	- -	2,140 J	776 K	1,930 J	1,760 K	1,180 J	1,250 K	1,670 K	1,510	1,280	1,440	1,810	1,840	2,200
Silver	mg/kg	39.1 {N}	511 {N}	- -	0.860 B	<0.350	<0.350	<0.280	<0.350	<0.280 L	<0.310	<2.00	<1.80	<1.98	<1.88	<2.39	<1.78
Sodium	mg/kg	- -	- -	- -	510 B	225 B	275 B	187 B	344 B	260 B	257 B	105 J	87.4 J	103 J	95.2 J	130 J	134 J
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	<0.300 L	**1.10 B**	0.380 B	<0.280 L	<0.350 L	**0.760 B**	<0.310 L	0.190 J	0.140 J	0.0900 J	0.150 J	0.150 J	0.330 J
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**56.0 K**	**33.5 L**	**55.5 K**	**69.5 L**	**31.6 K**	**75.7 K**	**34.7 L**	**38.7 L**	**43.1 L**	**37.0 L**	**45.4 L**	**38.4 L**	**37.2 L**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	46.9 B	41.7 B	51.9 B	32.6 B	44.3 B	46.8 B	35.7 B	44.7 J	37.7 J	38.4 J	38.4 J	47.2 J	37.6 J

RBC Risk Based Concentration.
{C} Carcinogen.
{N} Noncarcinogen.
B (Inorganics) Constituent concentration quanitified as estimated.
B (Organics) Analyte was detected in the associated method blank.
J Constituent concentration quanitified as estimated.
K Estimated concentration bias high.
L Estimated concentration bias low.
NA Not Analyzed.
24,400 Constituent concentration exceeds Adjusted Soil RBC (Residential).
10.6 J Constituent concentration exceeds Adjusted Soil RBC (Industrial).
3,980 Inorganics constituent concentration exceeds Facility-Wide Background Point Estimate.
Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report*, IT Corporation, 2001.

Table 3-3
Historical Surface Water Sampling Results, Building Debris Disposal Trench
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Date Collected:	Units	Aquatic Life Freshwater Chronic	Human Health All Other Surface Waters	DTSW1 07/17/98	DTSW1-2 08/17/98	DTSW2 07/17/98	DTSW2-2 08/17/98	DTSW3 07/17/98	DTSW3-2 08/17/98	DTSW4 08/17/98	DTSW05 06/20/02	DTSW06 06/20/02	DTSW07 06/20/02	DTSW08 06/20/02	DTSW09 06/20/02	DTSW10 06/20/02
Explosives																
None Detected	- -	- -	- -	- -	- -	- -	- -	- -	NA	- -	NA	NA	NA	NA	NA	NA
Herbicides																
None Detected	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	- -	NA	- -	NA	NA	NA
Organochlorine Pesticides																
4,4'-DDT	ug/L	**0.001**	0.0059	NA	NA	NA	NA	NA	NA	NA	**0.00516 J**	NA	<0.02	NA	NA	NA
Dieldrin	ug/L	**0.056**	0.0014	NA	NA	NA	NA	NA	NA	NA	0.00548 J	NA	0.00591 J	NA	NA	NA
Endrin Ketone	ug/L	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.00437 J	NA	0.00599 J	NA	NA	NA
PAHs																
2-Methylnaphthalene	ug/L	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.03 B	0.03 B	<0.05	<0.05	0.03 B	0.13 B
Acenaphthene	ug/L	- -	2,700	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Acenaphthylene	ug/L	- -	- -	<1	<1	<1	<1	<1	NA	<1	<0.05	<0.05	<0.05	<0.05	<0.05	0.04 J
Fluorene	ug/L	- -	14,000	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	0.03 J
Naphthalene	ug/L	- -	- -	<0.1	<0.1	<0.1	<0.1	<0.1	NA	<0.1	0.04 B	0.04 B	0.03 B	0.03 B	0.04 B	0.13 B
Perchlorate																
None Detected	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	- -	- -	- -	- -	- -	- -
PCBs																
None Detected	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	- -	- -	- -	- -	- -	- -
Volatile Organics																
Bromodichloromethane	ug/L	- -	460	<1.0	<0.60	<1.0	<0.60	<1.0	23	<0.60	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide	ug/L	- -	- -	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	0.30 B	<1.0	0.22 B	0.34 B	0.31 B	0.29 B
Chloroform	ug/L	- -	29,000	<1.0	<0.80	<1.0	<0.80	<1.0	4.0	<0.80	0.11 J	0.11 J	0.070 J	0.080 J	<1.0	0.090 J
Semivolatile Organics																
Di-n-Butylphthalate	ug/L	- -	12,000	2.0 B	<10	3.0 B	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA
Inorganics																
Aluminum	ug/L	- -	- -	68.5 B	82.3 J	67.9 B	78.5 J	76.7 B	49.8 J	67.4 J	340	245	120 J	343	603	300
Antimony	ug/L	- -	4,300	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	0.740 B	0.380 B	<5.00	<5.00	<5.00
Barium	ug/L	- -	- -	60.6 B	64.5 K	60.1 B	66.5 K	66.2 B	60.0 L	61.0 K	77.1	75.7	72.6	82.5	77.4	77.6
Calcium	ug/L	- -	- -	50,600 B	63,100 J	50,100 B	65,000 J	55,100 B	56,000	59,900 J	54,100	52,300	47,000	52,500	48,300	54,900
Copper	ug/L	**9 {H}**	- -	**18.1 B**	**34.8 J**	**19.8 B**	**27.4 J**	**30.7 B**	**12.0 K**	**16.7 J**	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Iron	ug/L	- -	- -	114 B	105	127 B	106	115 B	76.3 J	87.6 J	238 J	314 J	203 J	328 J	507 J	294 J
Lead	ug/L	**14 {H}**	- -	<2.00	4.60 K	<2.00	2.30 K	<2.00	<2.00	<2.00	1.10 B	0.340 B	0.300 B	0.210 B	0.480 B	0.150 B
Magnesium	ug/L	- -	- -	13,700 B	14,100	13,600 B	14,600	15,000 B	12,700	13,200	16,200	15,900	15,400	17,400	15,900	16,100
Manganese	ug/L	- -	- -	5.60 B	3.40 J	5.30 B	3.60 J	5.40 B	4.00 J	3.40 J	10.8	11.5	12.2	17.2	19.8	10.8
Nickel	ug/L	**20 {H}**	4,600	2.80 K	5.50 J	2.80 K	5.00 J	2.70 K	3.40 K	3.20 J	<40.0	<40.0	<40.0	<40.0	<40.0	<40.0
Potassium	ug/L	- -	- -	1,930 B	2,490 K	1,980 B	2,510 K	2,110 B	2,340 K	2,260 K	3,250	3,050	3,210	3,670	3,360	3,160
Silver	ug/L	- -	- -	2.10 B	<2.00	<2.00 J	<2.00	<2.00 J	<2.00 L	<2.00	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Sodium	ug/L	- -	- -	26,900	26,500 K	26,900	25,300 K	29,300	22,400 K	25,600 K	31,500	31,100	31,200	35,300	32,200	31,200
Thallium	ug/L	- -	6.3	<2.00 L	<2.00 L	5.70 B	6.10 L	2.30 B	<2.00 L	7.20 L	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
Zinc	ug/L	**120 {H}**	69,000	20.2 B	46.2 J	21.9 B	34.2 J	20.4 B	38.7 K	21.6 J	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Miscellaneous																
Hardness	mg/L	- -	- -	NA	NA	NA	NA	NA	NA	NA	202	196	181	NA	NA	204

{H}	Value has not been adjusted for hardness.
B (Inorganics)	Constituent concentration quanitified as estimated.
B (Organics)	Constituent was detected in the associated method blank.
J	Constituent concentration quanitified as estimated.
K	Estimated concentration bias high.
L	Estimated concentration bias low.
NA	Not Analyzed.
10.6 J	Constituent concentration exceeds Virginia Surface Water Human Health Standards (All Other Surface Waters).
10.6 J	Constituent concentration exceeds Virginia Surface Water Aquatic Life Freshwater Chronic Standard.

Table 3-4
Historical Soil Sampling Results, Bag Loading Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	407712012 0 - 1 12/09/97	4077121224 1 - 2 12/09/97	4077122436 2 - 3 12/09/97	407736012 0 - 1 12/09/97	4077361224 1 - 2 12/09/97	407760012 0 - 1 12/09/97	4077601224 1 - 2 12/09/97	SS-09 0 - 0.5 06/04/97	SS-14 0 - 0.16 03/31/98	TR-03E 0.04 - 0.16 04/02/98	BLASB01A 0 - 0.5 06/11/02	BLASB01B 2 - 4 06/20/02	BLASB02A 0 - 0.5 06/11/02	BLASB02B 2 - 4 06/20/02	BLASB03A 0 - 0.5 06/11/02
Asbesos																			
Chrysotile	%ASB	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																			
1,3,5-Trinitrobenzene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	<0.1	<0.2
1,3-Dinitrobenzene	mg/kg	0.78 {N}	10 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	<0.1	<0.2
2,4,6-Trinitrotoluene	mg/kg	21 {C}	95 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.4
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.2	0.05 J	<0.2	0.43 K
2,6-Dinitrotoluene	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	1.9 C,J	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.4
4-Amino-2,6-Dinitrotoluene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.4
m-Nitrotoluene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.4	<0.4	<0.4	<0.4	<0.8
Nitroglycerine	mg/kg	0.78 {N}	10 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.34	<0.41	<0.35	<0.47	<0.68
Herbicides																			
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	- -	NA	NA
Organochlorine Pesticides																			
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.043 I	NA	NA	NA	NA	<0.00798	NA	NA
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00798	NA	NA
Aldrin	mg/kg	0.038 {C}	0.17 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**0.042 I,R,J**	NA	NA	NA	NA	<0.00798	NA	NA
Alpha-Chlordane	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.089 I	NA	NA	NA	NA	<0.00798	NA	NA
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**0.062 I,R**	NA	NA	NA	NA	<0.00798 J	NA	NA
Endosulfan I	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.022 I	NA	NA	NA	NA	<0.00798	NA	NA
Endosulfan II	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.101 I,R	NA	NA	NA	NA	<0.00798	NA	NA
Endrin	mg/kg	2.4 {N}	31 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.044 I,R	NA	NA	NA	NA	<0.00798	NA	NA
Endrin Aldehyde	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.024 I,R	NA	NA	NA	NA	<0.00798 L	NA	NA
Endrin Ketone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00798	NA	NA
Gamma-Chlordane	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.01 I	NA	NA	NA	NA	<0.00798	NA	NA
Heptachlor Epoxide	mg/kg	0.07 {C}	0.31 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.015 I	NA	NA	NA	NA	<0.00798	NA	NA
Methoxychlor	mg/kg	39 {N}	510 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0674 K	NA	NA
PAHs																			
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0035 B	<0.0023	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0015 B	<0.0023	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.019	<0.0023	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0053	<0.0023	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.072	<0.0023	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.074**	<0.0023	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.11	<0.0023	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.062	<0.0023	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.04	<0.0023	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.068	<0.0023	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.015	<0.0023	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.13	<0.0023	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0025	<0.0023	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.072	<0.0023	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0034 B	0.004 B	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.034	<0.0023	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.11	<0.0023	NA	NA	NA
PCBs																			
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**8.3**	ND	0.11	<0.030	<0.040	<0.030	NA	NA
Volatile Organics																			
3-Octanone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0057 J	<0.0069	<0.0066 J	<0.0079	<0.0074 J
Carbon Disulfide	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0057	0.0016 B	<0.0066	<0.0079	<0.0074
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.0010 B	0.0020 B	NA	<0.0057	<0.0069	<0.0066	<0.0079	<0.0074
Tetrachloroethene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0057	<0.0069	<0.0066	<0.0079	<0.0074
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0017 J	<0.0069	0.00071 B	<0.0079	<0.0074
Semivolatile Organics																			
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.78	NA	NA	NA	NA	<0.20	<0.26	<0.78
2,6-Dinitrotoluene	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.20	<0.26	<0.78
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.030 J	NA	NA	NA	NA	0.16 J	<0.26	0.061 J
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.10 J	NA	NA	NA	NA	5.7 J	<0.26	0.25 J
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.060 J	NA	NA	NA	NA	0.044 J	<0.26	0.058 J

See footnotes on last page.

Table 3-4
Historical Soil Sampling Results, Bag Loading Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	407712012 0 - 1 12/09/97	4077121224 1 - 2 12/09/97	4077122436 2 - 3 12/09/97	407736012 0 - 1 12/09/97	4077361224 1 - 2 12/09/97	407760012 0 - 1 12/09/97	4077601224 1 - 2 12/09/97	SS-09 0 - 0.5 06/04/97	SS-14 0 - 0.16 03/31/98	TR-03E 0.04 - 0.16 04/02/98	BLASB01A 0 - 0.5 06/11/02	BLASB01B 2 - 4 06/20/02	BLASB02A 0 - 0.5 06/11/02	BLASB02B 2 - 4 06/20/02	BLASB03A 0 - 0.5 06/11/02
Semivolatile Organics (continued)																			
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.20 J	NA	NA	NA	NA	13	<0.26	0.35 J
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**1.1**	ND	0.11	NA	NA	**39**	0.010 J	**2.8**
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**1.3 K**	ND	**0.070 J**	NA	NA	**36**	<0.26	**3.4**
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**1.9 K**	ND	0.12 J	NA	NA	**68**	<0.26	**6.8**
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.51 K	NA	NA	NA	NA	20	<0.26	2.0
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	2.0 K	ND	0.080 J	NA	NA	**14**	<0.26	2.1
Benzoic Acid	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.30 J	NA	NA	<0.99	0.18 B	<3.8
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.57	0.050 J	0.10 J	NA	NA	<0.20 J	0.030 B	0.18 B
Carbazole	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.40	NA	NA	NA	NA	13	<0.26	0.71 J
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	1.7	ND	0.11 J	NA	NA	**48**	<0.26	4.4
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	**0.20 J,K**	NA	NA	NA	NA	5.9 J	<0.26	0.53 J
Dibenzofuran	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.10	NA	NA	NA	NA	2.8	<0.26	0.24 J
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	3.6	NA	NA	NA	NA	<0.20	<0.26	2.5 B
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	2.9	ND	0.10 J	NA	NA	110	<0.26	9.4
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.20 J	NA	NA	NA	NA	5.2 J	<0.26	0.32 J
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**0.52 K**	NA	NA	NA	NA	**23**	<0.26	**2.3**
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.10 J	NA	NA	NA	NA	0.37	<0.26	0.23 J
N-Nitrosodiphenylamine	mg/kg	130 {C}	580 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.10 J	NA	NA	NA	NA	<0.20	<0.26	<0.78
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	2.0	ND	0.10 J	NA	NA	78	<0.26	5.4
Phenol	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	0.080 J	ND	NA	NA	<0.20	<0.26	<0.78
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	2.5 C	ND	0.10 J	NA	NA	85 J	<0.26	7.9 J
Inorganics																			
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**36,000**	**32,600**	**40,700**	**29,200**	**32,700**	**33,600**	**39,100**	**12,400**	**35,600**	NA	**17,400**	**43,700 J**	**26,500**	**40,900 J**	**14,000**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	0.330 J	ND	0.290 J	ND	ND	ND	ND	NA	NA	NA	0.200 B	0.280 B	<0.590 L	0.320 B	0.440 L
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**4.60**	**5.30**	**5.40**	**4.40**	**3.50**	**4.90**	**4.40**	**7.60**	**4.70**	NA	**6.40 J**	**5.26 J**	**1.29 J**	**3.67 J**	**7.16 J**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	86.3	71.3	81.6	78.6	54.8	50.4	49.2	**10,200 J**	65.8	NA	84.9	37.2	49.9	108	**3,980**
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	1.60	1.60	2.00	1.40	1.50	1.50	1.60	0.700	1.60	NA	0.860	1.64	1.32	2.97	0.520 B
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.250	<0.130	<0.120	<0.150	**11.8**
Calcium	mg/kg	- -	- -	- -	483 J	3,840	661 J	761 J	787 J	1,080 J	1,360	77,200	1,460	NA	17,100	1,040 J	1,130	3,360 J	23,500
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**42.1**	**42.4**	**57.9**	**39.0**	**38.7**	**43.3**	**47.2**	**56.6**	**44.0**	NA	**33.6 L**	**48.0 J**	**39.9 L**	**54.9 J**	**73.9 L**
Cobalt	mg/kg	- -	- -	72.3	14.8	16.9	119	11.4	14.8	16.6	13.9	17.2	22.5	NA	37.8 J	8.52 J	14.2 J	12.0 J	13.6 J
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	57.8	40.9	71.1	78.1	40.7	41.2	34.5	**13,600**	27.1	NA	29.7	22.4 J	29.3	31.9 J	**1,860**
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**38,700**	**41,300**	**47,600**	**41,400**	**36,800**	**39,000**	**43,500**	**31,300**	**40,000**	NA	**45,300**	**51,500**	**41,500**	**46,700**	**37,400**
Lead	mg/kg	400	750	26.8	15.1	20.5	35.9	105	13.8	16.1	43.3	**1,970**	14.7	NA	51.5	10.0	16.0	11.6	**1,720**
Magnesium	mg/kg	- -	- -	- -	6,220	8,150	7,810	4,850	5,820	5,660	6,630	52,600	6,270	NA	12,100	4,150 J	8,490	30,800 J	13,000
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**218**	**286**	**736**	**183**	**216**	**289**	**180**	**327**	**573**	NA	**1,360**	71.0 J	**255**	**429 J**	**290**
Mercury	mg/kg	2.35	30.66	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0400 J	0.0800 L	0.0500 J	0.0400 L	0.260
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	27.6	25.4	33.9	23.2	25.3	25.6	28.2	57.1	23.8	NA	12.4	24.9	25.9	46.5	26.6
Potassium	mg/kg	- -	- -	- -	4,870	4,760	5,740	4,080	4,850	4,880	5,610	2,700	4,200	NA	1,710	3,240	4,520	9,590	1,330
Selenium	mg/kg	39.1 {N}	511 {N}	- -	1.40	0.800 J	1.10	1.20	0.630 J	0.960 J	0.850 J	0.600	NA	NA	<1.14	<1.37	<1.20	<1.57	<1.15
Silver	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1.14	<1.37	<1.20	<1.57	0.680 J
Sodium	mg/kg	- -	- -	- -	54.4 J	54.3 J	58.0 J	35.6 J	44.8 J	48.1 J	49.9 J	NA	NA	NA	37.4 J	28.9 B	31.2 J	51.4	40.4 J
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	**0.780 J**	0.470 J	ND	ND	ND	ND	ND	NA	NA	NA	0.170 J	0.380 J	0.280 J	0.310 J	0.170 J
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**77.4**	**79.9**	**93.1**	**78.3**	**71.6**	**76.5**	**86.6**	**39.6**	**78.3**	NA	**71.5**	**92.7 J**	**72.6**	**78.0 J**	**35.4**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	39.8	42.6	57.8	91.4	33.8	38.4	41.2	**5,940**	41.4	NA	79.1 J	32.1 J	64.0 J	62.3 J	2,050 J
Miscellaneous																			
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.48 J	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29,400 K	NA	NA	NA	NA

See footnotes on last page.

Table 3-4
Historical Soil Sampling Results, Bag Loading Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	BLASB03B 2 - 4 06/20/02	BLASS01 0 - 0.5 06/11/02	BLASS02 0 - 0.5 06/11/02	BLASS03 0 - 0.5 06/11/02	BLASS04 0 - 0.5 06/11/02	BLASS05 0 - 0.5 06/11/02	BLASS06 0 - 0.5 06/11/02	BLASS07 0 - 0.5 06/11/02	BLASS08 0 - 0.5 06/11/02	BLASS09 0 - 0.5 06/11/02	BLASS10 0 - 0.5 06/11/02	BLASS11 0 - 0.5 06/11/02	BLATR01 0 - 0.5 06/20/02	BLATR02 0 - 0.5 06/20/02	BLATR03 0 - 0.5 06/20/02
Asbesos																			
Chrysotile	%ASB	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																			
1,3,5-Trinitrobenzene	mg/kg	230 {N}	3,100 {N}	- -	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.07 J	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA
1,3-Dinitrobenzene	mg/kg	0.78 {N}	10 {N}	- -	<0.1	<0.1	0.05 J	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA
2,4,6-Trinitrotoluene	mg/kg	21 {C}	95 {C}	- -	<0.2	<0.2	<0.2	0.06 J	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	<0.2	<0.2	0.26	2.99	0.08 J	0.08 J	<0.2	<0.2	0.25	0.04 K	<0.2	<0.2	NA	NA	NA
2,6-Dinitrotoluene	mg/kg	7.8 {N}	100 {N}	- -	<0.2	<0.2	<0.2	0.32	<0.2	<0.2	0.07 J	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA
4-Amino-2,6-Dinitrotoluene	mg/kg	- -	- -	- -	<0.2	<0.2	<0.2	0.07 K	<0.2	<0.2	<0.2	0.06 K	0.04 K	<0.2	<0.2	<0.2	NA	NA	NA
m-Nitrotoluene	mg/kg	- -	- -	- -	<0.4	<0.4	<0.4	<0.4	2.86	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	NA	NA	NA
Nitroglycerine	mg/kg	0.78 {N}	10 {N}	- -	<0.39	<0.34	<0.31	<0.72	<0.39	<0.31	<0.72	<0.69	<0.7	<0.37	<0.36	0.21 J	NA	NA	NA
Herbicides																			
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	- -	NA	NA	NA	NA
Organochlorine Pesticides																			
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00574 J	NA	NA	NA	NA
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809	NA	NA	NA	NA
Aldrin	mg/kg	0.038 {C}	0.17 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809	NA	NA	NA	NA
Alpha-Chlordane	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809	NA	NA	NA	NA
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809 J	NA	NA	NA	NA
Endosulfan I	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809	NA	NA	NA	NA
Endosulfan II	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809	NA	NA	NA	NA
Endrin	mg/kg	2.4 {N}	31 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809 L	NA	NA	NA	NA
Endrin Ketone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809	NA	NA	NA	NA
Gamma-Chlordane	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809	NA	NA	NA	NA
Heptachlor Epoxide	mg/kg	0.07 {C}	0.31 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809	NA	NA	NA	NA
Methoxychlor	mg/kg	39 {N}	510 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00809	NA	NA	NA	NA
PAHs																			
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	0.013	0.0022 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	0.0017 B	<0.0018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	0.0022	0.00076 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	0.0035	0.0013 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	0.029	0.016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	**0.03**	0.017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	0.059	0.033	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	0.024	0.018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	0.016	0.0086	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	0.038	0.021	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	0.0063	0.0039	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	0.062	0.047	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	0.0019 J	0.0011 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	0.026	0.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	0.012	0.0019 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	0.033	0.019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	0.045	0.027	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																			
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	NA	**3.2**	0.060	NA	NA	NA	NA	NA	NA	NA	<0.040	NA	0.040	**5.7**	<0.030
Volatile Organics																			
3-Octanone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.011 J	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	<0.0059	<0.0058 J	<0.0067 J	<0.0066 J	NA	<0.0088 J	<0.0066 J	0.023 B	NA	<0.0055 J	<0.0061 J	<0.0068 J	NA	NA	NA
Carbon Disulfide	mg/kg	- -	- -	- -	0.00043 B	<0.0058	<0.0067	<0.0066	NA	<0.0088	<0.0066	<0.0070	NA	<0.0055	<0.0061	<0.0068	NA	NA	NA
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.057 J	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	<0.0059	<0.0058	<0.0067	<0.0066	NA	<0.0088	<0.0066	<0.0070	NA	<0.0055	<0.0061	<0.0068	NA	NA	NA
Tetrachloroethene	mg/kg	- -	- -	- -	<0.0059	<0.0058	<0.0067	<0.0066	NA	<0.0088	0.00090 J	0.00092 J	NA	<0.0055	<0.0061	<0.0068	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	<0.0059	<0.0058	<0.0067	<0.0066	NA	0.0041 J	0.0059 J	0.0070	NA	<0.0055	<0.0061	<0.0068	NA	NA	NA
Semivolatile Organics																			
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	<0.22	NA	NA	**120**	NA	R	<0.20 J	<0.39	NA	<0.21	<0.21	<0.21	NA	NA	NA
2,6-Dinitrotoluene	mg/kg	7.8 {N}	100 {N}	- -	<0.22	NA	NA	6.3 J	NA	R	<0.20 J	<0.39	NA	<0.21	<0.21	<0.21	NA	NA	NA
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	<0.22	NA	NA	<0.21	NA	0.048 J	<0.20 J	<0.39	NA	<0.21	0.015 J	<0.21	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	<0.22	NA	NA	<0.21	NA	0.067 J	0.015 J	0.22 J	NA	0.040 J	0.086 J	0.067 J	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	<0.22	NA	NA	<0.21	NA	0.065 J	<0.20 J	<0.39	NA	<0.21	0.042 J	<0.21	NA	NA	NA

See footnotes on last page.

Table 3-4
Historical Soil Sampling Results, Bag Loading Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	BLASB03B 2 - 4 06/20/02	BLASS01 0 - 0.5 06/11/02	BLASS02 0 - 0.5 06/11/02	BLASS03 0 - 0.5 06/11/02	BLASS04 0 - 0.5 06/11/02	BLASS05 0 - 0.5 06/11/02	BLASS06 0 - 0.5 06/11/02	BLASS07 0 - 0.5 06/11/02	BLASS08 0 - 0.5 06/11/02	BLASS09 0 - 0.5 06/11/02	BLASS10 0 - 0.5 06/11/02	BLASS11 0 - 0.5 06/11/02	BLATR01 0 - 0.5 06/20/02	BLATR02 0 - 0.5 06/20/02	BLATR03 0 - 0.5 06/20/02
Semivolatile Organics (continued)																			
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	<0.22	NA	NA	0.022 J	NA	0.099 J	0.039 J	0.41	NA	0.11 J	0.21 J	0.14 J	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	0.022 J	NA	NA	0.15 J	NA	**0.72**	**0.28 J**	**1.8**	NA	**0.73**	**1.1**	**0.74**	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.22	NA	NA	**0.17 J**	NA	**0.84**	**0.30 J**	**1.4**	NA	**0.69**	**1.0**	**0.70**	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	0.024 J	NA	NA	**0.36 J**	NA	**1.6**	**0.51 J**	**2.6**	NA	**1.2**	**1.6**	**1.2**	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	<0.22	NA	NA	0.12 J	NA	0.55	0.18 J	0.97	NA	0.61	0.79	0.55	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	0.0080 J	NA	NA	0.10 J	NA	0.47	0.13 J	0.60	NA	0.33	0.53	0.25	NA	NA	NA
Benzoic Acid	mg/kg	- -	- -	- -	0.16 B	NA	NA	<1.0	NA	<0.86	<1.0 J	<1.9	NA	<1.0	<1.0	<1.0	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	0.037 B	NA	NA	<0.21	NA	0.21 B	0.17 B	0.30 B	NA	<0.21	0.083 B	0.10 B	NA	NA	NA
Carbazole	mg/kg	- -	- -	- -	<0.22	NA	NA	0.045 J	NA	0.13 J	0.057 J	0.35 J	NA	0.14 J	0.25	0.18 J	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	0.015 J	NA	NA	0.21	NA	0.89	0.31 J	1.4	NA	0.88	1.2	0.89	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	<0.22	NA	NA	<0.21 J	NA	0.18	0.044 J	0.19 J	NA	0.14 J	0.18 J	0.13 J	NA	NA	NA
Dibenzofuran	mg/kg	- -	- -	- -	<0.22	NA	NA	<0.21	NA	0.074 J	0.016 J	0.084 J	NA	0.019 J	0.055 J	0.025 J	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	<0.22	NA	NA	120 B	NA	0.58 B	<0.20 J	<0.39	NA	0.36 B	0.061 B	<0.21	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.033 J	NA	NA	0.37	NA	1.5	0.69 J	3.9	NA	1.7	2.9	2.0	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	<0.22	NA	NA	<0.21	NA	0.075 J	0.020 J	0.21 J	NA	0.032 J	0.11 J	0.069 J	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.22	NA	NA	0.13 J	NA	**0.60**	0.22 J	**1.1**	NA	**0.68**	**0.91**	**0.63**	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	<0.22	NA	NA	<0.21	NA	0.072 J	0.013 J	0.019 J	NA	<0.21	0.036 J	<0.21	NA	NA	NA
N-Nitrosodiphenylamine	mg/kg	130 {C}	580 {C}	- -	<0.22	NA	NA	8.3	NA	R	<0.20 J	<0.39	NA	<0.21	<0.21	<0.21	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.017 J	NA	NA	0.19 J	NA	0.62	0.30 J	2.6	NA	0.73	1.7	1.2	NA	NA	NA
Phenol	mg/kg	2,300 {N}	31,000 {N}	- -	<0.22	NA	NA	<0.21	NA	R	<0.20 J	<0.39	NA	<0.21	<0.21	<0.21	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.026 J	NA	NA	0.42	NA	1.6	0.53 J	3.1 J	NA	1.2	2.1	1.5	NA	NA	NA
Inorganics																			
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**30,500 J**	**18,000**	5,530	**13,500**	NA	**26,600**	**22,200**	**20,300**	**21,700**	**29,700**	**28,600**	**24,100**	NA	NA	NA
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	<0.650 L	0.230 B	0.200 B	0.970 L	NA	0.220 B	0.250 B	0.370 B	1.62 L	0.230 B	0.230 B	0.230 B	NA	NA	NA
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**5.66 J**	**7.48 J**	<0.510	**7.05 J**	NA	**14.8 J**	**7.94 J**	**12.5 J**	**4.94 J**	**7.97 J**	**5.50 J**	**5.15 J**	NA	NA	NA
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	89.9	155	49.2	**3,120**	NA	57.9	48.3	45.4	267	331	69.6	98.6	NA	NA	NA
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	1.36	0.950	0.360 B	0.500 B	NA	1.24	1.18	1.37	1.00	0.370 B	1.41	1.49	NA	NA	NA
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.130	0.350	1.29	**12.2**	NA	0.530	0.100 J	0.170	**12.1**	1.12	0.350	1.50	NA	NA	NA
Calcium	mg/kg	- -	- -	- -	1,360 J	10,700	64,700	71,400	NA	6,240	1,800	642	43,600	15,800	1,370	1,890	NA	NA	NA
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**31.1 J**	**33.5 L**	11.2 L	**40.2 L**	NA	**62.6 L**	**43.4 L**	**37.3 L**	**30.2 L**	**51.4 L**	**29.3 L**	**58.9 L**	NA	NA	NA
Cobalt	mg/kg	- -	- -	72.3	17.8 J	20.5 J	4.43 J	8.54 J	NA	16.6 J	18.4 J	15.8 J	27.1 J	4.15 J	24.7 J	**149 J**	NA	NA	NA
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	34.0 J	26.0	244	**2,270**	NA	**490**	**503**	**691**	**1,450**	**962**	51.6	53.4	NA	NA	NA
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**35,000**	**32,300**	**8,500**	**19,500**	NA	**42,000**	**37,500**	**30,500**	**23,900**	**33,500**	**35,800**	**44,700**	NA	NA	NA
Lead	mg/kg	400	750	26.8	19.0	61.1	79.9	**3,850**	NA	81.5	28.8	34.1	**8,790**	255	95.6	143	NA	NA	NA
Magnesium	mg/kg	- -	- -	- -	3,840 J	8,610	40,000	48,100	NA	8,500	6,140	6,000	20,300	11,000	5,710	5,230	NA	NA	NA
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**435 J**	**628**	140	153	NA	**332**	**399**	**292**	**508**	88.0	**350**	**3,080**	NA	NA	NA
Mercury	mg/kg	2.35	30.66	0.13	0.0500 L	0.0600	<0.0500	**5.24**	NA	0.0300 J	0.0400 J	0.0200 J	0.0400 J	2.16	0.190	0.140	NA	NA	NA
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	20.1	12.9	5.99	25.1	NA	25.5	23.2	22.7	20.3	15.2	25.3	27.0	NA	NA	NA
Potassium	mg/kg	- -	- -	- -	2,870	1,910	1,490	1,380	NA	3,290	3,940	3,100	3,580	752	4,100	2,680	NA	NA	NA
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<1.31	0.410 J	<1.03	<1.21	NA	<1.03	<1.20	0.390 J	<1.17	<1.23	<1.21	<1.23	NA	NA	NA
Silver	mg/kg	39.1 {N}	511 {N}	- -	<1.31	<1.16	<1.03	0.770 J	NA	<1.03	<1.20	<1.16	<1.17	0.620 J	<1.21	<1.23	NA	NA	NA
Sodium	mg/kg	- -	- -	- -	26.0 B	38.8 J	74.4 J	118 J	NA	31.9 J	23.8 B	33.2 J	70.5 J	38.5 J	28.4 B	25.7 B	NA	NA	NA
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.260 J	0.190 J	0.0400 J	0.110 J	NA	0.270 J	0.250 J	0.260 J	0.190 J	0.180 J	0.350 J	0.280 J	NA	NA	NA
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**59.1 J**	**58.3**	**14.4**	**29.6**	NA	**65.1**	**66.4**	**52.1**	**41.7**	**58.4**	**62.2**	**77.4**	NA	NA	NA
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	49.2 J	139 J	976 J	2,140 J	NA	**1,090 J**	53.2 J	75.6 J	**2,450 J**	185 J	94.1 J	164 J	NA	NA	NA
Miscellaneous																			
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

RBC	Risk Based Concentration.
{C}	Carcinogen.
{N}	Noncarcinogen.
B (Inorganics)	Constituent concentration quanitified as estimated.
B (Organics)	Constituent was detected in the associated method blank.
J	Constituent concentration quanitified as estimated.
K	Estimated concentration bias high.
L	Estimated concentration bias low.
R	Constituent concentration rejected.
NA	Not Analyzed.
ND	Not Detected (no detection limit given).
24,400	Constituent concentration exceeds Adjusted Soil RBC (Residential).
10.6 J	Constituent concentration exceeds Adjusted Soil RBC (Industrial).
3,980	Inorganics constituent concentration exceeds Facility-Wide Background Point Estimate.

Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report* , IT Corporation, 2001.

Table 3-5
Historical Sediment Sampling Results, Bag Loading Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	BLASD01 0 - 0.5 06/18/02	BLASD02 0 - 0.5 06/18/02	BLASD04 0 - 0.5 06/24/02	BLASD05 0 - 0.5 06/24/02
Explosives								
Pentaerythritol Tetranitrate	mg/kg	- -	- -	- -	0.16 J	<0.37	<0.47	<0.44
Herbicides								
None Detected	- -	- -	- -	- -	- -	- -	- -	- -
Organochlorine Pesticides								
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	0.00092	0.00064 J	0.00073 J	0.00059 J
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	0.00086 B	0.00058 B	0.00182 B	0.00102 B
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	<0.00079	<0.00082	0.00077 B	0.00062 B
Alpha-Chlordane	mg/kg	- -	- -	- -	<0.00079	<0.00082	0.00038 J	0.00025 J
Beta-BHC	mg/kg	0.36 {C}	1.6 {C}	- -	0.00028 J	<0.00082	0.00029 J	<0.00099
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	<0.00079	<0.00082	0.00094 K	<0.00099
Endrin	mg/kg	2.4 {N}	31 {N}	- -	<0.00079	0.00035 J	<0.00106	<0.00099
Gamma-Chlordane	mg/kg	- -	- -	- -	<0.00079	<0.00082	0.00041 J	<0.00099
Heptachlor Epoxide	mg/kg	0.07 {C}	0.31 {C}	- -	0.00094	<0.00082	<0.00106	<0.00099
Methoxychlor	mg/kg	39 {N}	510 {N}	- -	0.00442	<0.00082	<0.00106	<0.00099
PAHs								
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	0.0044	0.0064	0.0018 B	0.0013 B
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	0.00099 J	<0.0026	<0.0027	<0.0025
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	<0.0024	0.00099 J	0.0017 J	<0.0025
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	0.0054	0.0074	0.013	0.0059
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	0.0049	0.0098	0.012	0.005
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	0.0098	0.017	0.019	0.013
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	0.0068	0.0083	0.0071	0.0031
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	0.0028	0.0051	0.0071	0.0033
Chrysene	mg/kg	22 {C}	390 {C}	- -	0.0065	0.011	0.013	0.0073
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	0.0019 J	0.0028	0.0021 J	0.0013 J
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.0089	0.015	0.019	0.0078
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	0.0015 J	0.00095 J	0.0012 J	<0.0025
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	0.0052	0.0098	0.0081	0.0039
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	0.0037 B	0.004 B	0.0021 B	0.002 B
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.0058	0.01	0.009	0.0037
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.0071	0.012	0.019	0.0091
PCBs								
None Detected	- -	- -	- -	- -	- -	- -	- -	- -
Volatile Organics								
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	<0.0060	<0.0062	<0.0080 J	0.028 B
Toluene	mg/kg	630 {N}	8,200 {N}	- -	<0.0060	<0.0062	<0.0080	0.00096 B
Semivolatile Organics								
Benzoic Acid	mg/kg	31,000 {N}	410,000 {N}	- -	0.14 B	<1.0	<1.3	<1.2
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	0.20 B	0.20 B	0.058 B	<0.25
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.0095 J	0.015 J	0.029 J	0.013 J
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	<0.20	<0.21	0.018 J	0.012 J
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.022 J	0.014 J	0.022 J	0.010 J
Inorganics								
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**24,400**	**31,500**	**13,300**	**7,900**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	0.460 L	0.320 B	0.280 B	0.370 B
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**10.6 J**	**4.92 J**	**2.10 L**	**4.60 L**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	151	54.5	77.2	74.8
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	1.36	2.20	0.890	0.920
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	0.0900 J	<0.120	<0.150	<0.150
Calcium	mg/kg	- -	- -	- -	5,640 J	1,490 J	61,200 J	102,000 J
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**54.5 J**	**33.7 J**	**26.8**	**28.5**
Cobalt	mg/kg	- -	- -	72.3	28.8	19.6	7.30 J	10.5 J
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	23.5 L	23.8 L	8.89	6.06
Iron	mg/kg	5,500 {N}	72,000 {N}	50,962 {N}	**41,100 J**	**32,000 J**	**17,600 J**	**23,300 J**
Lead	mg/kg	400	750	26.8	24.6	23.6	14.6	19.3
Magnesium	mg/kg	- -	- -	- -	7,550 J	6,370 J	3,200 J	9,810 J
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**1,030 J**	**180 J**	**681 J**	**649 J**
Mercury	mg/kg	2.35	30.66	0.13	0.0500 J	0.0500 J	<0.0700	<0.0700
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	23.4	31.0	11.5 J	10.9 J
Potassium	mg/kg	- -	- -	- -	3,030	4,730	1,240	1,310
Selenium	mg/kg	39.1 {N}	511 {N}	- -	0.470 L	<1.24 L	<1.59 L	<1.50 L
Sodium	mg/kg	- -	- -	- -	28.7 B	34.9	81.9 J	83.6 J
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.240 J	0.310 J	0.180 J	0.290 J
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**71.5 J**	**59.5 J**	**31.7 J**	**37.8 J**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	50.3 J	45.8 J	36.0 J	25.8 J

RBC Risk Based Concentration.
{C} Carcinogen.
{N} Noncarcinogen.
B (Inorganics) Constituent concentration quanitified as estimated
B (Organics) Constituent was detected in the associated method blank
J Constituent concentration quanitified as estimated
K Estimated concentration bias high.
L Estimated concentration bias low.
24,400 Constituent concentration exceeds Adjusted Soil RBC (Residential)
10.6 J Constituent concentration exceeds Adjusted Soil RBC (Industrial)
16 Inorganics constituent concentration exceeds Facility-Wide Background Point Estimate
Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report*, IT Corporation, 2001.

Table 3-6
Surface Water Sampling Results, Bag Loading Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Date Collected:	Units	Aquatic Life Freshwater Chronic	Human Health (All Other Surface	BLASW04 06/24/02	BLASW05 06/24/02
Explosives					
m-Nitrotoluene	ug/L	- -	- -	0.43 J	0.42 J
Herbicides					
2,4-D	ug/L	- -	- -	3.26	<0.5
Organochlorine Pesticides					
Dieldrin	ug/L	**0.056**	0.0014	0.0041 J	0.00582 J
PAHs					
None Detected	- -	- -	- -	- -	- -
Perchlorate					
None Detected	- -	- -	- -	- -	- -
PCBs					
None Detected	- -	- -	- -	- -	- -
Volatile Organics					
Carbon Disulfide	ug/L	- -	- -	0.12 B	0.070 B
Chloroform	ug/L	- -	29,000	0.18 J	0.13 J
Semivolatile Organics					
Butylbenzylphthalate	ug/L	- -	5,200	0.44 B	<5.0
Di-n-Butylphthalate	ug/L	- -	12,000	0.90 B	<5.0
Inorganics					
Aluminum	ug/L	- -	- -	140 J	384
Antimony	ug/L	- -	4,300	<5.00	0.770 B
Barium	ug/L	- -	- -	85.1	84.7
Calcium	ug/L	- -	- -	57,200	54,600
Iron	ug/L	- -	- -	274	297
Lead	ug/L	**14 {H}**	- -	0.500 B	0.340 B
Magnesium	ug/L	- -	- -	16,400	16,400
Manganese	ug/L	- -	- -	30.4	18.4
Potassium	ug/L	- -	- -	3,300	3,310
Selenium	ug/L	**5**	11,000	0.510 B	<5.00
Sodium	ug/L	- -	- -	34,200	34,700
Miscellaneous					
Hardness	mg/L	- -	- -	210	204

{H}	Value has not been adjusted for hardness.
B (Inorganics)	Constituent concentration quanitified as estimated.
B (Organics)	Constituent was detected in the associated method blank.
J	Constituent concentration quanitified as estimated.
10.6 J	Constituent concentration exceeds Virginia Surface Water Human Health Standards (All Other Surface Waters).
10.6 J	Constituent concentration exceeds Virginia Surface Water Aquatic Life Freshwater Chronic Standard.

Table 3-7
Asbestos and Lead-Based Paint Samples, Bag Loading Area, January 2005 Sampling Event
New River Unit, Radford Army Ammunition Plan, Radford Virginia.

Sample Name:		BLASS12	BLASS13	BLASS14	BLASS15	BLASS16	BLASS17	BLADF01	BLADF02	BLAIF01	BLAIF02	BLAW01	BLAW02	WB01	BLAPC01
Sample Matrix:		Soil	Soil	Soil	Soil	Soil	Soil	Flooring	Flooring	Flooring	Flooring	Wipe	Wipe	Wipe	Paint
Sample Type/Paint Color:		-	-	-	-	-	-	Deteriorated	Deteriorated	Intact	Intact	-	-	-	White
Sample Depth (ft):		0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	-	-	-	-	-	-	-	-
Distance from Building (in):		6	6	30	6	6	30	-	-	-	-	-	-	-	-
Date Collected:	Units	01/26/05	01/26/05	01/26/05	01/26/05	01/26/05	01/26/05	01/26/05	01/26/05	01/26/05	01/26/05	01/26/05	01/26/05	01/26/05	01/26/05
Sample Components															
Acid Soluble	%	18.1	17.3	22.3	20.7	7.3	20.5	29.2	29.5	27.4	17.9	NA	NA	NA	NA
Organics	%	8.2	7.2	13.8	22.5	13.1	21.7	14.5	17.8	17.8	22.5	NA	NA	NA	NA
Other	%	66.3	68.0	60.7	42.6	67.6	46.2	45.0	42.2	38.4	38.7	NA	NA	NA	NA
Total Asbestos	%	7.4	7.6	3.2	14.2	11.9	11.6	11.3	10.5	16.5	20.8	NA	NA	NA	NA
Asbestos															
Actinolite	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Amosite	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Anthophyllite	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Chrysotile	%	7.4	7.6	3.2	14.2	11.9	11.6	11.3	10.5	16.5	20.8	NA	NA	NA	NA
Crocidolite	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Tremolite	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Total Asbestos	s/cm^2	NA	NA	NA	NA	NA	NA	0.0	0.0	0.0	0.0	225,000,000	122,000,000	2,820	NA
Inorganics															
Lead	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	306

ft Feet.
in Inches.
% Percent.
s/cm^2 Structures per square centimeter.
mg/kg Milligrams per kilogram.
NA Not Analyzed.

Table 3-8
Historical Soil Sampling Results, Igniter Assembly Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	50240012 0 - 1 12/08/97	502401224 1 - 2 12/11/97	502402436 2 - 3 12/11/97	502436012 0 - 1 12/11/97	5024361224 1 - 2 12/11/97	502460012 0 - 1 12/11/97	5024601224 1 - 2 12/11/97	504312012 0 - 1 12/11/97	5043121224 1 - 2 12/09/97	5043122436 2 - 3 12/09/97	504336012 0 - 1 12/09/97	5043361224 1 - 2 12/09/97	504360012 0 - 1 12/09/97	5043601224 1 - 2 12/09/97	81022612012 0 - 1 12/11/97	810226121224 1 - 2 12/11/97	810226122436 2 - 3 12/11/97	81022636012 0 - 1 12/11/97	810226361224 1 - 2 12/11/97
Asbesos																							
Chrysotile	%ASB	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioxin/Furan																							
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																							
4-Amino-2,6-Dinitrotoluene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitroglycerine	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																							
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																							
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	mg/kg	2.4 {N}	31 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																							
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																							
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	**0.26**	0.031 JP	0.0070 JP	0.14	0.13	0.041 JP	ND	**0.89 P**	ND	0.046 P	**0.32**	0.054 P	**0.56**	**10 D***	NA	NA	NA	NA	NA
Aroclor-1260	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organics																							
3-Octanone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																							
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	**48 J**	**210 J**	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	41 J	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic Acid	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**750**	ND	**110 J**	**81 J**	ND	**110 J**	**260 J**	NA	NA	NA	NA	NA
Butylbenzylphthalate	mg/kg	1,600 {N}	20,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	**44 J**	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	250 J	ND	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Octylphthalate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	59 J	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	48 J	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-8
Historical Soil Sampling Results, Igniter Assembly Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	50240012 0 - 1 12/08/97	502401224 1 - 2 12/11/97	502402436 2 - 3 12/11/97	502436012 0 - 1 12/11/97	5024361224 1 - 2 12/11/97	502460012 0 - 1 12/11/97	5024601224 1 - 2 12/11/97	504312012 0 - 1 12/11/97	5043121224 1 - 2 12/09/97	5043122436 2 - 3 12/09/97	504336012 0 - 1 12/09/97	5043361224 1 - 2 12/09/97	504360012 0 - 1 12/09/97	5043601224 1 - 2 12/09/97	81022612012 0 - 1 12/11/97	810226121224 1 - 2 12/11/97	810226122436 2 - 3 12/11/97	81022636012 0 - 1 12/11/97	810226361224 1 - 2 12/11/97
Inorganics																							
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**39,000**	**18,100**	**23,000**	**12,800**	**22,200**	**25,100**	**20,400**	**20,200**	**20,300**	**23,500**	**14,200**	**15,700**	**10,900**	7,430	**9,790**	**17,600**	**19,200**	**15,900**	**27,200**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	0.530 J	ND	ND	ND	ND	ND	ND	0.800 J	ND	ND	1.30 J	0.410 J	**3.20 J**	**7.20 J**	ND	ND	0.260 J	0.210 J	0.470 J
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**10.6**	**2.4**	**4.8**	**1.20 J**	**3.4**	**7.9**	**6**	**7.5**	**5.4**	**7.7**	**4.9**	**5.7**	**5.3**	**11.9**	ND	**8.2**	**6**	**1.40 J**	**8.2**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	80.1	20.0 J	12.8 J	61	16.4 J	54.7	29.4 J	961	50.2	40.5	394	133	489	906	20.2 J	8.50 J	22.7 J	12.3 J	14.0 J
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.760 J	0.500 J	0.390 J	0.370 J	0.34	0.700 J	0.650 J	0.580 J	0.360 J	0.340 J	0.470 J	0.430 J	0.550 J	0.370 J	ND	ND	ND	ND	ND
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	NA	NA	NA	NA	NA	NA	NA	0.640 J	ND	ND	0.420 J	ND	2.1	2	ND	ND	ND	ND	ND
Calcium	mg/kg	- -	- -	- -	1,690	1,280	1,560	1,640	1,220	1,460	1,460	10,500	876 J	734 J	23,500	7,930	148,000	82,000	1,340	633 J	1,080	1,300	488 J
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**60.3**	**31.4**	**48.8**	**25.5**	**46.1**	**40.9**	**36.6**	**511**	**42.4**	**42.8**	**468**	**176**	**884**	**1,920**	**25.2**	**44.3**	**43.9**	**33.5**	**51.1**
Cobalt	mg/kg	- -	- -	72.3	5.90 J	4.10 J	2.80 J	15.9	2.50 J	5.60 J	4.10 J	10.3	4.40 J	2.60 J	8.70 J	10.5	15.3	16.9	0.260 J	1.00 J	0.980 J	0.830 J	1.50 J
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	29.7	16.8	20.4	16.8	16.6	26.7	23.5	**1,780**	19	30.4	**653**	123	**397**	**812**	15.9	14.4	18.1	11.7	17.3
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**45,500**	**29,000**	**37,400**	**19,100**	**35,200**	**40,600**	**33,900**	**56,000**	**35,800**	**33,500**	**38,600**	**33,400**	**41,800**	**88,000**	**18,600**	**40,900**	**41,300**	**31,500**	**44,800**
Lead	mg/kg	400	750	26.8	25.9	28	26.7	51.9	36.1	40.3	43.2	**4,090**	15.4	18.5	**3,850**	**1,280**	**7,370**	**16,200**	10.7	11.4	11.5	10.5	13.3
Magnesium	mg/kg	- -	- -	- -	1,520	569 J	511 J	784 J	464 J	745 J	722 J	6,430	1,070	1,010	15,000	4,650	64,600	52,500	447 J	324 J	509 J	479 J	414 J
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	104	107	83.7	**420**	88.8	151	100	**312**	**169**	51.9	**281**	**274**	**349**	**584**	8.6	23.4	25.1	25.8	29.1
Mercury	mg/kg	2.35	30.66	0.13	0.4	ND	ND	0.11	ND	**3.3**	0.63	0.1	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	21	12.8	13.7	11	11.7	18.2	16.6	30	9.2	8.8	20.3	15.8	30	57.3	1.40 J	5.20 J	4.80 J	3.90 J	7.80 J
Potassium	mg/kg	- -	- -	- -	1,100 J	521 J	633 J	394 J	561 J	613 J	484 J	697 J	586 J	640 J	1,410	607 J	4,610	2,100	173 J	239 J	306 J	240 J	477 J
Selenium	mg/kg	39.1 {N}	511 {N}	- -	1.9	0.710 J	1.3	ND	1.3	0.570 J	1	1.2	1.4	1.2	0.850 J	0.870 J	ND	ND	0.570 J	1.4	1.2	0.760 J	1.9
Silver	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	0.180 J	NA	NA	NA	NA	NA
Sodium	mg/kg	- -	- -	- -	52.9 J	38.6 J	38.5 J	29.3 J	38.0 J	26.9 J	30.0 J	44.3 J	39.0 J	30.9 J	60.9 J	43.2 J	138 J	127 J	22.0 J	22.3 J	23.2 J	20.8 J	32.7 J
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	ND	**0.580 J**	ND	0.460 J	ND	ND	0.410 J	ND	ND	ND	0.370 J	ND	ND	ND	ND	ND	ND	ND	**0.630 J**
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**98.4**	**64.6**	**87.3**	**46**	**82.3**	**86.5**	**70.6**	**66.9**	**74.8**	**71.4**	**39.9**	**52.6**	**24.6**	**23.4**	**42.5**	**80.8**	**84.4**	**61.5**	**95.3**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	29.6	16.4	11.5	21.3	9.20	34.0	23.6	1,550	17.0	27.0	1,090	323	1,490	**3,170**	6.00	10.7	19.4	7.90	14.1
Miscellaneous																							
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-8
Historical Soil Sampling Results, Igniter Assembly Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	81022660012 0 - 1 12/11/97	810226601224 1 - 2 12/11/97	81027112012 0 - 1 12/08/97	810271121224 1 - 2 12/08/97	810271122436 2 - 3 12/08/97	81027136012 0 - 1 12/08/97	810271361224 1 - 2 12/08/97	81027160012 0 - 1 12/08/97	810271601224 1 - 2 12/08/97	81027236012 0 - 1 12/08/97	810272361224 1 - 2 12/08/97	81027260012 0 - 1 12/08/97	810272601224 1 - 2 12/08/97	8102727012 0 - 1 12/08/97	81027271224 1 - 2 12/08/97	810272724362 2 - 3 12/08/97	SS-03 0 - 0.5 06/03/97	SS-11 0 - 0.5 06/03/97
Asbesos																						
Chrysotile	%ASB	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioxin/Furan																						
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																						
4-Amino-2,6-Dinitrotoluene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitroglycerine	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																						
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																						
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	0.0032 JP	ND	ND	0.00066 J	0.00049 JP	0.00062 JP	0.0013 JP	NA	NA	NA	ND	ND	ND	0.00042 JP	NA	NA
Endosulfan II	mg/kg	- -	- -	- -	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	0.0003 J	NA	NA
Endrin	mg/kg	2.4 {N}	31 {N}	- -	NA	NA	0.0018 JP	0.00024 JP	0.0013 JP	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	0.00042 JP	NA	NA
PAHs																						
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																						
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	0.0049 JP	ND	ND	NA	NA
Aroclor-1260	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.37**	**1.0**
Volatile Organics																						
3-Octanone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.0090 B
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0020 B	0.0040 B
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.00090 B
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																						
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.11 J	0.070 J
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	**0.15 J**
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.20 J
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.11 J
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.15 J
Benzoic Acid	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.22 J	0.085 J	0.082 J	ND	1.3 K	5.7
Butylbenzylphthalate	mg/kg	1,600 {N}	20,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.13 J
Carbazole	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.10 J	0.15 J
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.070 J
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	0.070 J
Di-n-Octylphthalate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.30 J	0.20 J
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.10 J	0.13 J
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.30 J	0.20 J

See footnotes on last page.

Table 3-8
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New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	810226600120 - 1 12/11/97	810226601224 1 - 2 12/11/97	81027112012 0 - 1 12/08/97	810271121224 1 - 2 12/08/97	810271122436 2 - 3 12/08/97	81027136012 0 - 1 12/08/97	810271361224 1 - 2 12/08/97	81027160012 0 - 1 12/08/97	810271601224 1 - 2 12/08/97	81027236012 0 - 1 12/08/97	810272361224 1 - 2 12/08/97	81027260012 0 - 1 12/08/97	810272601224 1 - 2 12/08/97	8102727012 0 - 1 12/08/97	81027271224 1 - 2 12/08/97	81027272436 2 - 3 12/08/97	SS-03 0 - 0.5 06/03/97	SS-11 0 - 0.5 06/03/97
Inorganics																						
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**24,300**	**25,600**	**29,300**	**20,800**	**23,800**	**20,000**	**35,100**	**18,500**	**46,900**	**18,000**	**31,500**	**35,400**	**38,600**	**16,100**	**37,600**	**33,200**	**15,300**	**7,920**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	ND	0.290 J	ND	ND	ND	ND	ND	ND	0.230 J	ND	ND	0.240 J	ND	ND	ND	ND	ND	0.6
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**5.5**	**5**	**10.5**	**2.10 J**	**2.8**	**2.6**	**8.2**	**1.40 J**	**11.4**	**4**	**8.1**	**11.3**	**14.6**	**8.7**	**11.3**	**11.1**	**25.2**	**85.8**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	14.4 J	12.6 J	29.2 J	29.8 J	46.4 J	39.0 J	54.4	20.3 J	31.9 J	33.9 J	70	27.2 J	54.8	166	51.5	82.6	50.2 J	**9,360 J**
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.420 J	0.340 J	1.2	0.860 J	0.810 J	0.680 J	1.2	0.460 J	1.1	0.890 J	2.8	0.630 J	3.8	0.670 J	2.3	2.9	0.5	0.6
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	ND	1.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.3	**7.8**
Calcium	mg/kg	- -	- -	- -	866 J	275 J	739 J	1,370	1,790	1,490	1,400	1,250	1,360	2,640	2,720	2,590	2,670	1,060	4,380	3,170	28,000	54,000
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**49.8**	**50.8**	**37.2**	**28.8**	**31.9**	**26.5**	**40**	**24.8**	**44.4**	**26.8**	**52.5**	**41.5**	**56.7**	**25.2**	**48.5**	**47.1**	**54.4**	**86.8**
Cobalt	mg/kg	- -	- -	72.3	1.90 J	1.40 J	27.1	6.10 J	5.90 J	4.80 J	21.1	3.00 J	5.90 J	26	17.5	9.30 J	11.9	12	47.6	18.7	23.8	76.9
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	18.8	16.5	42.4	19.6	207	175	34.5	15.2	34.6	35	29.9	51.5	36.8	274	38.3	61.6	**24,600**	**38,000**
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**40,900**	**44,800**	**38,500**	**37,400**	**38,600**	**32,200**	**41,600**	**29,300**	**45,300**	**28,900**	**37,300**	**41,100**	**47,000**	**21,100**	**40,800**	**30,900**	**35,800**	**28,700**
Lead	mg/kg	400	750	26.8	13.9	13.5	38.3	25.4	24.3	20.4	49	12.4	30	26.8	24.2	20.8	25.8	**475**	40	30	207	**1,040**
Magnesium	mg/kg	- -	- -	- -	497 J	323 J	1,500	1,400	1,600	1,340	1,400	921 J	1,530	2,190	14,600	1,240	3,940	1,910	8,420	22,900	28,800	46,000
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	48.4	35.4	**590**	69.3	56.5	47.1	**410**	34.1	84.1	**188**	**442**	99.4	**178**	**221**	**341**	**408**	**225**	**498**
Mercury	mg/kg	2.35	30.66	0.13	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	0.1	ND	0.15	ND	ND	ND	NA	NA
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	9.2	7.40 J	34.8	14.7	16.8	14	27.4	7.70 J	24.7	15.1	37.9	16.9	38.9	13.9	33	32.5	61	110
Potassium	mg/kg	- -	- -	- -	440 J	413 J	921 J	642 J	734 J	620 J	1,080 J	621 J	1,450	778 J	3,940	855 J	1,830	718 J	2,430	4,620	673	664
Selenium	mg/kg	39.1 {N}	511 {N}	- -	1.2	1.6	1.2	0.750 J	0.850 J	0.730 J	0.830 J	0.990 J	1.3	0.600 J	ND	1.6	1.4	0.660 J	0.860 J	0.590 J	ND	1.2
Silver	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.6	9.4
Sodium	mg/kg	- -	- -	- -	33.4 J	29.5 J	45.1 J	43.5 J	47.5 J	30.4 J	29.7 J	41.8 J	27.0 J	33.7 J	42.7 J	35.0 J	35.8 J	26.6 J	39.3 J	48.8 J	NA	NA
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	ND	ND	ND	ND	ND	ND	**0.660 J**	ND	ND	ND	0.530 J	ND	**0.550 J**	ND	ND	0.520 J	**1**	**1**
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**76.6**	**91.8**	**65.8**	ND	ND	**59.7**	**77.9**	**58.3**	**84.8**	**54.6**	**67.5**	**79.9**	**83.1**	**37.6**	**76.7**	**59.2**	**53**	**60**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	21.4	13.5	61.6	ND	ND	43.3	56.3	22.6	43.3	30.4	35.7	36.3	35.9	293	43.8	86.2	626	**21,800**
Miscellaneous																						
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-8
Historical Soil Sampling Results, Igniter Assembly Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SS-11a 0 - 0.2 03/30/98	SS-11b 0 - 0.2 03/30/98	SS-12 0 - 0.2 03/30/98	TR-01A 0 - 0.2 04/02/98	TR-01B 0 - 0.2 04/02/98	IATP1A 0.5 - 1 08/04/98	IATP1B 0.5 - 1 08/04/98	IATP1C 4 - 4.5 08/04/98	IATP1D 4 - 4.5 08/04/98	IATP2A 0.5 - 1 08/04/98	IATP2B 0.5 - 1 08/04/98	IATP2C 4 - 4.5 08/04/98	IATP2D 4 - 4.5 08/04/98	IASB1A 0.5 - 1 08/05/98	IASB1B 5 - 6 08/05/98	IASB2A 0 - 2 08/05/98	IASB2B 4 - 6 08/05/98	IASB2C 26 - 28 08/05/98	IASB3A 0.5 - 1 08/05/98	IASB3B 5 - 6 08/05/98	IASB4A 0.5 - 1.5 08/05/98	IASB4B 5 - 6 08/05/98	IASB5A 0.5 - 1 08/05/98
Asbesos																												
Chrysotile	%ASB	- -	- -	- -	NA	NA	2.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioxin/Furan																												
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																												
4-Amino-2,6-Dinitrotoluene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	<0.2	<0.3	<0.3	<0.2	<0.3	<0.3	<0.2	<0.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitroglycerine	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	<1.2	<1.3	<1.3	<1.2	<1.3	<1.3	<1.2	<1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																												
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																												
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	R	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	mg/kg	2.4 {N}	31 {N}	- -	NA	NA	NA	0.02	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																												
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																												
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organics																												
3-Octanone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																												
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43	<0.49	<0.42
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	<0.38	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	0.30 J	ND	<0.38	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	1.0	ND	<0.38	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	**3.5**	ND	0.060 J	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	**5.2 C**	**0.040 J**	**0.080 J**	<0.37	NA	NA	<0.39 J	<0.38 J	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42 J
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	**13 C**	0.090 J	0.12 J	<0.37	NA	NA	<0.39 J	<0.38 J	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42 J
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	0.040 J	<0.37	NA	NA	<0.39 J	<0.38 J	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42 J
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	**6.5 C**	0.050 J	0.16 J	<0.37	NA	NA	<0.39 J	<0.38 J	NA	NA	<0.38	0.050 J	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42 J
Benzoic Acid	mg/kg	- -	- -	- -	NA	NA	NA	0.30 J	0.10 J	<1.9	<1.8	NA	NA	<1.9	<1.9	NA	NA	<1.9	<2.0	<2.0	<2.1	<2.1	<2.3	<2.3	<2.2 [<1.9]	<2.4	<2.1
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	0.40 J	0.20 J	0.53 J	0.090 J	NA	NA	0.60	0.23 J	NA	NA	0.030 J	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Butylbenzylphthalate	mg/kg	1,600 {N}	20,000 {N}	- -	NA	NA	NA	NA	NA	<0.38 J	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Carbazole	mg/kg	- -	- -	- -	NA	NA	NA	0.50 J	ND	<0.38	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	7.7 C	0.060 J	0.11 J	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	**0.94**	ND	<0.38	<0.37	NA	NA	<0.39 J	<0.38 J	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42 J
Dibenzofuran	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	<0.38	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	NA	NA	NA	<0.38	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	0.070 J [<0.38]	<0.49	<0.42
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	<0.38	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	0.11 J	<0.40	0.090 J	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Di-n-Octylphthalate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	<0.38	<0.37	NA	NA	0.040 J	<0.38 J	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42 J
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	4.4 C	ND	0.16 J	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	0.080 J	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	<0.38	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	**6.1 C**	ND	<0.38	<0.37	NA	NA	<0.39 J	<0.38 J	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42 J
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	<0.38	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	<0.40	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	0.30 J	ND	0.070 J	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	0.060 J	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	4.9 C	ND	0.15 J	<0.37	NA	NA	<0.39	<0.38	NA	NA	<0.38	0.050 J	<0.40	<0.42	<0.41	<0.46	<0.46	<0.43 [<0.38]	<0.49	<0.42

See footnotes on last page.

Table 3-8
Historical Soil Sampling Results, Igniter Assembly Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SS-11a 0 - 0.2 03/30/98	SS-11b 0 - 0.2 03/30/98	SS-12 0 - 0.2 03/30/98	TR-01A 0 - 0.2 04/02/98	TR-01B 0 - 0.2 04/02/98	IATP1A 0.5 - 1 08/04/98	IATP1B 0.5 - 1 08/04/98	IATP1C 4 - 4.5 08/04/98	IATP1D 4 - 4.5 08/04/98	IATP2A 0.5 - 1 08/04/98	IATP2B 0.5 - 1 08/04/98	IATP2C 4 - 4.5 08/04/98	IATP2D 4 - 4.5 08/04/98	IASB1A 0.5 - 1 08/05/98	IASB1B 5 - 6 08/05/98	IASB2A 0 - 2 08/05/98	IASB2B 4 - 6 08/05/98	IASB2C 26 - 28 08/05/98	IASB3A 0.5 - 1 08/05/98	IASB3B 5 - 6 08/05/98	IASB4A 0.5 - 1.5 08/05/98	IASB4B 5 - 6 08/05/98	IASB5A 0.5 - 1 08/05/98
Inorganics																											
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**8,060**	3,900	4,860	NA	NA	7,680	5,670	**9,160**	**9,690**	**13,900**	**9,870**	**13,500**	**16,700**	**11,100**	**11,500**	**12,900**	**11,500**	**9,930**	**29,200**	**17,900**	**15,600 [14,200]**	**15,700**	**10,000**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	NA	NA	NA	NA	NA	<0.560	<0.550	<0.580	<0.600	<0.580	<0.560	<0.650	<0.720	<0.550	<0.610	<0.590	<0.640	<0.600	<0.680	<0.700	<0.640 [<0.550]	<0.710	<0.620
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**100**	**56.4**	**164**	NA	NA	**4.30 K**	**1.80 K**	**3.3**	**4**	**28.8 K**	**8.40 K**	**5.9**	**10.1**	**6.1**	**4.3**	**6.4**	**7.6**	**3.6**	**7.8**	**3.9**	**6.60 [5.50]**	**7.8**	**2**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	**11,800**	**4,600**	**3,220**	NA	NA	527 K	50.7 K	22.5 B	24.2 B	1,170 K	270 K	38.5	41.7	32.2 K	48.2 K	29.2 K	39.6 K	9.50 B	35.5 K	18.0 B	75.5 K [55.1]	51.4 K	38.7 K
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.5	ND	ND	NA	NA	<0.110	<0.110	<0.120	<0.120	0.580 J	0.520 J	2.1	1.7	<0.110	<0.120	<0.120	<0.130	<0.120	0.360 J	0.280 J	2.30 [0.410 J]	4.3	0.450 J
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	**5.5**	3.2	**6.8**	NA	NA	0.250 J	<0.110	<0.120	<0.120	1	0.140 J	<0.130	<0.140	<0.110 L	<0.120 L	<0.120 L	<0.130 L	<0.120 L	<0.140 L	<0.140 L	2.00 L [<0.110]	<0.140 L	<0.120 L
Calcium	mg/kg	- -	- -	- -	62,100	101,000	87,700	NA	NA	1,680	1,230	759 B	508 B	25,100	4,730 B	2,220 B	4,160 B	762 B	89.6 B	702 B	230 B	220 B	943 B	462 B	866 B [715 B]	2,080 B	777 B
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**79.4**	**79.1**	**99.2**	NA	NA	21.8	15.6	15.9	17.3	**36.8**	**23.7**	**42.2**	**36**	**54.2**	**28.6**	**40.5**	**40.9**	**24**	**48.5**	**35.2**	**35.5 [22.9]**	**59.8**	22
Cobalt	mg/kg	- -	- -	72.3	66.5	42.1	**85.6**	NA	NA	4.20 K	2.10 K	0.950 J	1.10 J	17.6 K	11.8 K	25.6	12.3	1.40 J	0.750 J	1.10 J	1.30 J	2.10 J	4.40 J	3.20 J	39.4 [7.30]	18.3	7.3
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	**43,900**	**53,400**	**56,500**	NA	NA	**1,280 K**	38.9 K	9.10 B	24.5	**7,070**	**1,440**	21.1	23.3	72.4	28.9	19.2	25.4	6.10 B	29	12.1 B	265 [27.2]	20.3	83.6
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**28,600**	**27,500**	**35,100**	NA	NA	**16,700**	**12,600**	**17,600**	**19,300**	**32,300**	**24,300**	**33,200**	**30,900**	**40,600**	**19,600**	**42,700**	**36,700**	**25,600**	**52,600**	**31,200**	**31,200 [35,600]**	**36,300**	**23,100**
Lead	mg/kg	400	750	26.8	**918**	336	**563**	NA	NA	41.7 L	11.8 L	7	6.4	190	75.2	24.4	22.7	14.1	10.9	8.5	8.3	11.5	21.8	16.4	46.5 [28.0]	23.8	19.2
Magnesium	mg/kg	- -	- -	- -	52,500	82,200	71,500	NA	NA	2,370	739	438 B	296 B	18,900	3,680	2,660	9,380	523 B	128 B	317 B	153 B	120 B	677 B	261 B	2,370 B [989 B]	1,940 B	1,240 B
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**465**	**300**	**281**	NA	NA	57.7 K	114 K	38.8	22.4	**308**	**234**	**270**	**269**	44.4	24.1	33.4	27.9	46.4	78.7	60	144 [134]	**557**	49.8
Mercury	mg/kg	2.35	30.66	0.13	0.2	ND	ND	NA	NA	0.5	0.12	<0.120	<0.120	0.660 K	0.150 K	0.17	0.2	0.270 K	<0.120	<0.120	<0.130	<0.120	<0.140	<0.150	<0.130 [<0.110]	<0.150	<0.130
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	97.2	124	**173**	NA	NA	5.70 K	1.10 K	0.470 B	0.830 B	33.5 K	13.3 K	21.7	19.3	1.50 K	0.880 K	<0.120	1.20 K	3.20 K	10.3 K	7.50 K	17.5 K [7.80]	48.7 K	8.40 K
Potassium	mg/kg	- -	- -	- -	733	837	814	NA	NA	243 K	197 K	274 B	180 B	821 K	418 B	1,120 J	5,570 J	304 B	176 B	218 B	199 B	184 B	352 B	276 B	694 B [390 B]	840 K	324 B
Selenium	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	NA	NA	<0.560	<0.550	0.58	<0.600	<0.580	<0.560	<0.650	<0.720	<0.550 J	<0.610 J	<0.590 J	0.660 J	<0.600 J	<0.680 J	0.720 J	<0.640 J [<0.550]	<0.710 J	<0.620 J
Silver	mg/kg	39.1 {N}	511 {N}	- -	11	13	22.5	NA	NA	0.630 L	<0.220 L	<0.230	<0.240	1.90 B	0.300 B	<0.260	<0.290	<0.220	<0.250	<0.240	0.270 B	<0.240	<0.270	<0.280	<0.260 [<0.220]	<0.280	<0.250
Sodium	mg/kg	- -	- -	- -	ND	ND	101	NA	NA	35.8 B	35.1 B	69.4 B	93.2 B	84.7 B	48.8 B	134 B	1,350 B	47.6 B	41.8 B	35.8 B	36.2 B	44.3 B	57.6 B	37.8 B	48.1 B [90.0 B]	48.5 B	36.5 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.5	0.3	**0.7**	NA	NA	<0.220 L	<0.220 L	0.540 B	**0.790 B**	**0.990 B**	<0.220 L	<0.260	<0.290	<0.220	<0.250	<0.240	**0.550 B**	<0.240	**0.560 B**	<0.280	**0.630 B [0.370 B]**	<0.280	<0.250
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**23.8**	**10.8**	**16.3**	NA	NA	**33.1 K**	**25.0 K**	**33.1**	**34.9**	**43.3 K**	**38.7 K**	**49.2**	**47.2**	**69.0 L**	**63.1**	**70.0 L**	**56.0 L**	**43.0 L**	**89.8 L**	**54.5 L**	**57.1 L [58.1]**	**58.0 L**	**40.9 L**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	**18,300**	**8,280**	**6,460**	NA	NA	467	30.8	8.20 B	13.5 B	1,090	312	21.4 B	33.8 B	50.5 B	26.8 B	16.7 B	24.7 B	11.3 B	41.1 B	26.6 B	101 B [30.5 B]	34.8 B	82.4 B
Miscellaneous																											
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-8
Historical Soil Sampling Results, Igniter Assembly Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	IASB5B 0.5 - 6 08/05/98	IASB06A 0 - 0.5 06/10/02	IASB06B 4 - 6 06/18/02	IASB06C 8 - 10 06/18/02	IASB07A 0 - 0.5 06/10/02	IASB07B 4 - 6 06/18/02	IASB08A 0 - 0.5 06/10/02	IASB08B 4 - 6 06/18/02	IASB09A 0 - 0.5 06/10/02	IASB09B 4 - 6 06/18/02	IASB10A 0 - 0.5 06/10/02	IASB10B 2 - 4 06/18/02	IASB11A 0 - 0.5 06/10/02	IASB11B 2 - 4 06/18/02	IASB12A 0 - 0.5 06/10/02	IASB12B 4 - 6 06/18/02	IASB12C 8 - 10 06/18/02	IASB13A 0 - 0.5 06/11/02	IASB13B 1 - 2 06/18/02	IASB13C 2 - 4 06/18/02	IASB14A 0 - 0.5 06/11/02	IASB14B 1 - 2 06/18/02	IASB14C 2 - 4 06/18/02
Asbesos																											
Chrysotile	%ASB	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioxin/Furan																											
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																											
4-Amino-2,6-Dinitrotoluene	mg/kg	- -	- -	- -	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitroglycerine	mg/kg	- -	- -	- -	<1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																											
None Detected	- -	- -	- -	- -	NA	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																											
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	<0.00755	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	mg/kg	- -	- -	- -	NA	<0.00755	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	mg/kg	2.4 {N}	31 {N}	- -	NA	<0.00755	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																											
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	0.002 B	<0.0019	0.0042 B	NA	NA	NA	NA	NA	NA	NA	NA	0.0015 B	<0.0022	0.00092 B	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	<0.0019	<0.0019	0.0022 B	NA	NA	NA	NA	NA	NA	NA	NA	<0.0021	<0.0022	<0.0021	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	<0.0019	<0.0019	0.002 J	NA	NA	NA	NA	NA	NA	NA	NA	<0.0021	<0.0022	<0.0021	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	<0.0019	<0.0019	0.0011 J	NA	NA	NA	NA	NA	NA	NA	NA	<0.0021	<0.0022	<0.0021	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	0.0036	<0.0019	<0.0023	NA	NA	NA	NA	NA	NA	NA	NA	0.0018 J	<0.0022	0.0028	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	0.0038	<0.0019	<0.0023	NA	NA	NA	NA	NA	NA	NA	NA	0.002 J	<0.0022	0.0028	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	0.0095	<0.0019	<0.0023	NA	NA	NA	NA	NA	NA	NA	NA	0.0049	<0.0022	0.0065	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	0.0068	<0.0019	<0.0023	NA	NA	NA	NA	NA	NA	NA	NA	0.0023	<0.0022	0.0023	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	0.0028	<0.0019	<0.0023	NA	NA	NA	NA	NA	NA	NA	NA	0.0014 J	<0.0022	0.0022	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	0.0054	<0.0019	<0.0023	NA	NA	NA	NA	NA	NA	NA	NA	0.0026	<0.0022	0.0037	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	<0.0019	<0.0019	<0.0023	NA	NA	NA	NA	NA	NA	NA	NA	<0.0021	<0.0022	<0.0021	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	0.011	<0.0019	<0.0023	NA	NA	NA	NA	NA	NA	NA	NA	0.0047	<0.0022	0.0079	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	<0.0019	<0.0019	0.0022 J	NA	NA	NA	NA	NA	NA	NA	NA	<0.0021	<0.0022	<0.0021	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	0.0043 J	<0.0019	<0.0023	NA	NA	NA	NA	NA	NA	NA	NA	0.0017 J	<0.0022	0.0023 J	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	0.0013 B	<0.0019	0.0034 B	NA	NA	NA	NA	NA	NA	NA	NA	0.00088 B	<0.0022	<0.0021	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	0.005	0.00084 J	0.0014 J	NA	NA	NA	NA	NA	NA	NA	NA	0.0035	<0.0022	0.0034	<0.0024	0.001 J	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	0.0081	<0.0019	<0.0023	NA	NA	NA	NA	NA	NA	NA	NA	0.0033	<0.0022	0.0053	<0.0024	<0.0024	NA	NA	NA	NA	NA	NA
PCBs																											
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	NA	<0.030	<0.030	<0.040	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.040	<0.040	<0.040	0.12	<0.040	<0.040	0.050	<0.030	<0.040
Aroclor-1260	mg/kg	- -	- -	- -	NA	<0.030	<0.030	<0.040	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.040	<0.040	<0.040	<0.030	<0.040	<0.040	<0.030	<0.030	<0.040
Volatile Organics																											
3-Octanone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	0.060 B	<0.0057	<0.0060	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0062	<0.0070	<0.0071	NA	NA	NA	NA	NA	NA
d-Limonene	mg/kg	- -	- -	- -	NA	0.031 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	<0.0074	<0.0057	<0.0060	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0062	<0.0070	<0.0071	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	<0.0074	<0.0057	<0.0060	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0062	0.00072 B	0.00083 B	NA	NA	NA	NA	NA	NA
Semivolatile Organics																											
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic Acid	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	mg/kg	1,600 {N}	20,000 {N}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	mg/kg	- -	- -	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	mg/kg	- -	- -	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	0.23 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Octylphthalate	mg/kg	- -	- -	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	<0.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-8
Historical Soil Sampling Results, Igniter Assembly Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	IASB5B 0.5 - 6 08/05/98	IASB06A 0 - 0.5 06/10/02	IASB06B 4 - 6 06/18/02	IASB06C 8 - 10 06/18/02	IASB07A 0 - 0.5 06/10/02	IASB07B 4 - 6 06/18/02	IASB08A 0 - 0.5 06/10/02	IASB08B 4 - 6 06/18/02	IASB09A 0 - 0.5 06/10/02	IASB09B 4 - 6 06/18/02	IASB10A 0 - 0.5 06/10/02	IASB10B 2 - 4 06/18/02	IASB11A 0 - 0.5 06/10/02	IASB11B 2 - 4 06/18/02	IASB12A 0 - 0.5 06/10/02	IASB12B 4 - 6 06/18/02	IASB12C 8 - 10 06/18/02	IASB13A 0 - 0.5 06/11/02	IASB13B 1 - 2 06/18/02	IASB13C 2 - 4 06/18/02	IASB14A 0 - 0.5 06/11/02	IASB14B 1 - 2 06/18/02	IASB14C 2 - 4 06/18/02
Inorganics																												
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**16,900**	**33,700 J**	**9,510**	**25,600**	**31,200 J**	**23,500**	**29,700 J**	**31,800**	**23,400 J**	**20,400**	**20,400 J**	**27,200**	**16,900 J**	**24,100**	**21,500 J**	**29,400**	**28,300**	**11,000**	**13,000**	**42,900**	**12,400**	**27,600**	**32,200**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	<0.710	0.240 B	<0.570 L	<0.660 L	0.390 B	<0.670 L	0.340 B	<0.660 L	0.460 L	<0.620 L	0.470 L	0.320 B	0.260 B	0.300 B	0.220 B	0.270 B	<0.710 L	0.330 B	<0.640 L	<0.710 L	0.880 L	<0.590 L	<0.710 L
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**11.9**	**9.24**	**2.65 L**	**9.66 L**	**6.29**	**9.02 L**	**8.04**	**10.8 L**	**11.8**	**9.96 L**	**6.73**	**6.42 L**	**5.33**	**9.59 L**	**6.82**	**21.4 L**	**13.5 L**	**0.820 J**	**4.36 L**	**9.52 L**	**3.55 J**	**5.82 L**	**6.12 L**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	20.3 B	37.3	35.5	25.9	31.2	66.7	34.2	24.8	189	17.1	32	48.3	48.4	16.6	48.9	15.6	15.1	107	71.6	20.3	88.7	11.8	13.8
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.99	0.75	<0.220 L	0.450 B	0.81	1.60 L	0.64	0.680 L	0.66	0.950 L	0.550 B	3.02 L	0.64	<0.260 L	<0.630	<0.270 L	0.300 B	0.62	0.460 B	0.770 L	0.58	0.360 B	0.830 L
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.140	<0.110	<0.110	<0.130	<0.110	<0.130	<0.110	<0.130	0.31	<0.120	<0.120	<0.120	0.100 J	<0.130	<0.120	<0.140	<0.140	1.15	0.0600 B	<0.140	0.27	<0.110	<0.140
Calcium	mg/kg	- -	- -	- -	1,200	1,900	330	515	1,890	686	1,620	626	4,290	325	1,710	2,310	1,040	446	1,160	33.7 B	45.9	123,000	2,020	1,230	69,500	1,060	1,450
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**42.1**	**39.1 J**	10.1	**41.4**	**38.1 J**	**45**	**38.8 J**	**53.2**	**39.0 J**	**43.7**	**33.6 J**	**57**	18.8 J	**36.5**	**45.6 J**	**59.2**	**43.8**	**54.4 L**	18.7	**32.9**	**157 L**	**49.8**	**66.1**
Cobalt	mg/kg	- -	- -	72.3	59.1	17.2 J	10.4 J	3.37 J	422 J	36.0 J	11.2 J	4.46 J	15.3 J	57.0 J	9.00 J	18.6 J	57.2 J	1.47 J	4.48 J	1.42 J	1.67 J	6.69 J	4.79 J	70.1 J	6.56 J	3.43 J	2.93 J
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	18.3 B	75.6 J	5.13	17.5	51.1 J	22.2	26.9 J	22.1	**3,310 J**	22.3	27.8 J	31.2	**1,360 J**	16	18.1 J	29.5	28.9	38.1	23	34	40	25.8	27.8
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**44,500**	**36,900**	**9,620**	**39,600**	**36,900**	**33,400**	**35,900**	**50,800**	**30,000**	**38,500**	**31,500**	**36,800**	**20,100**	**35,700**	**33,500**	**77,600**	**66,000**	**15,200**	**17,000**	**45,400**	**20,800**	**43,700**	**49,800**
Lead	mg/kg	400	750	26.8	30.9	50.2	11.2 J	19.2 J	41.7	49.2 J	32	33.4 J	141	35.3 J	29.7	27.2 J	66.2	14.7 J	22.2	20.7 J	23.9 J	**458**	23.6 J	116	**1,480**	24.3 J	29.0 J
Magnesium	mg/kg	- -	- -	- -	813 B	1,430	426	543	1,850	8,060	1,560	680	4,540	890	1,150	16,700	2,960	385	769	234	218	69,700	1,130	689	41,200	652	767
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**254**	**213 J**	**199**	30.5	**2,510 J**	**504**	79.8 J	38.1	**190 J**	**183**	**163 J**	**476**	**752 J**	53.9	**270 J**	33.3	37.3	**180**	**356**	**960**	**225**	54.1	60.5
Mercury	mg/kg	2.35	30.66	0.13	<0.130	0.07	0.0300 J	0.11	0.06	0.1	0.08	0.12	0.13	0.06	0.08	0.07	0.0500 J	0.1	0.07	0.0300 J	<0.0700	<0.0500	0.0300 J	0.08	0.0500 J	0.0300 J	0.11
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	14.5	26.1	5.37	12.7	29.5	39.6	17	15.7	29	20.6	12.7	51.3	19.6	10.7	8.46	11	12.9	11.8	8.7	25.9	12.2	19.8	22
Potassium	mg/kg	- -	- -	- -	561 B	909	333 J	496	849	3,250	753	514	860	559	563	3,290	795	231 J	563	368 J	288 J	3,350	341 J	509	2,310	441	511
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<0.710	<1.13 L	0.770 L	<1.34 L	<1.18 L	0.660 L	0.430 L	0.580 L	0.480 L	0.730 L	<1.23 L	<1.27 L	<1.21 L	<1.31 L	<1.26 L	<1.40 L	0.560 L	<1.08	<1.30 L	0.610 L	<1.08	<1.19 L	<1.44 L
Silver	mg/kg	39.1 {N}	511 {N}	- -	<0.290	<1.13	<1.14	<1.34	<1.18	<1.35	<1.19	<1.34	0.700 J	<1.25	<1.23	<1.27	<1.21	<1.31	<1.26	<1.40	<1.42	<1.08	<1.30	<1.42	<1.08	<1.19	<1.44
Sodium	mg/kg	- -	- -	- -	96.0 B	16.7 B	24.9 B	16.4 B	18.2 B	17.1 B	12.6 B	12.9 B	21.0 B	7.66 B	11.9 B	20.0 B	11.6 B	7.68 B	12.2 B	6.84 B	17.5 B	143 J	10.2 B	7.16 B	88.1 J	6.28 B	7.19 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	<0.290	0.280 J	0.140 J	0.270 J	0.250 J	0.45	0.230 J	0.290 J	0.290 J	0.280 J	0.190 J	0.44	0.290 J	0.390 J	0.120 J	0.210 J	0.220 J	0.200 J	0.190 J	**0.8**	0.160 J	0.160 J	0.250 J
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**64.2**	**59.2**	**18.7**	**62.5**	**63.2**	**48.8**	**60.3**	**86.7**	**50.2**	**62.9**	**54.3**	**59.9**	**33.7**	**59.9**	**62.9**	**97.6**	**78.1**	**24.3**	**32**	**80.7**	**30.7**	**76.6**	**90.6**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	33.5 B	193 J	15.7	17.2	53.3 J	22.5	44.9 J	28.8	526 J	22.6	38.7 J	38.3	75.4 J	16.1	42.7 J	28.7	29.5	160 J	25.5	40.1	264 J	44.5	47.2
Miscellaneous																											
pH	pH Units	- -	- -	- -	NA	6.17 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	17,500 K	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-8
Historical Soil Sampling Results, Igniter Assembly Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	IASB15A 0 - 0.5 06/11/02	IASB15B 1 - 2 06/18/02	IASB15C 2 - 4 06/18/02	IASS01 0 - 0.5 06/10/02	IASS02 0 - 0.5 06/10/02	IASS03 0 - 0.5 06/10/02	IASS04 0 - 0.5 06/10/02	IASS05 0 - 0.5 06/10/02	IATR01 0 - 0.5 06/20/02	IATR02 0 - 0.5 06/20/02	IATR03 0 - 0.5 06/20/02	IATR04 0 - 0.5 06/20/02	IATR05 0 - 0.5 06/20/02	IATR06 0 - 0.5 06/20/02	IATR07 0 - 0.5 06/20/02	IATR08 0 - 0.5 06/20/02
Asbesos																				
Chrysotile	%ASB	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioxin/Furan																				
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																				
4-Amino-2,6-Dinitrotoluene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.05 K	NA	NA	NA	NA	NA	NA	NA	NA
Nitroglycerine	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.57	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																				
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																				
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	mg/kg	2.4 {N}	31 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																				
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	0.0019 B	0.0048	0.0032 B	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	<0.0021	<0.0022	0.015 B	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	<0.0021	0.0012 J	<0.0021	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	<0.0021	0.0013 J	0.028	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	0.0052	0.01	0.07	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	0.0059	0.01	**0.057**	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	0.013	0.024	0.099	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	0.0071	0.018	0.031	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	0.0039	0.0056	0.029	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	0.0073	0.013	0.056	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	<0.0021	0.0024	0.0078	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	0.013	0.022	0.16	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	<0.0021	0.00097 J	0.013	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	0.0056 J	0.0089 J	0.037 J	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	0.0014 B	0.0031 B	0.0045 B	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	0.0078	0.0099	0.14	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	0.014	0.019	0.12	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																				
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	0.040	<0.040	<0.040	NA	NA	NA	NA	**12**	<0.030	<0.040	<0.040	<0.040	<0.030	<0.030	<0.030	<0.030
Aroclor-1260	mg/kg	- -	- -	- -	<0.030	<0.040	<0.040	NA	NA	NA	NA	<0.040	<0.030	<0.040	<0.040	<0.040	<0.030	<0.030	0.40	<0.030
Volatile Organics																				
3-Octanone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.013 J	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.032 B	NA	NA	NA	NA	NA	NA	NA	NA
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	<0.0073	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	<0.0073	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																				
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	<0.21	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.095 J	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	<0.21	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.16 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**0.39**	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**0.35**	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**0.49**	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.24	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.19 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic Acid	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.27 B	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.18 B	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	mg/kg	1,600 {N}	20,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	<0.21	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.11 J	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.39	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.078 J	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.031 J	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	<0.21	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.31 B	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Octylphthalate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	<0.21	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.94 L	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.079 J	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**0.29**	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.015 J	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.69 L	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.67	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-8
Historical Soil Sampling Results, Igniter Assembly Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	IASB15A 0 - 0.5 06/11/02	IASB15B 1 - 2 06/18/02	IASB15C 2 - 4 06/18/02	IASS01 0 - 0.5 06/10/02	IASS02 0 - 0.5 06/10/02	IASS03 0 - 0.5 06/10/02	IASS04 0 - 0.5 06/10/02	IASS05 0 - 0.5 06/10/02	IATR01 0 - 0.5 06/20/02	IATR02 0 - 0.5 06/20/02	IATR03 0 - 0.5 06/20/02	IATR04 0 - 0.5 06/20/02	IATR05 0 - 0.5 06/20/02	IATR06 0 - 0.5 06/20/02	IATR07 0 - 0.5 06/20/02	IATR08 0 - 0.5 06/20/02
Inorganics																				
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**12,700**	**33,000**	**30,200**	**32,700 J**	**24,200 J**	**28,200 J**	**16,900 J**	**26,500 J**	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	0.310 B	<0.650 L	<0.690 L	0.240 B	0.580 L	0.310 B	0.350 B	<0.600 L	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**0.550 J**	**8.67 L**	**6.27 L**	**8.33**	**8.33**	**8.02**	**8.66**	**8.35**	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	56.6	48.4	19	42.6	72.9	159	277	38.8	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.63	0.480 B	0.730 L	0.390 B	0.480 B	0.83	0.67	0.560 B	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	0.5	<0.130	<0.140	<0.120	<0.120	0.13	0.38	<0.120	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	- -	- -	- -	105,000	1,240	1,440	3,170	1,900	2,140	1,420	807	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**57.4 L**	**38**	**34.8**	**40.5 J**	**36.8 J**	**28.0 J**	**29.1 J**	**41.9 J**	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	- -	- -	72.3	7.70 J	5.96 J	4.20 J	5.29 J	8.73 J	22.7 J	14.6 J	6.97 J	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	32.6	61.4	31.5	45.3 J	97.2 J	164 J	**661 J**	18.7 J	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**15,900**	**39,100**	**45,300**	**34,800**	**32,000**	**23,100**	**16,700**	**32,600**	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	400	750	26.8	**476**	127	41.7 J	30.2	49.1	95.6	144	31.1	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	mg/kg	- -	- -	- -	63,200	923	825	1,530	1,330	3,330	4,110	895	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**174**	**166**	100	75.5 J	125 J	**621 J**	**452 J**	**219 J**	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.35	30.66	0.13	<0.0500	0.08	0.85	0.09	0.1	0.1	0.0500 J	0.08	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	12.9	21.8	20	17.2	14.9	21.7	17.4	17.2	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	- -	- -	- -	3,950	658	491	809	847	1,080	863	817	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<1.10	0.480 L	<1.40 L	<1.26 L	<1.24 L	<1.21 L	<1.32 L	<1.22 L	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	39.1 {N}	511 {N}	- -	<1.10	<1.31	<1.40	<1.26	<1.24	<1.21	<1.32	<1.22	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	- -	- -	- -	133 J	13.9 B	9.24 B	22.0 B	14.9 B	22.2 B	18.2 B	12.7 B	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.130 J	0.280 J	0.300 J	0.350 J	0.180 J	0.250 J	0.250 J	0.150 J	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**27.4**	**71.1**	**77.9**	**61.6**	**56.7**	**44.8**	**34**	**56.4**	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	277 J	79.5	47.0	48.2 J	88.1 J	232 J	670 J	87.9 J	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																				
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

RBC Risk Based Concentration.
{C} Carcinogen.
{N} Noncarcinogen.
B (Inorganics) Constituent concentration quanitified as estimated
B (Organics) Constituent was detected in the associated method blank
J Constituent concentration quanitified as estimated
K Estimated concentration bias high.
L Estimated concentration bias low.
NA Not Analyzed.
24,400 Constituent concentration exceeds Adjusted Soil RBC (Residential)
10.6 J Constituent concentration exceeds Adjusted Soil RBC (Industrial)
3,980 Inorganics constituent concentration exceeds Background Point Estimate
Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report*, IT Corporation, 2001.

Table 3-9
Historical Sediment Sampling Results, Igniter Assembly Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	IASD04 0 - 0.5 06/18/02	IASD05 0 - 0.5 06/19/02	IASD06 0 - 0.5 06/19/02	IASD07 0 - 0.5 06/19/02	IASD08 0 - 0.5 06/19/02	IASD09 0 - 0.5 06/19/02	IASD10 0 - 0.5 06/19/02	IASD11 0 - 0.5 06/19/02	IASD12 0 - 0.5 06/19/02
Explosives													
1,3,5-Trinitrobenzene	mg/kg	- -	- -	- -	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.07 J	<0.1
4-Amino-2,6-Dinitrotoluene	mg/kg	- -	- -	- -	<0.2	0.04 J	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Herbicides													
None Detected	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	NA	- -
Organochlorine Pesticides													
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	0.00111	<0.00086	0.00079 J	0.00068 J	0.00248	<0.00082	0.00242	NA	0.00191
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	<0.0008	0.00301	0.00066 B	0.00072 B	<0.00082	0.00074 B	<0.00072	NA	0.00075 B
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	0.00089 B	0.00385	0.00362	0.00386	0.0067	0.00076 B	0.00233	NA	0.00297
Alpha-Chlordane	mg/kg	- -	- -	- -	0.00056 J	0.00301	<0.0008	0.00038 J	<0.00082	<0.00082	<0.00072	NA	<0.0008
Beta-BHC	mg/kg	0.36 {C}	1.6 {C}	- -	<0.0008	<0.00086	<0.0008	0.00017 J	<0.00082	<0.00082	<0.00072	NA	<0.0008
Delta-BHC	mg/kg	- -	- -	- -	<0.0008	<0.00086	<0.0008	<0.0008	<0.00082	<0.00082	0.00104	NA	<0.0008
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	0.00442	0.00151	0.00074 J	0.00108	<0.00082	0.00089	0.00909	NA	0.00061 J
Endosulfan II	mg/kg	- -	- -	- -	0.00135	0.00052 J	<0.0008	0.00049 J	0.00378	0.00218	0.00123	NA	0.00038 J
Endrin	mg/kg	2.4 {N}	31 {N}	- -	<0.0008	0.00328	0.00062 J	0.003	<0.00082	<0.00082	<0.00072	NA	<0.0008
Endrin Ketone	mg/kg	- -	- -	- -	<0.0008	0.00424	<0.0008	0.00148	<0.00082	<0.00082	0.00423	NA	<0.0008
Gamma-Chlordane	mg/kg	- -	- -	- -	<0.0008	0.00408	<0.0008	0.00102	<0.00082	0.00062 J	0.00136	NA	<0.0008
Heptachlor Epoxide	mg/kg	0.07 {C}	0.31 {C}	- -	<0.0008	<0.00086	<0.0008	<0.0008	0.00101	<0.00082	<0.00072	NA	<0.0008
Methoxychlor	mg/kg	39 {N}	510 {N}	- -	0.00757	0.00257	0.00117	0.00107	0.0105	<0.00082	0.0122	NA	0.0027
PAHs													
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.36	0.012
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.0043 B	0.0014 B
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.0085	0.0028
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.014	0.0029
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.06	0.018
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	**0.04**	0.018
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.1	0.055
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	0.051	0.022
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.027	0.018
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.098	0.041
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.012	0.0046
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.11 L	0.074 L
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.01	0.0013 J
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	0.038	0.023
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.2	0.0082 B
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.25	0.019
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	0.11	0.05
PCBs													
None Detected	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Volatile Organics													
3-Octanone	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.012 J	NA	0.0060 J	NA	0.015 J
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	<0.0060	<0.0059	<0.0061	0.011 B	0.033 B	0.022 B	<0.0055	0.045 B	0.16 B
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	0.037 J	0.084 J	NA	NA	NA	NA
Semivolatile Organics													
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	0.014 J	<0.44	<0.21	0.059 J	<0.21	0.22 J	<0.19	0.32	0.0095 J
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	<0.21	<0.44	<0.21	<0.41	<0.21	1.0 J	<0.19	<0.21	<0.20
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	<0.21	<0.44	<0.21	<0.41	<0.21	0.061 J	<0.19	<0.21	<0.20
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	<0.21	<0.44	<0.21	<0.41	<0.21	2.1	0.032 J	0.014 J	<0.20
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.21	0.051 J	0.016 J	0.046 J	<0.21	**6.9**	**0.25 J**	0.064 J	0.020 J
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.21	**0.042 J**	0.018 J	<0.41	<0.21	**5.9**	**0.24 J**	**0.047 J**	**0.023 J**
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.21	0.072 J	0.040 J	<0.41	<0.21	**11**	**0.37 J**	0.096 J	0.053 J
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	<0.21	0.12 J	<0.21	<0.41	<0.21	3.5	0.24 J	0.062 J	0.042 J
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	<0.21	0.023 J	0.011 J	<0.41	<0.21	**2.6**	0.099 J	0.028 J	0.021 J
Benzoic Acid	mg/kg	31,000 {N}	410,000 {N}	- -	<1.0	<2.2	<1.0	<2.0	0.17 B	<8.2	0.13 B	0.17 B	0.16 B

See footnotes on last page.

Table 3-9
Historical Sediment Sampling Results, Igniter Assembly Area
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	IASD04 0 - 0.5 06/18/02	IASD05 0 - 0.5 06/19/02	IASD06 0 - 0.5 06/19/02	IASD07 0 - 0.5 06/19/02	IASD08 0 - 0.5 06/19/02	IASD09 0 - 0.5 06/19/02	IASD10 0 - 0.5 06/19/02	IASD11 0 - 0.5 06/19/02	IASD12 0 - 0.5 06/19/02
Semivolatile Organics (continued)													
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	0.26 B	1.2 B	0.30 B	0.96 B	0.53 B	0.90 B	0.46 B	0.52 B	0.34 B
Carbazole	mg/kg	32 {C}	140 {C}	- -	<0.21	<0.44	<0.21	<0.41	<0.21	2.4	0.032 J	0.016 J	<0.20
Chrysene	mg/kg	22 {C}	390 {C}	- -	<0.21	0.070 J	0.034 J	0.028 J	<0.21	7.7	0.30 J	0.10 J	0.049 J
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.21	<0.44	<0.21	<0.41	<0.21	**0.97 J**	**0.058 J**	<0.21	<0.20
Dibenzofuran	mg/kg	7.8 {N}	100 {N}	- -	<0.21	<0.44	<0.21	0.018 J	<0.21	0.74 J	<0.19	0.11 J	<0.20
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.019 J	0.10 J	0.042 J	0.039 J	0.0092 J	22 J	0.52 J	0.12 J	0.049 J
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	<0.21	<0.44	<0.21	<0.41	<0.21	1.3 J	0.011 J	<0.21	<0.20
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.21	0.060 J	<0.21	<0.41	<0.21	**4.2**	**0.25 J**	0.043 J	0.034 J
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	0.010 J	<0.44	<0.21	0.043 J	<0.21	0.75 J	0.0081 J	0.17 J	<0.20
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.014 J	0.051 J	0.023 J	0.053 J	<0.21 J	16 J	0.24 J	0.28 J	0.022 J
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.026 J	0.078 J	0.035 J	0.059 J	0.0088 J	16	0.47 J	0.11 J	0.045 J
Inorganics													
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**31,400**	**21,900 J**	**20,700 J**	**12,400 J**	**17,200 J**	**22,800 J**	**17,500 J**	**16,400 J**	**19,800 J**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	0.320 B	0.340 B	0.340 B	0.590 B	<0.610 L	<0.620 L	<0.540 L	<0.600 L	0.250 B
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**7.94 J**	**7.56 L**	**6.93 L**	**6.20 L**	**9.43 L**	**10.5 L**	**6.21 L**	**6.60 L**	**9.10 L**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	38.4	34.1	41.7	31.4	18.6	57.3	36.8	37.5	36.9
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.390 B	0.590 B	0.390 B	0.650 K	0.460 B	0.430 B	0.500 B	0.650 K	0.650 K
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	0.0800 J	0.260	0.270	0.380	<0.120	2.54	0.0800 J	<0.120	0.200
Calcium	mg/kg	- -	- -	- -	24,400 J	3,330 J	40,400 J	118,000 J	1,580 J	3,200 J	2,420 J	1,150 J	4,950 J
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**36.4 J**	**39.9**	**28.4**	23.5	**31.2**	**40.4**	**28.5**	**31.2**	**39.0**
Cobalt	mg/kg	- -	- -	72.3	3.90 J	14.8 J	7.69 J	5.90 J	3.50 J	6.48 J	6.99 J	15.1 J	34.5 J
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	16.7 L	31.2	18.8	10.8	14.8	27.9	16.4	30.6	32.1
Iron	mg/kg	5,500 {N}	72,000 {N}	50,962 {N}	**29,600 J**	**42,600 J**	**24,100 J**	**15,000 J**	**30,800 J**	**37,900 J**	**24,700 J**	**30,400 J**	**30,600 J**
Lead	mg/kg	400	750	26.8	24.6	58.9 J	**884**	46.4 J	19.7	61.8 J	22.9 J	53.0 J	**643 J**
Magnesium	mg/kg	- -	- -	- -	14,400 J	2,400	30,300	77,100	743	1,400	1,320	1,420	2,630
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	102 J	**337 J**	**217 J**	107 J	69.3 J	**302 J**	156 J	**255 J**	**569 J**
Mercury	mg/kg	2.35	30.66	0.13	0.0900	0.0600 L	0.0500 L	0.0700 L	0.0500 L	0.0500 L	0.0300 L	0.0500 L	0.0500 L
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	12.7	18.8	13.2	9.25	7.93	14.2	13.0	16.5	19.7
Potassium	mg/kg	- -	- -	- -	836	542	2,800	740	388	658	534	651	817
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<1.21 L	<1.30 L	<1.21 L	<1.20 L	<1.23 L	<1.24 L	<1.09 L	<1.21 L	0.410 L
Sodium	mg/kg	- -	- -	- -	61.9	13.0 B	75.5	173	7.50 B	17.0 B	12.0 B	17.0 B	14.0 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.140 J	0.270 B	0.280 J	0.220 B	0.220 B	0.200 B	0.210 B	0.220 B	0.270 B
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**54.3 J**	**71.6**	**46.8**	**34.9**	**56.5**	**76.3**	**48.0**	**50.8**	**49.8**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	49.8 J	171 J	57.5 J	52.0 J	22.7 J	1,110 J	55.7 J	99.6 J	459 J
Miscellaneous													
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	7.2 J
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	15,500

RBC Risk Based Concentration.
{C} Carcinogen.
{N} Noncarcinogen.
B (Inorganics) Constituent concentration quanitified as estimated.
B (Organics) Constituent was detected in the associated method blank.
J Constituent concentration quanitified as estimated.
K Estimated concentration bias high.
L Estimated concentration bias low.
NA Not Analyzed.
24,400 Constituent concentration exceeds Adjusted Soil RBC (Residential).
10.6 J Constituent concentration exceeds Adjusted Soil RBC (Industrial).
3,980 Inorganics constituent concentration exceeds Facility-Wide Background Point Estimate.
Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report* , IT Corporation, 2001.

Table 3-10
Historical Sediment Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGSD01 0 - 0.5 06/18/02	NBGSD02 0 - 0.5 07/14/04	NBGSD03 0 - 0.5 07/16/04	NBGSD04 0 - 0.5 07/16/04
Dioxin/Furan								
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	0.00004075	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	0.00000464	NA	NA	NA
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	0.00000041	NA	NA	NA
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	0.00000053	NA	NA	NA
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	0.00000071	NA	NA	NA
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	0.00000141	NA	NA	NA
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	0.00000162 J	NA	NA	NA
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	0.00000136	NA	NA	NA
1,2,3,7,8-PeCDF	mg/kg	- -	- -	- -	0.00000021	NA	NA	NA
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	0.00000029	NA	NA	NA
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	0.00000024	NA	NA	NA
2,3,7,8-TCDD	mg/kg	0.0000043 {C}	0.000019 {C}	- -	0.00000047 J	NA	NA	NA
2,3,7,8-TCDF	mg/kg	- -	- -	- -	0.00000038	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	0.002629 J	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	0.0000342 J	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	0.00008126	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	0.00002337	NA	NA	NA
Total HxCDDs	mg/kg	- -	- -	- -	0.00000802	NA	NA	NA
Total HxCDFs	mg/kg	- -	- -	- -	0.00000747	NA	NA	NA
Total PeCDFs	mg/kg	- -	- -	- -	0.00000336	NA	NA	NA
Total TCDDs	mg/kg	- -	- -	- -	0.00000114	NA	NA	NA
Total TCDFs	mg/kg	- -	- -	- -	0.00000151	NA	NA	NA
Explosives								
None Detected	- -	- -	- -	- -	- -	NA	NA	NA
Herbicides								
None Detected	- -	- -	- -	- -	- -	NA	NA	NA
Organochlorine Pesticides								
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	0.00244	NA	NA	NA
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	0.00085 B	NA	NA	NA
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	0.00421	NA	NA	NA
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	0.00185	NA	NA	NA
Endosulfan II	mg/kg	- -	- -	- -	0.00176	NA	NA	NA
PAHs								
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	0.0086 B	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	0.052	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	0.029	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	0.19	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	**0.21**	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	**0.31**	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	0.18	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	0.11	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	0.16	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	**0.036**	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.33	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	0.01	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	0.18	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	0.0053 B	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.15	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.25	NA	NA	NA
PCBs								
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	0.14	0.068	<0.039	0.15
Volatile Organics								
None Detected	- -	- -	- -	- -	- -	NA	NA	NA
Semivolatile Organics								
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	0.040 J	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	0.018 J	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	0.22	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	**0.28**	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	**0.37**	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	0.16 J	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	0.13 J	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	0.18 B	NA	NA	NA
Carbazole	mg/kg	32 {C}	140 {C}	- -	0.022 J	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	0.23	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.37	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	0.17 J	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.12 J	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.34	NA	NA	NA
Inorganics								
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**17,900**	**21,400**	**19,500**	**13,200**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	0.360 B	0.380 B	1.60 B	2.10 B
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**5.56 J**	**8.90**	**6.80**	**5.10**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	55.4	44.2	123	142
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.500 B	0.670 J	0.640 J	0.480 J
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	0.270	0.0830 J	1.70	1.10
Calcium	mg/kg	- -	- -	- -	3,300 J	2,680	35,700	12,200
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**41.1 J**	**38.3**	**397**	**151**
Cobalt	mg/kg	- -	- -	72.3	5.60 J	6.20	8.90	7.50
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	22.1 L	20.5	41.5	46.7
Iron	mg/kg	5,500 {N}	72,000 {N}	50,962 {N}	**22,600 J**	**31,700**	**24,800**	**14,500**
Lead	mg/kg	400	750	26.8	159	146	**3,500**	**2,200**
Magnesium	mg/kg	- -	- -	- -	2,570 J	1,820	19,000	7,930
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**204 J**	**215**	**334**	**319**
Mercury	mg/kg	2.35	30.66	0.13	0.0700 J	0.100	0.0480	0.0510
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	10.3	14.3	13.1	10.0
Potassium	mg/kg	- -	- -	- -	999	655	1,530	899
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<1.21 L	0.840 J	<0.550	<0.520
Sodium	mg/kg	- -	- -	- -	15.0 B	79.9 B	<560	345 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.180 J	<0.360	<0.340	<0.320
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**40.6 J**	**55.8**	**46.3**	**29.0**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	473 J	208	**4,220**	**2,630**
Miscellaneous								
Percent Solids	%	- -	- -	- -	NA	81	87	82

RBC	Risk Based Concentration.
{C}	Carcinogen.
{N}	Noncarcinogen.
B (Inorganics)	Constituent concentration quanitified as estimated.
B (Organics)	Constituent was detected in the associated method blank.
J	Constituent concentration quanitified as estimated.
K	Estimated concentration bias high.
L	Estimated concentration bias low.
NA	Not Analyzed.
24,400	Constituent concentration exceeds Adjusted Soil RBC (Residential).
10.6 J	Constituent concentration exceeds Adjusted Soil RBC (Industrial).
16	Inorganics constituent concentration exceeds Facility-Wide Background Point Estimate.

Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report*, IT Corporation, 2001.

Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SS-01 0.5 - 0.7 06/03/97	SS-02 0.5 - 0.7 06/03/97	NBGSB1A 0.5 - 1.5 08/04/98	NBGSB1B 8 - 10 08/04/98	NBGSB1C 53 - 55 08/04/98	NBGSB2A 0 - 2 08/04/98	NBGSB2B 5 - 6 08/04/98	NBGSB3A 0.5 - 1.5 08/04/98	NBGSB3B 5 - 6 08/04/98	NBGSB4A 0.5 - 1.5 08/04/98	NBGSB4B 5 - 6 08/04/98	NBGSB5A 0.5 - 1.5 08/04/98	NBGSB5B 5 - 6 08/04/98	NBGSB6A 0 - 0.5 05/27/99	NBGSB6B 3.5 - 4 05/27/99	NBGSB7A 0 - 0.5 05/27/99	NBGSB7B 3.5 - 4 05/27/99
Dioxin/Furan																					
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																					
None Detected	- -	- -	- -	- -	NA	NA	- -	- - [- -]	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Herbicides																					
2,4,5-T	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DB	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																					
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																					
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02	<0.03	0.04	<0.03
PCBs																					
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organics																					
1,1-Dichlorethene	mg/kg	390 {N}	5,100 {N}	- -	0.0020 J	ND	<0.0020	<0.0030 [<0.0020]	<0.0030	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0030	<0.0020 J	<0.0030	NA	<0.0025	<0.0024	<0.0023
1,2,4-Trimethylbenzene	mg/kg	- -	- -	- -	NA	NA	<0.0020	<0.0020 [<0.0020]	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020 J	<0.0020	NA	<0.0021	<0.0020	<0.0020
2-Butanone	mg/kg	4,700 {N}	61,000 {N}	- -	NA	NA	<0.0060 J	<0.0070 [<0.0060]	<0.0070	<0.0060 J	<0.0060	R	<0.0060	<0.0060	<0.0070	R	R	NA	R	R	<0.0061
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	0.0030 B	ND	<0.0060 J	<0.0070 [<0.0060]	<0.0070	<0.0060 J	<0.0060	<0.0060	<0.0060	<0.0060	<0.0070	<0.0060 J	<0.0070	NA	R	R	<0.0061
Benzene	mg/kg	12 {C}	52 {C}	- -	0.0010 J	ND	<0.0010	<0.0010 [<0.0010]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010 J	<0.0010	NA	<0.0013	<0.0013	<0.0012
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	<0.0060	<0.0070 [<0.0060]	<0.0070	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0070	<0.0060 J	<0.0070	NA	<0.0066	<0.0063	<0.0061
Chlorobenzene	mg/kg	160 {N}	2,000 {N}	- -	0.0010 J	ND	<0.0010	<0.0020 [<0.0010]	<0.0020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010 J	<0.0020	NA	<0.0014	<0.0014	<0.0013
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	0.0020 B	0.0020 B	<0.0010	<0.0010 [<0.0010]	<0.0010	0.0030	<0.0010	0.0030	<0.0010	<0.0010	0.0050	0.0030 J	0.0040	NA	<0.0013 J	<0.0013 J	<0.0012
tert-Butylbenzene	mg/kg	- -	- -	- -	NA	NA	<0.0010	<0.0020 [<0.0010]	<0.0020	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010 J	<0.0020	NA	<0.0016	<0.0015	<0.0015
Toluene	mg/kg	630 {N}	8,200 {N}	- -	0.0010 J	ND	<0.0020	<0.0020 [<0.0010]	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010 J	<0.0020	NA	<0.0016	<0.0016	<0.0015
Trichloroethene	mg/kg	1.6 {C}	7.2 {C}	- -	0.0010 J	ND	<0.0030	<0.0040 [<0.0030]	<0.0040	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0040	<0.0030 J	<0.0040	NA	<0.0034	<0.0032	<0.0031
Semivolatile Organics																					
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	0.20 J	0.10 J	<0.39	<0.46 [<0.38]	<0.46	0.070 J	<0.43	<0.37	<0.40	<0.38	<0.45	<0.38	<0.47	0.060 J	<0.39	0.050	<0.36
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	<0.39	<0.46 [<0.38]	<0.46	<0.38	<0.43	<0.37	<0.40	<0.38	<0.45	<0.38	0.10 J	0.060 B	0.050 B	0.070 B	0.13 B
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	ND	0.040 J	<0.39	<0.46 [<0.38]	<0.46	<0.38	<0.43	<0.37	<0.40	0.090 J	<0.45	<0.38	<0.47	<0.37	<0.39	<0.37	<0.36

See footnotes on last page.

Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SS-01 0.5 - 0.7 06/03/97	SS-02 0.5 - 0.7 06/03/97	NBGSB1A 0.5 - 1.5 08/04/98	NBGSB1B 8 - 10 08/04/98	NBGSB1C 53 - 55 08/04/98	NBGSB2A 0 - 2 08/04/98	NBGSB2B 5 - 6 08/04/98	NBGSB3A 0.5 - 1.5 08/04/98	NBGSB3B 5 - 6 08/04/98	NBGSB4A 0.5 - 1.5 08/04/98	NBGSB4B 5 - 6 08/04/98	NBGSB5A 0.5 - 1.5 08/04/98	NBGSB5B 5 - 6 08/04/98	NBGSB6A 0 - 0.5 05/27/99	NBGSB6B 3.5 - 4 05/27/99	NBGSB7A 0 - 0.5 05/27/99	NBGSB7B 3.5 - 4 05/27/99
Inorganics																					
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**18,200**	**28,900**	**10,800**	**27,400 [22,700]**	**13,100**	**8,270**	**27,500**	**9,810**	**15,800**	**18,400**	**28,400**	**10,400**	**30,400**	4,670	**9,420**	7,800	5,930
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	NA	NA	<0.580	<0.690 [<0.560]	<0.670	<0.560	<0.620	<0.540	<0.590	<0.560	<0.660	<0.560	<0.680	<0.620	<0.660	<0.620	<0.590
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**7.60**	**6.30**	**4.20 K**	**7.00 K [7.30 K]**	**9.20 K**	**8.50 K**	**10.5 K**	**3.20 K**	**4.30 K**	**6.00 K**	**8.10 K**	**4.50 K**	**17.0 K**	**2.20 B**	**5.40 B**	**7.00 B**	**6.50 B**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	79.3 J	80.3 J	41.0 K	18.7 B [14.0 B]	30.5 K	81.9 K	18.1 B	38.9 K	9.60 B	41.7 K	21.7 B	34.0 K	13.2 B	40.8	19.0	23.0	10.5
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.500	0.600	<0.120	0.230 J [0.190 J]	1.90	<0.110	0.330 J	0.110 J	<0.120	0.260 J	0.290 J	0.190 J	0.460 J	0.280 B	0.380 B	0.430 B	0.460 B
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	ND	0.800	<0.120	<0.140 [<0.110]	0.220 J	0.920	<0.120	<0.110	<0.120	<0.110	<0.130	<0.110	<0.140	<0.120	<0.130	<0.120	<0.120
Calcium	mg/kg	- -	- -	- -	62,700	55,700	1,580 B	928 B [526 B]	857 B	4,040 B	840 B	2,570 B	371 B	1,780 B	673 B	2,800 B	469 B	637	635 J	684	529 J
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**32.2**	**44.2**	**31.8**	**75.3 [53.7]**	**35.0**	**1,620**	**53.4**	20.2	21.9	**30.0**	**42.3**	16.4	**52.4**	7.10	22.3	22.3	19.6
Cobalt	mg/kg	- -	- -	72.3	7.70	7.50	4.50 K	3.50 K [3.60 K]	9.80 K	23.9 K	3.10 K	4.20 K	2.10 K	4.90 K	4.20 K	6.70 K	4.00 K	4.60 K	23.0	21.7	24.3
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	18.4	38.6	5.50 B	18.4 K [15.1 B]	21.0 K	52.7	12.9 B	9.20 B	6.20 B	11.4 B	15.6 B	4.90 B	24.2 K	8.80 K	20.9	18.2	19.3
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**28,000**	**26,700**	**18,500**	**45,900 [36,800]**	**29,700**	**12,900**	**52,000**	**12,100**	**19,200**	**23,300**	**41,900**	**16,100**	**60,600**	**8,270**	**28,800**	**30,100**	**29,600**
Lead	mg/kg	400	750	26.8	55.4	199	127	226 [155]	29.5	**23,400**	19.5	104	10.8	76.2	20.0	19.3	20.2	16.5	13.8	17.7	12.3
Magnesium	mg/kg	- -	- -	- -	28,300	26,000	605 B	719 B [557 B]	11,900	1,520 B	1,010 B	1,350 B	278 B	977 B	661 B	1,300 B	382 B	193 J	472 J	285 J	214 J
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**208**	156	**204**	68.1 [55.1]	**594**	**158**	58.9	**182**	21.8 K	**317**	53.3	**393**	73.5	**410**	89.9	**470**	**380**
Mercury	mg/kg	2.35	30.66	0.13	NA	NA	<0.120	<0.140 [<0.110]	<0.140	<0.110	0.570	<0.110	<0.120	<0.120	<0.130	<0.110	0.620	<0.120	<0.130	<0.120	<0.120
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	13.8	17.3	3.80 B	8.90 K [8.30 K]	30.4 K	5.60 B	8.50 K	4.50 B	3.80 B	7.60 K	12.5 K	4.10 B	14.4 K	3.50 K	14.3 K	11.0 K	13.6 K
Potassium	mg/kg	- -	- -	- -	2,060	2,310	352 B	601 B [516 B]	3,240 K	324 B	873 K	473 B	489 B	635 K	1,300 K	425 B	1,030 K	149 J	307 J	362 J	199 J
Selenium	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	<0.580	<0.690 [<0.560]	<0.670	<0.560	<0.620	0.560 K	<0.590	<0.560	<0.660	<0.560	<0.680	0.550 K	<0.530	<0.500	<0.470
Silver	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	<0.230 L	<0.280 L [<0.220 L]	<0.270 L	0.230 B	<0.250 L	<0.220 L	<0.240 L	<0.220 L	<0.260 L	<0.220 L	<0.270 L	<0.120	<0.130	<0.120	<0.120
Sodium	mg/kg	- -	- -	- -	NA	NA	136 B	146 B [116 B]	103 B	113 B	104 B	125 B	106 B	115 B	137 B	94.1 B	111 B	100 B	105 B	102 B	106 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.200	0.200	0.420 B	**1.50 B [<0.220 L]**	<0.270 L	0.460 B	<0.250 L	<0.220 L	<0.240 L	**1.10 B**	<0.260 L	0.280 B	<0.270 L	<0.860 J	<0.920 J	<0.870 J	<0.830 J
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**64.6**	**70.0**	**33.1 J**	**83.1 J [66.8 J]**	**49.5 J**	**23.4 J**	**79.1 J**	**21.9 J**	**32.1 J**	**39.7 J**	**76.4 J**	**27.9 J**	**91.0 J**	**14.9**	**37.4**	**51.9**	**45.1**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	294	1,210	61.0 B	67.4 B [50.2 B]	60.4 B	**3,760**	22.8 B	132 B	15.4 B	67.8 B	28.3 B	22.1 B	45.0 B	18.1	24.7	29.3	29.2
Inorganics-TCLP																					
Arsenic	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	100,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																					
Percent Solids	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.5	7.4	6.85	7.55
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,799	2,376	NA	NA

See footnotes on last page

Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Sample Depth (ft): / Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGSB8A 0 - 0.5 05/27/99	NBGSB8B 3.5 - 4 05/27/99	NBGSB9A 0 - 0.5 05/27/99	NBGSB10A 2 - 4 05/26/99	NBGSB10B 4 - 6 05/26/99	NBGSB10C 6 - 8 05/26/99	NBGSB10D 8 - 10 05/26/99	NBGSB10E 10 - 12 05/26/99	NBGDW1 0 - 4 05/26/99	NBGDW2 0 - 4 05/26/99	NBGDW3 0 - 4 08/18/99	NBGDW4 0 - 4 08/17/99	NBGDW5 0 - 4 08/19/99	NBGDW6 0 - 4 08/19/99	NBGDW7 0 - 4 08/19/99	NBGDW8 0 - 4 08/19/99	NBGDW9 0 - 4 08/19/99	S Samp Da
Dioxin/Furan																						**Dioxin/Furan**
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,6,7,8-H
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,6,7,8-H
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,7,8,9-H
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,7,8-Hx
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,7,8-Hx
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,6,7,8-Hx
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,6,7,8-Hx
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8,9-Hx
1,2,3,7,8,9-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8,9-Hx
1,2,3,7,8-PeCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8-PeCI
1,2,3,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8-PeCI
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,3,4,6,7,8-Hx
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,3,4,7,8-PeCI
2,3,7,8-TCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,3,7,8-TCDF
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	OCDD
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	OCDF
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total HpCDDs
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total HpCDFs
Total HxCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total HxCDDs
Total HxCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total HxCDFs
Total PeCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total PeCDDs
Total PeCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total PeCDFs
Total TCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total TCDDs
Total TCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total TCDFs
Explosives																						**Explosives**
None Detected	- -	- -	- -	- -	- - [- -]	- -	- -	- -	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	None Detected
Herbicides																						**Herbicides**
2,4,5-T	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,4,5-T
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,4-D
2,4-DB	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,4-DB
Dalapon	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dalapon
Dicamba	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dicamba
MCPP	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	MCPP
Organochlorine Pesticides																						**Organochlori**
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,4'-DDD
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,4'-DDE
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,4'-DDT
Endrin Aldehyde	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Endrin Aldehyd
PAHs																						**PAHs**
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	<0.03 [<0.03]	<0.03	<0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Benzo(g,h,i)pe
PCBs																						**PCBs**
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Aroclor-1254
Volatile Organics																						**Volatile Orga**
1,1-Dichlorethene	mg/kg	390 {N}	5,100 {N}	- -	NA	<0.0023	<0.0025	<0.0026	<0.0028	<0.0028	<0.0029	<0.0028	<0.0024	NA	NA	NA	NA	NA	NA	NA	NA	1,1-Dichloreth
1,2,4-Trimethylbenzene	mg/kg	- -	- -	- -	NA	<0.0020	<0.0021	<0.0022	<0.0024	<0.0023	<0.0024	<0.0024	<0.0020	0.0056	NA	NA	NA	NA	NA	NA	NA	1,2,4-Trimethy
2-Butanone	mg/kg	4,700 {N}	61,000 {N}	- -	NA	R	<0.0064	R	R	R	R	R	R	R	NA	NA	NA	NA	NA	NA	NA	2-Butanone
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	<0.0061	<0.0064	R	R	R	R	R	R	NA	NA	NA	NA	NA	NA	NA	NA	Acetone
Benzene	mg/kg	12 {C}	52 {C}	- -	NA	<0.0012	<0.0013	<0.0014	<0.0015	<0.0014	<0.0015	<0.0015	<0.0012	<0.0012	NA	NA	NA	NA	NA	NA	NA	Benzene
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	NA	R	<0.0064	<0.0068	<0.0074	<0.0072	<0.0075	<0.0074	<0.0062	NA	NA	NA	NA	NA	NA	NA	NA	Carbon Disulfi
Chlorobenzene	mg/kg	160 {N}	2,000 {N}	- -	NA	<0.0013	<0.0014	<0.0015	<0.0016	<0.0016	<0.0016	<0.0016	<0.0014	<0.0013	NA	NA	NA	NA	NA	NA	NA	Chlorobenzene
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	d-Limonene
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	<0.0012 J	<0.0013 J	<0.0014	<0.0015	<0.0014	<0.0015	<0.0015	<0.0012 J	NA	NA	NA	NA	NA	NA	NA	NA	Methylene Chl
tert-Butylbenzene	mg/kg	- -	- -	- -	NA	<0.0015	<0.0015	<0.0016	<0.0018	<0.0017	<0.0018	<0.0018	<0.0015	0.0030	NA	NA	NA	NA	NA	NA	NA	tert-Butylbenze
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	<0.0015	<0.0016	<0.0017	<0.0018	<0.0018	<0.0019	<0.0018	<0.0015	<0.0015	NA	NA	NA	NA	NA	NA	NA	Toluene
Trichloroethene	mg/kg	1.6 {C}	7.2 {C}	- -	NA	<0.0031	<0.0033	<0.0035	<0.0038	<0.0037	<0.0039	<0.0038	<0.0032	<0.0031	NA	NA	NA	NA	NA	NA	NA	Trichloroethen
Semivolatile Organics																						**Semivolatile O**
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	<0.37 [<0.38]	<0.36	0.13	<0.40	<0.44	<0.43	<0.44	<0.44	0.040 J	NA	NA	NA	NA	NA	NA	NA	NA	bis(2-Ethylhex
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	0.24 [<0.38]	<0.36	<0.38	<0.40	<0.44	<0.43	<0.44	<0.44	NA	NA	NA	NA	NA	NA	NA	NA	NA	Diethylphthala
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	<0.37 [<0.38]	<0.36	<0.38	0.060 B	0.080 B	0.060 B	0.090 B	0.050 J	0.080 B	NA	NA	NA	NA	NA	NA	NA	NA	Di-n-Butylphth

See footnotes on last page.

See footnotes

Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGSB8A 0 - 0.5 05/27/99	NBGSB8B 3.5 - 4 05/27/99	NBGSB9A 0 - 0.5 05/27/99	NBGSB10A 2 - 4 05/26/99	NBGSB10B 4 - 6 05/26/99	NBGSB10C 6 - 8 05/26/99	NBGSB10D 8 - 10 05/26/99	NBGSB10E 10 - 12 05/26/99	NBGDW1 0 - 4 05/26/99	NBGDW2 0 - 4 05/26/99	NBGDW3 0 - 4 08/18/99	NBGDW4 0 - 4 08/17/99	NBGDW5 0 - 4 08/19/99	NBGDW6 0 - 4 08/19/99	NBGDW7 0 - 4 08/19/99	NBGDW8 0 - 4 08/19/99	NBGDW9 0 - 4 08/19/99	S Sam Da
Inorganics																						**Inorganics**
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	6,150 [7,260]	5,680	5,980	**22,200**	**31,200**	**26,700**	**30,600**	**29,800**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Aluminum
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	<0.590 [<0.610]	<0.610	<0.620	<0.650	<0.700	0.800 B	<0.740	<0.740	NA	NA	NA	NA	NA	NA	NA	NA	NA	Antimony
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**5.40 B [7.90]**	**6.00 B**	**5.60 B**	**10.6**	**15.1**	**16.3**	**14.5**	**17.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Arsenic
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	39.5 [39.3]	32.6	45.6	22.5 J	15.7 J	16.4	19.2 J	20.7 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	Barium
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.580 B [0.800 B]	0.400 B	0.570 B	0.350 B	0.560 B	0.530 B	0.510 B	0.600 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	Beryllium
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.120 [0.160]	<0.120	<0.120	0.380	0.620 J	0.660 J	0.500 J	0.620 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	Cadmium
Calcium	mg/kg	- -	- -	- -	1,330 [1,180]	974	1,420	1,500	343 J	826	301 J	266 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	Calcium
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	15.4 [20.3]	14.8	16.0	**43.9**	**58.1**	**64.8**	**57.3**	**69.3**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Chromium
Cobalt	mg/kg	- -	- -	72.3	26.6 [28.1]	22.3	28.0	2.30 K	5.00 K	3.50 K	3.90 K	4.10 K	NA	NA	NA	NA	NA	NA	NA	NA	NA	Cobalt
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	18.7 [20.6]	15.5	17.5	23.5	36.3	40.4	34.4	38.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	Copper
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**21,200 [27,900]**	**21,800**	**21,300**	**39,500**	**56,500**	**63,100**	**54,500**	**62,300**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Iron
Lead	mg/kg	400	750	26.8	24.3 [22.8]	17.6	**28.4**	10.4	19.6	30.3	31.2	30.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	Lead
Magnesium	mg/kg	- -	- -	- -	395 J [409 J]	299 J	402 J	670	488 J	479 J	488 J	364 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	Magnesium
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**710 [709]**	**401**	**926**	35.3	62.9	71.4	79.6	99.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	Manganese
Mercury	mg/kg	2.35	30.66	0.13	0.170 [<0.130]	<0.120	<0.120	0.260	0.220	0.350	0.220	<0.150	NA	NA	NA	NA	NA	NA	NA	NA	NA	Mercury
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	12.5 K [17.4]	12.7 K	12.4 K	6.80 K	20.6	14.2 K	11.9 K	14.6 K	NA	NA	NA	NA	NA	NA	NA	NA	NA	Nickel
Potassium	mg/kg	- -	- -	- -	385 J [393 J]	178 J	378 J	684	758	861	723 J	583 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	Potassium
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<0.470 [<0.490]	<0.490	<0.490	1.30 K	<0.560	<0.580	<0.590	<0.590	NA	NA	NA	NA	NA	NA	NA	NA	NA	Selenium
Silver	mg/kg	39.1 {N}	511 {N}	- -	<0.120 [<0.120]	<0.120	<0.120	0.270 K	0.480 K	0.490 K	0.660 K	0.640 K	NA	NA	NA	NA	NA	NA	NA	NA	NA	Silver
Sodium	mg/kg	- -	- -	- -	100 B [98.9 B]	101 B	112 J	189	183 J	198 J	165 J	177 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	Sodium
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	<0.830 J [<0.860 J]	**0.920 J**	<0.860 J	<0.910 J	<0.990 J	<1.00 J	<1.00 J	<1.00 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	Thallium
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**36.5 [44.2]**	**34.7**	**36.9**	**77.9**	**112**	**127**	**118**	**125**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Vanadium
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	37.6 [47.6]	27.2	45.8	19.1	37.6	37.6	29.9	31.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	Zinc
Inorganics-TCLP																						**Inorganics-TC**
Arsenic	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	8.8	<6	<6	<6	<6	<6	<6	6.8	<6	Arsenic
Barium	µg/L	100,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	601	146	233	219	272	180	238	181	239	Barium
Cadmium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	20.7	<1	<1	<1	<1	<1	<1	<1	<1	Cadmium
Chromium	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	6.8	35.6	<1	2.3	17.4	<1	23.2	24.1	28.6	Chromium
Lead	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	**6,400**	43.4	11.2	93.3	34.3	35	1,920	387	1,210	Lead
Selenium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	<4	4.9	<5	<5	<5	<5	<5	<5	5.7	Selenium
Silver	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	1.2	<1	<1	<1	<1	<1	<1	<1	<1	Silver
Miscellaneous																						**Miscellaneous**
Percent Solids	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Percent Solids
pH	pH Units	- -	- -	- -	6.05 [7.15]	6.75	7.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	pH
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total Organic

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See footnotes

Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

ample Name: ple Depth (ft): ate Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGDW10 0 - 4 08/19/99	NBGDW11 0 - 4 08/19/99	NBGDW12 0 - 4 08/19/99	NBGDW13 0 - 4 08/19/99	NBGSB11A 0 - 0.5 06/12/02	NBGSB11B 1 - 3 06/19/02	NBGSB11C 3 - 5 06/19/02	NBGSB12A 0 - 0.5 06/12/02	NBGSB12B 1 - 3 06/19/02	NBGSB12C 3 - 5 06/19/02	NBGSB13A 0 - 0.5 06/12/02	NBGSB13B 1 - 3 06/19/02	NBGSB14A 0 - 0.5 06/12/02	NBGSB14B 1 - 3 06/19/02	NBGSB15A 0 - 0.5 06/12/02	NBGSB15B 1 - 3 06/19/02
lpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.00008921 J	0.00003037	0.00000328 J	0.0000481	0.00001449	0.00000379	0.00004898 J	0.00003946	0.00008469	0.00009242 J	0.00004404	0.00004759 J
lpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.00002183 J	<0.0000001	0.00000044 J	<0.00000097	<0.00000009	<0.00000011	0.00001327 J	0.00000035	0.00000812	0.00000018 J	0.00000475	0.00000795 J
lpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	<0.00000219	<0.00000013	<0.00000006	<0.00000125	<0.00000012	<0.00000015	<0.00000274	<0.00000016	<0.00000195	<0.00000005	<0.00000184	0.00000071 J
CDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	<0.00000302	<0.00000018	<0.00000009	<0.00000206	<0.00000019	<0.0000002	<0.00000301	0.00000053	<0.00000216	<0.00000009	<0.00000231	0.00000118 J
CDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.00002445 J	<0.00000009	0.00000047 J	<0.00000135	<0.00000008	<0.00000009	0.0000226 J	<0.00000008	<0.00000156	<0.00000004	<0.00000127	0.00000205 J
CDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	<0.00000236	<0.00000014	<0.00000007	<0.00000162	<0.00000015	<0.00000016	<0.00000236	0.00000083	<0.00000169	<0.00000007	<0.00000181	0.00000237 J
CDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.0000096 J	<0.00000009	0.00000025 J	<0.00000131	<0.00000007	<0.00000008	0.00000948 J	<0.00000008	<0.00000151	<0.00000004	<0.00000124	0.00000271 J
CDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	NA	NA	NA	NA	<0.00000229	0.0000005	<0.00000008	<0.00000157	<0.00000014	<0.00000015	<0.00000229	0.00000093	<0.00000164	0.00000077 J	<0.00000175	0.000003 J
CDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	<0.00000216	<0.0000001	<0.00000007	<0.00000155	<0.00000009	<0.0000001	0.00000179	<0.00000009	<0.00000178	<0.00000006	<0.00000146	0.00000034 J
DD	mg/kg	- -	- -	- -	NA	NA	NA	NA	<0.00000463	<0.00000014	<0.00000016	<0.0000027	<0.00000011	<0.00000017	<0.00000432	<0.00000021	<0.00000199	<0.00000008	<0.00000185	0.00000058 J
DF	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.00001225 J	<0.00000007	0.00000016 J	<0.00000111	<0.00000007	<0.00000008	0.00000714 J	<0.00000008	<0.000001	<0.00000004	<0.000001	0.00000029 J
CDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.00000257 J	<0.0000001	0.00000009 J	<0.00000154	<0.00000009	<0.0000001	0.00000294 J	<0.00000009	<0.00000177	<0.00000005	<0.00000145	0.00000108 J
DF	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.0000169 J	<0.00000007	0.00000038 J	<0.00000116	<0.00000007	<0.00000008	0.0000101 J	<0.00000008	<0.00000104	<0.00000005	<0.00000104	0.00000061 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.0001246 J	<0.0000001	0.00000234 J	<0.00000197	<0.0000001	<0.00000011	0.00006188 J	<0.00000008	0.00000725	<0.00000004	<0.00000151	<0.00000016 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.00224 J	0.004805 J	0.0005022 J	0.002977	0.003495 J	0.0008244 J	0.002165 J	0.0033 J	0.003884	0.01645 J	0.002064	0.004063 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.00008762 J	<0.00000025 J	0.00000142 B	<0.00000225	0.00000266 J	0.0000021 J	0.0000191 B	0.00000114 J	0.00002918 B	0.00000863 J	<0.00000386	0.00000529 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.0001613 J	0.00005671	0.00000744 J	0.0001243	0.0000262	0.00000941	0.0001208 J	0.00009885	0.000178	0.0001458 J	0.0001053	0.0001147 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.00007406 J	<0.0000001	0.0000009 J	<0.00000097	<0.00000009	<0.00000011	0.00002477 J	0.00000035	0.00003418	0.00000053 J	0.00000475	0.00001225 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	<0.00000229	0.00000176	<0.00000007	<0.00000157	0.00000047	<0.00000015	<0.00000229	0.00000719	0.00000983	0.00000188 J	0.00001125	0.00002469 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.00005829 J	<0.00000009	0.00000123 J	<0.00000131	<0.00000007	<0.00000008	0.00006751 J	<0.00000008	<0.00000151	<0.00000004	<0.00000124	0.00001394 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	<0.00000463	<0.00000014	<0.00000016	<0.0000027	<0.00000011	<0.00000017	<0.00000432	<0.00000021	<0.00000199	<0.00000008	<0.00000185	0.00000199 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.0001008 J	<0.00000007	0.00000202 J	<0.00000111	<0.00000007	<0.00000008	0.00007985 J	<0.00000008	<0.000001	<0.00000004	<0.000001	0.00000838 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	<0.00000165	<0.00000012	<0.00000006	<0.00000141	<0.00000013	<0.00000014	<0.00000181	<0.00000006	<0.00000151	<0.00000006	0.00000468	0.00000047 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	0.0003194 J	<0.0000001	0.00001017 J	<0.00000197	<0.0000001	<0.00000011	0.0001714 J	<0.00000008	0.00000725	<0.00000004	<0.00000151	0.00000731 J
	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	0.00719 J	NA	NA	<0.0121	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	0.195	NA	NA	0.146	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	0.0596 B	NA	NA	<0.121	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	<0.12	NA	NA	0.0814 J	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	0.00321 K	NA	NA	<0.0241	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	<12	NA	NA	<12.1	NA	NA	NA	NA	NA	NA	NA	NA
ne Pesticides																				
	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	0.00933 J	NA	NA	0.00495 J	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	0.07	NA	NA	0.0289	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	0.24	NA	NA	0.0854	NA	NA	NA	NA	NA	NA	NA	NA
de	mg/kg	- -	- -	- -	NA	NA	NA	NA	<0.00798 L	NA	NA	0.00645 J	NA	NA	NA	NA	NA	NA	NA	NA
rylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	NA	NA	**3.4**	0.020 J	0.070	**2.5**	<0.030	<0.040	**3.4**	0.060	**0.97**	<0.040	<0.030	<0.030
nics																				
ene	mg/kg	390 {N}	5,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
lbenzene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	4,700 {N}	61,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	12 {C}	52 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
de	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
e	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
oride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
e	mg/kg	1.6 {C}	7.2 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organics																				
yl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
te	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

ample Name: ple Depth (ft): ate Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGDW10 0 - 4 08/19/99	NBGDW11 0 - 4 08/19/99	NBGDW12 0 - 4 08/19/99	NBGDW13 0 - 4 08/19/99	NBGSB11A 0 - 0.5 06/12/02	NBGSB11B 1 - 3 06/19/02	NBGSB11C 3 - 5 06/19/02	NBGSB12A 0 - 0.5 06/12/02	NBGSB12B 1 - 3 06/19/02	NBGSB12C 3 - 5 06/19/02	NBGSB13A 0 - 0.5 06/12/02	NBGSB13B 1 - 3 06/19/02	NBGSB14A 0 - 0.5 06/12/02	NBGSB14B 1 - 3 06/19/02	NBGSB15A 0 - 0.5 06/12/02	NBGSB15B 1 - 3 06/19/02
	mg/kg	7,800 {N}	100,000 {N}	40,041	**37,000**	NA	NA	**25,200**	**13,900**	**15,400**	**34,900**	**12,700**	**24,200**	**26,400**	**14,400**	**12,700**	**26,100**	**23,600**	**15,100**	**13,900**
	mg/kg	3.13 {N}	40.88 {N}	- -	2.30 B	NA	NA	2.40 B	**41.8 L**	<0.590 L	0.320 B	0.780 L	<0.590 L	<0.670 L	**22.0 L**	0.220 B	2.46 L	<0.610 L	1.33 L	0.450 L
	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**14.5 K**	NA	NA	**8.70 K**	**64.1**	**2.61 L**	**14.1 L**	**3.31**	**5.87 L**	**11.3 L**	**24.1**	**2.35 L**	**9.97**	**5.69 L**	**3.78**	**4.14 L**
	mg/kg	1,564 {N}	20,440 {N}	209 {N}	25.0 J	NA	NA	66.4	562	44.5	20.7	67.1	31.9	15.4	342	49.7	89.4	29.6	295	95.4
	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.370 J	NA	NA	0.390 J	<0.590	<0.590	0.420 B	0.450 B	<0.590	0.430 B	0.590 B	0.380 B	0.560 B	<0.610	0.640 K	0.440 B
	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.130	NA	NA	0.210 J	**11.4**	<0.110	<0.130	0.580	<0.110	<0.130	**5.72**	0.0900 J	0.870	<0.120	2.89	0.160
	mg/kg	- -	- -	- -	1,190	NA	NA	3,650	28,500 J	557	684	5,420 J	731	371	17,000 J	745	9,810 J	1,190	57,800 J	46,600
	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**54.2**	NA	NA	**94.5**	**25,700 J**	**25.4 L**	**172 L**	**253 J**	**28.1 L**	**38.5 L**	**10,700 J**	**30.8 L**	**3,110 J**	**33.1 L**	**123 J**	22.7 L
	mg/kg	- -	- -	72.3	4.40 J	NA	NA	6.80	**190 J**	6.20	4.00 J	6.95 J	3.90 J	4.60 J	80.4 J	5.90 J	26.1 J	2.20 J	8.85 J	7.61
	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	26.4	NA	NA	24.5	**569 L**	4.63	29.0	43.6 L	10.8	25.7	307 L	6.21	218 L	12.7	58.7 L	36.2
	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**51,100**	NA	NA	**29,100**	**59,800 J**	**14,500 J**	**50,500 J**	**15,200 J**	**24,300 J**	**38,900 J**	**24,900 J**	**13,200 J**	**31,600 J**	**27,100 J**	**17,500 J**	**14,300 J**
	mg/kg	400	750	26.8	20.7	NA	NA	**707**	**91,400 K**	63.6	**903**	**3,640 K**	12.0	20.9	**65,300 K**	82.7	**20,500 K**	30.4	**1,200 K**	82.0
	mg/kg	- -	- -	- -	953	NA	NA	2,110	12,100	648	655	3,220	794	801	9,500	545	5,650	708	30,700	25,200
	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	95.5	NA	NA	**281**	**855 J**	**323**	62.9	**328 J**	50.4	61.2	**469 J**	**203**	**168 J**	55.2	**264 J**	**316**
	mg/kg	2.35	30.66	0.13	0.270	NA	NA	<0.120	<0.0500	0.0300 J	0.200	0.0400 J	0.0700	0.220	0.0400 J	0.0300 J	0.0500 J	0.0700	0.0700	0.0200 J
	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	12.2	NA	NA	10.7	39.6	8.16	15.3	7.12	10.4	20.8	16.7	7.24	17.8	7.78	11.9	10.6
	mg/kg	- -	- -	- -	964	NA	NA	812	1,270	476	798	663	865	981	1,010	400	1,790	607	2,060	1,830
	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	NA	<1.20 L	<1.19 L	<1.34 L	<1.21 L	<1.19 L	<1.35 L	<1.19 L	<1.22 L	<1.20 L	<1.22 L	<1.15 L	<1.17 L
	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	NA	2.74 L	<1.19	<1.34	<1.21 L	<1.19	<1.35	1.27 L	<1.22	<1.20 L	<1.22	<1.15 L	<1.17
	mg/kg	- -	- -	- -	88.7 B	NA	NA	133 J	273	14.0 B	11.0 B	33.5	18.0 B	11.0 B	117	12.0 B	55.0	11.0 B	87.8	66.3
	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	NA	NA	NA	NA	0.270 J	0.110 J	0.230 J	0.180 J	0.140 J	0.220 J	0.220 J	0.140 J	0.190 J	0.170 J	0.150 J	0.130 J
	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**97.4**	NA	NA	**57.6**	**121 J**	**29.2 L**	**74.7 L**	**29.1 J**	**44.8 L**	**69.0 L**	**70.4 J**	**28.5 L**	**62.0 J**	**48.8 L**	**34.4 J**	**29.6 L**
	mg/kg	2,346 {N}	30,660 {N}	202 {N}	35.4	NA	NA	**706**	**39,000 J**	22.8 J	**211 J**	**1,280 J**	18.2 J	32.0 J	**19,600 J**	64.8 J	**3,570 J**	18.5 J	**3,820 J**	129 J
CLP																				
	µg/L	5,000*	- -	- -	<6	<6	<6	<6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	100,000*	- -	- -	118	564	140	474	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	1,000*	- -	- -	<1	11.5	<1	5.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	5,000*	- -	- -	1.3	69.5	19.2	133	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	5,000*	- -	- -	29.9	**63,300**	384	**5,100**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	1,000*	- -	- -	<5	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	5,000*	- -	- -	<1	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
s																				
	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	6.82 J	NA	4.68 J	NA	NA	NA	NA	NA	NA
Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	29,100 K	NA	1,200 J	NA	NA	NA	NA	NA	NA

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Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGSB16A 0 - 0.5 06/12/02	NBGSB16B 2 06/19/02	NBGSB16C 6 06/19/02	NBGSB16D 10 - 12 06/19/02	NBGSB17A 0 - 0.5 06/12/02	NBGSB17B 1 - 3 06/19/02	NBGSB18A 0 - 0.5 06/12/02	NBGSB18B 1 - 3 06/19/02	NBGSB19A 0 - 0.5 06/12/02	NBGSB19B 1 - 3 06/19/02	NBGSB20A 0 - 0.5 07/20/04	NBGSB20B 1 - 3 07/20/04	NBGSB20C 3 - 5 07/20/04	NBGSB20D 5 - 7 07/20/04	NBGSB21A 0 - 0.5 07/20/04
Dioxin/Furan																			
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	0.00003343	0.00000222	0.00000219	0.00000528	0.00001618	0.00000501	0.00002162	0.00000852 J	0.0001025	0.00000466	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	0.00000304	<0.00000009	<0.00000009	<0.00000013	<0.00000109	0.00000012	<0.00000114	0.00000016 J	0.00000244	0.00000015 B	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	<0.00000118	<0.00000011	<0.00000012	<0.00000017	<0.00000141	<0.00000004	<0.00000148	<0.00000004	<0.00000161	<0.00000005	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	<0.00000171	<0.00000017	<0.00000018	<0.00000023	<0.00000174	<0.00000008	<0.00000174	<0.00000007	<0.00000158	<0.00000008	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	<0.00000092	<0.00000006	<0.00000008	<0.00000007	<0.00000101	<0.00000003	<0.0000012	<0.00000004	<0.00000106	<0.00000005	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	<0.00000134	<0.00000013	<0.00000014	<0.00000018	<0.00000136	<0.00000006	<0.00000136	<0.00000006	<0.00000123	<0.00000006	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	<0.0000009	<0.00000006	<0.00000007	<0.00000007	<0.00000099	<0.00000003	<0.00000117	<0.00000004	<0.00000103	<0.00000005	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	<0.0000013	<0.00000012	<0.00000013	<0.00000018	<0.00000132	<0.00000006	<0.00000132	0.00000028 J	<0.0000012	<0.00000007	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDF	mg/kg	- -	- -	- -	<0.00000106	<0.00000007	<0.00000009	<0.00000008	<0.00000116	<0.00000004	<0.00000138	<0.00000006	<0.00000121	<0.00000007	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDD	mg/kg	- -	- -	- -	<0.0000014	<0.0000001	<0.0000001	<0.00000013	<0.00000153	<0.00000007	<0.0000013	<0.00000007	<0.00000132	<0.00000006	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDF	mg/kg	- -	- -	- -	<0.0000007	<0.00000006	<0.00000007	<0.00000009	<0.00000083	<0.00000003	<0.00000076	<0.00000004	<0.00000076	<0.00000004	NA	NA	NA	NA	NA
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	<0.00000105	<0.00000007	<0.00000009	<0.00000008	<0.00000116	<0.00000004	<0.00000137	<0.00000005	<0.00000121	<0.00000006	NA	NA	NA	NA	NA
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	<0.00000074	<0.00000006	<0.00000007	<0.00000009	<0.00000087	<0.00000003	<0.00000079	<0.00000004	<0.0000008	<0.00000005	NA	NA	NA	NA	NA
2,3,7,8-TCDF	mg/kg	- -	- -	- -	<0.00000119	<0.00000008	<0.0000001	<0.00000011	<0.00000129	<0.00000003	<0.00000107	<0.00000003	<0.00000119	<0.00000003	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	0.002352	0.0004363 J	0.0004122 J	0.0008114 J	0.00172	0.0009594 J	0.003185	0.002096 J	0.01964	0.0008243 J	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	<0.00000178	<0.00000029 J	0.00000128 J	0.0000022 J	<0.00000289	0.00000102 B	<0.00000292	0.00000096 B	0.00001394 B	0.00000137 B	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	0.00007269	0.00000508	0.00000513	0.00001071	0.00003714	0.00001344	0.00002162	0.00001799 J	0.0002014	0.00001208	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	0.00000304	<0.00000009	<0.00000009	0.00000076	<0.00000109	0.00000012	<0.00000114	0.0000003 J	0.00000244	0.00000063	NA	NA	NA	NA	NA
Total HxCDDs	mg/kg	- -	- -	- -	<0.0000013	<0.00000012	<0.00000013	<0.00000018	<0.00000132	<0.00000006	<0.00000132	0.00000028 J	0.0000063	<0.00000006	NA	NA	NA	NA	NA
Total HxCDFs	mg/kg	- -	- -	- -	<0.0000009	<0.00000006	<0.00000007	<0.00000007	<0.00000099	<0.00000003	<0.00000117	<0.00000004	<0.00000103	<0.00000005	NA	NA	NA	NA	NA
Total PeCDDs	mg/kg	- -	- -	- -	<0.0000014	<0.0000001	<0.0000001	<0.00000013	<0.00000153	<0.00000007	<0.0000013	<0.00000007	<0.00000132	<0.00000006	NA	NA	NA	NA	NA
Total PeCDFs	mg/kg	- -	- -	- -	<0.0000007	<0.00000006	<0.00000007	<0.00000009	<0.00000083	<0.00000003	<0.00000076	<0.00000004	<0.00000076	0.00000027	NA	NA	NA	NA	NA
Total TCDDs	mg/kg	- -	- -	- -	<0.00000128	<0.0000001	<0.00000013	<0.00000014	<0.00000146	<0.00000005	<0.00000133	<0.00000005	<0.00000128	<0.00000005	NA	NA	NA	NA	NA
Total TCDFs	mg/kg	- -	- -	- -	<0.00000119	<0.00000008	<0.0000001	<0.00000011	<0.00000129	<0.00000003	<0.00000107	<0.00000003	<0.00000119	<0.00000003	NA	NA	NA	NA	NA
Explosives																			
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																			
2,4,5-T	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	<0.0116	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	<0.0232	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DB	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	<0.116	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	0.0759 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	<0.0232	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	3.3 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																			
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	<0.00773	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	<0.00773	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	<0.00773	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	- -	- -	- -	NA	NA	NA	NA	<0.00773 L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																			
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																			
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	<0.030	<0.030	<0.040	<0.040	<0.030	<0.040	<0.040	<0.040	<0.040	<0.040	**0.23**	<0.043	<0.046	<0.048	**1.3**
Volatile Organics																			
1,1-Dichlorethene	mg/kg	390 {N}	5,100 {N}	- -	NA	NA	NA	NA	<0.0046	<0.0054	<0.0064	<0.0067	<0.0054	<0.0066	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	mg/kg	4,700 {N}	61,000 {N}	- -	NA	NA	NA	NA	<0.0046	<0.0054	0.011 K	<0.0067	<0.0054	<0.0066	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	<0.0046	<0.0054	0.12 B	<0.0067	<0.0054	<0.0066	NA	NA	NA	NA	NA
Benzene	mg/kg	12 {C}	52 {C}	- -	NA	NA	NA	NA	<0.0046	<0.0054	<0.0064	<0.0067	<0.0054	<0.0066	NA	NA	NA	NA	NA
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	<0.0046	0.00044 B	<0.0064	0.00052 B	<0.0054	<0.0066	NA	NA	NA	NA	NA
Chlorobenzene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	<0.0046	<0.0054	<0.0064	<0.0067	<0.0054	<0.0066	NA	NA	NA	NA	NA
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	0.023 J	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	<0.0046	<0.0054	<0.0064	<0.0067	<0.0054	<0.0066	NA	NA	NA	NA	NA
tert-Butylbenzene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	<0.0046	<0.0054	<0.0064	<0.0067	<0.0054	<0.0066	NA	NA	NA	NA	NA
Trichloroethene	mg/kg	1.6 {C}	7.2 {C}	- -	NA	NA	NA	NA	<0.0046	<0.0054	<0.0064	<0.0067	<0.0054	<0.0066	NA	NA	NA	NA	NA
Semivolatile Organics																			
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGSB16A 0 - 0.5 06/12/02	NBGSB16B 2 06/19/02	NBGSB16C 6 06/19/02	NBGSB16D 10 - 12 06/19/02	NBGSB17A 0 - 0.5 06/12/02	NBGSB17B 1 - 3 06/19/02	NBGSB18A 0 - 0.5 06/12/02	NBGSB18B 1 - 3 06/19/02	NBGSB19A 0 - 0.5 06/12/02	NBGSB19B 1 - 3 06/19/02	NBGSB20A 0 - 0.5 07/20/04	NBGSB20B 1 - 3 07/20/04	NBGSB20C 3 - 5 07/20/04	NBGSB20D 5 - 7 07/20/04	NBGSB21A 0 - 0.5 07/20/04
Inorganics																			
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**15,500**	**13,900**	**24,400**	**36,500**	**19,700**	**18,800**	**35,500**	**59,500**	**21,300**	**47,600**	**15,000**	**33,000**	**51,400**	**48,800**	**17,000**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	0.470 L	<0.570 L	<0.600 L	<0.690 L	0.370 B	0.270 B	<0.630 L	<0.670 L	<0.600 L	0.410 B	<3.30 L	<0.320	0.820 J	<0.670	<5.70
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**2.25**	**5.38 L**	**6.28 L**	**7.75 L**	**5.92**	**8.20 L**	**8.37**	**10.4 L**	**4.73**	**16.5 J**	**6.80 J**	**10.4**	**16.1**	**17.5**	<6.60
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	52.5	20.9	28.3	32.5	65.9	15.7	21.4	31.3	58.0	26.3	90.6	20.6	22.8	20.6	176
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.480 B	<0.570	<0.600	<0.690	<0.570	<0.600	0.490 B	0.520 B	0.460 B	<0.650	0.540	0.450	0.720	0.780	0.540
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	0.140	<0.110	<0.120	<0.140	<0.110	<0.120	<0.120	<0.130	<0.120	<0.130	0.760	0.450 J	0.780	0.750 J	2.40
Calcium	mg/kg	- -	- -	- -	41,600 J	228	358	164	75,100 J	649	670 J	344	39,300 J	690 J	14,600	545	277	79.2 J	21,800
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**118 J**	21.9 L	**32.4 L**	**58.4 L**	**29.3 J**	**68.8 L**	**44.5 J**	**54.9 L**	**28.4 J**	**51.2**	**1,000**	**42.6**	**54.8**	**55.8**	**1,090**
Cobalt	mg/kg	- -	- -	72.3	7.01 J	1.90 J	2.10 J	3.60 J	7.34 J	2.60 J	3.40 J	5.20 J	5.60 J	3.80 J	14.6	3.00	6.80	6.60	17.8
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	13.2 L	4.44	10.9	23.8	14.8 L	11.1	22.0 L	27.5	16.3 L	23.6	43.0	17.3	30.8	29.0	69.5
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**13,300 J**	**13,400 J**	**25,200 J**	**40,800 J**	**17,600 J**	**29,800 J**	**44,800 J**	**52,300 J**	**21,200 J**	**45,500**	**19,500**	**39,400**	**55,200**	**55,600**	**20,300**
Lead	mg/kg	400	750	26.8	**931 K**	13.5	14.0	25.7	38.9 K	16.2	21.5 K	25.1	36.2 K	23.2	**11,200**	15.9	34.0	40.1	**16,500**
Magnesium	mg/kg	- -	- -	- -	29,200	347	529	1,450	38,100	492	723	800	29,700	659	5,530 J	690 J	755 J	669 J	11,300 J
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**250 J**	19.5	23.0	50.4	144 J	148	64.3 J	83.8	**161 J**	74.1	**499**	55.1	135	156	**422**
Mercury	mg/kg	2.35	30.66	0.13	0.0400 J	0.0400 J	0.0800	0.0700	0.0400 J	0.0900	0.130	0.270	0.0400 J	0.170 K	0.0450	0.170	0.160	0.130	0.0390
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	11.1	3.20 J	8.47	15.0	11.1	4.93	17.9	27.0	12.9	22.2	11.0	11.3	24.2	25.5	10.8
Potassium	mg/kg	- -	- -	- -	1,990	416	579	1,250	2,930	496	835	1,400	2,140	1,190	827 K	878	1,250	969	1,050
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<1.16 L	<1.15 L	<1.21 L	<1.40 L	<1.16 L	<1.20 L	<1.28 L	<1.34 L	<1.20 L	<1.32 L	<0.630	1.20 J	1.30 J	<1.30	<0.560
Silver	mg/kg	39.1 {N}	511 {N}	- -	<1.16 L	<1.15	<1.21	<1.40	<1.16 L	<1.20	<1.28 L	<1.34	<1.20 L	<1.32	<0.130	<0.130	<0.140	<0.260	<0.110
Sodium	mg/kg	- -	- -	- -	89.2	7.50 B	16.0 B	22.0 B	115	9.30 B	23.0 B	24.0 B	85.4	22.0 B	390 B	70.2 B	72.1 B	79.1 B	937 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.150 J	0.100 J	0.200 J	0.230 J	0.140 J	0.110 J	0.210 J	0.210 J	0.190 J	0.300 J	**0.630 J**	<0.380	<0.420	<0.790	<6.80
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**27.1 J**	**24.7 L**	**42.3 L**	**78.2 L**	**36.7 J**	**50.4 L**	**76.0 J**	**94.8 L**	**41.5 J**	**81.1 J**	**34.6**	**78.1**	**103**	**96.6**	**35.9**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	464 J	7.87 J	16.7 J	26.0 J	143 J	19.2 J	34.9 J	40.8 J	78.6 J	40.3 J	**1,700**	19.7	31.9	31.1	**6,090**
Inorganics-TCLP																			
Arsenic	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	100,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																			
Percent Solids	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	84	78	72	70	83
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page

Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGSB21B 1 - 3 07/20/04	NBGSB21C 3 - 5 07/20/04	NBGSB21D 5 - 7 07/20/04	NBGSB22A 0 - 0.5 07/20/04	NBGSB22B 1 - 3 07/20/04	NBGSB22C 3 - 5 07/20/04	NBGSB22D 5 - 7 07/20/04	NBGSB23A 0 - 0.5 07/20/04	NBGSB23B 1 - 3 07/20/04	NBGSB23C 3 - 5 07/20/04	NBGSB23D 5 - 7 07/20/04	NBGSB24A 0 - 0.5 07/20/04	NBGSB24B 1 - 3 07/20/04	NBGSB24C 3 - 5 07/20/04	NBGSB24D 5 - 7 07/20/04	NBGSB25A 0 - 0.5 07/20/04
Dioxin/Furan																				
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																				
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																				
2,4,5-T	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DB	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																				
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																				
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																				
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	<0.041	**0.18**	<0.044	**4.6**	<0.039	<0.041	<0.046	<0.039	<0.040	<0.040	<0.040	0.14	<0.040	<0.039	<0.039	**0.56**
Volatile Organics																				
1,1-Dichlorethene	mg/kg	390 {N}	5,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	mg/kg	4,700 {N}	61,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	mg/kg	12 {C}	52 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	mg/kg	1.6 {C}	7.2 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																				
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGSB21B 1 - 3 07/20/04	NBGSB21C 3 - 5 07/20/04	NBGSB21D 5 - 7 07/20/04	NBGSB22A 0 - 0.5 07/20/04	NBGSB22B 1 - 3 07/20/04	NBGSB22C 3 - 5 07/20/04	NBGSB22D 5 - 7 07/20/04	NBGSB23A 0 - 0.5 07/20/04	NBGSB23B 1 - 3 07/20/04	NBGSB23C 3 - 5 07/20/04	NBGSB23D 5 - 7 07/20/04	NBGSB24A 0 - 0.5 07/20/04	NBGSB24B 1 - 3 07/20/04	NBGSB24C 3 - 5 07/20/04	NBGSB24D 5 - 7 07/20/04	NBGSB25A 0 - 0.5 07/20/04
Inorganics																				
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**15,500**	**16,400**	**36,900**	**12,700**	**13,700**	**33,400**	**54,900**	**17,300**	**26,400**	**21,000**	**18,000**	**13,000**	**13,500**	**13,200**	**16,000**	**17,100**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	0.390 J	0.880 J	0.960 J	**25.5 B**	0.370 J	0.710 J	0.680 L	0.860 B	0.530 J	0.510 J	0.330 J	0.750 B	0.530 J	<0.280	0.410 J	2.60 B
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**6.50**	**4.90**	**13.3**	**36.6 J**	**4.10**	**10.2**	**10.1**	**6.30**	**7.80**	**7.30**	**4.50**	**5.60**	**7.20**	**3.90**	**3.60**	**6.50**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	46.5	41.6	25.9	618	25.9	23.8	24.1	36.6	21.1	16.2	14.6	97.1	48.1	52.4	27.3	202
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.470	0.260	0.590	0.470	0.290	0.580	1.20	0.360	0.370	0.300	0.250	0.470	0.540	0.630	0.290	0.530
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	0.270 J	0.370 J	0.580 J	**10.6**	0.190 J	<0.0290	<0.0390	<0.0300	<0.0310	<0.0310	<0.0320	0.280 J	<0.0320	<0.0300	<0.0300	1.40
Calcium	mg/kg	- -	- -	- -	774	766	347	15,000	820	996	76.1 B	1,930	440	122	27.1 B	9,580	777	608	414	37,700
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**32.9**	**352**	**53.1**	**9,690**	23.0	**53.6**	**41.3**	**50.8**	**54.3**	**31.8**	**26.9**	**174**	**26.0**	16.1	18.0	**494**
Cobalt	mg/kg	- -	- -	72.3	4.50	4.60	3.50	**85.2**	4.10	3.30	6.50	3.90	3.70	3.30	2.80	6.80	5.90	10.6	3.30	9.70
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	9.10	16.1	17.6	**567**	4.00	16.2	30.0	10.8	10.6	8.50	6.70	37.9	8.50	5.10	5.80	**95.4**
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**19,700**	**17,700**	**46,400**	**40,400**	**16,700**	**38,500**	**45,400**	**20,400**	**27,400**	**25,700**	**16,900**	**13,700**	**23,400**	**12,500**	**15,100**	**19,900**
Lead	mg/kg	400	750	26.8	30.4	**4,090**	24.7	**111,000**	27.6	143 J	34.9 J	348 J	147 J	50.1 J	10.0 J	**1,710 J**	27.4 J	23.2 J	10.0 J	**5,610 J**
Magnesium	mg/kg	- -	- -	- -	547 J	878 J	864 J	8,340 J	575 J	1,100	1,120	1,330	683	372	296	4,850	526	688	646	19,700
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**621**	47.7	62.1	**435**	**182**	63.4	74.6	110	39.2	63.7	36.2	**407**	**471**	**501**	110	**290**
Mercury	mg/kg	2.35	30.66	0.13	0.0290 J	0.0400	0.250	0.0310 J	0.0390	0.200 J	0.100 J	0.0350 J	0.0890 J	0.0410 J	0.0400 J	0.0360 J	0.0380 J	0.0580 J	0.0310 J	0.0400 J
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	7.90	5.50	13.9	21.0	4.20	12.7	23.2	7.50	9.70	8.00	6.70	8.10	7.70	6.60	6.10	13.8
Potassium	mg/kg	- -	- -	- -	405	608	939	1,190	514	1,080	1,080	691	864	580	369	604	444	507	649	1,430
Selenium	mg/kg	39.1 {N}	511 {N}	- -	0.720 J	0.560 J	1.40 J	<0.570	0.680 J	<0.530	<0.710	<0.540	0.680 J	0.650 J	<0.580	<0.530	<0.590	<0.540	<0.560	<0.530
Silver	mg/kg	39.1 {N}	511 {N}	- -	<0.110	<0.110	0.130 B	0.990	<0.120	<0.110	<0.140	<0.110	<0.120	<0.110	<0.120	<0.540	<0.120	<0.110	<0.110	<0.110
Sodium	mg/kg	- -	- -	- -	77.0 B	<141	84.7 B	2,020 B	73.7 B	52.1 B	60.4 B	104 B	65.5 B	41.3 B	56.8 B	137 B	74.5 B	52.9 B	47.3 B	404 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	<0.330	0.460 J	<0.400	<17.2	<0.360	**1.20 B**	**0.710 B**	<0.330	<0.350	<0.340	<0.350	<0.320	<0.360	<0.330	<0.340	<0.330
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**38.6**	**37.5**	**86.5**	**40.5 J**	**35.3**	**76.8**	**84.9**	**42.9**	**56.1**	**48.2**	**34.0**	**29.2**	**42.3**	**28.1**	**32.8**	**35.4**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	29.6	**647**	23.1	**15,800**	14.2	45.5	31.0	159	31.1	23.0	8.90	**875**	34.8	20.1	11.1	**4,040**
Inorganics-TCLP																				
Arsenic	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	100,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																				
Percent Solids	%	- -	- -	- -	81	84	76	83	85	81	72	86	84	84	84	88	84	85	87	91
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page

Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGSB25B 1 - 3 07/20/04	NBGSB25C 3 - 5 07/20/04	NBGSB25D 5 - 7 07/20/04	NBGSB26A 0 - 0.5 07/20/04	NBGSB27A 0 - 0.5 07/22/04	NBGSB28A 0 - 0.5 07/21/04	NBGSB29A 0 - 0.5 07/20/04	NBGSB30A 0 - 0.5 07/21/04	NBGSB31A 0 - 0.5 07/22/04	NBGSB32A 0 - 0.5 07/19/04	NBGSB33A 0 - 0.5 07/21/04
Dioxin/Furan															
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives															
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides															
2,4,5-T	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DB	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides															
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs															
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs															
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	<0.037	<0.040	<0.040	<0.039	<0.043	<0.042	<0.040	<0.041	<0.044	<0.042	<0.039
Volatile Organics															
1,1-Dichlorethene	mg/kg	390 {N}	5,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	mg/kg	4,700 {N}	61,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	mg/kg	12 {C}	52 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	mg/kg	1.6 {C}	7.2 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics															
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-11
Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGSB25B 1 - 3 07/20/04	NBGSB25C 3 - 5 07/20/04	NBGSB25D 5 - 7 07/20/04	NBGSB26A 0 - 0.5 07/20/04	NBGSB27A 0 - 0.5 07/22/04	NBGSB28A 0 - 0.5 07/21/04	NBGSB29A 0 - 0.5 07/20/04	NBGSB30A 0 - 0.5 07/21/04	NBGSB31A 0 - 0.5 07/22/04	NBGSB32A 0 - 0.5 07/19/04	NBGSB33A 0 - 0.5 07/21/04
Inorganics															
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**11,500**	**11,600**	**20,300**	**14,500**	**10,500**	**17,700**	**15,000**	**26,600**	**16,500**	**22,800**	**17,500**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	<0.280	0.420 J	0.430 J	0.790 B	<0.360 L	0.830 B	0.370 B	0.650 B	0.410 B	0.680 B	0.390 B
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**4.30**	**12.7**	**6.10**	**5.20**	**4.00**	**4.30**	**2.40 B**	**11.0**	**5.90**	**8.90**	**8.10**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	73.8	27.4	26.0	52.9	52.8 K	126	158	35.1	40.6	47.0	34.1
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.510	0.400	0.390	0.530	0.470	0.570	0.740	0.710	0.390	0.680	0.450
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	0.860	0.440 J	0.260 J	0.240 J	0.0860 J	0.520 J	0.420 J	0.190 J	0.240 J	0.290 J	0.150 J
Calcium	mg/kg	- -	- -	- -	4,170	941	1,010	978	1,450	81,900	129,000	1,370	22,500	2,640	2,790
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	14.9	**29.6**	**24.0**	**24.8**	21.7	**25.8**	**26.4**	**36.8**	**23.6**	**39.9**	**28.0**
Cobalt	mg/kg	- -	- -	72.3	13.4	4.00	2.80	5.20	7.50	6.70	8.30	5.10	3.20	6.80	4.00
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	**313**	8.60	12.0	10.2	8.90	26.9	39.7	16.9	11.0	22.8	11.3
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**38,600**	**42,300**	**23,400**	**17,900 J**	**11,700 J**	**16,800 J**	**16,100 J**	**34,300 J**	**19,100 J**	**31,400 J**	**23,200 J**
Lead	mg/kg	400	750	26.8	63.5	24.1	11.1	80.1	110	124	79.5	51.0	53.9	159	20.8
Magnesium	mg/kg	- -	- -	- -	2,800 J	658 J	779 J	908	983 K	39,900	58,500	1,220	11,800	1,840	2,150
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**675**	**221**	63.9	**409**	**252 K**	**221**	**204**	116	122	**211**	137
Mercury	mg/kg	2.35	30.66	0.13	0.0210 J	0.0600	0.0780	0.0310 J	0.0480	0.0410	0.0450	0.0700	0.0610	0.0970	0.0490
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	7.30	4.80	8.70	8.20	7.20	13.1	15.4	13.8	7.80	14.8	8.90
Potassium	mg/kg	- -	- -	- -	701	469	793	458	509 K	2,210	3,680	732	856	764	1,010
Selenium	mg/kg	39.1 {N}	511 {N}	- -	1.40 J	1.50 J	<0.570	<0.620	<0.710	<0.630	<0.560	0.940 J	<0.600	<0.660	0.580 J
Silver	mg/kg	39.1 {N}	511 {N}	- -	<0.110	<0.110	<0.120	<0.130	<0.140	<0.130	<0.110	<0.120	<0.120	<0.130	<0.120
Sodium	mg/kg	- -	- -	- -	142 B	69.7 B	77.4 B	69.3 B	79.9 B	187 B	210 B	65.0 B	126 B	99.0 B	59.4 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	<0.330	<0.330	<0.350	<0.380	<0.430	<0.390	<0.340	<0.370	<0.370	<0.400	<0.350
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**23.9**	**62.1**	**46.3**	**37.6**	**23.8**	**35.7**	**35.5**	**66.2**	**40.4**	**59.1**	**46.3**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	650	20.7	17.8	95.4	99.5	199	158	34.8	143	204	38.3
Inorganics-TCLP															
Arsenic	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	100,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous															
Percent Solids	%	- -	- -	- -	89	84	83	85	77	80	84	81	77	80	87
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

RBC	Risk Based Concentration.
{C}	Carcinogen.
{N}	Noncarcinogen.
B (Inorganics)	Constituent concentration quanitified as estimated.
B (Organics)	Constituent was detected in the associated method blank.
J	Constituent concentration quanitified as estimated.
K	Estimated concentration bias high.
L	Estimated concentration bias low.
R	Constituent concentration rejected.
NA	Not Analyzed.
ND	Not Detected (no detection limit given).
24,400	Constituent concentration exceeds Adjusted Soil RBC (Residential).
10.6 J	Constituent concentration exceeds Adjusted Soil RBC (Industrial).
16	Inorganics constituent concentration exceeds Background Point Estimate.
5,000*	TCLP Standards

Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report*, IT Corporation, 2001.

Table 3-12
Historical Sediment Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGSD01 0 - 0.5 06/18/02	NBGSD02 0 - 0.5 07/14/04	NBGSD03 0 - 0.5 07/16/04	NBGSD04 0 - 0.5 07/16/04
Dioxin/Furan								
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	0.00004075	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	0.00000464	NA	NA	NA
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	0.00000041	NA	NA	NA
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	0.00000053	NA	NA	NA
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	0.00000071	NA	NA	NA
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	0.00000141	NA	NA	NA
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	0.00000162 J	NA	NA	NA
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	0.00000136	NA	NA	NA
1,2,3,7,8-PeCDF	mg/kg	- -	- -	- -	0.00000021	NA	NA	NA
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	0.00000029	NA	NA	NA
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	0.00000024	NA	NA	NA
2,3,7,8-TCDD	mg/kg	0.0000043 {C}	0.000019 {C}	- -	0.00000047 J	NA	NA	NA
2,3,7,8-TCDF	mg/kg	- -	- -	- -	0.00000038	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	0.002629 J	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	0.0000342 J	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	0.00008126	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	0.00002337	NA	NA	NA
Total HxCDDs	mg/kg	- -	- -	- -	0.00000802	NA	NA	NA
Total HxCDFs	mg/kg	- -	- -	- -	0.00000747	NA	NA	NA
Total PeCDFs	mg/kg	- -	- -	- -	0.00000336	NA	NA	NA
Total TCDDs	mg/kg	- -	- -	- -	0.00000114	NA	NA	NA
Total TCDFs	mg/kg	- -	- -	- -	0.00000151	NA	NA	NA
Explosives								
None Detected	- -	- -	- -	- -	- -	NA	NA	NA
Herbicides								
None Detected	- -	- -	- -	- -	- -	NA	NA	NA
Organochlorine Pesticides								
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	0.00244	NA	NA	NA
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	0.00085 B	NA	NA	NA
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	0.00421	NA	NA	NA
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	0.00185	NA	NA	NA
Endosulfan II	mg/kg	- -	- -	- -	0.00176	NA	NA	NA
PAHs								
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	0.0086 B	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	0.052	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	0.029	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	0.19	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	**0.21**	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	**0.31**	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	0.18	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	0.11	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	0.16	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	**0.036**	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.33	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	0.01	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	0.18	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	0.0053 B	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.15	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.25	NA	NA	NA
PCBs								
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	0.14	0.068	<0.039	0.15
Volatile Organics								
None Detected	- -	- -	- -	- -	- -	NA	NA	NA
Semivolatile Organics								
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	0.040 J	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	0.018 J	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	0.22	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	**0.28**	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	**0.37**	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	0.16 J	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	0.13 J	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	0.18 B	NA	NA	NA
Carbazole	mg/kg	32 {C}	140 {C}	- -	0.022 J	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	0.23	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.37	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	0.17 J	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.12 J	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.34	NA	NA	NA

See foot notes on last page.

Table 3-12

Historical Sediment Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	NBGSD01 0 - 0.5 06/18/02	NBGSD02 0 - 0.5 07/14/04	NBGSD03 0 - 0.5 07/16/04	NBGSD04 0 - 0.5 07/16/04
Inorganics								
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**17,900**	**21,400**	**19,500**	**13,200**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	0.360 B	0.380 B	1.60 B	2.10 B
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**5.56 J**	**8.90**	**6.80**	**5.10**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	55.4	44.2	123	142
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.500 B	0.670 J	0.640 J	0.480 J
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	0.270	0.0830 J	1.70	1.10
Calcium	mg/kg	- -	- -	- -	3,300 J	2,680	35,700	12,200
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**41.1 J**	**38.3**	**397**	**151**
Cobalt	mg/kg	- -	- -	72.3	5.60 J	6.20	8.90	7.50
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	22.1 L	20.5	41.5	46.7
Iron	mg/kg	5,500 {N}	72,000 {N}	50,962 {N}	**22,600 J**	**31,700**	**24,800**	**14,500**
Lead	mg/kg	400	750	26.8	159	146	**3,500**	**2,200**
Magnesium	mg/kg	- -	- -	- -	2,570 J	1,820	19,000	7,930
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**204 J**	**215**	**334**	**319**
Mercury	mg/kg	2.35	30.66	0.13	0.0700 J	0.100	0.0480	0.0510
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	10.3	14.3	13.1	10.0
Potassium	mg/kg	- -	- -	- -	999	655	1,530	899
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<1.21 L	0.840 J	<0.550	<0.520
Sodium	mg/kg	- -	- -	- -	15.0 B	79.9 B	<560	345 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.180 J	<0.360	<0.340	<0.320
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**40.6 J**	**55.8**	**46.3**	**29.0**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	473 J	208	**4,220**	**2,630**
Miscellaneous								
Percent Solids	%	- -	- -	- -	NA	81	87	82

RBC	Risk Based Concentration.
{C}	Carcinogen.
{N}	Noncarcinogen.
B (Inorganics)	Constituent concentration quanitified as estimated.
B (Organics)	Constituent was detected in the associated method blank.
J	Constituent concentration quanitified as estimated.
K	Estimated concentration bias high.
L	Estimated concentration bias low.
NA	Not Analyzed.
24,400	Constituent concentration exceeds Adjusted Soil RBC (Residential).
10.6 J	Constituent concentration exceeds Adjusted Soil RBC (Industrial).
16	Inorganics constituent concentration exceeds Facility-Wide Background Point Estimate.

Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report*, IT Corporation, 2001.

Table 3-13
Historical Soil Sampling Results, Rail Yard
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SS-07 0 - 0.5 06/04/97	SS-08 0 - 0.5 06/04/97	SS-08a 0.25 - 0.5 03/30/98	TR-02A 0 - 0.16 04/02/98	TR-02C 0 - 0.16 04/02/98	RYSB1A 0 - 2 08/03/98	RYSB1B 4 - 8 08/03/98	RYSB1C 19 - 23 08/03/98	RYSB2A 0 - 2 08/03/98	RYSB2B 4 - 6 08/03/98	RYSB3A 1 - 3 08/03/98	RYSB3B 3 - 4.2 08/03/98	RYSB4A 0 - 4 08/03/98	RYSB4B 4 - 6 08/03/98	RYSB5A 0 - 4 08/03/98	RYSB5B 4 - 6 08/03/98	RYSB6A 0 - 4 08/03/98	RYSB6B 4 - 6 08/03/98
Explosives																						
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	NA	NA	NA	NA	NA	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2	<0.2	<0.3	<0.3	<0.2	<0.3	<0.3	<0.3
2,6-Dinitrotoluene	mg/kg	7.8 {N}	100 {N}	- -	ND	0.32 C	NA	NA	NA	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2	<0.2	<0.3	<0.3	<0.2	<0.3	<0.3	<0.3
4-Amino-2,6-Dinitrotoluene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2	<0.2	<0.3	<0.3	<0.2	<0.3	<0.3	<0.3
Herbicides																						
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																						
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	ND	R	0.01 I	0.04	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-BHC	mg/kg	0.1 {C}	0.45 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-Chlordane	mg/kg	- -	- -	- -	ND	0.03 J	0.02 I	ND	R	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beta-BHC	mg/kg	0.36 {C}	1.6 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	ND	R	R	ND	**0.27**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	- -	- -	- -	ND	0.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																						
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																						
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	ND	**1.7**	**1.0**	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organics																						
2-Butanone	mg/kg	4,700 {N}	61,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Octanone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethanol	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	0.00070 B	0.0030 B	3.0 B	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																						
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	ND	0.40 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	ND	0.040 J	NA	NA	NA	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	ND	0.070 J	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	ND	0.10 J	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	ND	0.080 J	ND	**0.40 J**	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	ND	**0.080 J**	ND	**0.40 J**	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	ND	0.080 J	ND	**1.0**	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	ND	0.090 J	ND	0.56	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Benzoic Acid	mg/kg	31,000 {N}	410,000 {N}	- -	NA	NA	NA	NA	NA	<1.8	<2.3	<2.3	<2.1	<2.3	<2.1	<2.0	<2.6	<2.3	<2.2	<2.0	<2.2	<2.3
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	1.8	0.10 J	ND	0.11 J	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Carbazole	mg/kg	32 {C}	140 {C}	- -	NA	NA	ND	0.10 J	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Chrysene	mg/kg	22 {C}	390 {C}	- -	ND	0.090 J	ND	0.66	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	ND	**0.050 J**	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Dibenzofuran	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	NA	NA	NA	NA	NA	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	0.32 J	<0.43	<0.41	<0.43	1.1
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	ND	1.1	NA	NA	NA	<0.35	<0.46	<0.46	0.11 B	<0.46	0.060 B	<0.41	<0.52	<0.46	<0.43	<0.41	0.060 B	<0.46
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	ND	0.30 J	ND	0.39	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	ND	0.11 J	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Pentachlorophenol	mg/kg	5.3 {C}	24 {C}	- -	NA	NA	ND	0.11 J	**830 C**	<1.8	<2.3	<2.3	<2.1	<2.3	<2.1	<2.0	<2.6	<2.3	<2.2	<2.0	<2.2	<2.3
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	ND	0.10 J	ND	0.060 J	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	ND	0.10 J	ND	0.86	ND	<0.35	<0.46	<0.46	<0.42	<0.46	<0.41	<0.41	<0.52	<0.46	<0.43	<0.41	<0.43	<0.46

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Table 3-13
Historical Soil Sampling Results, Rail Yard
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Sample Depth (ft): / Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SS-07 0 - 0.5 06/04/97	SS-08 0 - 0.5 06/04/97	SS-08a 0.25 - 0.5 03/30/98	TR-02A 0 - 0.16 04/02/98	TR-02C 0 - 0.16 04/02/98	RYSB1A 0 - 2 08/03/98	RYSB1B 4 - 8 08/03/98	RYSB1C 19 - 23 08/03/98	RYSB2A 0 - 2 08/03/98	RYSB2B 4 - 6 08/03/98	RYSB3A 1 - 3 08/03/98	RYSB3B 3 - 4.2 08/03/98	RYSB4A 0 - 4 08/03/98	RYSB4B 4 - 6 08/03/98	RYSB5A 0 - 4 08/03/98	RYSB5B 4 - 6 08/03/98	RYSB6A 0 - 4 08/03/98	RYSB6B 4 - 6 08/03/98
Inorganics																						
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	338	**18,100**	**24,800**	NA	NA	817	**12,400**	**10,400**	5,630	**12,700**	7,470	**11,100**	**17,500**	**23,300**	**14,200**	**10,200**	**12,100**	**15,400**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	NA	NA	NA	NA	NA	<0.510	<0.700	<0.690	<0.610	<0.690	<0.600	<0.590	<0.780	<0.670	<0.630	<0.620	<0.630	<0.680
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**1.80**	**20.8**	**8.90**	NA	NA	**1.60 K**	**4.90 K**	**4.50 K**	**2.90 K**	**4.90 K**	**2.10 K**	**3.90 K**	**5.60 K**	**4.90 K**	**7.00 K**	**4.30 K**	**7.80 K**	**5.40 K**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	**1,770 J**	147	53.7	NA	NA	94.1 K	27.5 K	38.6 K	22.7 K	17.6 K	15.4 K	17.4 K	20.8 K	41.1 K	22.4 K	19.9 K	29.9 K	24.8 K
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	ND	1.30	1.40	NA	NA	<0.100	0.250 J	4.30	0.210 J	0.520 J	0.130 J	0.500 J	0.230 J	0.550 J	0.660	0.980	1.50	0.840
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	ND	1.80	0.800	NA	NA	0.130 J	<0.140	<0.140	<0.120	<0.140	<0.120	<0.120	<0.160	<0.130	<0.130	<0.120	<0.130	<0.140
Calcium	mg/kg	- -	- -	- -	196,000	28,500	4,720	NA	NA	177,000	5,130	1,850	1,390	152 J	761	8,340	1,660	2,650	1,670	2,540	4,950	1,520
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	ND	**39.8**	**41.1**	NA	NA	3.10	20.0	21.3	7.00	**46.3**	9.90	19.4	21.8	20.3	21.4	11.2	19.8	**26.9**
Cobalt	mg/kg	- -	- -	72.3	ND	25.8	32.1	NA	NA	1.30 K	9.80 K	5.80 K	17.1 K	2.10 K	4.90 K	7.40 K	74.9 K	74.5 K	8.40 K	39.1 K	22.7 K	11.5 K
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	ND	60.2	31.0	NA	NA	2.30 B	4.70 B	15.1 K	3.20 B	9.10 B	4.80 B	14.8 K	8.50 B	14.0 K	11.7 K	9.00 B	12.8 K	8.80 B
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**2,780**	**39,600**	**48,400**	NA	NA	**2,600**	**24,700**	**20,200**	**7,120**	**31,900**	**11,200**	**21,800**	**27,700**	**23,600**	**31,200**	**14,800 L**	**27,200**	**30,300**
Lead	mg/kg	400	750	26.8	1.80	149	52.6	NA	NA	9.70 L	15.4 L	25.4 L	25.2 L	18.0 L	7.20 L	15.9 L	33.7 L	42.1 L	25.2 L	49.2	25.3 L	22.2 L
Magnesium	mg/kg	- -	- -	- -	104,000	15,200	2,710	NA	NA	90,700	2,710	994	660	190 J	266 J	4,620	606 J	1,700	1,030	1,520	3,140	680
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	94.0	**203**	**233**	NA	NA	105 K	151 K	**235 K**	**202 K**	70.9 K	36.6 K	154 K	**301 K**	**342 K**	108 K	**405 K**	**213 K**	133 K
Mercury	mg/kg	2.35	30.66	0.13	NA	NA	0.200	NA	NA	<0.110	0.460	<0.140	0.140	0.150	<0.130	<0.120	<0.140	0.150	<0.120	0.140	<0.130	<0.130
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	ND	17.5	21.1	NA	NA	2.90 K	2.50 K	8.90 K	1.60 K	3.30 K	2.80 K	10.5 K	7.90 K	25.5 K	8.00 K	7.20 K	10.8 K	4.70 K
Potassium	mg/kg	- -	- -	- -	ND	1,110	985	NA	NA	448 K	382 K	367 K	162 K	249 K	412 K	504 K	501 K	702 K	437 K	329 K	747 K	750 K
Selenium	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	NA	NA	1.00 K	<0.700	<0.690	<0.610	<0.690	<0.600	<0.590	<0.780	<0.670	<0.630	<0.620	<0.630	<0.680
Sodium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	331 B	41.4 B	40.4 B	43.0 B	30.0 B	33.1 B	46.7 B	41.6 B	46.2 B	59.1 B	82.3 B	52.8 B	70.3 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	ND	0.400	0.400	NA	NA	<0.210 L	<0.280 L	0.440 B	<0.240 L	<0.280 L	<0.240 L	<0.240 L	<0.310 L	**0.700 B**	0.420 B	**0.860 B**	<0.250 L	<0.270 L
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**31.8**	**75.9**	**91.5**	NA	NA	5.00 K	**44.0 K**	**49.1 K**	**23.7 K**	**72.4 K**	**19.7 K**	**38.7 K**	**60.4 K**	**42.6 K**	**57.1 K**	**36.3 K**	**48.4 K**	**55.9 K**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	12.5	752	159	NA	NA	12.5	8.20	9.60	7.40	13.3	6.10	30.5	10.3	23.7	33.3	14.4	15.3	8.00
Miscellaneous																						
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-13
Historical Soil Sampling Results, Rail Yard
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	RYSB7A 0 - 4 08/03/98	RYSB7B 4 - 6 08/03/98	RYSB08A 0 - 0.5 06/17/02	RYSB08B 4 - 6 06/17/02	RYSB09A 0 - 0.5 06/17/02	RYSB09B 4 - 6 06/17/02	RYSB09C 8 - 10 06/17/02	RYSS01 0 - 0.5 06/17/02	RYSS02 0 - 0.5 06/17/02	RYSS03 0 - 0.5 06/17/02	RYSS04 0 - 0.5 07/25/02	RYSS05 0 - 0.5 07/25/02	RYSS06 0 - 0.5 07/25/02	RYSS07 0 - 0.5 07/25/02	RYSS08 0 - 0.5 07/25/02	RYSS09 0 - 0.5 07/25/02
Explosives																				
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	<0.3 [<0.3]	<0.3	<0.2	<0.2	NA	NA	NA	<0.2	NA	0.06 J	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,6-Dinitrotoluene	mg/kg	7.8 {N}	100 {N}	- -	<0.3 [<0.3]	<0.3	<0.2	<0.2	NA	NA	NA	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
4-Amino-2,6-Dinitrotoluene	mg/kg	- -	- -	- -	<0.3 [<0.3]	<0.3	<0.2	0.04 J	NA	NA	NA	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Herbicides																				
None Detected	- -	- -	- -	- -	NA	NA	- -	NA	- -	NA	NA	NA	NA	NA	NA	- -	NA	NA	NA	- -
Organochlorine Pesticides																				
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	<0.00882	NA	<0.0079	NA	NA	NA	NA	NA	NA	<0.00083	NA	NA	NA	<0.00083
Alpha-BHC	mg/kg	0.1 {C}	0.45 {C}	- -	NA	NA	<0.00882	NA	<0.0079	NA	NA	NA	NA	NA	NA	0.0006 J	NA	NA	NA	0.00052 J
Alpha-Chlordane	mg/kg	- -	- -	- -	NA	NA	<0.00882	NA	<0.0079	NA	NA	NA	NA	NA	NA	<0.00083	NA	NA	NA	<0.00083
Beta-BHC	mg/kg	0.36 {C}	1.6 {C}	- -	NA	NA	<0.00882	NA	<0.0079	NA	NA	NA	NA	NA	NA	0.00017 J	NA	NA	NA	<0.00083
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	<0.00882	NA	<0.0079	NA	NA	NA	NA	NA	NA	<0.00083	NA	NA	NA	<0.00083
Endrin Aldehyde	mg/kg	- -	- -	- -	NA	NA	<0.00882	NA	<0.0079	NA	NA	NA	NA	NA	NA	<0.00083	NA	NA	NA	<0.00083
PAHs																				
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	<0.0022	0.0013 B	NA	NA	NA	<0.0021	NA	NA	<0.0023	0.0047	<0.0022	0.001 J	0.00088 J	<0.0021
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	<0.0022	<0.0027	NA	NA	NA	<0.0021	NA	NA	<0.0023	<0.0021	<0.0022	0.0065	<0.002	<0.0021
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	<0.0022	<0.0027	NA	NA	NA	<0.0021	NA	NA	<0.0023	0.003	<0.0022	<0.0022	<0.002	<0.0021
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	<0.0022	<0.0027	NA	NA	NA	0.002 J	NA	NA	<0.0023	0.0051	0.0015 J	0.0094	<0.002	<0.0021
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	0.0017 J	<0.0027	NA	NA	NA	0.008	NA	NA	0.0013 J	0.019	0.0078	0.027	0.0011 J	0.0012 J
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	0.0016 J	<0.0027	NA	NA	NA	0.0074	NA	NA	0.0012 J	**0.027**	0.0059	0.019	0.0013 J	0.0011 J
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	0.0068	<0.0027	NA	NA	NA	0.029	NA	NA	0.002 J	0.07	0.022	0.03	0.003	0.003
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	0.0016 J	<0.0027	NA	NA	NA	0.0065 J	NA	NA	0.0017 J	0.037	0.0073	0.017	0.0016 J	0.0017 J
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	0.0023	<0.0027	NA	NA	NA	0.0093	NA	NA	<0.0023	0.02	0.0062	0.0088	0.00084 J	0.00083 J
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	0.0042	<0.0027	NA	NA	NA	0.02	NA	NA	0.0013 J	0.037	0.018	0.022	0.0021	0.0021
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	<0.0022	<0.0027	NA	NA	NA	0.0021 J	NA	NA	<0.0023	0.011	0.0016 J	0.0043	<0.002	<0.0021
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	0.0069	<0.0027	NA	NA	NA	0.031	NA	NA	0.0028	0.037	0.051	0.071	0.0034	0.0044
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	<0.0022	<0.0027	NA	NA	NA	<0.0021	NA	NA	<0.0023	<0.0021	<0.0022	0.0067	<0.002	<0.0021
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	0.0017 J	<0.0027	NA	NA	NA	0.0076 J	NA	NA	0.0016 J	0.04	0.0086	0.018	0.0016 J	0.0014 J
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	0.00097 B	0.0014 B	NA	NA	NA	0.0016 B	NA	NA	<0.0023	0.0041 B	<0.0022	0.0014 B	0.0012 B	<0.0021
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	0.0016 J	<0.0027	NA	NA	NA	0.0089	NA	NA	0.0013 J	0.012	0.012	0.057	0.0013 J	0.002 J
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	0.0063	<0.0027	NA	NA	NA	0.028	NA	NA	0.0017 J	0.026	0.028	0.043	0.0022	0.0027
PCBs																				
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	<0.040	<0.050	<0.030	<0.040	<0.040	<0.040	<0.030	**0.37**	<0.040	0.020 J	<0.040	**1.2**	<0.030	<0.040
Volatile Organics																				
2-Butanone	mg/kg	4,700 {N}	61,000 {N}	- -	NA	NA	<0.0066	<0.0086	<0.0059	<0.0068	<0.0067	<0.0061	NA	NA	<0.0067	<0.0056	0.016 K	<0.0059	<0.0054	<0.0056
3-Octanone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.014 J	NA	0.15 J	0.0090 J	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	<0.0066	<0.0086	<0.0059	<0.0068	<0.0067	<0.0061	NA	NA	0.060 J	<0.0056 L	0.31 J	<0.0059 L	0.045 B	<0.0056 L
Ethanol	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.018 J	NA	0.087 J	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	<0.0066	<0.0086	<0.0059	<0.0068	<0.0067	<0.0061	NA	NA	<0.0067	<0.0056	<0.0063	<0.0059	0.00061 B	<0.0056
Semivolatile Organics																				
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	NA	NA	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	<0.21	<0.22	<0.22	<0.20	<0.21
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	0.014 J	<0.22	0.012 J	<0.20	<0.21
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	<0.21	<0.22	0.12 J	<0.20	<0.21
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	<0.21	<0.22	<0.22	<0.20	<0.21
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	<0.21	<0.22	0.21 J	<0.20	<0.21
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	0.014 J	NA	NA	<0.23	0.024 J	<0.22	**0.60**	<0.20	<0.21
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	**0.032 J**	<0.22	**0.55**	<0.20	<0.21
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	0.039 J	NA	NA	<0.23	0.084 J	<0.22	**0.73**	<0.20	<0.21
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	<0.21	<0.22	0.35	<0.20	<0.21
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	0.013 J	NA	NA	<0.23	0.027 J	<0.22	0.23	<0.20	<0.21
Benzoic Acid	mg/kg	31,000 {N}	410,000 {N}	- -	<2.1 [<2.0]	<2.2	0.15 B	<1.3	NA	NA	NA	<1.0	NA	NA	<1.1	<1.0	<1.1	<1.1	<0.99	<1.0
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	<0.41 [<0.40]	<0.43	0.038 B	0.060 B	NA	NA	NA	0.20 B	NA	NA	<0.23	0.097 B	0.12 B	<0.22	<0.20	<0.21
Carbazole	mg/kg	32 {C}	140 {C}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	<0.21	<0.22	0.12 J	<0.20	<0.21
Chrysene	mg/kg	22 {C}	390 {C}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	0.022 J	NA	NA	<0.23	0.048 J	<0.22	0.54	<0.20	<0.21
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	<0.21	<0.22	**0.083 J**	<0.20	<0.21
Dibenzofuran	mg/kg	7.8 {N}	100 {N}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	<0.21	<0.22	0.045 J	<0.20	<0.21
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	0.090 J [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	<0.21	<0.22	<0.22	<0.20	<0.21
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	0.090 B [<0.40]	0.11 B	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	<0.21	<0.22	<0.22	<0.20	<0.21
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	0.042 J	NA	NA	<0.23	0.058 J	0.059 J	1.6	<0.20	<0.21
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	<0.41 [<0.40]	<0.43	<0.22 J	<0.26 J	NA	NA	NA	<0.20 J	NA	NA	<0.23	<0.21	<0.22	0.12 J	<0.20	<0.21
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	<0.21	<0.22	**0.39**	<0.20	<0.21
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	<0.20	NA	NA	<0.23	0.0092 J	<0.22	<0.22	<0.20	<0.21
Pentachlorophenol	mg/kg	5.3 {C}	24 {C}	- -	<2.1 [<2.0]	<2.2	<1.1	<1.3	NA	NA	NA	<1.0	NA	NA	<1.1	<1.0	<1.1	<1.1	<0.99	<1.0
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	0.012 J	NA	NA	<0.23	0.038 J	0.037 J	1.1	<0.20	<0.21
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	<0.41 [<0.40]	<0.43	<0.22	<0.26	NA	NA	NA	0.035 J	NA	NA	<0.23	0.046 J	0.040 J	1.2	<0.20	<0.21

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Table 3-13
Historical Soil Sampling Results, Rail Yard
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Sample Depth (ft): / Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	RYSB7A 0 - 4 08/03/98	RYSB7B 4 - 6 08/03/98	RYSB08A 0 - 0.5 06/17/02	RYSB08B 4 - 6 06/17/02	RYSB09A 0 - 0.5 06/17/02	RYSB09B 4 - 6 06/17/02	RYSB09C 8 - 10 06/17/02	RYSS01 0 - 0.5 06/17/02	RYSS02 0 - 0.5 06/17/02	RYSS03 0 - 0.5 06/17/02	RYSS04 0 - 0.5 07/25/02	RYSS05 0 - 0.5 07/25/02	RYSS06 0 - 0.5 07/25/02	RYSS07 0 - 0.5 07/25/02	RYSS08 0 - 0.5 07/25/02	RYSS09 0 - 0.5 07/25/02
Inorganics																				
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**8,180 [10,400]**	**11,400**	**35,800 J**	**18,200 J**	NA	NA	NA	**22,000 J**	**16,100 J**	NA	**39,000**	**19,300**	**31,800**	**25,100**	**28,000**	**24,800**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	<0.630 [<0.580]	<0.640	<0.660 L	0.310 B	NA	NA	NA	0.310 L	0.270 B	NA	0.280 J	0.240 J	0.320 J	0.460 J	0.210 J	<0.620 L
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**3.20 K [3.60 K]**	**5.50 K**	**10.6 L**	**5.82 L**	NA	NA	NA	**7.70 L**	**1.39 L**	NA	**8.83 J**	**6.75 J**	**13.2 J**	**6.11 J**	**8.58 J**	**5.15 J**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	52.7 K [49.5 K]	75.3 K	50.6	32.6	NA	NA	NA	42.0	71.6	NA	36.3	44.1	30.4	49.4	42.7	33.6
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	1.40 [1.50]	2.10	1.39	1.03	NA	NA	NA	**2.23**	0.890	NA	1.50	0.910 B	1.46	1.56	0.800 B	1.63
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.130 [<0.120]	<0.130	<0.130	<0.150	NA	NA	NA	<0.120	<0.100	NA	<0.130	0.0900 J	<0.120	<0.130	0.260	<0.120
Calcium	mg/kg	- -	- -	- -	1,290 [1,320]	2,100	1,310	60.0	NA	NA	NA	2,960	100,000	NA	1,060 J	1,130 J	731 J	1,410 J	685 J	4,860 J
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	14.7 [18.7]	16.3	**38.9 K**	19.0 K	NA	NA	NA	**34.4 K**	**25.7 K**	NA	**59.0 L**	**23.9 L**	**52.9 L**	**35.1 L**	**29.5 L**	**32.2 L**
Cobalt	mg/kg	- -	- -	72.3	25.9 K [11.8 K]	8.20 K	30.0 J	32.9 J	NA	NA	NA	23.9 J	9.42 J	NA	16.4 J	12.1 J	9.38 J	19.0 J	7.23 J	19.5 J
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	4.50 B [5.80 B]	10.5 K	30.2 J	35.1 J	NA	NA	NA	27.6 J	14.6 J	NA	33.5 J	15.8 J	31.3 J	27.6 J	18.5 J	25.2 J
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**14,900 [19,300]**	**18,500**	**42,600**	**25,700**	NA	NA	NA	**37,900**	**16,300**	NA	**50,100**	**20,400**	**48,400**	**38,200**	**27,900**	**35,700**
Lead	mg/kg	400	750	26.8	33.9 L [20.7 L]	15.5 L	27.0	11.7	NA	NA	NA	23.8	14.0	NA	25.1 K	26.9 K	20.9 K	26.3 K	13.0 K	23.2 K
Magnesium	mg/kg	- -	- -	- -	617 J [769]	1,780	2,100	2,330	NA	NA	NA	2,980	55,500	NA	1,870	2,040	1,340	1,960	1,480	3,720
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**709 K [502 K]**	**395 K**	**384 J**	**356 J**	NA	NA	NA	**309 J**	**189 J**	NA	**168 J**	**218 J**	92.7 J	**235 J**	105 J	**278 J**
Mercury	mg/kg	2.35	30.66	0.13	0.410 [<0.120]	<0.130	0.110	<0.0700	NA	NA	NA	0.0600	0.0200 J	NA	0.190	0.0500 J	0.100	0.0700	0.0600	0.0800
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	3.90 K [5.00 K]	10.6 K	31.8 J	33.9 J	NA	NA	NA	26.6 J	14.9 J	NA	27.7	16.1	29.4	29.2	17.0	24.5
Potassium	mg/kg	- -	- -	- -	282 K [384 K]	545 K	1,550	1,420	NA	NA	NA	1,930	4,570	NA	1,440 J	1,530 J	1,720 J	1,310 J	1,440 J	1,030 J
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<0.630 [<0.580]	<0.640	<1.32	<1.57 L	NA	NA	NA	<1.22	0.430 B	NA	<1.35 L	<1.25 L	<1.27 L	<1.31 L	<1.20 L	<1.25 L
Sodium	mg/kg	- -	- -	- -	35.4 B [32.5 B]	42.9 B	21.2 B	9.54 B	NA	NA	NA	14.6 B	113	NA	16.0 J	15.0 J	13.0 J	15.0 J	19.0 J	19.0 J
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	**0.890 B [<0.230 L]**	<0.250 L	0.390 J	0.490	NA	NA	NA	0.300 J	0.180 J	NA	**0.560**	0.250 J	0.310 J	0.390 J	0.220 J	0.270 J
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**34.2 K [38.6 K]**	**34.9 K**	**75.3**	**46.5**	NA	NA	NA	**62.3**	**32.0**	NA	**90.4 J**	**39.8 J**	**78.6 J**	**61.7 J**	**49.5 J**	**63.1 J**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	7.10 [8.90]	15.6	39.2 J	33.9 J	NA	NA	NA	31.1 J	41.1 J	NA	50.8 J	41.0 J	92.0 J	49.6 J	21.0 J	31.9 J
Miscellaneous																				
pH	pH Units	- -	- -	- -	NA	NA	6.85 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	1,880	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-13
Historical Soil Sampling Results, Rail Yard
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	RYSS10 0 - 0.5 07/25/02	RYSS11 0 - 0.5 07/25/02	RYSS12 0 - 0.5 07/25/02	RYSS13 0 - 0.5 07/25/02	RYSS14 0 - 0.5 07/25/02	RYSS15 0 - 0.5 07/25/02	RYSS16 0 - 0.5 07/25/02	RYTR01 0 - 0.5 06/18/02	RYTR02 0 - 0.5 06/18/02	RYTR03 0 - 0.5 06/18/02
Explosives														
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA
2,6-Dinitrotoluene	mg/kg	7.8 {N}	100 {N}	- -	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA
4-Amino-2,6-Dinitrotoluene	mg/kg	- -	- -	- -	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA
Herbicides														
None Detected	- -	- -	- -	- -	- -	NA	NA	NA	NA	- -	NA	NA	NA	NA
Organochlorine Pesticides														
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	<0.00084	NA	NA	NA	NA	<0.00085	NA	NA	NA	NA
Alpha-BHC	mg/kg	0.1 {C}	0.45 {C}	- -	0.00077 J	NA	NA	NA	NA	0.00066 J	NA	NA	NA	NA
Alpha-Chlordane	mg/kg	- -	- -	- -	<0.00084	NA	NA	NA	NA	<0.00085	NA	NA	NA	NA
Beta-BHC	mg/kg	0.36 {C}	1.6 {C}	- -	0.00025 J	NA	NA	NA	NA	<0.00085	NA	NA	NA	NA
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	<0.00084	NA	NA	NA	NA	<0.00085	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	- -	- -	- -	<0.00084	NA	NA	NA	NA	<0.00085	NA	NA	NA	NA
PAHs														
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	0.00098 J	0.00093 J	0.0012 J	0.0015 J	0.0019 J	<0.0022	0.0011 J	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	<0.0022	<0.0021	<0.0022	<0.0021	0.0011 J	<0.0022	<0.0023	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	<0.0022	<0.0021	<0.0022	0.00097 J	<0.002	<0.0022	<0.0023	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	<0.0022	<0.0021	<0.0022	0.0031	0.0021	<0.0022	<0.0023	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	0.0034	0.0019 J	0.0014 J	0.012	0.0085	<0.0022	<0.0023	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	0.0018 J	0.0018 J	0.0013 J	0.011	0.0078	<0.0022	<0.0023	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	0.0047	0.0031	0.004	0.034	0.014	<0.0022	<0.0023	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	0.0028	0.002 J	0.0022	0.016	0.008	<0.0022	<0.0023	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	0.0012 J	0.00089 J	0.0011 J	0.0098	0.0041	<0.0022	<0.0023	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	0.003	0.0021	0.0027	0.023	0.0091	<0.0022	<0.0023	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.0022	<0.0021	<0.0022	0.0034	0.0018 J	<0.0022	<0.0023	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.0036	0.0039	0.0043	0.036	0.022	<0.0022	<0.0023	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	<0.0022	<0.0021	<0.0022	<0.0021	0.0011 J	<0.0022	<0.0023	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	0.0028	0.0021	0.0023	0.017	0.0085	<0.0022	<0.0023	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	0.0012 B	0.0012 B	0.0015 B	0.0021 B	0.0019 B	<0.0022	0.0015 B	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.0022	0.0021	0.0018 J	0.0093	0.012	<0.0022	<0.0023	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.0028	0.0027	0.0028	0.023	0.013	<0.0022	<0.0023	NA	NA	NA
PCBs														
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	<0.040	0.10	<0.040	<0.040	<0.030	<0.040	<0.040	<0.030	**0.22**	<0.030
Volatile Organics														
2-Butanone	mg/kg	4,700 {N}	61,000 {N}	- -	<0.0057	<0.0061	<0.0064	<0.0067	<0.0053	<0.0057	<0.0060	NA	NA	NA
3-Octanone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	<0.0057 L	0.040 B	<0.0064 L	<0.0067 L	<0.0053 L	<0.0057 L	<0.0060 L	NA	NA	NA
Ethanol	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	<0.0057	<0.0061	<0.0064	<0.0067	0.00097 B	<0.0057	<0.0060	NA	NA	NA
Semivolatile Organics														
2,4-Dinitrotoluene	mg/kg	16 {N}	200 {N}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Benzoic Acid	mg/kg	31,000 {N}	410,000 {N}	- -	<1.1	<1.0	<1.1	<1.0	0.17 J	<1.1	<1.1	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	<0.22	<0.21	<0.22	0.087 B	<0.20	<0.22	<0.23	NA	NA	NA
Carbazole	mg/kg	32 {C}	140 {C}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Dibenzofuran	mg/kg	7.8 {N}	100 {N}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Diethylphthalate	mg/kg	6,300 {N}	82,000 {N}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	<0.22	<0.21	<0.22	0.036 J	0.019 J	<0.22	<0.23	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	<0.22	<0.21	<0.22	<0.21	<0.20	<0.22	<0.23	NA	NA	NA
Pentachlorophenol	mg/kg	5.3 {C}	24 {C}	- -	<1.1	<1.0	<1.1	<1.0	<0.97	<1.1	<1.1	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	<0.22	<0.21	<0.22	0.010 J	0.012 J	<0.22	<0.23	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	<0.22	<0.21	<0.22	0.028 J	0.015 J	<0.22	<0.23	NA	NA	NA

See foot notes on last page

Table 3-13
Historical Soil Sampling Results, Rail Yard
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Sample Depth (ft): / Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	RYSS10 0 - 0.5 07/25/02	RYSS11 0 - 0.5 07/25/02	RYSS12 0 - 0.5 07/25/02	RYSS13 0 - 0.5 07/25/02	RYSS14 0 - 0.5 07/25/02	RYSS15 0 - 0.5 07/25/02	RYSS16 0 - 0.5 07/25/02	RYTR01 0 - 0.5 06/18/02	RYTR02 0 - 0.5 06/18/02	RYTR03 0 - 0.5 06/18/02
Inorganics														
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**30,300**	**20,400**	**31,100**	**30,300**	**19,500**	**43,600**	**12,700**	NA	NA	NA
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	<0.630 L	<0.600 L	0.580 J	0.340 J	0.270 J	<0.630 L	0.240 J	NA	NA	NA
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**10.7 J**	**7.23 J**	**9.31 J**	**11.6 J**	**7.58 J**	**9.86 J**	**3.33 J**	NA	NA	NA
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	45.3	52.3	48.2	45.5	42.9	57.2	11.1	NA	NA	NA
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	2.46	1.72	1.47	1.42	0.930 B	1.84	1.50	NA	NA	NA
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.120	<0.120	<0.120	<0.120	0.0600 J	<0.120	<0.130	NA	NA	NA
Calcium	mg/kg	- -	- -	- -	38,900 J	611 J	1,550 J	1,510 J	922 J	1,670 J	1,460 J	NA	NA	NA
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**32.0 L**	**30.1 L**	**36.3 L**	**45.2 L**	**33.9 L**	**48.8 L**	**28.9 L**	NA	NA	NA
Cobalt	mg/kg	- -	- -	72.3	32.5 J	38.3 J	25.1 J	14.8 J	36.3 J	8.34 J	9.59 J	NA	NA	NA
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	27.4 J	20.5 J	26.6 J	24.8 J	11.6 J	25.6 J	32.8 J	NA	NA	NA
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**33,000**	**26,100**	**35,800**	**39,800**	**25,700**	**46,200**	**43,100**	NA	NA	NA
Lead	mg/kg	400	750	26.8	37.1 K	22.6 K	32.6 K	29.3 K	19.5 K	21.5 K	14.0 K	NA	NA	NA
Magnesium	mg/kg	- -	- -	- -	26,500	2,170	1,710	1,740	961	2,950	760	NA	NA	NA
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**288 J**	**395 J**	**329 J**	**276 J**	**791 J**	133 J	107 J	NA	NA	NA
Mercury	mg/kg	2.35	30.66	0.13	0.100	0.0300 J	0.120	0.130	0.0400 J	0.160	0.110	NA	NA	NA
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	27.1	17.0	27.7	24.6	12.6	32.5	40.3	NA	NA	NA
Potassium	mg/kg	- -	- -	- -	1,540 J	2,040 J	1,250 J	1,530 J	974 J	2,160 J	439 J	NA	NA	NA
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<1.27 L	<1.21 L	<1.28 L	<1.21 L	<1.17 L	<1.28 L	<1.33 L	NA	NA	NA
Sodium	mg/kg	- -	- -	- -	58.0 J	21.0 J	26.7 J	20.0 J	20.0 J	35.2 J	5.10 J	NA	NA	NA
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.400	0.270 J	0.360 J	0.330 J	0.170 J	0.260 J	0.0900 J	NA	NA	NA
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**63.4 J**	**48.1 J**	**65.5 J**	**69.9 J**	**53.6 J**	**89.3 J**	**41.5 J**	NA	NA	NA
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	35.8 J	26.2 J	32.5 J	26.5 J	23.6 J	31.8 J	49.8 J	NA	NA	NA
Miscellaneous														
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

RBC Risk Based Concentration.
{C} Carcinogen.
{N} Noncarcinogen.
B (Inorganics) Constituent concentration quanitified as estimated.
B (Organics) Constituent was detected in the associated method blank.
J Constituent concentration quanitified as estimated.
K Estimated concentration bias high.
L Estimated concentration bias low.
NA Not Analyzed.
ND Not Detected (no detection limit given).
24,400 Constituent concentration exceeds Adjusted Soil RBC (Residential).
10.6 J Constituent concentration exceeds Adjusted Soil RBC (Industrial).
16 Inorganics constituent concentration exceeds Background Point Estimate.
Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report*, IT Corporation, 2001.

Table 3-14
Historical Sediment Sampling Results, Rail Yard
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Sample Depth (ft): / Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SD-03 04/01/98	SD-04 04/01/98	SD-05 04/01/98	SL-05 06/04/97	SL-08 03/30/98	SL-108 03/30/98	RYSD01 0 - 0.5 06/17/02	RYSD03 0 - 0.5 07/08/02	RYSD04 0 - 0.5 07/08/02	RYSD05 0 - 0.5 06/27/02	RYSD06 0 - 0.5 06/18/02	RYSD07 0 - 0.5 06/17/02	RYSD08 0 - 0.5 06/18/02	RYSD09 0 - 0.5 06/18/02	RYSD10 0 - 0.5 06/18/02	RYSD12 0 - 0.5 06/25/02	RYSD13 0 - 0.5 06/25/02
Explosives																					
Nitroglycerine	mg/kg	0.78 {N}	10 {N}	- -	NA	NA	NA	NA	NA	NA	<0.36	0.57 J	<0.93	0.26 J	<0.37	<0.36	<0.35	<0.32	<0.36	<0.95	<0.53
Pentaerythritol Tetranitrate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	<0.36	<0.71	<0.93	<0.52	<0.37	<0.36	0.13 J	0.23 J	<0.36	<0.95	<0.53
Herbicides																					
2,4,5-T	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	<0.0123	<0.0239	0.0334	0.00567 J	<0.0125	<0.012	0.0114 J	<1.08 L	<0.12	<0.0159	<0.0179
2,4,5-TP	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	NA	NA	<0.0123	<0.0239 J	0.104 J	<0.0175	0.00976 J	<0.012	<0.0118	<1.08 L	<0.12	<0.0159	<0.0179
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	<0.0246	<0.0478	<0.0625	<0.0349	<0.025	<0.024	0.209	<2.17 L	<0.24	<0.0317	<0.0358
Dalapon	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	<0.123	<0.239	<0.313	<0.175	<0.125	0.107 J	<0.118	<10.8 L	<1.2	<0.159	<0.179
Dicamba	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	<0.0246	<0.0478 L	0.0497 J	<0.0349	<0.025	<0.024	<0.0235	<2.17 L	<0.24	<0.0317	<0.0358
Dichlorprop	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	<0.0246	<0.0478 L	0.353 J	<0.0349	<0.025	<0.024	<0.0235	<2.17 L	<0.24	<0.0317	<0.0358
MCPP	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	<12.3	<23.9	<31.3	<17.5	<12.5	<12	3.53 J	<1,080 L	<120	<15.9	<17.9
Organochlorine Pesticides																					
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	0.00071 J	<0.008	<0.00078	<0.00072	<0.0008	0.00194	0.00174
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	0.00245 B	<0.00116	0.00031 B	<0.008	0.00112 B	0.00069 B	0.00102 B	0.0084	0.0052
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	R	NA	NA	<0.00819	<0.0016 J	0.00293 B	<0.00116	0.00055 B	<0.008	<0.00078	0.00195	0.004	0.0031	0.00281
Alpha-BHC	mg/kg	0.1 {C}	0.45 {C}	- -	NA	NA	NA	NA	NA	NA	<0.00819	0.00059 J	<0.00208	<0.00116	<0.00083	<0.008	<0.00078	<0.00072	0.00055 J	<0.00106	<0.0012
Alpha-Chlordane	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	<0.00083	<0.008	<0.00078	0.0101	0.00835	0.00153	0.00087 J
Delta-BHC	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	<0.00083	<0.008	<0.00078	0.00099	0.0012	<0.00106	<0.0012
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	<0.00083	<0.008	<0.00078	0.00315	0.0041	0.00211	0.00174
Endosulfan II	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	0.00072 J	<0.008	<0.00078	0.00025 J	0.00052 J	<0.00106	<0.0012
Endrin	mg/kg	2.4 {N}	31 {N}	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	<0.00083	<0.008	<0.00078	<0.00072	0.0125	<0.00106	<0.0012
Endrin Aldehyde	mg/kg	- -	- -	- -	ND	0.04	ND	0.01	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	<0.00083	<0.008	<0.00078	<0.00072	<0.0008	<0.00106	<0.0012
Endrin Ketone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	<0.00083	<0.008	<0.00078	<0.00072	0.00203	<0.00106	<0.0012
Gamma-BHC (Lindane)	mg/kg	0.49 {C}	2.2 {C}	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	0.00097 B	<0.008	<0.00078	<0.00072	<0.0008	<0.00106	<0.0012
Gamma-Chlordane	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	<0.00083	<0.008	<0.00078	0.0116	0.013	0.00406	0.00081 J
Heptachlor	mg/kg	0.14 {C}	0.64 {C}	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	<0.00083	<0.008	<0.00078	0.00084	0.00213	<0.00106	<0.0012
Heptachlor Epoxide	mg/kg	0.07 {C}	0.31 {C}	- -	NA	NA	NA	NA	NA	NA	<0.00819	<0.0016	<0.00208	<0.00116	<0.00083	<0.008	<0.00078	0.00726	0.00399	<0.00106	<0.0012
PAHs																					
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	0.0045	0.0022 B	0.04	0.0014 B	0.012	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	0.0019 B	<0.0041	0.025 B	<0.003	0.059 L	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	0.026	0.0026 J	0.026	<0.003	0.0038	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	0.0093	0.0034 J	0.0093	<0.003	0.081 L	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	0.09	0.013	0.0038 J	<0.003	0.19 L	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	**0.11**	0.017	0.0058	<0.003	**0.17 L**	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	0.18	0.033	0.011	<0.003	**0.25 L**	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	0.079 J	0.0085	0.0038 J	<0.003	0.1 L	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	0.048	0.031	0.0029 J	<0.003	0.08 L	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	0.097	0.014	0.0053	<0.003	0.17	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	0.017 J	<0.0041	<0.0053	<0.003	**0.026 L**	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	0.14	0.019	0.0079	<0.003	0.44 L	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	0.0035	<0.0041	0.019	<0.003	0.046 L	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	0.084 J	0.01	0.004 J	<0.003	0.12 L	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	0.005 B	0.0049 B	0.043	<0.003	0.027 L	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	0.045	0.0065	0.01	<0.003	0.36 L	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	0.15	0.027 J	0.011 J	<0.003	0.3 L	NA	NA	NA	NA	NA	NA
PCBs																					
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	NA	NA	**0.22**	0.050	<0.040	<0.070	<0.10	<0.050	<0.040	<0.030	<0.030	<0.030	<0.040	<0.050	<0.050
Volatile Organics																					
2-Butanone	mg/kg	4,700 {N}	61,000 {N}	- -	ND	0.010	ND	NA	NA	NA	<0.0061	<0.012	0.10 J	<0.0087	<0.0063	<0.0060	<0.0059	<0.0054	<0.0060	<0.0079	<0.0090
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	0.0030 J	0.048	ND	NA	NA	NA	<0.0061	0.049 B	0.53 B	0.042 B	<0.0063	<0.0060	<0.0059	<0.0054	<0.0060	<0.0079 J	<0.0090 J
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	<0.0061	0.0010 B	0.0022 B	0.00062 B	<0.0063	<0.0060	<0.0059	<0.0054	<0.0060	<0.0079	<0.0090
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	0.0030 B	0.0010 B	0.0030 B	0.0010 B	0.0030 B	0.0030 B	<0.0061	<0.012	<0.016	<0.0087	<0.0063	<0.0060	<0.0059	<0.0054	<0.0060	<0.0079	<0.0090
Semivolatile Organics																					
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	<0.20	<0.40	<0.52	<0.30	<0.21	<0.20	<0.20	0.013 J	<0.20	<0.27	<0.30
4-Methylphenol	mg/kg	39 {N}	510 {N}	- -	NA	NA	NA	NA	NA	NA	<0.20	<0.40	<0.52	0.036 B	<0.21 L	<0.20	<0.20 L	<0.18 L	<0.20 L	<0.27 L	<0.30 L
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	0.028 J	<0.40	<0.52	<0.30	<0.21	<0.20	<0.20	<0.18	<0.20	<0.27	<0.30
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	0.013 J	<0.40	<0.52	<0.30	<0.21	0.011 J	<0.20	<0.18	<0.20	<0.27	<0.30
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	0.070 J	NA	NA	0.080 J	0.045 J	<0.52	<0.30	0.024 J	0.023 J	<0.20	0.019 J	0.024 J	0.037 J	0.027 J
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	**0.070 J**	NA	NA	**0.14 J**	**0.042 J**	<0.52	<0.30 J	**0.024 J**	**0.030 J**	<0.20	0.019 J	**0.033 J**	<0.27	<0.30
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	0.070 J	NA	NA	0.21	0.048 J	<0.52	<0.30 J	0.039 J	0.10 J	<0.20	0.038 J	0.045 J	<0.27	<0.30
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	0.11 J	0.051 J	<0.52	<0.30 J	<0.21	0.047 J	<0.20	<0.18	<0.20	<0.27	<0.30
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	0.070 J	NA	NA	0.067 J	0.026 J	<0.52	<0.30 J	0.011 J	0.027 J	<0.20	0.011 J	0.014 J	<0.27	<0.30
Benzoic Acid	mg/kg	31,000 {N}	410,000 {N}	- -	NA	NA	NA	NA	NA	NA	<1.0	0.28 B	<2.6	<1.4	<1.0	<1.0	<0.98	<0.90	<1.0	<1.3	<1.5
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	ND	ND	0.10 J	0.30 J	NA	NA	0.20 B	0.10 B	<0.52	<0.30	0.16 B	0.22 B	0.16 B	0.33 B	0.31 B	0.088 B	0.047 B

See footnotes on last page.

Table 3-14
Historical Sediment Sampling Results, Rail Yard
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Sample Depth (ft): / Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SD-03 04/01/98	SD-04 04/01/98	SD-05 04/01/98	SL-05 06/04/97	SL-08 03/30/98	SL-108 03/30/98	RYSD01 0 - 0.5 06/17/02	RYSD03 0 - 0.5 07/08/02	RYSD04 0 - 0.5 07/08/02	RYSD05 0 - 0.5 06/27/02	RYSD06 0 - 0.5 06/18/02	RYSD07 0 - 0.5 06/17/02	RYSD08 0 - 0.5 06/18/02	RYSD09 0 - 0.5 06/18/02	RYSD10 0 - 0.5 06/18/02	RYSD12 0 - 0.5 06/25/02	RYSD13 0 - 0.5 06/25/02
Semivolatile Organics (continued)																					
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	0.090 J	NA	NA	0.11 J	0.035 J	<0.52	<0.30	0.019 J	0.060 J	<0.20	0.019 J	0.038 J	0.033 J	0.026 J
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	<0.20	<0.40	<0.52	<0.30	<0.21	<0.20	<0.20	<0.18	0.069 B	<0.27	<0.30
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	ND	0.060 J	ND	0.10 J	0.070 J	0.060 J	0.18 J	0.071 J	<0.52	<0.30	0.039 J	0.083 J	<0.20	0.025 J	0.063 J	0.066 J	0.061 J
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	0.093 J	0.039 J	<0.52	<0.30 J	<0.21	0.044 J	<0.20	<0.18	<0.20	<0.27	<0.30
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	0.090 J	NA	NA	0.066 J	0.037 J	<0.52	<0.30	0.022 J	0.019 J	<0.20	0.021 J	<0.20	0.046 J	0.051 J
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	0.12 J	0.040 J	0.040 J	0.21	0.060 J	<0.52	<0.30	0.036 J	0.068 J	<0.20	0.026 J	0.054 J	0.066 J	0.064 J
Inorganics																					
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**9,370**	**11,000**	**27,000**	**8,190**	**21,600**	**32,300**	**18,200 J**	**14,600**	**14,000**	**20,900 J**	**17,000**	**26,700 J**	**26,000**	**12,500**	**21,100**	**9,790**	**21,600**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	NA	NA	NA	1.00	NA	NA	0.440 L	0.480 B	0.620 B	<0.870 L	0.340 B	0.400 B	0.540 L	0.450 L	0.600 L	<0.790 L	<0.890 L
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**4.90**	**4.60**	**2.20**	**22.3**	**9.20**	**19.4**	**4.68 L**	**4.90 J**	**2.76 J**	**8.92 J**	**4.66 J**	**10.1 L**	**11.8 J**	**4.65 J**	**11.8 J**	**2.76 J**	**2.56 J**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	81.7	113	52.4	69.1 J	75.2	234	52.6	43.9	100	105	47.1	38.6	68.0	36.5	49.1	60.4	70.2
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.600	0.800	1.30	1.10	1.10	1.30	1.10	1.22 J	0.680 J	0.990	0.940	0.960	1.67	0.530 B	0.670	0.860 B	0.910 B
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	NA	NA	NA	NA	1.20	1.30	0.210	0.170 J	<0.310 J	<0.170	0.0900 J	0.170	<0.110	0.0800 J	0.110 J	0.160 J	0.0800 B
Calcium	mg/kg	- -	- -	- -	176,000	129,000	3,200	14,900	8,550	7,090	2,920	16,400 J	107,000	3,980	1,850 J	1,970	3,150 J	64,500 J	6,200 J	90,100 J	78,600 J
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**24.6**	21.2	**32.9**	**103**	**34.0**	**40.0**	**25.3 K**	**80.9**	15.6 J	**34.8**	22.9 J	**29.3 K**	**79.5 J**	17.7 J	**31.2 J**	**47.4 J**	**27.7 J**
Cobalt	mg/kg	- -	- -	72.3	5.90	6.60	11.8	26.8	18.4	21.4	13.2 J	13.5	6.70 J	11.3	10.4	13.9 J	15.0	7.07	9.53	7.50 J	8.20 J
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	47.6	21.9	20.9	**373**	34.4	36.8	19.8 J	16.2	12.0	15.5 J	17.8 L	23.4 J	22.8 L	10.8 L	18.9 L	6.67	14.4
Iron	mg/kg	5,500 {N}	72,000 {N}	50,962 {N}	**12,500**	**14,200**	**22,000**	**120,000**	**42,600**	**46,500**	**25,000**	**23,900**	**11,500**	**24,200**	**22,600 J**	**30,500**	**79,600 J**	**14,900 J**	**30,000 J**	**27,400**	**19,200**
Lead	mg/kg	400	750	26.8	10.9	11.2	28.4	161	94.1	102	29.7	21.3	17.1	22.1	19.4	22.2	33.0	19.7	30.3	21.7	16.0
Magnesium	mg/kg	- -	- -	- -	3,600	2,840	3,590	4,560	2,430	3,040	2,120	4,660 J	3,940 J	3,670	4,090 J	1,560	5,030 J	42,500 J	4,490 J	3,910	3,840
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**446**	**1,220**	90.9	**908**	**249**	**281**	**258 J**	**175**	**302**	**188**	**260 J**	**180 J**	**831 J**	**242 J**	**304 J**	**451**	**365**
Mercury	mg/kg	2.35	30.66	0.13	NA	NA	NA	NA	0.100	0.100	0.0500 J	0.0400 J	<0.150	0.0600 J	0.0400 J	0.0800	0.0800	0.0300 J	0.0500 J	<0.0700	0.0700 J
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	6.70	9.00	19.7	116	17.2	21.5	16.8 J	16.7 J	7.50 J	16.6	16.9	22.8 J	24.5	10.3	15.6	7.05	12.2
Potassium	mg/kg	- -	- -	- -	553	666	1,870	593	1,100	1,650	929	981	1,130	2,620	2,000	1,450	2,000	1,060	1,050	491	1,820
Selenium	mg/kg	39.1 {N}	511 {N}	- -	ND	ND	1.70	NA	ND	0.600	0.420 B	<2.39	1.50 J	<1.75 L	<1.25 L	0.480 B	<1.18 L	<1.08 L	<1.20 L	<1.59 L	<1.79 L
Sodium	mg/kg	- -	- -	- -	ND	110	ND	NA	NA	NA	14.6 B	15.0 B	35.0 B	76.4	13.0 B	17.8 B	19.0 B	70.8	17.0 B	76.8 J	86.6 J
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	NA	NA	NA	NA	ND	0.500	0.290 J	0.450 J	0.210 J	0.150 J	0.210 J	0.290 J	0.390 J	0.160 J	0.210 J	0.0700 B	0.110 B
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**26.1**	**20.8**	**50.7**	**72.2**	**72.0**	**77.0**	**46.4**	**50.7**	**28.8**	**48.3**	**42.0 J**	**57.8**	**110 J**	**31.3 J**	**60.1 J**	**49.9**	**31.0**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	16.2	27.8	93.6	56.3	675	758	103 J	57.6 J	45.1 J	96.8 J	46.6 J	110 J	37.6 J	33.8 J	44.0 J	31.6 J	28.0 J

RBC	Risk Based Concentration.
{C}	Carcinogen.
{N}	Noncarcinogen.
B (Inorganics)	Constituent concentration quanitified as estimated.
B (Organics)	Constituent was detected in the associated method blank.
J	Constituent concentration quanitified as estimated.
K	Estimated concentration bias high.
L	Estimated concentration bias low.
NA	Not Analyzed.
24,400	Constituent concentration exceeds Adjusted Soil RBC (Residential).
10.6 J	Constituent concentration exceeds Adjusted Soil RBC (Industrial).
3,980	Inorganics constituent concentration exceeds Facility-Wide Background Point Estimate.

Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report* , IT Corporation, 2001.

Table 3-15
Historical Surface Water Sampling Results, Rail Yard
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Date Collected:	Aquatic Life Freshwater Chronic	Human Health All Other Surface Waters	Units	WW-04 03/30/98	RYSW02 06/27/02	RYSW03 07/15/02	RYSW04 07/15/02	RYSW05 06/27/02	RYSW12 06/25/02	RYSW13 06/25/02	RYSW15 07/11/02
Explosives											
m-Nitrotoluene	- -	- -	ug/L	NA	<0.52	<0.52	1.25	<0.52	0.4 J	0.38 J	NA
Nitrobenzene	- -	1,900	ug/L	NA	<0.26	0.13 J	0.2 J	0.15 J	<0.26	<0.26	NA
Nitroglycerine	- -	- -	ug/L	NA	<0.97 L	0.61 J	<0.97	<0.97 L	<0.97 L	<0.97 L	NA
Herbicides											
2,4,5-TP	- -	- -	ug/L	NA	<0.1	0.05 J	<0.1	<0.1	<0.1	<0.1	NA
2,4-D	- -	- -	ug/L	NA	<0.5	<0.5	<0.5	<0.5	4.2	4.09	NA
MCPP	- -	- -	ug/L	NA	<125	<125	<125	<125	46.3 J	<125	NA
Organochlorine Pesticides											
4,4'-DDT	**0.001**	0.0059	ug/L	NA	<0.02	<0.02	<0.02	<0.02	<0.02	**0.01 J**	NA
Delta-BHC	- -	- -	ug/L	NA	<0.02	0.01 J	<0.02	<0.02	<0.02	<0.02	NA
Dieldrin	**0.056**	0.0014	ug/L	NA	<0.02	<0.02	<0.02	<0.02	0.00719 J	0.0063 J	NA
Endosulfan Sulfate	- -	240	ug/L	NA	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	NA
Endrin Aldehyde	- -	0.81	ug/L	NA	<0.02	<0.02	<0.02	0.01 J	<0.02	<0.02	NA
PAHs											
2-Methylnaphthalene	- -	- -	ug/L	NA	<0.05	<0.05	<0.05	0.02 J	NA	NA	NA
Naphthalene	- -	- -	ug/L	NA	0.02 B	0.03 B	0.03 B	0.02 B	NA	NA	NA
Perchlorate											
None Detected	- -	- -	- -	NA	- -	- -	- -	- -	- -	- -	- -
PCBs											
None Detected	- -	- -	- -	NA	- -	- -	- -	- -	- -	- -	NA
Volatile Organics											
Carbon Disulfide	- -	- -	ug/L	NA	<1.0	NA	NA	0.17 B	0.15 B	<1.0	NA
Chloroform	- -	29,000	ug/L	NA	<1.0	NA	NA	<1.0	0.36 J	0.36 J	NA
Semivolatile Organics											
Benzoic Acid	- -	- -	ug/L	NA	<25	4.5 J	6.0 J	5.7 J	6.1 J	5.7 J	NA
bis(2-Ethylhexyl)phthalate	- -	- -	ug/L	NA	<5.0	4.8 B	5.8 B	<5.0	3.5 J	2.0 J	NA
Butylbenzylphthalate	- -	5,200	ug/L	NA	<5.0	<5.0	<5.0	0.37 B	1.1 B	0.68 B	NA
Diethylphthalate	- -	120,000	ug/L	NA	<5.0	<5.0	<5.0	<5.0	0.37 J	<5.0	NA
Di-n-Butylphthalate	- -	12,000	ug/L	NA	<5.0	<5.0	<5.0	1.0 B	0.86 B	0.89 B	NA
Inorganics											
Aluminum	- -	- -	ug/L	258	<200	462	608	110 J	130 J	150 J	NA
Antimony	- -	4,300	ug/L	NA	<5.00	0.360 B	0.580 B	0.390 B	<5.00	<5.00	NA
Barium	- -	- -	ug/L	NA	45.3	29.4	22.6	15.0 J	78.9	78.7	NA
Cadmium	**1.1 {H}**	- -	ug/L	NA	<2.00	0.110 B	0.0600 B	<2.00	<2.00	<2.00	NA
Calcium	- -	- -	ug/L	26,600	59,500	35,200	21,100	15,300	57,700	59,000	NA
Chromium	- -	- -	ug/L	NA	<10.0	<10.0	5.50 J	<10.0	<10.0	<10.0	NA
Copper	**9 {H}**	- -	ug/L	**38.0**	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	NA
Iron	- -	- -	ug/L	4,470	<50.0	513	553	127	237	210	NA
Lead	**14 {H}**	- -	ug/L	**31.0**	<2.00	1.20 B	1.10 B	<2.00	0.990 B	0.880 B	NA
Magnesium	- -	- -	ug/L	6,530	26,400	25,600	25,800	26,400	16,900	17,100	NA
Manganese	- -	- -	ug/L	102	1.70 J	97.8	81.7	24.2	21.1	19.5	NA
Potassium	- -	- -	ug/L	2,780	1,700 J	2,700 J	3,360	3,120	3,420	3,590	NA
Selenium	**5**	11,000	ug/L	NA	0.480 B	<5.00	<5.00	<5.00	<5.00	<5.00	NA
Silver	- -	- -	ug/L	NA	<10.0	5.20 B	8.30 B	<10.0	<10.0	<10.0	NA
Sodium	- -	- -	ug/L	1,660	950	908	895	1,000	36,000	36,200	NA
Zinc	**120 {H}**	69,000	ug/L	**274**	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	NA
Miscellaneous											
Hardness	- -	- -	mg/L	NA	257	193	159	147	214	218	177

{H}	Value has not been adjusted for hardness.
B (Inorganics)	Constituent concentration quanitified as estimated.
B (Organics)	Constituent was detected in the associated method blank.
J	Constituent concentration quanitified as estimated.
NA	Not Analyzed.
10.6 J	Constituent concentration exceeds Virginia Surface Water Human Health Standards (All Other Surface Waters).
10.6 J	Constituent concentration exceeds Virginia Surface Water Aquatic Life Freshwater Chronic Standard.

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SS-04 0 - 0.5 06/03/97	SS-04a 0 - 0.5 06/03/97	SS-05 0 - 0.5 06/03/97	WBGBC1A 0 - 2 08/18/99	WBGBC1B 5 - 7 08/18/99	WBGSB1A 0 - 2 08/05/98	WBGSB1B 2 - 4 08/05/98	WBGSB2A 0 - 2 08/05/98	WBGSB2B 6 - 8 08/05/98	WBGSB2C 9 - 11 08/05/98	WBGSB3A 0 - 1 08/05/98	WBGSB4A 0 - 1.5 08/05/98	WBGSB5A 0 - 2 08/05/98	WBGDW1 0 - 2 05/26/99	WBGDW2 0 - 2 05/26/99	WBGDW3 0 - 2 05/26/99	WBGDW4 0 - 2 05/26/99	WBGDW5 0 - 2 05/26/99	WBGDW6 0 - 2 05/26/99	WBGDW7 06/21/99	WBGDW15 06/28/99	WBGDW16 07/13/99
Dioxin/Furan																										
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	0.000021925	0.00001374	0.00001422	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	0.000002541 B	0.000001492 B	0.000002285 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	ND	ND	0.000000756 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	0.000001062 J	0.000000503	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	0.000000567 J	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD	mg/kg	0.0000043 {C}	0.000019 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	0.000835467	0.000514342	0.00067782	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	0.00000397 B	0.000002011 B	0.000003306 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	0.000018718	0.00001187	0.000013721	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	0.000004247 I	0.000002527 I	0.000004698 I	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDDs	mg/kg	- -	- -	- -	0.000004853 J	0.000003464	0.000003753	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDFs	mg/kg	- -	- -	- -	0.000007154 J	0.000004695 I	0.000015869 I	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDFs	mg/kg	- -	- -	- -	0.000001176	0.000002388 I	0.000003891 I	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDFs	mg/kg	- -	- -	- -	ND	0.000001169 I	0.000001248 I	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																										
Pentaerythritol Tetranitrate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	<1.2	<1.2	<1.2	<1.3 [<1.2]	<1.3	<1.2	<1.2	<1.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																										
2,4,5-TP	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																										
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																										
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																										
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	0.084	0.047	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organics																										
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	ND	ND	0.0040 B	NA	NA	<0.0060	<0.0060	<0.0060	<0.0070 J [<0.0070]	<0.0070 J	<0.0060	<0.0060	<0.0060	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	0.00080 J	ND	ND	NA	NA	<0.0060	<0.0060	<0.0060	<0.0070 J [<0.0070]	<0.0070 J	<0.0060	<0.0060	<0.0060	NA	NA	NA	NA	NA	NA	NA	NA	NA
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	0.0030 B	0.0030 B	0.0020 B	NA	NA	<0.0010	<0.0010	0.0030	<0.0010 J [<0.0010]	<0.0010 J	<0.0010	0.0030	<0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	<0.0010	<0.0010	<0.0010	<0.0010 J [<0.0010]	<0.0010 J	<0.0010 J	<0.0010 J	<0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	<0.0010	<0.0020	<0.0010	<0.0020 J [<0.0020]	<0.0020 J	<0.0010	<0.0010	<0.0020	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																										
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	<0.37	<0.38	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	<0.37	<0.38	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	<0.37	0.040 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	0.16 J	0.15 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	<0.36	<0.36	<0.38 J	<0.39	<0.38	<0.46 [<0.46]	<0.48	**0.40 J**	**0.33 J**	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	<0.36	<0.36	<0.38 J	<0.39	<0.38	<0.46 [<0.46]	<0.48	**0.62 J**	**0.48 J**	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	<0.36	<0.36	<0.38 J	<0.39	<0.38	<0.46 [<0.46]	<0.48	0.17 J	0.13 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	<0.36	<0.36	<0.38 J	<0.39	<0.38	<0.46 [<0.46]	<0.48	0.51 J	0.40 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	0.10 J	0.090 J	0.070 J	0.040	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	0.040 J	<0.38 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	mg/kg	1,600 {N}	20,000 {N}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	<0.37	<0.38 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	mg/kg	32 {C}	140 {C}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	<0.37	0.040 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	0.24 J	0.22 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	<0.36	<0.36	<0.38 J	<0.39	<0.38	<0.46 [<0.46]	<0.48	R	R	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	<0.37	<0.38	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	0.040 J	ND	ND	<0.36	<0.36	<0.38	<0.39	<0.38	0.080 J [<0.46]	<0.48	<0.37	<0.38	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Octylphthalate	mg/kg	- -	- -	- -	NA	NA	NA	<0.36	<0.36	<0.38 J	<0.39	<0.38	<0.46 [<0.46]	<0.48	R	R	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	0.33 J	0.33 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	<0.37	<0.38	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	<0.36	<0.36	<0.38 J	<0.39	<0.38	<0.46 [<0.46]	<0.48	0.15 J	0.13 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	<0.37	<0.38	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	mg/kg	130 {C}	580 {C}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	0.060 J	<0.38	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	0.12 J	0.19 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	<0.36	<0.36	<0.38	<0.39	<0.38	<0.46 [<0.46]	<0.48	0.40	0.43 J	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SS-04 0 - 0.5 06/03/97	SS-04a 0 - 0.5 06/03/97	SS-05 0 - 0.5 06/03/97	WBGBC1A 0 - 2 08/18/99	WBGBC1B 5 - 7 08/18/99	WBGSB1A 0 - 2 08/05/98	WBGSB1B 2 - 4 08/05/98	WBGSB2A 0 - 2 08/05/98	WBGSB2B 6 - 8 08/05/98	WBGSB2C 9 - 11 08/05/98	WBGSB3A 0 - 1 08/05/98	WBGSB4A 0 - 1.5 08/05/98	WBGSB5A 0 - 2 08/05/98	WBGDW1 0 - 2 05/26/99	WBGDW2 0 - 2 05/26/99	WBGDW3 0 - 2 05/26/99	WBGDW4 0 - 2 05/26/99	WBGDW5 0 - 2 05/26/99	WBGDW6 0 - 2 05/26/99	WBGDW7 06/21/99	WBGDW15 06/28/99	WBGDW16 07/13/99
Inorganics																										
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**18,700**	**20,300**	**13,600**	**27,900**	**46,500**	**12,500**	**14,200**	**10,100**	**12,700 [23,500]**	**27,000**	**14,500**	**13,200**	**15,300**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	NA	NA	NA	1.70 B	2.20 B	<0.560	<0.570	<0.560	<0.690 [<0.680]	<0.710	**5.30 K**	<0.580	<0.580	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**9.70**	**6.10**	**7.20**	**11.2 K**	**11.4 K**	**9.40 K**	**7.80 K**	**17.0 K**	**3.70 K [5.10 K]**	**5.30 K**	**35.8**	**37.9**	**9.80 K**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	22.4 J	23.8 J	35.6 J	33.1	105	210 K	26.9 K	457 K	22.3 B [43.1 K]	45.9 K	610 K	584 K	49.6 K	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.700	0.600	0.600	0.830 B	2.50	0.320 J	0.700	0.480 J	2.70 [3.00]	1.40	0.290 J	0.420 J	0.540 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	NA	NA	NA	<0.120	0.310 J	0.450 J	<0.110	1.90	<0.140 [<0.140]	0.300 J	2.70	0.400 J	<0.120	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	- -	- -	- -	980	702	1,080	3,730	4,630	33,900	2,570 B	97,300	4,710 B [7,060 B]	37,300	47,600	10,600 B	9,430 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**39.1**	**37.1**	**34.4**	**39.4**	**65.3**	**195**	**41.5**	**233**	**28.0 [47.4]**	**64.1**	**249**	**34.9**	**38.2**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	- -	- -	72.3	12.3	13.6	5.10	17.0	17.3	7.20 K	7.80 K	8.70 K	7.90 K [12.1 K]	16.4 K	10.9 K	8.30 K	8.60 K	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	57.6	25.6	26.4	28.1	43.0	**556**	18.0 B	203	14.9 B [18.2 B]	13.9 B	**1,340**	194	53.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**47,800**	**39,100**	**35,700**	**46,000**	**43,700**	**34,500**	**27,300**	**26,300**	**19,900 [30,800]**	**28,700**	**42,900**	**28,000**	**39,300**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	400	750	26.8	42.9	27.5	310	33.2	18.6	**2,070**	179	**2,450**	9.50 [18.7]	13.3	**3,990**	**2,480**	44.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	mg/kg	- -	- -	- -	763	657	524	3,990	31,300	18,900	2,490 B	21,000	17,900 [41,100]	58,900	23,200	4,910	3,560	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**255**	**347**	**188**	**268**	**256**	**177**	44.9	**312**	**255 [222]**	**247**	**548**	**161**	139	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.35	30.66	0.13	NA	NA	NA	0.190	<0.120	<0.110	<0.120	<0.120	<0.140 [<0.140]	<0.140	<0.110	<0.120	<0.120	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	15.0	18.9	10.2	18.4	36.0	11.6 K	12.0 K	18.6 K	17.7 K [29.0 K]	20.0 K	28.4 K	17.7 K	11.7 K	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	- -	- -	- -	684	674	458	1,240	5,960	1,100 K	1,040 K	1,950 K	2,860 K [7,170 K]	10,600 K	1,620 K	836 K	1,030 K	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	<0.590	<0.590	<0.560	<0.570	<0.560	<0.690 [<0.680]	<0.710	<0.560	<0.580	<0.580	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	<0.120	<0.120	<0.230 L	<0.230 L	0.240 B	<0.280 L [<0.270 L]	<0.280 L	0.500 B	<0.230 L	<0.230 L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	- -	- -	- -	NA	NA	NA	116 B	153 B	111 B	49.1 B	217 B	65.8 B [66.8 B]	120 B	384 B	123 B	78.7 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	NA	NA	NA	<0.820 J	<0.830 J	<0.230 L	<0.230 L	0.410 B	<0.280 L [<0.270 L]	**0.670 B**	**0.860 B**	<0.230 L	<0.230 L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**73.7**	**67.6**	**66.3**	**74.9**	**75.8**	**45.9 K**	**56.2 K**	**33.5 K**	**38.3 K [63.4 K]**	**67.7 K**	**53.9 K**	**54.0 K**	**70.3 K**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	162	85.7	205	414	59.5	1,100	57.6 B	**2,520**	47.4 B [75.5 B]	57.3 B	**3,250**	1,280	126 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics - TCLP																										
Arsenic	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6	<6	<6	<6	<6	<6	<6	<6	7.7
Barium	µg/L	100,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	48.5	905	42.1	120	24.2	24	116	628	126
Cadmium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	3.9	<1	<1	<1	1.3	<1	1.3	<1
Chromium	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	3.2	<1	<1	<1	<1	337	103	5.6
Lead	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	11.4	2.2	<2	5.3	<2	<2	272	9.1
Mercury	µg/L	200*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.2	0.75	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Selenium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<4	5	<4	4.5	<4	<4	<4	<4	<4
Silver	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	1.1	<1	<1	<1	<1	<1	<1
Miscellaneous																										
Percent Solids	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGDW17 07/14/99	WBGDW18 07/15/99	WBGDW19 07/15/99	WBGDW20 07/15/99	WBGDW21 07/15/99	WBGDW22 07/22/99	WBGDW23 07/22/99	WBGDW23A 07/29/99	WBGDW24 07/23/99	WBGDW25 07/23/99	WBGDW26 10/06/99	WBGSB6A 0 - 2 05/26/99	WBGSB7A 0 - 2 05/26/99	WBGSB8A 0 - 2 05/26/99	WBGSB9A 0 - 2 05/26/99	WBGSB10A 0 - 2 05/26/99	WBGSB11A 0 - 2 05/26/99	WBGTP1A 2.5 - 3 06/22/99	WBGTP1B 3 - 3.5 06/23/99	WBGTP1B2 3.5 - 4 07/23/99	WBGTP1S 1 - 1.5 06/22/99	WBGTP1SB 1 - 1.5 06/23/99	S Samp Da
Dioxin/Furan																												**Dioxin/Furan**
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,6,7,8-H
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,6,7,8-H
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,7,8,9-H
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,7,8-Hx
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,7,8-Hx
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,6,7,8-Hx
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,6,7,8-Hx
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8,9-Hx
1,2,3,7,8,9-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8,9-Hx
1,2,3,7,8-PeCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8-PeC
1,2,3,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8-PeC
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,3,4,6,7,8-Hx
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,3,4,7,8-PeC
2,3,7,8-TCDD	mg/kg	0.0000043 {C}	0.000019 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,3,7,8-TCDD
2,3,7,8-TCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,3,7,8-TCDF
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	OCDD
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	OCDF
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total HpCDDs
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total HpCDFs
Total HxCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total HxCDDs
Total HxCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total HxCDFs
Total PeCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total PeCDDs
Total PeCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total PeCDFs
Total TCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total TCDDs
Total TCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total TCDFs
Explosives																												**Explosives**
Pentaerythritol Tetranitrate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Pentaerythritol
Herbicides																												**Herbicides**
2,4,5-TP	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,4,5-TP
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,4-D
Dalapon	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dalapon
MCPP	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	MCPP
Organochlorine Pesticides																												**Organochlori**
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,4'-DDD
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dieldrin
PAHs																												**PAHs**
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2-Methylnaphtl
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.03 J	<0.03 [<0.03 J]	0.32 J	<0.03 J	<0.03 J	NA	NA	NA	NA	NA	NA	Acenaphthene
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.03	<0.03 [<0.03]	<0.03	<0.03	<0.02	NA	NA	NA	NA	NA	NA	Acenaphthylen
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02	<0.02 [<0.02]	<0.02	<0.02	<0.01	NA	NA	NA	NA	NA	NA	Anthracene
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02	<0.02 [<0.02]	<0.02	<0.02	<0.02	NA	NA	NA	NA	NA	NA	Benzo(a)anthra
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02	<0.02 [<0.02]	<0.02	<0.02	<0.02	NA	NA	NA	NA	NA	NA	Benzo(a)pyren
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.03	<0.03 [<0.03]	0.02 J	<0.03	<0.02	NA	NA	NA	NA	NA	NA	Benzo(b)fluora
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.03	<0.03 [<0.03]	<0.03	<0.03	<0.02	NA	NA	NA	NA	NA	NA	Benzo(g,h,i)pe
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02	<0.03 [<0.03]	<0.03	<0.02	<0.02	NA	NA	NA	NA	NA	NA	Benzo(k)fluora
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02	<0.02 [0.02 J]	<0.02	<0.02	<0.02	NA	NA	NA	NA	NA	NA	Chrysene
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02	<0.03 [<0.03]	<0.02	<0.02	<0.02	NA	NA	NA	NA	NA	NA	Dibenzo(a,h)ar
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02	<0.02 [<0.02]	<0.02	<0.02	<0.02	NA	NA	NA	NA	NA	NA	Fluoranthene
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.03	<0.03 [<0.03]	<0.03	<0.03	<0.02	NA	NA	NA	NA	NA	NA	Fluorene
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01	<0.01 [<0.02]	<0.01	<0.01	<0.01	NA	NA	NA	NA	NA	NA	Indeno(1,2,3-c
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.04	<0.04 [<0.04]	<0.04	<0.03	<0.03	NA	NA	NA	NA	NA	NA	Naphthalene
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02	<0.02 [<0.02]	<0.02	<0.02	<0.02	NA	NA	NA	NA	NA	NA	Phenanthrene
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02	<0.02 [<0.02]	0.04 J	<0.02	<0.02	NA	NA	NA	NA	NA	NA	Pyrene
PCBs																												**PCBs**
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Aroclor-1254
Volatile Organics																												**Volatile Orga**
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0062 J	<0.0064 J [<0.0065 J]	<0.0063 J	0.070 J	<0.0057 J	NA	NA	NA	NA	NA	NA	Acetone
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0062	<0.0064 [<0.0065]	<0.0063	<0.0060	<0.0057	NA	NA	NA	NA	NA	NA	Carbon Disulfi
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	d-Limonene
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0012	<0.0013 [<0.0013]	<0.0013	<0.0012	<0.0011	NA	NA	NA	NA	NA	NA	Methylene Chl
p-Isopropyltoluene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0011	0.0048 [<0.0012]	<0.0011	<0.0011	<0.0010	NA	NA	NA	NA	NA	NA	p-Isopropyltolu
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0015	<0.0016 [<0.0016]	<0.0016	<0.0015	<0.0014	NA	NA	NA	NA	NA	NA	Toluene
Semivolatile Organics																												**Semivolatile O**
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.37	<0.39 [<0.39]	<0.38	<0.36	<0.34	<0.41	<0.41	NA	<0.42	<0.38	2-Methylnaphtl
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Acenaphthene
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Anthracene
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Benzo(a)anthra
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Benzo(a)pyren
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Benzo(b)fluora
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Benzo(g,h,i)pe
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Benzo(k)fluora
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.37	<0.39 [<0.39]	<0.38	<0.36	<0.34	<0.41	<0.41	NA	<0.42	<0.38	bis(2-Ethylhex
Butylbenzylphthalate	mg/kg	1,600 {N}	20,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.37	<0.39 [<0.39]	<0.38	<0.36	<0.34	<0.41	<0.41	NA	<0.42	<0.38	Butylbenzylpht
Carbazole	mg/kg	32 {C}	140 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.37	<0.39 [<0.39]	<0.38	<0.36	<0.34	<0.41	<0.41	NA	<0.42	<0.38	Carbazole
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Chrysene
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Dibenzo(a,h)ar
Dibenzofuran	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.37	<0.39 [<0.39]	<0.38	<0.36	<0.34	<0.41	<0.41	NA	<0.42	<0.38	Dibenzofuran
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.050 B	<0.39 [0.050 B]	0.070 B	0.070 B	0.13 B	0.36 B	<0.41	NA	<0.42	0.21 B	Di-n-Butylphth
Di-n-Octylphthalate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.37	<0.39 [<0.39]	<0.38	<0.36	<0.34	<0.41	<0.41	NA	<0.42	<0.38	Di-n-Octylphth
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Fluoranthene
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Fluorene
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Indeno(1,2,3-c
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Naphthalene
N-Nitrosodiphenylamine	mg/kg	130 {C}	580 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.37	<0.39 [<0.39]	<0.38	<0.36	<0.34	<0.41	<0.41	NA	<0.42	<0.38	N-Nitrosodiphe
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Phenanthrene
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.41	<0.41	NA	<0.42	<0.38	Pyrene

See footnotes on last page.

See footnotes

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Sample Depth (ft): / Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGDW17 07/14/99	WBGDW18 07/15/99	WBGDW19 07/15/99	WBGDW20 07/15/99	WBGDW21 07/15/99	WBGDW22 07/22/99	WBGDW23 07/22/99	WBGDW23A 07/29/99	WBGDW24 07/23/99	WBGDW25 07/23/99	WBGDW26 10/06/99	WBGSB6A 0 - 2 05/26/99	WBGSB7A 0 - 2 05/26/99	WBGSB8A 0 - 2 05/26/99	WBGSB9A 0 - 2 05/26/99	WBGSB10A 0 - 2 05/26/99	WBGSB11A 0 - 2 05/26/99	WBGTP1A 2.5 - 3 06/22/99	WBGTP1B 3 - 3.5 06/23/99	WBGTP1B2 3.5 - 4 07/23/99	WBGTP1S 1 - 1.5 06/22/99	WBGTP1SB 1 - 1.5 06/23/99	S Samp Da
Inorganics																											**Inorganics**
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**14,700**	**15,800 [18,800]**	**15,500**	**14,800**	**8,570**	**11,700**	**9,950**	**10,300**	**10,000**	**8,270**	Aluminum
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.610	1.90 B [<0.650]	<0.620	<0.580	<0.560	<0.620	<0.630	1.30 B	<0.630	<0.570	Antimony
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**10.0**	**17.1 [15.8]**	**14.9**	**8.50**	**6.00 B**	**6.50 B**	**6.00 B**	**5.40 B**	**4.20 B**	**4.40 B**	Arsenic
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.6 L	35.9 L [19.4 L]	72.2 L	30.0 L	22.9 L	24.4	38.6	56.0	21.5 J	25.4	Barium
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.520 K	0.650 K [0.490 K]	0.780 K	0.570 K	0.230 K	0.770 B	0.850 B	0.910 B	0.360 B	0.290 B	Beryllium
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.300	0.740 [0.790]	0.540	0.330	<0.110	<0.120	<0.130	<0.120	<0.130	<0.110	Cadmium
Calcium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	856	1,300 [1,050]	1,780	1,630	660	1,420	1,840	7,020	990	912	Calcium
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**28.1**	**46.6 [49.7]**	**45.7**	**30.6**	22.2	**38.6 K**	**47.9 K**	**69.6**	**25.0 K**	22.0 K	Chromium
Cobalt	mg/kg	- -	- -	72.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.20	7.20 [4.80]	11.9	6.00	5.80	11.8 K	7.80	7.10 K	8.50	6.20	Cobalt
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21.6	40.0 K [29.0 K]	33.8 K	21.1	10.4	23.5	22.5	26.1 K	12.2	11.8	Copper
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**31,800**	**39,300 [54,000]**	**39,100**	**35,000**	**20,400**	**36,400**	**30,200**	**30,100**	**25,000**	**21,100**	Iron
Lead	mg/kg	400	750	26.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.1 J	79.4 J [17.7 J]	43.6 J	11.6	11.6	34.0	231	**808**	14.8	17.9	Lead
Magnesium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	416	688 [735]	1,100	601	319	836	2,340	4,020	462 J	458 J	Magnesium
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	87.0 K	82.8 K [60.2 K]	122 K	71.3 K	131 K	123 K	109 K	144	117 K	123 K	Manganese
Mercury	mg/kg	2.35	30.66	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.120	<0.130 [<0.120]	0.210 K	0.210 K	<0.110	<0.120	<0.130	<0.120	0.210	<0.110	Mercury
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.5 K	15.1 K [11.3 K]	16.2 K	10.7 K	5.30	11.1 J	10.3 J	10.0 K	4.40 J	4.20 J	Nickel
Potassium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	545	704 [625]	684	583	444	766	1,010	1,020 J	438 J	335 J	Potassium
Selenium	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.490 L	<0.510 L [<0.520 L]	<0.500 L	<0.580 L	1.20	<0.500	0.610 K	<0.610 L	<0.500	<0.450	Selenium
Silver	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.280 B	0.360 B [0.470 B]	0.410 B	0.280 B	0.130 B	<0.120	<0.130	0.240 B	<0.130	<0.110	Silver
Sodium	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	123 B	159 B [124 B]	148 B	112 B	119 B	194 B	61.6 B	23.7 B	122 B	45.2 B	Sodium
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.850	<0.890 [<0.910]	<0.870	<0.810	<0.780	<0.870	<0.880	<0.850	<0.880	<0.790	Thallium
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**61.7 K**	**86.2 K [90.7 K]**	**82.3 K**	**63.8 K**	**39.0 K**	**69.3 K**	**52.3 K**	**57.4 K**	**47.7 K**	**35.7 K**	Vanadium
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30.9 K	381 K [118]	96.5 K	25.7 K	15.2 K	29.0 K	86.6 K	311 J	22.1 K	26.5 K	Zinc
Inorganics - TCLP																											**Inorganics - T**
Arsenic	µg/L	5,000*	- -	- -	6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Arsenic
Barium	µg/L	100,000*	- -	- -	485	346	272	497	847	221	553	326	588	423	108	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Barium
Cadmium	µg/L	1,000*	- -	- -	<1	5.6	2.9	2.3	8.2	2.4	3.4	1.6	2.1	4.5	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Cadmium
Chromium	µg/L	5,000*	- -	- -	113	13	<1	144	19.5	<1	6.9	66	<1	17.2	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Chromium
Lead	µg/L	5,000*	- -	- -	88.9	468	284	424	558	157	3,530	721	172	221	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Lead
Mercury	µg/L	200*	- -	- -	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Mercury
Selenium	µg/L	1,000*	- -	- -	<5	12.9	10.6	11.1	10.2	<5	6.2	<5	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Selenium
Silver	µg/L	5,000*	- -	- -	1.3	1.2	<1	<1	<1	1	<1	<1	1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Silver
Miscellaneous																											**Miscellaneous**
Percent Solids	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Percent Solids
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.6	NA	5.95	6.85	6.7	NA	6.9	6.8	pH
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total Organic C

See footnotes on last page

See footnotes

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

ample Name: ple Depth (ft): ate Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGTP2A 2.5 - 3 06/22/99	WBGTP2B 3 - 3.5 06/22/99	WBGTP2S 1 - 1.5 06/22/99	WBGTP3A 2.5 - 3 06/23/99	WBGTP3S 1 - 1.5 06/23/99	WBGTP4A 2.5 - 3 06/24/99	WBGTP4B 2 - 2.5 06/24/99	WBGTP4S 0.5 - 1 06/24/99	WBGTP5A 2.5 - 3 06/24/99	WBGTP5B 2.5 - 3 06/24/99	WBGTP6A 2.5 - 3 06/23/99	WBGTP7A 2.5 - 3 07/13/99	WBGTP7B 2.5 - 3 07/14/99	WBGTP7S 1 - 1.5 07/14/99	WBGTP8A 3 - 3.5 07/13/99	WBGTP8B 3 - 3.5 07/13/99	WBGTP9A 2.5 - 3 06/24/99	WBGTP9S 1 - 1.5 06/24/99	WBGTP10A 2.5 - 3 07/15/99	WBGTP10B 2.5 - 3 07/15/99	WBGTP10S 0.5 - 1 07/15/99	WBGTP11A 2.5 - 3 07/15/99	WBGTP11B 2.5 - 3 07/15/99	S Samp Da
																												Dioxin/Furan
lpCDD	mg/kg	- -	- -	- -	NA	0.000243	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000133	NA	NA	NA	NA	NA	NA	NA	0.0000452	NA	NA	NA	1,2,3,4,6,7,8-H
lpCDF	mg/kg	- -	- -	- -	NA	0.00000042	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000256	NA	NA	NA	NA	NA	NA	NA	0.00000137	NA	NA	NA	1,2,3,4,6,7,8-H
lpCDF	mg/kg	- -	- -	- -	NA	<0.0000001	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000151	NA	NA	NA	NA	NA	NA	NA	<0.0000002	NA	NA	NA	1,2,3,4,7,8,9-H
CDD	mg/kg	- -	- -	- -	NA	0.00000723	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000168	NA	NA	NA	NA	NA	NA	NA	0.00000088	NA	NA	NA	1,2,3,4,7,8-Hx
CDF	mg/kg	- -	- -	- -	NA	<0.00000006	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000181	NA	NA	NA	NA	NA	NA	NA	0.00000041	NA	NA	NA	1,2,3,4,7,8-Hx
CDD	mg/kg	- -	- -	- -	NA	0.000023	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000389	NA	NA	NA	NA	NA	NA	NA	0.00000131	NA	NA	NA	1,2,3,6,7,8-Hx
CDF	mg/kg	- -	- -	- -	NA	<0.00000006	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000218	NA	NA	NA	NA	NA	NA	NA	0.00000029	NA	NA	NA	1,2,3,6,7,8-Hx
CDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	NA	0.0000181	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000325	NA	NA	NA	NA	NA	NA	NA	0.0000017	NA	NA	NA	1,2,3,7,8,9-Hx
CDF	mg/kg	- -	- -	- -	NA	<0.00000007	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000052	NA	NA	NA	NA	NA	NA	NA	<0.00000014	NA	NA	NA	1,2,3,7,8,9-Hx
DD	mg/kg	- -	- -	- -	NA	0.00000685	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000141	NA	NA	NA	NA	NA	NA	NA	0.00000057	NA	NA	NA	1,2,3,7,8-PeCI
DF	mg/kg	- -	- -	- -	NA	<0.00000005	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000144	NA	NA	NA	NA	NA	NA	NA	0.00000038	NA	NA	NA	1,2,3,7,8-PeCI
CDF	mg/kg	- -	- -	- -	NA	<0.00000006	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000342	NA	NA	NA	NA	NA	NA	NA	0.00000021	NA	NA	NA	2,3,4,6,7,8-Hx
DF	mg/kg	- -	- -	- -	NA	<0.00000005	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000155	NA	NA	NA	NA	NA	NA	NA	0.00000049	NA	NA	NA	2,3,4,7,8-PeCI
	mg/kg	0.0000043 {C}	0.000019 {C}	- -	NA	0.00000047	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000417	NA	NA	NA	NA	NA	NA	NA	0.00000024	NA	NA	NA	2,3,7,8-TCDD
	mg/kg	- -	- -	- -	NA	<0.00000007	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000225	NA	NA	NA	NA	NA	NA	NA	0.00000044	NA	NA	NA	2,3,7,8-TCDF
	mg/kg	- -	- -	- -	NA	0.00721	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00648 J	NA	NA	NA	NA	NA	NA	NA	0.00543 J	NA	NA	NA	OCDD
	mg/kg	- -	- -	- -	NA	0.00000127	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000472	NA	NA	NA	NA	NA	NA	NA	0.00000186 B	NA	NA	NA	OCDF
	mg/kg	- -	- -	- -	NA	0.000523	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000278	NA	NA	NA	NA	NA	NA	NA	0.000109	NA	NA	NA	Total HpCDDs
	mg/kg	- -	- -	- -	NA	0.00000042	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000647	NA	NA	NA	NA	NA	NA	NA	0.00000344	NA	NA	NA	Total HpCDFs
	mg/kg	- -	- -	- -	NA	0.0002	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000045	NA	NA	NA	NA	NA	NA	NA	0.0000166	NA	NA	NA	Total HxCDDs
	mg/kg	- -	- -	- -	NA	0.00000087	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000473	NA	NA	NA	NA	NA	NA	NA	0.00000125 B	NA	NA	NA	Total HxCDFs
	mg/kg	- -	- -	- -	NA	0.0000355	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000107	NA	NA	NA	NA	NA	NA	NA	0.00000318	NA	NA	NA	Total PeCDDs
	mg/kg	- -	- -	- -	NA	0.00000085	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000542	NA	NA	NA	NA	NA	NA	NA	0.00000165	NA	NA	NA	Total PeCDFs
	mg/kg	- -	- -	- -	NA	0.0000032	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000978	NA	NA	NA	NA	NA	NA	NA	0.00000024	NA	NA	NA	Total TCDDs
	mg/kg	- -	- -	- -	NA	0.00000015	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000562	NA	NA	NA	NA	NA	NA	NA	0.00000037	NA	NA	NA	Total TCDFs
																												Explosives
Tetranitrate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Pentaerythritol
																												Herbicides
	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,4,5-TP
	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,4-D
	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dalapon
	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	MCPP
ne Pesticides																												**Organochlorin**
	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,4'-DDD
	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dieldrin
																												PAHs
halene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2-Methylnaphth
	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Acenaphthene
ie	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Acenaphthyler
	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Anthracene
acene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Benzo(a)anthra
ie	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Benzo(a)pyren
nthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Benzo(b)fluora
rylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Benzo(g,h,i)pe
nthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Benzo(k)fluora
	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Chrysene
nthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dibenzo(a,h)ar
	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Fluoranthene
	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Fluorene
d)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Indeno(1,2,3-c
	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Naphthalene
	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Phenanthrene
	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Pyrene
																												PCBs
	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Aroclor-1254
nics																												**Volatile Organ**
	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Acetone
de	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Carbon Disulfi
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	d-Limonene
oride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Methylene Chl
ene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	p-Isopropyltolu
	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Toluene
Organics																												**Semivolatile O**
halene	mg/kg	31 {N}	410 {N}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.070	<0.060	<0.060	<0.060	<0.060	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.070	<0.060	<0.34	<0.34	<0.36	<0.34	<0.35	2-Methylnaphth
	mg/kg	470 {N}	6,100 {N}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.0075	<0.0073	<0.0072	<0.0071	<0.0073	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.0073	<0.0070	<0.34	<0.34	<0.36	<0.34	<0.35	Acenaphthene
	mg/kg	2,300 {N}	31,000 {N}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.020	<0.020	<0.020	<0.020	<0.020	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.020	<0.020	<0.34	<0.34	<0.36	<0.34	<0.35	Anthracene
acene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.010	<0.010	<0.010	<0.010	<0.010	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.010	<0.010	<0.34	<0.34	<0.36	<0.34	<0.35	Benzo(a)anthra
ie	mg/kg	0.022 {C}	0.39 {C}	- -	<0.41	<0.39	<0.40	**0.040**	<0.40	<0.010	<0.010	<0.010	<0.010	<0.010	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	**0.050**	<0.010	<0.34	<0.34	<0.36	<0.34	<0.35	Benzo(a)pyren
nthene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.41	<0.39	<0.40	0.060 J	<0.40	<0.13	<0.12	<0.12	<0.12	<0.12	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	0.040	<0.12	<0.34	<0.34	<0.36	<0.34	<0.35	Benzo(b)fluora
rylene	mg/kg	- -	- -	- -	0.39	<0.39	0.38 J	0.42 J	<0.40	<0.010 J	<0.010 J	<0.010	<0.0099 J	<0.010 J	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	0.42 J	<0.0097 J	<0.34	<0.34	<0.36	<0.34	<0.35	Benzo(g,h,i)pe
nthene	mg/kg	2.2 {C}	39 {C}	- -	<0.41	<0.39	<0.40	0.080 J	<0.40	<0.12	<0.12	<0.12	<0.12	<0.12	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	0.050 J	<0.11	<0.34	<0.34	<0.36	<0.34	<0.35	Benzo(k)fluora
yl)phthalate	mg/kg	46 {C}	200 {C}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.070	<0.070	<0.070	<0.070	<0.070	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.070	0.050	<0.34	<0.34	<0.36	<0.34	<0.35	bis(2-Ethylhex
halate	mg/kg	1,600 {N}	20,000 {N}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.010	<0.010	<0.010	<0.010	<0.010	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.010	<0.010	<0.34	<0.34	<0.36	<0.34	<0.35	Butylbenzylpht
	mg/kg	32 {C}	140 {C}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.060 J	<0.060 J	<0.050	<0.050 J	<0.060 J	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.060 J	<0.050 J	<0.34	<0.34	<0.36	<0.34	<0.35	Carbazole
	mg/kg	22 {C}	390 {C}	- -	<0.41	<0.39	<0.40	0.040	<0.40	<0.020	<0.020	<0.020	<0.020	<0.020	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	0.080 J	<0.020	<0.34	<0.34	<0.36	<0.34	<0.35	Chrysene
nthracene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.060 J	<0.060 J	<0.060	<0.050 J	<0.060 J	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	0.20 J	<0.050 J	<0.34	<0.34	<0.36	<0.34	<0.35	Dibenzo(a,h)ar
	mg/kg	7.8 {N}	100 {N}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.060	<0.060	<0.060	<0.060	<0.060	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.060	<0.060	<0.34	<0.34	<0.36	<0.34	<0.35	Dibenzofuran
alate	mg/kg	780 {N}	10,000 {N}	- -	0.42 B	0.24 B	<0.40	<0.39	0.20 B	<0.030	<0.030	<0.030	<0.030	<0.030	0.17 B	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.030	0.090 B	<0.34	<0.34	0.040 B	<0.34	<0.35	Di-n-Butylphth
alate	mg/kg	- -	- -	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.020	<0.020	<0.020	<0.010	<0.020	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.020	<0.010	<0.34	<0.34	<0.36	<0.34	<0.35	Di-n-Octylphth
	mg/kg	310 {N}	4,100 {N}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.010	<0.010	<0.010	<0.010	<0.010	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	0.12	<0.010	<0.34	<0.34	<0.36	<0.34	<0.35	Fluoranthene
	mg/kg	310 {N}	4,100 {N}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.0079	<0.0077	<0.0076	<0.0075	<0.0077	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.0077	<0.0074	<0.34	<0.34	<0.36	<0.34	<0.35	Fluorene
d)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.030 J	<0.030 J	<0.030	<0.030 J	<0.030 J	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.030 J	<0.030 J	<0.34	<0.34	<0.36	<0.34	<0.35	Indeno(1,2,3-c
	mg/kg	160 {N}	2,000 {N}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.0075	<0.0073	<0.0072	<0.0071	<0.0073	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.0073	<0.0070	<0.34	<0.34	<0.36	<0.34	<0.35	Naphthalene
enylamine	mg/kg	130 {C}	580 {C}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.010	<0.010	<0.010	<0.010	<0.010	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.010	<0.010	<0.34	<0.34	<0.36	<0.34	<0.35	N-Nitrosodiphe
	mg/kg	230 {N}	3,100 {N}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.010	<0.010	<0.010	<0.010	<0.010	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	0.050	<0.010	<0.34	<0.34	<0.36	<0.34	<0.35	Phenanthrene
	mg/kg	230 {N}	3,100 {N}	- -	<0.41	<0.39	<0.40	<0.39	<0.40	<0.010	<0.010	<0.010	<0.010	<0.010	<0.45	<0.38	<0.37	<0.39 [<0.39]	<0.37	<0.36	<0.010	<0.010	<0.34	<0.34	<0.36	<0.34	<0.35	Pyrene

on last page.

See footnotes

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

ample Name: / ple Depth (ft): / ate Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGTP2A 2.5 - 3 06/22/99	WBGTP2B 3 - 3.5 06/22/99	WBGTP2S 1 - 1.5 06/22/99	WBGTP3A 2.5 - 3 06/23/99	WBGTP3S 1 - 1.5 06/23/99	WBGTP4A 2.5 - 3 06/24/99	WBGTP4B 2 - 2.5 06/24/99	WBGTP4S 0.5 - 1 06/24/99	WBGTP5A 2.5 - 3 06/24/99	WBGTP5B 2.5 - 3 06/24/99	WBGTP6A 2.5 - 3 06/23/99	WBGTP7A 2.5 - 3 07/13/99	WBGTP7B 2.5 - 3 07/14/99	WBGTP7S 1 - 1.5 07/14/99	WBGTP8A 3 - 3.5 07/13/99	WBGTP8B 3 - 3.5 07/13/99	WBGTP9A 2.5 - 3 06/24/99	WBGTP9S 1 - 1.5 06/24/99	WBGTP10A 2.5 - 3 07/15/99	WBGTP10B 2.5 - 3 07/15/99	WBGTP10S 0.5 - 1 07/15/99	WBGTP11A 2.5 - 3 07/15/99	WBGTP11B 2.5 - 3 07/15/99	S Samp Da
																												Inorganics
	mg/kg	7,800 {N}	100,000 {N}	40,041	**8,450**	6,910	**11,600**	**16,700**	**11,200**	**14,700**	**15,000**	**14,300**	**14,300**	**15,200**	**9,480**	**11,800**	**9,090**	**15,300 [14,900]**	**13,300**	**10,400**	**10,400**	**12,300**	**10,800**	7,520	**13,300**	5,760	**13,800**	Aluminum
	mg/kg	3.13 {N}	40.88 {N}	- -	<0.620	<0.580	<0.610	<0.590	<0.590	<0.630	<0.610	<0.610	<0.600	<0.620	<0.680	<0.630	<0.620	<0.640 [<0.650]	<0.620	<0.600	<0.610	<0.590	<0.570	<0.570	<0.610	<0.550	<0.580	Antimony
	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**3.80 B**	**1.70 B**	**7.30**	**9.80**	**5.40 B**	**9.70 K**	**9.20 K**	**9.40 K**	**7.20 B**	**8.30 K**	**3.70 B**	**4.50 B**	**2.80 B**	**7.80 B [7.10 B]**	**4.30 B**	**3.40 B**	**9.70 K**	**9.50 K**	**7.30 B**	**2.60 B**	**13.0**	**2.70 B**	**8.20**	Arsenic
	mg/kg	1,564 {N}	20,440 {N}	209 {N}	17.0 J	13.7 J	52.5	51.8	22.9 J	25.7	26.8	15.2	24.4	29.5	18.9 J	24.3 J	22.5 J	14.0 J [14.5 J]	22.4 J	21.6 J	184	28.9	33.2	14.7 J	15.3 J	20.0 J	95.9	Barium
	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.490 B	0.240 B	0.670 B	1.20 B	0.520 B	0.440 B	0.290 B	0.300 B	0.160 B	0.260 B	<0.140	0.290 B	<0.120	0.230 B [0.320 B]	0.300 B	0.370 B	0.140 B	0.290 B	0.490 B	<0.110	0.550 B	0.120 B	0.710 B	Beryllium
	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.120	<0.120	0.200 K	0.280 K	<0.120	<0.130	<0.120	<0.120	<0.120	<0.120	<0.140	<0.130	<0.120	<0.130 [<0.130]	<0.120	<0.120	0.750	<0.120	<0.110	<0.110	<0.120	<0.110	0.220 K	Cadmium
	mg/kg	- -	- -	- -	2,030	1,860	3,640	7,190	2,650	1,640	2,890	657	1,060	2,610	1,170	1,440	1,320	755 [748]	1,270	1,710	29,200	2,010	2,090	1,430	796	1,040	15,700	Calcium
	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**24.9 K**	23.3 K	**41.3 K**	**45.2 K**	**35.8 K**	**41.1**	**36.4**	**34.6**	**30.7**	**34.1**	**29.0 K**	**33.0**	17.7 K	**38.8 [34.5]**	**30.3**	**23.8**	**34.5**	**34.0**	**28.9**	13.5 K	**36.6**	12.5 K	**35.1**	Chromium
	mg/kg	- -	- -	72.3	7.90	2.30 J	9.50 K	16.1 K	9.00	13.3	8.40	6.60	6.90	8.30	1.90 J	6.30 K	2.70 K	4.30 K [4.20 K]	3.20 K	6.20 K	6.10 J	8.80	7.70 K	1.40 K	10.0 K	2.30 K	6.80 K	Cobalt
	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	16.7	10.0	66.0 K	34.1 K	20.3	25.2 K	23.1 K	24.6 K	16.7 K	23.0 K	12.6	16.2 K	9.20	20.5 K [20.0 K]	15.2	19.1 K	**122 K**	45.1 K	20.3 K	8.20 K	26.1 K	7.10 K	63.6	Copper
	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**25,200**	**16,400**	**30,900**	**36,300**	**32,300**	**38,900**	**34,700**	**39,500**	**29,900**	**32,200**	**22,800**	**25,900**	**16,700**	**36,700 [34,900]**	**24,800**	**26,400**	**25,800**	**39,500**	**30,600**	**14,300**	**44,100**	**13,400**	**27,300**	Iron
	mg/kg	400	750	26.8	25.4	54.8	173	137	19.5	39.6	36.8	19.9	14.1	32.6	9.30	81.4	17.4	11.5 [13.1]	9.40	15.6	265	33.3	26.0	8.90	23.2	7.90	89.7	Lead
	mg/kg	- -	- -	- -	771	521 J	2,170	4,150	890	1,170	1,350	510	689	1,290	549 J	943	765	522 J [449 J]	1,050	1,120	4,640	511	856	475 J	381 J	408 J	6,330	Magnesium
	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	125 K	38.5 K	149 K	**160 K**	81.9 K	132	92.0	74.0	83.1	85.1	21.3 K	60.7	48.1	46.3 [44.2]	39.5	98.3	152	**157**	99.1	27.2 K	**208**	42.4 K	113	Manganese
	mg/kg	2.35	30.66	0.13	0.200	<0.110	0.130	<0.120	<0.120	<0.130	<0.120	<0.120	<0.120	<0.120	0.210	<0.130	<0.120	<0.130 [<0.120]	<0.120	<0.120	<0.120	<0.110	<0.120	<0.110	<0.120	<0.110	<0.110	Mercury
	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	7.10 J	2.60 J	10.8 J	15.9 J	11.7 J	12.2	9.90	10.2	8.00	10.3	2.50 J	5.10	2.80 J	6.10 [6.00]	5.90	5.80	10.1	10.0 B	7.50	1.30 J	11.3	1.80 J	11.6	Nickel
	mg/kg	- -	- -	- -	678	382 J	741	1,750	418 J	835 J	1,090 J	573 J	1,120 J	1,110 J	1,250	807 J	1,070 J	1,300 J [1,190 J]	942 J	796 J	866 J	452 J	1,370 J	465 J	830 J	930 J	1,560 J	Potassium
	mg/kg	39.1 {N}	511 {N}	- -	0.580 J	<0.470	<0.490	<0.470	0.520 K	<0.500	<0.490	<0.490	<0.480	<0.490	0.720 K	<0.510	<0.620	<0.640 [<0.650]	<0.500	<0.480	<0.490	<0.470	<0.570	<0.570	<0.610	<0.550	<0.580	Selenium
	mg/kg	39.1 {N}	511 {N}	- -	<0.120	<0.120	<0.120	<0.120	<0.120	<0.130	<0.120	<0.120	<0.120	<0.120	<0.140	0.140 B	<0.120	0.240 B [0.200 B]	0.220 B	0.120 B	0.140	<0.120	0.210 B	0.160 B	0.290 B	<0.110	0.180 B	Silver
	mg/kg	- -	- -	- -	133 B	109 B	130 B	81.6 B	46.5 B	75.5 B	99.1 B	68.0 B	111 B	106 B	59.0 B	166 B	249 B	236 B [233 B]	198 B	169 B	116 B	58.0 B	183 B	158 B	148 B	150 B	201 B	Sodium
	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	<0.870	<0.810	<0.860	<0.830	**1.20 J**	<0.880	<0.860	<0.850	<0.830	<0.860	<0.950	<0.890	<0.870	<0.900 [<0.910]	<0.870	<0.840	<0.860	<0.820	<0.790	**0.820 J**	<0.850	<0.770	<0.810	Thallium
	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**49.4 K**	**44.7 K**	**55.7 K**	**57.4 K**	**50.1 K**	**69.7**	**63.7**	**71.0**	**56.3**	**60.5**	**42.3 K**	**51.8 K**	**36.5 K**	**91.1 K [82.9 K]**	**56.1 K**	**43.0 K**	**48.2**	**62.3**	**58.4 K**	**29.6 K**	**77.1 K**	**28.0 K**	**48.4 K**	Vanadium
	mg/kg	2,346 {N}	30,660 {N}	202 {N}	25.1 K	18.5 K	214 K	309 K	178 K	40.7	57.0	132	26.2	58.4	25.3 K	63.6	17.2 K	25.6 K [26.7 K]	95.4	72.8	685 L	689	45.5	22.7 K	113	16.0 K	172	Zinc
CLP																												**Inorganics - T**
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Arsenic
	µg/L	100,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Barium
	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Cadmium
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Chromium
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Lead
	µg/L	200*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Mercury
	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Selenium
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Silver
s																												**Miscellaneous**
	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Percent Solids
	pH Units	- -	- -	- -	6.75	6.95	6.85	6.65	6.75	6.45	6.15	7.15	6.25	6.3	6.25	6.3	6.6	6.65 [6.6]	6.35	6.3	7.05	7.25	7.5	7.75	7.45	7.55	7	pH
Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total Organic C

on last page

See footnotes

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

ample Name: ple Depth (ft): ate Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGTP12A 2.5 - 3 07/15/99	WBGTP12S 0.5 - 1 07/15/99	WBGTP13A 1.5 - 2 07/22/99	WBGTP13B 1 - 1.5 07/22/99	WBGTP13S 1.5 - 2 07/22/99	WBGTP14A 2 - 2.5 07/22/99	WBGTP14B 1.5 - 2 07/22/99	WBGTP15A 1.5 - 2 07/15/99	WBGTP16A 0.5 - 1 07/22/99	WBGTP16A2 0.5 - 1 09/14/99	WBGTP17A 0.5 - 1 07/22/99	WBGTP18A 1 - 1.5 07/22/99	WBGTP18S 1 - 1.5 07/22/99	WBGTP19A 2.5 - 3 07/29/99	WBGTP19S 2.5 - 3 07/29/99	WBGSB12 0 - 4 08/18/99	WBGSB13 0 - 2 10/06/99	WBGSB13A 2 - 4 10/06/99	WBGSB14 0 - 2 10/06/99	WBGSB14A 2 - 4 10/06/99	WBGSB15 0 - 2 10/06/99	S Samp Da
																										Dioxin/Furan
lpCDD	mg/kg	- -	- -	- -	0.000128	0.000145	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000548	NA	0.000039 B	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,6,7,8-H
lpCDF	mg/kg	- -	- -	- -	0.0000226	0.0000132	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000044	NA	0.00000036 B	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,6,7,8-H
lpCDF	mg/kg	- -	- -	- -	0.00000105	0.00000098	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000011	NA	0.00000011 B	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,7,8,9-H
CDD	mg/kg	- -	- -	- -	0.00000236	0.00000209 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000092	NA	0.00000051	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,7,8-Hx
CDF	mg/kg	- -	- -	- -	0.00000179	0.00000145 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000013	NA	0.00000013 B	NA	NA	NA	NA	NA	NA	NA	1,2,3,4,7,8-Hx
CDD	mg/kg	- -	- -	- -	0.0000063	0.00000503	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000176	NA	0.00000096	NA	NA	NA	NA	NA	NA	NA	1,2,3,6,7,8-Hx
CDF	mg/kg	- -	- -	- -	0.00000158	0.00000115	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000009	NA	0.00000011 B	NA	NA	NA	NA	NA	NA	NA	1,2,3,6,7,8-Hx
CDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	0.00000623	0.00000412	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000409	NA	0.00000092	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8,9-Hx
CDF	mg/kg	- -	- -	- -	0.00000054	<0.0000005	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000008	NA	<0.00000005	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8,9-Hx
DD	mg/kg	- -	- -	- -	0.00000183	0.00000168	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000081	NA	0.0000005 B	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8-PeCD
DF	mg/kg	- -	- -	- -	0.00000121	0.00000124	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000011	NA	0.00000009 B	NA	NA	NA	NA	NA	NA	NA	1,2,3,7,8-PeCD
CDF	mg/kg	- -	- -	- -	0.00000185	0.0000015	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000001	NA	0.00000011 B	NA	NA	NA	NA	NA	NA	NA	2,3,4,6,7,8-Hx
DF	mg/kg	- -	- -	- -	0.00000185	0.00000172	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000014	NA	0.00000015 B	NA	NA	NA	NA	NA	NA	NA	2,3,4,7,8-PeCD
	mg/kg	0.0000043 {C}	0.000019 {C}	- -	0.00000054	0.00000053	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000032	NA	0.00000045 B	NA	NA	NA	NA	NA	NA	NA	2,3,7,8-TCDD
	mg/kg	- -	- -	- -	0.00000166	0.00000184	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000012	NA	0.00000008	NA	NA	NA	NA	NA	NA	NA	2,3,7,8-TCDF
	mg/kg	- -	- -	- -	0.0055 J	0.0083 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0032	NA	0.00436 J	NA	NA	NA	NA	NA	NA	NA	OCDD
	mg/kg	- -	- -	- -	0.0000254	0.0000181	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000125	NA	0.00000054 B	NA	NA	NA	NA	NA	NA	NA	OCDF
	mg/kg	- -	- -	- -	0.00026	0.000296	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000141	NA	0.0000755 B	NA	NA	NA	NA	NA	NA	NA	Total HpCDDs
	mg/kg	- -	- -	- -	0.0000471	0.0000285	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000044	NA	0.00000047 B	NA	NA	NA	NA	NA	NA	NA	Total HpCDFs
	mg/kg	- -	- -	- -	0.000059	0.0000409	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000234	NA	0.0000045	NA	NA	NA	NA	NA	NA	NA	Total HxCDDs
	mg/kg	- -	- -	- -	0.0000235	0.0000131	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000117	NA	0.00000072 B	NA	NA	NA	NA	NA	NA	NA	Total HxCDFs
	mg/kg	- -	- -	- -	0.0000174	0.0000161	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000562	NA	0.00000158 B	NA	NA	NA	NA	NA	NA	NA	Total PeCDDs
	mg/kg	- -	- -	- -	0.0000214	0.0000183	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000068	NA	0.00000102	NA	NA	NA	NA	NA	NA	NA	Total PeCDFs
	mg/kg	- -	- -	- -	0.00000669	0.0000049	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000011	NA	0.00000058 B	NA	NA	NA	NA	NA	NA	NA	Total TCDDs
	mg/kg	- -	- -	- -	0.0000258	0.0000291	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000053	NA	0.00000048	NA	NA	NA	NA	NA	NA	NA	Total TCDFs
																										Explosives
Tetranitrate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Pentaerythritol
																										Herbicides
	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,4,5-TP
	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,4-D
	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dalapon
	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	MCPP
ne Pesticides																										**Organochlorin**
	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,4'-DDD
	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dieldrin
																										PAHs
halene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2-Methylnaphth
	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Acenaphthene
e	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Acenaphthylen
	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Anthracene
acene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Benzo(a)anthra
e	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Benzo(a)pyren
nthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Benzo(b)fluora
rylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Benzo(g,h,i)pe
nthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Benzo(k)fluora
	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Chrysene
nthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dibenzo(a,h)ar
	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Fluoranthene
	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Fluorene
d)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Indeno(1,2,3-c
	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Naphthalene
	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Phenanthrene
	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Pyrene
																										PCBs
	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Aroclor-1254
nics																										**Volatile Organ**
	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Acetone
de	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Carbon Disulfi
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	d-Limonene
oride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Methylene Chl
ene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	p-Isopropyltolu
	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Toluene
Organics																										**Semivolatile O**
halene	mg/kg	31 {N}	410 {N}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	2-Methylnaphth
	mg/kg	470 {N}	6,100 {N}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Acenaphthene
	mg/kg	2,300 {N}	31,000 {N}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Anthracene
acene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Benzo(a)anthra
e	mg/kg	0.022 {C}	0.39 {C}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Benzo(a)pyren
nthene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 J [<0.37 J]	<0.34 J [<0.37 J]	NA	NA	<0.37 J	Benzo(b)fluora
rylene	mg/kg	- -	- -	- -	<0.33	<0.36	<0.36 J	<0.37 J	<0.34 J	<0.39 J	<0.49 J	<0.35	<0.38 J	NA	<0.37 J	<0.43 J	<0.37 J	<0.38 J [<0.37 J]	<0.38	<0.37	<0.38 J [<0.37 J]	<0.34 J [<0.37 J]	NA	NA	<0.37 J	Benzo(g,h,i)pe
nthene	mg/kg	2.2 {C}	39 {C}	- -	0.030	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Benzo(k)fluora
yl)phthalate	mg/kg	46 {C}	200 {C}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	bis(2-Ethylhex
halate	mg/kg	1,600 {N}	20,000 {N}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Butylbenzylpht
	mg/kg	32 {C}	140 {C}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Carbazole
	mg/kg	22 {C}	390 {C}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Chrysene
nthracene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 J [<0.37 J]	<0.34 J [<0.37 J]	NA	NA	<0.37 J	Dibenzo(a,h)ar
	mg/kg	7.8 {N}	100 {N}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Dibenzofuran
alate	mg/kg	780 {N}	10,000 {N}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Di-n-Butylphth
alate	mg/kg	- -	- -	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Di-n-Octylphth
	mg/kg	310 {N}	4,100 {N}	- -	0.040 B	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Fluoranthene
	mg/kg	310 {N}	4,100 {N}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Fluorene
d)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.33	<0.36	<0.36 J	<0.37 J	<0.34 J	<0.39 J	<0.49 J	<0.35	<0.38 J	NA	<0.37 J	<0.43 J	<0.37 J	<0.38	<0.38	<0.37	<0.38 J [<0.37 J]	<0.34 J [<0.37 J]	NA	NA	<0.37 J	Indeno(1,2,3-c
	mg/kg	160 {N}	2,000 {N}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Naphthalene
enylamine	mg/kg	130 {C}	580 {C}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	N-Nitrosodiphe
	mg/kg	230 {N}	3,100 {N}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Phenanthrene
	mg/kg	230 {N}	3,100 {N}	- -	<0.33	<0.36	<0.36	<0.37	<0.34	<0.39	<0.49	<0.35	<0.38	NA	<0.37	<0.43	<0.37	<0.38	<0.38	<0.37	<0.38 [<0.37]	<0.34 [<0.37]	NA	NA	<0.37	Pyrene

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See footnotes

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

ample Name: ple Depth (ft): ate Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGTP12A 2.5 - 3 07/15/99	WBGTP12S 0.5 - 1 07/15/99	WBGTP13A 1.5 - 2 07/22/99	WBGTP13B 1 - 1.5 07/22/99	WBGTP13S 1.5 - 2 07/22/99	WBGTP14A 2 - 2.5 07/22/99	WBGTP14B 1.5 - 2 07/22/99	WBGTP15A 1.5 - 2 07/15/99	WBGTP16A 0.5 - 1 07/22/99	WBGTP16A2 0.5 - 1 09/14/99	WBGTP17A 0.5 - 1 07/22/99	WBGTP18A 1 - 1.5 07/22/99	WBGTP18S 1 - 1.5 07/22/99	WBGTP19A 2.5 - 3 07/29/99	WBGTP19S 2.5 - 3 07/29/99	WBGSB12 0 - 4 08/18/99	WBGSB13 0 - 2 10/06/99	WBGSB13A 2 - 4 10/06/99	WBGSB14 0 - 2 10/06/99	WBGSB14A 2 - 4 10/06/99	WBGSB15 0 - 2 10/06/99	S Samp Da	
																											Inorganics
	mg/kg	7,800 {N}	100,000 {N}	40,041	**9,390**	**11,300**	**9,150**	**11,000**	**18,700**	**11,400**	**25,400**	**8,690**	**12,100**	**9,020**	**15,200**	**23,800**	**12,300**	**13,500**	**12,400**	**18,300**	**10,600 [10,300]**	**11,700 [14,100]**	**16,000**	**11,400**	**10,400**	Aluminum
	mg/kg	3.13 {N}	40.88 {N}	- -	<0.560	<0.610	0.710 B	1.20 B	1.30 B	<0.650	1.50 B	<0.590	1.00 B	1.20 B	1.10 B	1.40 B	0.700 B	<0.620	<0.640	1.70 B	<0.490 [<0.500]	<0.500 [<0.500]	<0.590	<0.620	<0.490	Antimony
	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**7.50 B**	**8.70**	**3.80 B**	**4.90 B**	**5.30 B**	**5.10 B**	**10.7 K**	**4.00 B**	**5.50**	**8.10 K**	**6.50 B**	**4.70 B**	**7.00 B**	**9.60**	**8.80**	**9.80 K**	**6.80 B [8.70 L]**	**8.00 L [8.40 L]**	**11.3 L**	**8.40 L**	**7.40 B**	Arsenic
	mg/kg	1,564 {N}	20,440 {N}	209 {N}	132	108	21.7 J	24.3	73.1	19.7 J	47.5	26.7	12.2 J	69.4	14.5 J	69.2	38.0	31.3	36.5	23.8 J	14.7 J [19.8 J]	27.8 [24.3]	17.2 J	24.4 J	17.0 J	Barium
	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.340 B	0.490 B	0.310 B	0.790 B	2.50 J	0.690 B	1.70 J	0.240 B	0.590 B	3.40	0.960 B	3.90 J	0.880 B	0.810 B	0.860 B	0.550 B	0.590 B [0.620 B]	1.30 B [1.00 B]	0.680 B	0.690 B	0.670 B	Beryllium
	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	0.360 K	0.190 K	<0.120	<0.120	<0.110	<0.130	<0.160	<0.120	<0.130	<0.110	<0.130	<0.140	<0.120	<0.120	<0.130	<0.120	<0.100 [<0.100]	<0.100 [<0.100]	<0.120	<0.120	<0.100	Cadmium
	mg/kg	- -	- -	- -	29,000	2,610	2,870	2,330	7,740	2,660	9,800	1,750	1,400	4,670	2,200	3,600	1,460	1,500	1,750	1,300	714 [1,040]	1,230 [1,480]	826	1,450	643	Calcium
	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	23.4	**37.3**	**46.2**	**42.4**	**45.8**	**31.7**	**67.0**	22.4	**47.4**	22.0	**45.0**	**72.8**	**32.1**	**30.3**	**33.5**	**35.7**	**23.9 [28.2]**	**37.3 [29.6]**	**32.3**	**30.6**	**24.1**	Chromium
	mg/kg	- -	- -	72.3	5.60 K	8.90 K	3.20 K	21.1 K	20.1 K	7.80 K	10.5 K	2.20 K	7.00 K	18.7	10.2 K	28.4 K	10.3 K	10.1	14.1	8.30	6.20 [22.6]	23.0 [14.4]	17.9	7.70	7.50	Cobalt
	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	55.8	108	19.3 K	24.0 K	26.3 K	27.0 K	36.0 K	10.1 K	21.1 K	31.6	30.7 K	35.7 K	28.4 K	23.6	26.1	20.0	17.7 [20.4]	18.2 [25.5]	24.6	21.8	18.4	Copper
	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**19,700**	**33,600**	**32,100**	**39,200**	**34,200**	**37,700**	**52,400**	**17,100**	**36,200**	**32,700**	**47,700**	**52,900**	**34,700**	**34,800**	**34,800**	**36,400**	**29,000 [32,800]**	**27,800 [39,800]**	**40,300**	**31,600**	**30,300**	Iron
	mg/kg	400	750	26.8	161	116	135	113	140	42.4	41.0	12.1 K	**681**	34.2	21.9	27.4	40.2	15.7	27.5	19.0	19.3 [25.3]	**25.5 [29.0]**	**33.3**	21.3	18.0	Lead
	mg/kg	- -	- -	- -	7,470	1,340	1,090	1,050	10,500	939	14,000	1,900	608 J	2,810	509 J	5,450	1,330	1,020	920	866	434 J [474 J]	2,510 [897]	699	912	526	Magnesium
	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	115	152	72.8	152	**297**	94.7	**157**	59.0	57.3	**911**	65.9	146	**170**	105	150	111	**79.9 [162]**	**241 [183]**	**192**	83.2	92.5	Manganese
	mg/kg	2.35	30.66	0.13	<0.110	<0.120	<0.120	<0.120	<0.120	<0.130	<0.160	<0.120	<0.130	0.240	<0.110	<0.140	<0.120	<0.120	<0.130	0.200	<0.100 [<0.100]	<0.100 [<0.100]	<0.110	<0.120	<0.100	Mercury
	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	7.30	10.6	4.00 K	9.40 K	27.6 K	9.10 K	21.1 K	2.30 J	7.70 K	37.0	15.2 K	37.3 K	9.70 K	11.4	12.5	12.8	9.00 [8.60]	13.6 [15.7]	13.8	10.7	9.60	Nickel
	mg/kg	- -	- -	- -	1,050 J	544 J	441 J	639 J	1,860 J	1,030 J	3,340 J	599 J	581 J	501 J	431 J	988 J	562 J	655	618 J	969	488 J [528]	861 [619]	858	788	512	Potassium
	mg/kg	39.1 {N}	511 {N}	- -	<0.560	<0.610	<0.590 L	<0.600 L	<0.560 L	<0.650 L	<0.800 L	<0.590	<0.630 L	<0.560 L	<0.630 L	<0.700 L	<0.620 L	<0.620	<0.640	<0.610	<0.490 L [<0.500 L]	<0.500 L [<0.500 L]	<0.590 L	<0.620 L	<0.490 L	Selenium
	mg/kg	39.1 {N}	511 {N}	- -	0.160 B	0.260 B	0.260 B	0.720 B	<0.110	0.170 B	0.170 B	0.150 B	0.130	<0.110 L	0.240 B	<0.140	0.130 B	<0.120	<0.130	<0.120	1.50 [1.90]	1.60 [2.30]	<0.120	<0.120	1.80	Silver
	mg/kg	- -	- -	- -	212 B	165 B	148 B	139 B	162 B	<1.00	23.2 B	162 B	144 B	119 B	150 B	193 B	138 B	246 B	236	90.0 B	119 B [113 B]	102 B [103 B]	176 B	163 B	91.8 B	Sodium
	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	<0.780	<0.850	<0.830	<0.850	<0.790	<0.910	<1.10	<0.830	<0.890	<0.780 L	<0.880	<0.980	<0.880	<0.860	<0.900	<0.850 J	<0.690 [<0.700]	<0.700 [<0.690]	<0.830	<0.880	<0.680	Thallium
	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**38.4 K**	**63.1 K**	**56.2 K**	**68.3 K**	**63.6 K**	**65.9 K**	**96.4 K**	**37.3 K**	**67.9 K**	**51.6**	**87.9 K**	**99.4 K**	**59.8 K**	**55.5**	**56.4**	**65.9**	**49.7 [58.5]**	**52.5 [68.9]**	**78.5**	**62.2**	**55.7**	Vanadium
	mg/kg	2,346 {N}	30,660 {N}	202 {N}	305	613	90.2 J	48.5 J	42.3 J	93.4 J	85.6 J	23.3 K	80.6 J	173	46.9 J	44.3 J	60.5 J	19.1	36.3	32.8	25.7 K [32.4 K]	28.4 K [29.6 K]	30.3	33.0	23.7 K	Zinc
CLP																											**Inorganics - T**
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Arsenic
	µg/L	100,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Barium
	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Cadmium
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Chromium
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Lead
	µg/L	200*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Mercury
	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Selenium
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Silver
s																											**Miscellaneous**
	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Percent Solids
	pH Units	- -	- -	- -	7.4	7.6	7	7.15	7.05	6.95	6.9	7.25	6.95	NA	6.8	6.8	7.2	5.1	5.85	NA	NA	NA	NA	NA	NA	NA	pH
Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Total Organic C

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See footnotes

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

ample Name: ple Depth (ft): ate Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGSB15A 2 - 4 10/06/99	WBGSB16 0 - 2 10/06/99	WBGSB16A 2 - 4 10/06/99	WBGSB17 0 - 2 10/06/99	WBGSB17A 2 - 4 10/06/99	WBGSB18 0 - 2 10/06/99	WBGSB18A 2 - 4 10/06/99	WBGSB19 0 - 2 10/06/99	WBGSB19A 2 - 4 10/06/99	WBGSB20 0 - 2 10/06/99	WBGSB20A 2 - 4 10/06/99	WBGSB21 0 - 2 10/06/99	WBGSB21A 2 - 4 10/06/99	WBGSB22A 0 - 0.5 06/18/02	WBGSB22B 2 - 4 06/19/02	WBGSB22C 6 - 8 06/19/02	WBGSB23A 0 - 0.5 06/18/02	WBGSB23B 2 - 4 06/19/02	WBGSB23C 6 - 8 06/19/02	WBGSB24A 0 - 0.5 06/18/02
lpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0000203	0.0002122 J	0.00001232	0.00002764	0.00001744 J	0.00000181	0.00002537
lpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000001	0.00003587 J	0.00000137	0.0000013	0.00000016 J	0.00000016	0.00000463
lpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000005	0.00000405 J	0.00000016 J	<0.00000007	<0.00000004	<0.00000003	0.00000023
CDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000028	0.00000663 J	0.00000026	0.00000055	<0.00000007	<0.00000007	0.00000029
CDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000019	0.0000183 J	0.0000006	0.00000032	<0.00000003	<0.00000003	0.00000062
CDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000037 J	0.00001314 J	0.00000045	0.00000079	<0.00000005	<0.00000006	0.00000076
CDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000018 J	0.00000849 J	0.00000027	0.00000039 J	<0.00000003	<0.00000003	0.00000047 J
CDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000104	0.00002096 J	0.00000881	0.00000162	0.00000032 J	0.00000031	0.00000105
CDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000007	0.00000182 J	<0.00000005	<0.00000009	<0.00000005	<0.00000004	<0.00000003
DD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0000001	0.00000413 J	0.00000025 J	<0.00000011	<0.00000006	<0.00000007	0.0000002
DF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000007	0.00000416 J	0.00000019	<0.00000008	<0.00000004	<0.00000004	0.0000001
CDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000006	0.00000528 J	0.00000026	0.00000014	<0.00000004	<0.00000004	0.00000017 J
DF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000008	0.00000641 J	0.00000024	<0.00000009	<0.00000005	<0.00000004	0.00000013
	mg/kg	0.0000043 {C}	0.000019 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000006	0.00000404 J	<0.00000007	0.00000151	<0.00000005	<0.00000005	0.00000032 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000006 J	0.00001035 J	0.00000035 J	<0.00000007 J	<0.00000003	<0.00000003	<0.00000021 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.003301 J	0.003034 J	0.001028 J	0.002912 J	0.006013 J	0.0001833 J	0.003963 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000202 B	0.00005688 J	0.00000242 B	0.0000027 B	0.00000155 B	0.0000014 B	0.00001049 J
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00004377	0.0004875 J	0.00003006	0.00005739	0.00003269 J	0.00000382	0.00005008
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000221	0.0000816 J	0.00000247	0.00000266	0.00000052 J	0.00000066	0.00001178
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000519	0.0001282 J	0.000014	0.0000097	0.00000054 J	0.00000031	0.00000502
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000079	0.00007702 J	0.00000113	0.00000112	<0.00000003	<0.00000003	0.00000378
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0000001	0.00001327 J	<0.00000008	<0.00000011	<0.00000006	<0.00000007	0.0000002
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000035	0.00006234 J	0.00000074	0.00000066	<0.00000004	<0.00000004	0.00000112
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000006	0.00002637 J	<0.00000007	0.00000244	<0.00000005	<0.00000005	0.00000094
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000041	0.0001252 J	0.00000428	0.00000176	<0.00000003	<0.00000003	0.00000192
Tetranitrate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.3	<0.35	<0.37	<0.3	<0.41	<0.38	0.11 J
	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0101	NA	NA	<0.0101	NA	NA	<0.0102
	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0201	NA	NA	<0.0202	NA	NA	0.0107 J
	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0392 J	NA	NA	0.0223 J	NA	NA	0.163
	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10.1	NA	NA	2.56 J	NA	NA	<10.2
ne Pesticides																								
	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0067	NA	NA	<0.00672	NA	NA	<0.00681
	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0067 J	NA	NA	<0.00672 J	NA	NA	0.00472 J
halene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0016 B	0.0093	0.001 B	0.0028 B	0.0063	0.0062	0.0029 B
	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0017	0.003 B	<0.0021	<0.0017	0.0032 B	0.0037 B	0.036
ie	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0017	0.0016 J	<0.0021	<0.0017	0.0027	0.0038	<0.0017
	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00037 J	0.021	<0.0021	<0.0017	<0.0023	0.0011 J	0.089
acene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0019	0.21	0.0026	0.0037	<0.0023	<0.0022	**0.58**
ie	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0017	**0.33**	0.0029	0.0064	<0.0023	<0.0022	**0.54**
nthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0034	**0.53**	0.0053	0.013	<0.0023	<0.0022	**0.97**
rylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0017	0.23	0.0023	0.0082	<0.0023	<0.0022	0.56
nthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.001 J	0.15	0.0016 J	0.0036	<0.0023	<0.0022	0.26
	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0018	0.21	0.0024	0.0053	<0.0023	<0.0022	0.59
nthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0017	0.062 J	<0.0021	0.0026	<0.0023	<0.0022	0.13
	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0031	0.23	0.0037	0.0069	0.00096 J	<0.0022	0.97
	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0017	0.0046	<0.0021	0.00094 J	0.002 J	0.0024	0.028
d)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0018	**0.28**	0.0027	0.0094	<0.0023	<0.0022	**0.6**
	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00087 B	0.0089	0.0013 B	0.0016 B	0.0079 B	0.0068 B	0.0027 B
	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.002	0.099	<0.0021	0.0045	0.0016 J	0.002 J	0.62
	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028	0.26 J	0.0043 J	0.007	0.0012 J	<0.0022 J	1.1
	mg/kg	0.16 {C}	1.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.030	**0.87**	<0.040	<0.030	<0.040	<0.040	<0.030
nics																								
	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.043 B	<0.0053	<0.0063	<0.0055	<0.0069	<0.0064	<0.0051
de	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0045	<0.0053	<0.0063	<0.0055	<0.0069	0.00046 B	<0.0051
	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.17 J	NA	NA	NA
oride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0045	<0.0053	<0.0063	<0.0055	<0.0069	<0.0064	<0.0051
ene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00032 B	<0.0053	<0.0063	0.0011 B	<0.0069	<0.0064	<0.0051
Organics																								
halene	mg/kg	31 {N}	410 {N}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	0.011 J	<0.21	<0.17	<0.23	<0.22	<0.17
	mg/kg	470 {N}	6,100 {N}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	<0.20	<0.21	<0.17	<0.23	<0.22	0.023 J
	mg/kg	2,300 {N}	31,000 {N}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	0.031 J	<0.21	<0.17	<0.23	<0.22	0.061 J
acene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	**0.28**	<0.21	0.0085 J	<0.23	<0.22	**0.38**
ie	mg/kg	0.022 {C}	0.39 {C}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	**0.55**	<0.21	<0.17	<0.23	<0.22	**0.37**
nthene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.37 J	NA	NA	NA	NA	NA	NA	<0.37 J [<0.35 J]	<0.35 J [<0.38 J]	NA	NA	<0.37 J	<0.12 J	<0.17	**0.76**	<0.21	<0.17	<0.23	<0.22	**0.73**
rylene	mg/kg	- -	- -	- -	<0.37 J	NA	NA	NA	NA	NA	NA	<0.37 J [<0.35 J]	<0.35 J [<0.38 J]	NA	NA	<0.37 J	<0.030 J	<0.17	0.62	<0.21	<0.17	<0.23	<0.22	0.31
nthene	mg/kg	2.2 {C}	39 {C}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.11	<0.17	0.23	<0.21	<0.17	<0.23	<0.22	0.19
yl)phthalate	mg/kg	46 {C}	200 {C}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.070	0.16 B	0.83 B	<0.21	0.21 B	<0.23	<0.22	0.16 B
halate	mg/kg	1,600 {N}	20,000 {N}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	0.16 B	<0.21	<0.17	<0.23	<0.22	<0.17
	mg/kg	32 {C}	140 {C}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.050	<0.17	0.023 J	<0.21 J	<0.17	<0.23 J	<0.22 J	0.10 J
	mg/kg	22 {C}	390 {C}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	0.36	<0.21	<0.17	<0.23	<0.22	0.47
nthracene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.37 J	NA	NA	NA	NA	NA	NA	<0.37 J [<0.35 J]	<0.35 J [<0.38 J]	NA	NA	<0.37 J	<0.050 J	<0.17	0.17 J	<0.21	<0.17	<0.23	<0.22	<0.17
	mg/kg	7.8 {N}	100 {N}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.060	<0.17	0.010 J	<0.21	<0.17	<0.23	<0.22	0.011 J
alate	mg/kg	780 {N}	10,000 {N}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	<0.20	<0.21	<0.17	<0.23	<0.22	<0.17
alate	mg/kg	- -	- -	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	<0.20	<0.21	0.016 J	<0.23	<0.22	<0.17
	mg/kg	310 {N}	4,100 {N}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	0.39	<0.21	0.0089 J	<0.23	<0.22	0.89
	mg/kg	310 {N}	4,100 {N}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	<0.20	<0.21	<0.17	<0.23	<0.22	0.016 J
d)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.37 J	NA	NA	NA	NA	NA	NA	<0.37 J [<0.35 J]	<0.35 J [<0.38 J]	NA	NA	<0.37 J	<0.030 J	<0.17	**0.70 J**	<0.21	<0.17	<0.23	<0.22	**0.32**
	mg/kg	160 {N}	2,000 {N}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	0.015 J	<0.21	<0.17	<0.23	<0.22	<0.17
enylamine	mg/kg	130 {C}	580 {C}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	<0.20	<0.21	<0.17	<0.23	<0.22	<0.17
	mg/kg	230 {N}	3,100 {N}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	0.17 J	<0.21	<0.17	<0.23	<0.22	0.43
	mg/kg	230 {N}	3,100 {N}	- -	<0.37	NA	NA	NA	NA	NA	NA	<0.37 [<0.35]	<0.35 [<0.38]	NA	NA	<0.37	<0.030	<0.17	0.39	<0.21	0.0068 J	<0.23	<0.22	0.67

on last page.

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

ample Name: ple Depth (ft): ate Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGSB15A 2 - 4 10/06/99	WBGSB16 0 - 2 10/06/99	WBGSB16A 2 - 4 10/06/99	WBGSB17 0 - 2 10/06/99	WBGSB17A 2 - 4 10/06/99	WBGSB18 0 - 2 10/06/99	WBGSB18A 2 - 4 10/06/99	WBGSB19 0 - 2 10/06/99	WBGSB19A 2 - 4 10/06/99	WBGSB20 0 - 2 10/06/99	WBGSB20A 2 - 4 10/06/99	WBGSB21 0 - 2 10/06/99	WBGSB21A 2 - 4 10/06/99	WBGSB22A 0 - 0.5 06/18/02	WBGSB22B 2 - 4 06/19/02	WBGSB22C 6 - 8 06/19/02	WBGSB23A 0 - 0.5 06/18/02	WBGSB23B 2 - 4 06/19/02	WBGSB23C 6 - 8 06/19/02	WBGSB24A 0 - 0.5 06/18/02
	mg/kg	7,800 {N}	100,000 {N}	40,041	**14,600**	**13,700 [13,200]**	**15,900**	**15,400**	**15,700**	**15,700**	**12,900**	**14,500 [10,700]**	**8,650 [8,290]**	**20,900**	**15,700**	**11,100**	**14,600**	**18,200**	**20,900**	**33,200**	**23,900**	**24,100**	**41,600**	**22,100**
	mg/kg	3.13 {N}	40.88 {N}	- -	<0.500	<0.610 [<0.610]	<0.630	<0.640	<0.640	<0.590	<0.590	<0.500 [<0.500]	<0.500 [<0.490]	<0.590	<0.610	<0.490	0.610 J	<0.500 L	**4.26 L**	0.280 B	<0.500 L	0.270 B	0.390 B	0.290 B
	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**9.20 L**	**12.5 L [12.0 L]**	**12.5 L**	**11.9 L**	**13.0 L**	**10.2 L**	**8.10 L**	**5.40 B [5.10 B]**	**6.40 B [5.60 B]**	**9.90 L**	**14.3 L**	**8.50 L**	**11.6 L**	**7.53 L**	**29.0 L**	**7.54 L**	**6.55 L**	**8.64 L**	**9.92 L**	**7.73 L**
	mg/kg	1,564 {N}	20,440 {N}	209 {N}	17.6 J	26.3 [22.9 J]	20.7 J	19.6 J	17.1 J	18.5 J	16.4 J	20.0 [22.7]	23.0 [19.0 J]	17.5 J	23.9 J	25.5	22.0 J	26.9	295	147	37.8	34.1	136	54.3
	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	1.10 B	0.960 B [0.680 B]	0.930 B	0.770 B	0.810 B	0.560 B	0.350 B	1.00 B [0.720 B]	0.530 B [0.430 B]	1.10 B	0.660 B	0.710 B	0.750 B	0.440 B	0.560 B	2.35 J	0.750 L	1.09 J	1.55 J	0.640 L
	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.100	<0.120 [<0.120]	<0.130	<0.130	<0.130	<0.120	<0.120	<0.100 [<0.100]	<0.100 [<0.100]	<0.0100	<0.120	<0.100	<0.120	<0.100	2.95	<0.120	<0.100	<0.130	<0.120	0.0900 J
	mg/kg	- -	- -	- -	1,250	1,300 [1,190]	1,420	1,130	1,430	836	843	760 [920]	828 [776]	1,680	2,940	1,220	1,360	947	31,500	4,310	1,020	1,410	3,610	2,130
	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**43.1**	**37.5 [34.1]**	**41.1**	**39.4**	**40.4**	**38.8**	**38.7**	**35.3 [28.8]**	22.6 [20.5]	**45.7**	**41.3**	**28.8**	**34.8**	**30.3**	**256 L**	**56.6 L**	**33.3**	**41.6 L**	**61.5 L**	**41.3**
	mg/kg	- -	- -	72.3	10.6	31.4 [14.8]	10.1	11.0	7.30	6.30	5.40 J	7.10 [7.60]	8.10 [7.90]	17.7	8.90	8.60	10.0	8.86 J	10.8	17.7	9.60 J	13.0	13.1	6.59 J
	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	27.2	29.8 [24.5]	23.9	27.4	31.4	22.9	19.9	21.3 [15.5]	11.9 [13.1]	32.3	27.5	19.3	26.5	16.4	174	32.5	19.3	23.9	22.2	32.1
	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**42,700**	**46,700 [40,300]**	**42,500**	**44,300**	**48,800**	**39,700**	**39,800**	**39,200 [27,300]**	**23,400 [22,800]**	**43,400**	**47,100**	**32,300**	**40,600**	**26,300**	**61,800 J**	**36,100 J**	**28,700**	**36,900 J**	**41,000 J**	**31,300**
	mg/kg	400	750	26.8	25.6	44.4 [29.9]	25.3	26.9	26.9	19.6	12.6	15.1 [14.8]	18.0 [14.5]	28.9	23.6	24.0	24.0	25.3 J	**965**	86.5	26.9 J	21.5	18.1	79.1
	mg/kg	- -	- -	- -	372 J	693 [588 J]	12,000	698	708	609	713	627 [967]	481 J [518]	2,480	808	784	605	1,700	18,300	33,000	1,540	2,150	17,600	1,500
	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	71.5	**241 [160]**	125	119	119	74.6	47.4	**45.7 [197]**	129 [103]	119	148	**158**	127	122	**633**	**374**	72.2	**235**	**275**	122
	mg/kg	2.35	30.66	0.13	0.140 K	<0.120 [<0.120]	<0.120	<0.130	<0.120	<0.120	<0.120	<0.100 [<0.100]	<0.100 [<0.100]	0.160 K	0.180 K	<0.100	<0.120	0.0600	0.0500 J	0.0800	0.0400 J	0.0700	0.0300 J	0.0600
	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	19.5	14.4 [12.1]	14.1	13.8	16.0	12.6	7.60	12.2 [8.90]	6.70 [5.30]	20.0	14.4	9.40	13.8	15.3	35.4	35.6	17.4	21.0	36.9	18.4
	mg/kg	- -	- -	- -	634	690 [621]	1,030	728	981	534 J	708	670 [523]	652 [646]	1,420	973	442 J	629	759	1,790	2,050	1,260	1,150	2,300	813
	mg/kg	39.1 {N}	511 {N}	- -	<0.500 L	<0.610 L [<0.610 L]	<0.630 L	<0.640 L	<0.640 L	<0.590 L	<0.590 L	<0.500 L [<0.500 L]	<0.500 L [<0.490 L]	<0.590 L	<0.610 L	<0.490 L	<0.590 L	0.750 L	<1.17 L	<1.26 L	0.740 L	0.860 B	<1.27 L	0.590 L
	mg/kg	39.1 {N}	511 {N}	- -	2.00	<0.120 [<0.120]	<0.130	<0.130	<0.130	<0.120	<0.120	2.20 [1.50]	1.40 [1.30]	<0.120	<0.120	1.70	<0.120	<1.01	<1.17	<1.26	<1.01	<1.37	<1.27	<1.02
	mg/kg	- -	- -	- -	95.7 B	149 B [144 B]	163 B	142 B	151 B	134 B	126 B	104 B [107 B]	92.7 B [97.2 B]	131 B	154 B	95.2 B	124 B	10.5 B	113	23.0 B	25.2 B	58.1	59.5	14.4 B
	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	<0.690	<0.850 [<0.850]	<0.880	<0.890	<0.890	<0.830	<0.820	<0.690 [<0.700]	<0.700 [<0.690]	<0.820	<0.850	<0.680	<0.820	0.200 J	0.150 J	0.410 J	0.190 J	0.410 J	0.300 J	0.190 J
	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**76.2**	**81.6 [75.0]**	**74.9**	**83.5**	**88.9**	**80.6**	**71.0**	**70.2 [51.0]**	**42.1 [41.9]**	**84.6**	**92.3**	**57.3**	**77.5**	**48.6**	**48.1 L**	**57.2 L**	**54.9**	**68.5 L**	**73.9 L**	**57.5**
	mg/kg	2,346 {N}	30,660 {N}	202 {N}	31.8 K	54.7 [43.9]	39.7	40.1	53.3	29.2	16.9	28.1 K [17.7 K]	17.6 K [16.2 K]	38.2	38.3	33.7 K	40.0	36.3	1,510 J	50.0 J	34.5	37.6 J	42.6 J	130
CLP																								
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	100,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	200*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
s																								
	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.31 J	NA	NA	NA
Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	25,600	NA	NA	NA

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Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGSB24B 2 - 4 06/19/02	WBGSB24C 6 - 8 06/19/02	WBGSB25A 0 - 0.5 06/18/02	WBGSB25B 2 - 4 06/19/02	WBGSB25C 6 - 8 06/19/02	WBGTR01 0 - 0.5 06/18/02	WBGSB26A 0 - 0.5 07/16/04	WBGSB27A 0 - 0.5 07/16/04	WBGSB28A 0 - 0.5 07/16/04	WBGSB29A 0 - 0.5 07/19/04	WBGSB30A 0 - 0.5 07/19/04	WBGSB31A 0 - 0.5 07/19/04	WBGSB32A 0 - 0.5 07/19/04	WBGSB33A 0 - 0.5 07/19/04	WBGSB34A 0 - 0.5 07/19/04	WBGSB35A 0 - 0.5 07/20/04	WBGSB36A 0 - 0.5 07/20/04	WBGSB37A 0 - 0.5 07/20/04	WBGSB38A 0 - 0.5 07/19/04	WBGSB39A 0 - 0.5 07/19/04	WBGSB40A 0 - 0.5 07/19/04
Dioxin/Furan																									
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	0.00002548	0.00000304	0.0001572	0.00000383	0.00000124	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	<0.00000013	<0.00000009	0.00003102	<0.00000016	<0.00000011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	<0.00000016	<0.00000011	0.00000205	<0.00000021	<0.00000015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	<0.00000021	<0.00000021	0.00000333	<0.00000027	<0.00000022	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	<0.0000001	<0.00000007	0.00000564	<0.00000012	<0.00000009	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	<0.00000016	<0.00000017	0.00000661	<0.00000021	<0.00000017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	<0.0000001	<0.00000007	0.00000508 J	<0.00000012	<0.00000009	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	<0.00000016	<0.00000016	0.00000834	<0.00000021	<0.00000017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDF	mg/kg	- -	- -	- -	<0.00000011	<0.00000008	0.00000045	<0.00000014	<0.0000001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDD	mg/kg	- -	- -	- -	<0.00000015	<0.00000011	0.00000173	<0.00000017	<0.00000013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDF	mg/kg	- -	- -	- -	<0.0000001	<0.00000007	0.00000107	<0.0000001	<0.00000008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	<0.00000011	<0.00000008	0.00000238	<0.00000014	<0.0000001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	<0.00000011	<0.00000007	0.00000149	<0.00000011	<0.00000008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD	mg/kg	0.0000043 {C}	0.000019 {C}	- -	<0.00000015	<0.00000013	0.00000077 J	<0.00000017	<0.00000013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDF	mg/kg	- -	- -	- -	<0.00000013	<0.00000011	0.0000017 J	<0.00000014	<0.00000009	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	0.005689 J	0.0003054 J	0.002972 J	0.0002626 J	0.00005723 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	0.00000223 J	0.00000093 J	0.00005862 J	<0.00000039 J	0.00000253 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	0.00004247	0.00000662	0.0003078	0.00000941	0.00000347	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	<0.00000013	<0.00000009	0.00007396	<0.00000016	0.0000009	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDDs	mg/kg	- -	- -	- -	0.00000173	<0.00000016	0.00007337	<0.00000021	<0.00000017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDFs	mg/kg	- -	- -	- -	<0.0000001	<0.00000007	0.0000445	<0.00000012	<0.00000009	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDDs	mg/kg	- -	- -	- -	<0.00000015	<0.00000011	0.00000554	<0.00000017	<0.00000013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDFs	mg/kg	- -	- -	- -	<0.0000001	<0.00000007	0.0000181	<0.0000001	<0.00000008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDDs	mg/kg	- -	- -	- -	<0.00000015	<0.00000013	0.00000671	<0.00000017	<0.00000013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDFs	mg/kg	- -	- -	- -	<0.00000013	<0.00000011	0.00002448	<0.00000014	<0.00000009	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																									
Pentaerythritol Tetranitrate	mg/kg	- -	- -	- -	<0.38	<0.35	<0.3	<0.35	<0.39	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																									
2,4,5-TP	mg/kg	63 {N}	820 {N}	- -	NA	NA	0.0078 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	0.0302 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	<1.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	<101	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																									
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	0.0019 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	<0.00676 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																									
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	0.0052	<0.002	0.023	<0.002	<0.0022	NA	<0.0091	<0.0094	<0.0085	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	0.0019 B	<0.002	0.025	<0.002	<0.0022	NA	<0.0091	<0.0094	<0.0085	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	0.0019 J	<0.002	0.0039	<0.002	<0.0022	NA	<0.0091	<0.0094	<0.0085	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	0.0011 J	<0.002	0.1	<0.002	<0.0022	NA	0.015	0.052	<0.0085	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	0.0071	<0.002	**0.97**	<0.002	<0.0022	NA	0.089	**0.42**	0.021 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	0.006	<0.002	**1.1**	<0.002	<0.0022	NA	**0.091**	**0.51**	**0.029 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	0.013	<0.002	**1.8**	<0.002	<0.0022	NA	0.17	**0.64**	0.046 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	0.0038	<0.002	0.96	<0.002	<0.0022	NA	0.074	0.27	0.027	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	0.0033	<0.002	0.53	<0.002	<0.0022	NA	0.044	0.17	0.017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	0.0074	<0.002	0.99	<0.002	<0.0022	NA	0.11	0.33	0.026	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	0.0013 J	<0.002	0.22	<0.002	<0.0022	NA	<0.0091	0.08	<0.0085	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.0096	<0.002	1.6	<0.002	<0.0022	NA	0.23	0.61	0.048	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	0.0014 J	<0.002	0.027	<0.002	<0.0022	NA	<0.0091	<0.0094	<0.0085	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	0.0047	<0.002	**1.1**	<0.002	<0.0022	NA	0.069	**0.27**	0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	0.0069 B	<0.002	0.018	<0.002	<0.0022	NA	<0.0091	<0.0094	<0.0085	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.0039	<0.002	0.69	<0.002	<0.0022	NA	0.087	0.2	0.016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.01 J	<0.002 J	1.6	<0.002 J	<0.0022 J	NA	0.14 J	0.39	0.028 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																									
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	<0.040	<0.030	<0.030	<0.030	<0.040	<0.030	<0.045	<0.047	<0.042	<0.043	<0.044	<0.041	<0.044	<0.050	<0.040	<0.044	<0.045	<0.042	<0.041	<0.044	<0.040
Volatile Organics																									
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	<0.0063	<0.0053	<0.0046	<0.0053	<0.0072	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	<0.0063	<0.0053	<0.0046	0.00039 B	<0.0072	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	<0.0063	<0.0053	<0.0046	<0.0053	<0.0072	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	<0.0063	<0.0053	<0.0046	<0.0053	<0.0072	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																									
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	<0.22	<0.20	0.016 J	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	<0.22	<0.20	0.015 J	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	<0.22	<0.20	0.051 J	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.22	<0.20	**0.32**	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.22	<0.20	**0.40**	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.22	<0.20	**0.65**	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	<0.22	<0.20	0.28	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	<0.22	<0.20	0.15 J	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	<0.22	<0.20	0.67 B	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	mg/kg	1,600 {N}	20,000 {N}	- -	<0.22	<0.20	<0.17	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	mg/kg	32 {C}	140 {C}	- -	<0.22 J	<0.20 J	0.038 J	<0.20 J	<0.22 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	<0.22	<0.20	0.32	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	<0.22	<0.20	0.076 J	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	mg/kg	7.8 {N}	100 {N}	- -	<0.22	<0.20	0.014 J	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	<0.22	<0.20	<0.17	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Octylphthalate	mg/kg	- -	- -	- -	<0.22	<0.20	<0.17	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	<0.22	<0.20	0.44	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	<0.22	<0.20	0.014 J	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	<0.22	<0.20	**0.32**	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	<0.22	<0.20	<0.17	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	mg/kg	130 {C}	580 {C}	- -	<0.22	<0.20	<0.17	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	<0.22	<0.20	0.25	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	<0.22	<0.20	0.38 J	<0.20	<0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGSB24B 2 - 4 06/19/02	WBGSB24C 6 - 8 06/19/02	WBGSB25A 0 - 0.5 06/18/02	WBGSB25B 2 - 4 06/19/02	WBGSB25C 6 - 8 06/19/02	WBGTR01 0 - 0.5 06/18/02	WBGSB26A 0 - 0.5 07/16/04	WBGSB27A 0 - 0.5 07/16/04	WBGSB28A 0 - 0.5 07/16/04	WBGSB29A 0 - 0.5 07/19/04	WBGSB30A 0 - 0.5 07/19/04	WBGSB31A 0 - 0.5 07/19/04	WBGSB32A 0 - 0.5 07/19/04	WBGSB33A 0 - 0.5 07/19/04	WBGSB34A 0 - 0.5 07/19/04	WBGSB35A 0 - 0.5 07/20/04	WBGSB36A 0 - 0.5 07/20/04	WBGSB37A 0 - 0.5 07/20/04	WBGSB38A 0 - 0.5 07/19/04	WBGSB39A 0 - 0.5 07/19/04	WBGSB40A 0 - 0.5 07/19/04
Inorganics																									
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**19,300**	**9,600**	**17,500**	**15,300**	**31,600**	NA	**15,700**	**19,000**	**21,800**	**40,000**	**34,300**	**24,200**	**28,500**	**20,100**	**30,400**	**33,700**	**39,000**	**26,300**	**24,400**	**16,500**	**15,700**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	<0.630 L	0.530 L	0.850 L	<0.590 L	<0.650 L	NA	<0.360 L	1.60 B	0.610 B	0.830 B	0.610 B	0.850 B	0.470 B	0.760 B	0.520 B	<0.300	0.800 B	0.530 J	0.420 J	<0.330	0.490 J
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**6.73 L**	**6.41 L**	**6.38 L**	**5.03 L**	**10.0 L**	NA	**8.30**	**9.50**	**9.40**	**10.8**	**13.3**	**9.40**	**9.80**	**7.90**	**10.8**	**8.60**	**15.8**	**10.2**	**9.00**	**6.10**	**5.60**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	42.9	29.8	99.0	84.0	62.2	NA	45.5	128	81.7	72.9	55.8	34.1	74.1	53.8	54.9	83.5	56.4	34.4	43.5	72.5	39.2
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.780 J	0.730 J	0.600 L	<0.590	3.25 J	NA	0.830 J	0.920 J	1.30 J	2.80	2.90	0.630	1.40	1.30	1.60	2.30	3.10	1.40	1.10	0.870	0.740
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.120	<0.110	0.300	<0.110	<0.130	NA	<0.0380	0.380 J	0.0840 J	0.420 J	0.370 J	0.200 J	0.400 J	0.300 J	0.390 J	0.0820 B	0.590 J	<0.0310	<0.0320	0.0780 B	<0.0330
Calcium	mg/kg	- -	- -	- -	1,060	538	4,900	885	1,880	NA	1,650	8,840	3,980	5,740 J	4,330 J	1,230 J	4,030 J	5,320 J	3,390 J	7,550	7,950 J	3,130	2,920	2,400	1,150
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**25.9 L**	21.9 L	**69.6**	20.8 L	**62.3 L**	NA	**26.7**	**44.8**	**45.2**	**59.5**	**54.8**	**35.6**	**43.4**	**32.7**	**49.6**	**51.8 J**	**58.5**	**39.7 J**	**37.4 J**	**24.2 J**	**25.0 J**
Cobalt	mg/kg	- -	- -	72.3	14.2	19.8	11.7 J	14.7	8.28	NA	14.5	10.2	9.80	21.1	30.6	10.8	13.6	11.1	16.5	16.6	30.6	17.4	13.6	7.50	16.0
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	31.7	4.37	52.8	9.52	23.4	NA	15.6	47.1	28.6	31.2	28.3	17.5	21.0	20.5	22.6	24.0	31.4	25.2	19.3	16.2	11.7
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**31,700 J**	**16,600 J**	**24,000**	**20,700 J**	**27,800 J**	NA	**24,900**	**24,600**	**28,300**	**37,800**	**37,000**	**30,900**	**31,100**	**21,600**	**33,300**	**30,000**	**41,400**	**32,000**	**29,200**	**17,600**	**18,300**
Lead	mg/kg	400	750	26.8	23.3	33.1	259	19.3	30.5	NA	32.5	279	114	33.5	41.0	19.6	31.8	43.1	85.6	54.9	45.8	29.1	27.8	38.0	28.7
Magnesium	mg/kg	- -	- -	- -	1,150	1,300	4,300	1,050	13,400	NA	1,220 K	3,390	3,140	9,210	4,710	752	6,230	3,010	4,230	12,200	6,750	2,750	2,800	1,530	1,780
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	134	**344**	**323**	**309**	71.1	NA	**637**	**428**	**251**	**280**	**283**	**180**	**364**	**224**	**212**	**233**	**282**	154	**166**	**292**	**449**
Mercury	mg/kg	2.35	30.66	0.13	0.0600	<0.0500	0.0400 J	0.0700	0.100	NA	0.0610	0.0700	0.0670	0.120	0.130	0.0800	0.0970	0.0850	0.0920	0.110	0.130	0.100	0.0760 B	0.0360 B	0.0410 B
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	17.5	5.94	18.9	10.2	33.3	NA	14.9	17.3	20.7	35.2	33.6	12.1	22.6	16.6	24.3	29.6	36.8	21.1	19.2	12.3	12.9
Potassium	mg/kg	- -	- -	- -	1,240	592	1,070	565	2,780	NA	702	1,120	1,200	2,910	2,050	792	1,620	1,200	1,690	2,530	2,820	1,600	1,470	612	764
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<1.27 L	<1.18 L	0.500 L	<1.18 L	<1.32 L	NA	1.10 B	0.750 B	0.860 B	0.830 B	1.00 B	0.740 B	<0.660	<0.740	0.730 B	<0.580	0.850 B	0.780 B	<0.590	<0.640	<0.600
Silver	mg/kg	39.1 {N}	511 {N}	- -	<1.27	<1.18	<1.01	<1.18	<1.32	NA	<0.140	<0.140	<0.130	<0.240	<0.280	<0.120	<0.130	<0.150	<0.120	<0.120	<0.280	<0.120	<0.120	<0.130	<0.120
Sodium	mg/kg	- -	- -	- -	18.0 B	9.70 B	28.3	14.0 B	18.0 B	NA	62.1 B	136 B	84.5 B	72.0 B	72.5 B	75.8 B	80.7 B	101 B	70.6 B	51.2 J	82.7 B	54.2 J	46.0 B	58.4 B	75.8 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.190 J	0.120 J	0.170 J	0.170 J	0.220 J	NA	<0.420	<0.430	<0.380	<0.370	<0.420	<0.360	<0.400	<0.450	<0.350	<0.360	<0.420	<0.350	<0.360	<0.390	<0.360
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**41.0 L**	**35.6 L**	**42.9**	**33.6 L**	**56.5 L**	NA	**46.1**	**48.0**	**53.9**	**80.9**	**74.2**	**63.5**	**63.0**	**46.1**	**66.5**	**62.1**	**84.7**	**63.4**	**58.4**	**37.5**	**43.0**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	17.5 J	11.8 J	449	24.0 J	35.1 J	NA	43.6	459	202	55.9	51.6	28.7	51.9	56.3	48.7	45.5	52.0	41.0	37.2	67.5	34.1
Inorganics - TCLP																									
Arsenic	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	100,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	µg/L	200*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																									
Percent Solids	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	73	71	79	78	76	81	76	67	83	75	74	79	82	76	83
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGSB41A 0 - 0.5 07/19/04	WBGSB42A 0 - 0.5 07/19/04	WBGSB43A 0 - 0.5 07/19/04	WBGSB43B 4 - 5 07/19/04	WBGSB44A 0 - 0.5 07/19/04	WBGSB44B 1 - 2 07/19/04	WBGSB45A 0 - 0.5 07/19/04	WBGSB45B 4 - 5 07/19/04	WBGSB46C 4 - 5 07/19/04	WBGSB47C 5 - 6 07/19/04	WBGSB48C 4 - 5 07/19/04	WBGSB49B 1 - 2 07/19/04	WBGSB50B 3 - 4 07/19/04	WBGSB51B 3 - 4 07/19/04	WBGSB52B 3 - 4 07/19/04	WBGSB53A 0 - 0.5 09/14/04
Dioxin/Furan																				
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD	mg/kg	0.0000043 {C}	0.000019 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																				
Pentaerythritol Tetranitrate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																				
2,4,5-TP	mg/kg	63 {N}	820 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dalapon	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																				
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																				
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																				
Aroclor-1254	mg/kg	0.16 {C}	1.4 {C}	- -	<0.040	<0.043	<0.041	<0.043	<0.040	<0.037	<0.040	<0.042	<0.044	<0.043	<0.043	<0.043	<0.042	<0.041	<0.041	NA
Volatile Organics																				
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
d-Limonene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics																				
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	mg/kg	1,600 {N}	20,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	mg/kg	32 {C}	140 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Octylphthalate	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	mg/kg	130 {C}	580 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-16
Historical Soil Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGSB41A 0 - 0.5 07/19/04	WBGSB42A 0 - 0.5 07/19/04	WBGSB43A 0 - 0.5 07/19/04	WBGSB43B 4 - 5 07/19/04	WBGSB44A 0 - 0.5 07/19/04	WBGSB44B 1 - 2 07/19/04	WBGSB45A 0 - 0.5 07/19/04	WBGSB45B 4 - 5 07/19/04	WBGSB46C 4 - 5 07/19/04	WBGSB47C 5 - 6 07/19/04	WBGSB48C 4 - 5 07/19/04	WBGSB49B 1 - 2 07/19/04	WBGSB50B 3 - 4 07/19/04	WBGSB51B 3 - 4 07/19/04	WBGSB52B 3 - 4 07/19/04	WBGSB53A 0 - 0.5 09/14/04
Inorganics																				
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**27,000**	**29,800**	**17,500**	**31,700**	**23,600**	**13,200**	**19,600**	**31,900**	**31,000**	**53,700**	**31,600**	**23,800**	**38,200**	**29,200**	**26,700**	**24,200**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	0.360 J	<0.320	0.530 L	<0.340	0.320 J	0.330 B	0.560 J	0.600 B	<0.340	0.950 B	1.10 B	0.390 B	<0.600	0.520 B	0.410 B	0.520 B
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**7.20**	**12.9**	**4.50**	**12.6**	**9.80**	**5.30**	**8.70**	**12.7**	**5.90**	**10.1**	**10.3**	**9.90**	**12.8**	**8.00**	**8.70**	**10.3**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	51.6	43.0	90.0	20.6	31.0	35.1	33.6	39.6	58.6	181	95.6	27.0	28.7	62.0	88.1	32.8
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	1.60	1.90	1.30	1.10	0.890	0.550	0.810	1.40	2.70	3.30	1.40	0.880	0.890	1.40	1.80	0.990
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	<0.0290	<0.0340	0.0660 B	<0.0370	<0.0330	<0.0290	<0.0310	<0.0350	<0.0360	0.0900 B	0.0740 B	<0.0300	<0.0640	0.240 B	0.300 J	0.140 J
Calcium	mg/kg	- -	- -	- -	1,600	3,840	3,860	1,060	1,220	1,460	1,020	1,310	1,800	5,180	7,160	733	1,490	5,150	14,700	2,280
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**46.8 J**	**46.1 J**	**102 J**	**49.4 J**	**43.9 J**	21.5 J	**33.2 J**	**44.8 J**	**75.3 J**	**80.6 J**	**57.3 J**	**35.6 J**	**52.2**	**40.3**	**62.8**	**38.4**
Cobalt	mg/kg	- -	- -	72.3	13.3	25.0	11.0	20.2	13.4	7.20	11.5	16.5	23.2	12.9	12.5	7.20	18.0	17.9	9.30	10.3
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	19.3	24.6	12.9	25.8	23.1	9.50	16.6	24.6	40.9	35.5	258	18.1	26.2	19.0	18.7	19.6
Iron	mg/kg	2,346 {N}	30,660 {N}	50,962 {N}	**32,400**	**37,100**	**19,300**	**47,400**	**40,600**	**19,500**	**28,200**	**44,800**	**52,100**	**47,700**	**38,800**	**35,000**	**51,500**	**31,100**	**23,700**	**33,500**
Lead	mg/kg	400	750	26.8	19.3	35.5	19.4	27.2	59.6	19.5	29.1	24.3	17.4	19.8	163	18.6	18.9	17.0	20.7	33.3
Magnesium	mg/kg	- -	- -	- -	4,850	3,490	5,340	1,190	1,260	583	865	1,350	3,270	38,500	7,490	758	1,010	3,880	16,500	1,720 K
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**193**	**238**	**416**	146	**158**	**171**	**184**	**203**	**489**	**294**	**230**	127	**262**	145	**220**	136
Mercury	mg/kg	2.35	30.66	0.13	0.0530 B	0.110 B	0.0320 B	0.110 B	0.0640 B	0.0410 B	0.0590 B	0.0860 B	0.0500 B	0.0330 B	0.0300 B	0.110 B	0.0450	0.0580	0.0650	0.0650
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	24.1	27.1	20.4	22.7	16.4	8.00	13.3	26.8	38.2	47.5	26.7	16.1	21.1	23.0	23.7	16.6
Potassium	mg/kg	- -	- -	- -	1,270	1,600	929 K	1,060	1,030	602	745	1,160	1,020	2,230	1,380	990	1,130	1,480	1,290	1,170 K
Selenium	mg/kg	39.1 {N}	511 {N}	- -	0.740 B	<0.610	<0.560	1.40 J	<0.590	<0.520	0.740 B	1.10 J	<0.670	<0.650	0.610 J	0.840 J	<1.20	0.740 J	<0.600	0.830 J
Silver	mg/kg	39.1 {N}	511 {N}	- -	<0.110	<0.250	<0.110	<0.140	<0.240	<0.110	<0.120	<0.130	<1.40 L	<0.130	<0.120	<0.110	<0.120 L	<0.130 L	<0.120 L	<0.120
Sodium	mg/kg	- -	- -	- -	43.0 B	47.9 B	58.1 B	48.6 B	58.9 B	55.6 B	57.2 B	51.4 B	<33.8	77.6 B	99.8 B	53.9 B	88.4 B	81.6 B	84.4 B	66.5 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	<0.320	<0.370	<0.340	<0.410	<0.360	<0.320	<0.350	<0.390	<0.410	<0.400	<0.360	<0.340	<0.710	<0.380	<0.360	<0.370
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**65.6**	**73.1**	**46.9**	**88.5**	**67.5**	**38.7**	**56.5**	**83.4**	**96.0**	**99.8**	**73.3**	**68.5**	**98.6**	**63.4**	**56.8**	**65.6**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	32.1	41.8	41.9	43.8	68.6	61.6	42.7	38.2	32.0	67.1	315	31.3	37.2	32.4	39.6	35.9
Inorganics - TCLP																				
Arsenic	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	100,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	µg/L	200*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	µg/L	1,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	5,000*	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																				
Percent Solids	%	- -	- -	- -	84	77	82	78	83	89	84	80	76	77	79	78	79	82	82	83
pH	pH Units	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

RBC Risk Based Concentration.
{C} Carcinogen.
{N} Noncarcinogen.
B (Inorganics) Constituent concentration quanitified as estimated.
B (Organics) Constituent was detected in the associated method blank.
J Constituent concentration quanitified as estimated.
K Estimated concentration bias high.
L Estimated concentration bias low.
R Constituent concentration rejected.
NA Not Analyzed.
24,400 Constituent concentration exceeds Adjusted Soil RBC (Residential).
10.6 J Constituent concentration exceeds Adjusted Soil RBC (Industrial).
16 Inorganics constituent concentration exceeds Background Point Estimate.
* TCLP Standard
Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report*, IT Corporation, 2001.

Table 3-17
Historical Sediment Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SD-01 06/04/97	SD-02 06/04/97	WBGSD1 0 - 0.5 07/16/98	WBGSD2 0 - 0.5 07/16/98	WBGSD3 0 - 0.5 07/16/98	WBGSD4 0 - 0.5 05/27/99	WBGSD5 0 - 0.5 05/27/99	WBGSD5-2 0 - 0.5 06/16/99	WBGSD5-2R 0 - 0.5 06/16/99	WBGSD6 0 - 0.5 05/27/99	WBGSD07 0 - 0.5 06/26/02	WBGSD08 0 - 0.5 06/25/02	WBGSD09 0 - 0.5 06/25/02	WBGSD10 0 - 0.5 06/26/02	WBGSD11 0 - 0.5 06/27/02	WBGSD12 0 - 0.5 06/26/02	WBGSD13 0 - 0.5 06/26/02
Dioxin/Furan																					
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00001793	0.00000211 J	0.00002099	0.00002501	0.00007199	0.00003719	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000094	<0.00000017	0.00000285	0.0000053	0.0000063	0.00000177	NA
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000025	<0.00000023	0.00000026	0.00000054 J	<0.00000033	<0.00000024	NA
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000034	<0.00000032	<0.0000003	<0.00000026	0.00000103	0.00000071	NA
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0000002	<0.00000014	0.00000092 J	0.00000168	<0.0000002	<0.00000019	NA
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000027	<0.00000026	<0.00000024	0.00000148	0.00000204 J	0.00000099 J	NA
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000019	<0.00000014	<0.00000014	0.00000173 J	<0.00000019	<0.00000019	NA
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000026	<0.00000026	0.00000093	0.00000155	0.00000239	0.00000144 J	NA
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000023	<0.00000018	<0.00000018	0.00000094 J	<0.00000023	<0.00000022	NA
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000022	<0.00000014	<0.00000013	0.00000141	<0.00000021	<0.00000019	NA
2,3,7,8-TCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000035	<0.00000014	<0.00000015	0.00000283 J	<0.0000003	<0.00000028	NA
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0007224	0.0001412	0.001106	0.001119	0.003422	0.001753	NA
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000244 J	<0.0000003 J	0.00000662 J	0.00001139	0.00001515	0.00000398	NA
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00004226	0.00000315	0.00004811	0.00005053	0.0001538	0.00008485	NA
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000265	<0.00000017	0.00000781	0.00001135	0.00001837	0.00000177	NA
Total HxCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000236	<0.00000026	0.00000397	0.00001213	0.00001657	0.00000876	NA
Total HxCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00000187	<0.00000014	0.00000258	0.00000654	0.00000514	0.00000154	NA
Total PeCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000037	<0.00000022	<0.00000025	<0.00000029	0.00000055	<0.00000023	NA
Total PeCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000021	<0.00000012	<0.00000012	0.00000779	0.00000965	0.00000088	NA
Total TCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000032	<0.00000024	<0.00000022	0.00000233	<0.00000028	<0.00000027	NA
Total TCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00000035	<0.00000014	<0.00000015	0.00003442	<0.0000003	<0.00000028	NA
Explosives																					
1,3,5-Trinitrobenzene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	<0.25	<0.25	<0.25	NA	NA	NA	NA	NA	NA	<0.1	<0.2	<0.2	<0.2	0.41	NA
Nitroglycerine	mg/kg	0.78 {N}	10 {N}	- -	NA	NA	<1.2	<1.2	<1.2	NA	NA	NA	NA	NA	NA	<0.46	<1.03	<1.07	<1.41	0.96 J	NA
Herbicides																					
2,4,5-T	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0153	NA	<0.0178	NA	NA	<0.0379
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.385	NA	<0.0356	NA	NA	<0.0758
Dicamba	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0322 B	NA	<0.0356	NA	NA	<0.0758
MCPP	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.56 B	NA	<17.8	NA	NA	<37.9
Organochlorine Pesticides																					
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00033 J	NA	0.00099 J	NA	NA	0.00152 J
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	ND	R	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00308	NA	0.0027 B	NA	NA	0.00203 B
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00102	NA	0.0119	NA	NA	<0.00253
Alpha-Chlordane	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00021 J	NA	<0.00119	NA	NA	<0.00253
Delta-BHC	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00095 B	NA	<0.00119	NA	NA	<0.00253
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00102	NA	0.00347	NA	NA	<0.00253
Endosulfan II	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00102	NA	0.00161	NA	NA	<0.00253
Endrin Aldehyde	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00102	NA	0.00169	NA	NA	<0.00253
Endrin Ketone	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00102	NA	0.00224	NA	NA	<0.00253
Gamma-Chlordane	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00102	NA	<0.00119	NA	NA	<0.00253
Methoxychlor	mg/kg	39 {N}	510 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00102	NA	<0.00119	NA	NA	<0.00253
PAHs																					
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0022 B	<0.004	0.062	<0.003	<0.004	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0043	<0.004	0.31	<0.003	<0.004	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0043	<0.004	0.021	<0.003	<0.004	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0048	<0.004	0.83	<0.003	<0.004	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.009	<0.004	**4**	<0.003	<0.004	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0057	<0.004	**3.7**	<0.003	<0.004	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0081	<0.004	**4.6**	<0.003	<0.004	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.005 J	<0.004	2.1	<0.003	<0.004	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0033 J	<0.004	1.4	<0.003	<0.004	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0077	<0.004	4.1	<0.003	<0.004	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0043	<0.004	0.56	<0.003	<0.004	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.019	<0.004	4.9	<0.003	0.0026 J	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0027 J	<0.004	0.25 J	<0.003	<0.004	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0038 J	<0.004	**1.6**	<0.003	<0.004	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0017 B	<0.004	0.085	<0.003	<0.004	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.014	<0.004	2.8	<0.003	<0.004	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.015	<0.004	5	<0.003	0.0017 J	NA	NA
PCBs																					
None Detected	- -	- -	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	- -	- -	- -	- -	- -	- -	- -
Volatile Organics																					
2-Butanone	mg/kg	4,700 {N}	61,000 {N}	- -	0.015	0.019	<0.0070	<0.010	<0.010	NA	NA	NA	NA	NA	0.17	<0.0077	<0.0086	<0.0089	0.090	0.18	<0.019
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	0.056 B	0.078 B	0.0030 J	<0.010	0.020 J	NA	NA	NA	NA	NA	0.23 B	<0.0077 J	<0.0086 J	0.048 B	0.14 B	0.20 B	0.10 B
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	NA	NA	<0.0070	<0.010	<0.010	NA	NA	NA	NA	NA	<0.013	<0.0077	<0.0086	0.0012 B	0.0013 B	<0.011	0.0014 B
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	0.0020 B	0.0020 B	<0.0010	<0.0030	<0.0030	NA	NA	NA	NA	NA	<0.013	<0.0077	<0.0086	<0.0089	<0.012	<0.011	<0.019
Toluene	mg/kg	630 {N}	8,200 {N}	- -	0.10	0.010 J	0.0040	0.040	0.010	NA	NA	NA	NA	NA	<0.013	<0.0077	<0.0086	0.0078 J	0.61 J	<0.011	<0.019

See footnotes on last page.

Table 3-17
Historical Sediment Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Sample Depth (ft): / Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	SD-01 06/04/97	SD-02 06/04/97	WBGSD1 0 - 0.5 07/16/98	WBGSD2 0 - 0.5 07/16/98	WBGSD3 0 - 0.5 07/16/98	WBGSD4 0 - 0.5 05/27/99	WBGSD5 0 - 0.5 05/27/99	WBGSD5-2 0 - 0.5 06/16/99	WBGSD5-2R 0 - 0.5 06/16/99	WBGSD6 0 - 0.5 05/27/99	WBGSD07 0 - 0.5 06/26/02	WBGSD08 0 - 0.5 06/25/02	WBGSD09 0 - 0.5 06/25/02	WBGSD10 0 - 0.5 06/26/02	WBGSD11 0 - 0.5 06/27/02	WBGSD12 0 - 0.5 06/26/02	WBGSD13 0 - 0.5 06/26/02
Semivolatile Organics																					
1,2,4-Trichlorobenzene	mg/kg	78 {N}	1,000 {N}	- -	NA	NA	NA	NA	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	<0.43	<0.26	0.012 J	<0.30	<0.40	<0.36	<0.64
1,4-Dichlorobenzene	mg/kg	27 {C}	120 {C}	- -	NA	NA	NA	NA	NA	<0.69	<1.1	NA	NA	<0.93 [<0.85]	<0.43	<0.26	0.012 J	<0.30	<0.40	<0.36	<0.64
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	0.056 J	<0.26	0.012 J	<0.30	<0.40	<0.36	<0.64
4-Methylphenol	mg/kg	39 {N}	510 {N}	- -	0.50 J	0.20 J	<0.42	2.2	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	<0.43	<0.26 L	<0.29 L	<0.30	<0.40	<0.36	<0.64
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	0.16 J	<0.26	<0.29	<0.30	<0.40	<0.36	<0.64
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	0.28 J	<0.26	<0.29	<0.30	<0.40	<0.36	<0.64
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	0.090 J	0.10 J	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	**0.39 J**	<0.26	<0.29	<0.30	<0.40	0.053 J	<0.64
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	**0.090 J**	ND	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	**0.34 J**	<0.26	<0.29	<0.30	<0.40	**0.054 J**	<0.64
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	0.090 J	0.10 J	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	**0.42 J**	<0.26	<0.29	<0.30	<0.40	0.090 J	<0.64
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	0.20 J	<0.26	<0.29	<0.30	<0.40	<0.36	<0.64
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	0.090 J	0.10 J	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	0.15 J	<0.26	<0.29	<0.30	<0.40	0.022 J	<0.64
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	0.060 J	0.18 J	<0.42	<0.92	<0.94	<0.69	0.15	NA	NA	<0.93 [<0.85]	<0.43	<0.26	0.072 B	0.27 B	0.18 B	0.14 B	<0.64
Carbazole	mg/kg	32 {C}	140 {C}	- -	NA	NA	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	0.21 J	<0.26 J	<0.29 J	<0.30 J	<0.40 J	<0.36 J	<0.64 J
Chrysene	mg/kg	22 {C}	390 {C}	- -	0.090 J	0.13 J	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	0.39 J	<0.26	<0.29	<0.30	<0.40	0.065 J	<0.64
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	<0.43	<0.26	<0.29	<0.30	<0.40	<0.36	<0.64
Dibenzofuran	mg/kg	7.8 {N}	100 {N}	- -	NA	NA	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	0.10 J	<1.3	<1.4	<0.30	<0.40	<0.36	<0.64
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.30 J	0.20 J	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	1.1	<0.26	<0.29	<0.30	<0.40	0.13 J	<0.64
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	0.18 J	<0.26	<0.29	<0.30	<0.40	<0.36	<0.64
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	**0.24 J**	<0.26	<0.29	<0.30	<0.40	<0.36	<0.64
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85] [<0.85]	0.27 J	<0.26	<0.29	<0.30	<0.40	<0.36	<0.64
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.12 J	0.15 J	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	1.1	<0.26	<0.29	<0.30	<0.40	0.066 J	<0.64
Phenol	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	<0.43	<0.26	<0.29	<0.30	<0.40	<0.36	<0.64
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.20 J	0.15 J	<0.42	<0.92	<0.94	<0.69	<1.1	NA	NA	<0.93 [<0.85]	0.90	<0.26	<0.29	<0.30	<0.40	0.11 J	<0.64
Inorganics																					
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	7,760	**8,140**	**23,100**	**23,900**	6,720	6,730	5,790	**13,800**	NA	6,010 [6,670]	7,110 J	**29,200**	**12,700**	**18,700 J**	**14,600 J**	**19,300 J**	5,400 J
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	NA	NA	<0.650	<1.30	<1.40	1.20 B	<1.80	<1.60	NA	1.70 B [<1.40]	<1.25 L	<0.760 L	<0.850 L	3.10 L	<1.18 L	0.740 B	<1.89 L
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**5.10**	**4.80**	**10.3**	**10.0**	**2.90**	**3.30 B**	**5.30 B**	**3.90 B**	NA	**4.20 B [4.90 B]**	**1.44 J**	**4.28 J**	**16.6 J**	**5.51 J**	**1.74 J**	**2.32 J**	**30.4 J**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	55.4	68.0 J	96.7 K	65.2 K	47.3 K	46.2 L	72.1 L	67.0 J	NA	50.1 L [50.6 J]	32.3	129	32.8	179	73.3	58.1	94.7
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	1.10	0.700	1.20 B	0.800 B	0.930 B	0.710 K	0.450 K	<0.330 L	NA	0.540 K [0.520]	1.20 J	1.67 B	0.850 B	2.27	0.760 J	0.740 J	0.560 J
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	NA	NA	<0.130	<0.270	<0.280	<0.230	<0.360	<0.330	NA	<0.310 [<0.280]	0.190 J	<0.150	<0.170	2.70	0.140 B	<0.210	<0.370
Calcium	mg/kg	- -	- -	- -	9,190	6,110	2,450 B	30,400	11,800 B	15,700	70,800	56,300	NA	22,300 [23,000]	5,530	1,820 J	28,400 J	27,300	38,500	13,300	14,200
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	**29.9**	20.6	**40.0**	**46.8**	**26.0**	21.9	**39.3**	**96.9**	NA	**25.0 [24.9]**	**116**	**41.2 J**	**39.0 J**	**15,400**	22.4	**26.9**	5.17 B
Cobalt	mg/kg	- -	- -	72.3	5.20	6.50	25.1 K	13.5 K	3.20 K	10.2	5.50	8.30 J	NA	7.30 [8.00]	7.10 J	16.1	8.79	84.1	6.50 J	8.30 J	9.60 J
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	28.3	85.1	15.4 B	18.8 B	15.0 B	18.6 K	24.4	19.8 K	NA	28.7 K [37.2 K]	6.36 J	17.4	8.48	188 J	12.8 J	11.9 J	13.7 J
Iron	mg/kg	5,500 {N}	72,000 {N}	50,962 {N}	**18,500**	**14,200**	**36,800**	**33,900**	**8,530**	**15,300**	**12,700**	**20,100**	NA	**15,500 [16,100]**	**19,700**	**31,200**	**32,700**	**44,100**	**15,600**	**15,200**	**293,000**
Lead	mg/kg	400	750	26.8	23.5	36.6	**28.1**	26.8	18.7	20.8 J	347 J	**899**	378	29.5 J [31.0 J]	22.5	16.3	44.6	**109,000**	29.4	28.5	5.61 B
Magnesium	mg/kg	- -	- -	- -	3,260	1,480	2,140 B	4,010	1,800 B	1,780	3,170	4,350	NA	1,720 [1,830]	1,870	4,810	5,510	4,170	3,580	1,680	863
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	112	**245**	**721**	**165**	25.9	121 K	155 K	144	NA	**238 K [238 K]**	43.6 B	**479**	**339**	**295**	126	**264**	**2,310**
Mercury	mg/kg	2.35	30.66	0.13	NA	NA	<0.140	<0.270	<0.290	<0.230	<0.370	<0.320	NA	<0.300 [<0.270]	<0.120	0.0600 J	0.0300 J	0.0600 J	0.0500 J	0.0500 J	<0.180
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	10.6	8.80	17.9 K	17.9 K	7.70 K	8.70 K	5.00 K	11.2 J	NA	7.00 K [7.60 K]	9.70 J	26.8	9.27	26.7	11.1	12.3	4.40 J
Potassium	mg/kg	- -	- -	- -	435	479	1,350 J	2,210 J	376 B	448	568	1,110 J	NA	440 [498]	290 J	2,160	777	831	734	854	320 J
Selenium	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	<0.650 L	<1.30 L	<1.40 L	<0.930 L	<1.40 L	<1.30	NA	1.30 L [1.30 J]	<2.50 L	<1.53 L	<1.71 L	<1.78 L	1.30 J	0.810 J	<3.79 L
Silver	mg/kg	39.1 {N}	511 {N}	- -	NA	NA	0.790 B	1.60 B	0.950 B	<0.230	<0.360	<0.330	NA	<0.310 [<0.280]	<2.50 L	<1.53	<1.71	8.42 L	<2.35 L	<2.14 L	<3.79 L
Sodium	mg/kg	- -	- -	- -	118	100	194 B	389 B	398 B	292 B	577 B	422 B	NA	516 B [456 B]	85.8	89.0 J	72.0 J	138	133	86.6	164
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.200	0.200	**1.70 B**	<0.540 L	<0.560 L	<1.60	<2.50	<2.30	NA	<2.20 [<2.00]	0.130 J	0.220 B	0.100 B	0.260 J	0.170 J	0.210 J	**0.740 J**
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**30.7**	**27.2**	**66.2 K**	**67.3 K**	**20.1 K**	**33.0 K**	**23.6 K**	**34.8**	NA	**31.4 K [32.1 K]**	**40.6**	**59.3**	**52.2**	**106 J**	**29.6**	**32.4**	**14.0 J**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	69.5	61.2	38.0 B	41.8 B	65.9 B	30.5 K	104 K	**209**	NA	42.0 K [44.3 K]	44.4 J	31.6 J	22.0 J	**17,300**	59.2 J	50.3 J	17.1 J
Miscellaneous																					
Percent Solids	%	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	21,842	39,276	NA	NA	37,330 [35,146]	53,700 K	NA	NA	28,600 K	24,200 K	NA	NA

See footnotes on last page.

Table 3-17
Historical Sediment Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: Sample Depth (ft): Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGSD14 0 - 0.5 06/25/02	WBGSD15 0 - 0.5 06/27/02	WBGSD16 0 - 0.5 07/16/04	WBGSD17 0 - 0.5 07/22/04	WBGSD18 0 - 0.5 07/22/04	WBGSD19 0 - 0.5 07/22/04	WBGSD20 0 - 0.5 07/22/04	WBGSD21 0 - 0.5 07/22/04	WBGSD22 0 - 0.5 07/22/04	WBGSD23 0 - 0.5 09/14/04	WBGSD24 0 - 0.5 09/14/04	WBGSD25 0 - 0.5 09/14/04
Dioxin/Furan																
1,2,3,4,6,7,8-HpCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-HpCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-HxCDD	mg/kg	0.0001 {C}	0.00046 {C}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-HxCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-PeCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDD	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OCDF	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HpCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total HxCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PeCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDDs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total TCDFs	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives																
1,3,5-Trinitrobenzene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitroglycerine	mg/kg	0.78 {N}	10 {N}	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides																
2,4,5-T	mg/kg	78 {N}	1,000 {N}	- -	0.00757 J	<0.214	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-D	mg/kg	78 {N}	1,000 {N}	- -	6.83	<0.427	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba	mg/kg	230 {N}	3,100 {N}	- -	<0.0481	<0.427	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MCPP	mg/kg	7.8 {N}	100 {N}	- -	<24	<214	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organochlorine Pesticides																
4,4'-DDD	mg/kg	2.7 {C}	12 {C}	- -	0.00063 J	<0.00143	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	mg/kg	1.9 {C}	8.4 {C}	- -	<0.0016	0.00152 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	1.9 {C}	8.4 {C}	- -	0.00356	0.00142 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha-Chlordane	mg/kg	- -	- -	- -	<0.0016	0.00071 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Delta-BHC	mg/kg	- -	- -	- -	<0.0016	<0.00143	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	mg/kg	0.04 {C}	0.18 {C}	- -	<0.0016	<0.00143	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	mg/kg	- -	- -	- -	0.00094 J	<0.00143	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	- -	- -	- -	<0.0016	<0.00143	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Ketone	mg/kg	- -	- -	- -	0.00288	<0.00143	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	mg/kg	- -	- -	- -	<0.0016	0.00088 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	mg/kg	39 {N}	510 {N}	- -	0.00637	<0.00143	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs																
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	NA	NA	<0.016	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	NA	NA	<0.016	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	<0.016	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	NA	NA	0.078	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	0.078 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	**0.087 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	0.17	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	NA	NA	0.054 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	NA	NA	0.053 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	NA	NA	0.099 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	NA	NA	<0.016	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	0.18 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	NA	NA	<0.016	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	NA	NA	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	NA	NA	<0.016	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	0.074 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	NA	NA	0.12 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs																
None Detected	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	NA	NA	NA
Volatile Organics																
2-Butanone	mg/kg	4,700 {N}	61,000 {N}	- -	<0.012	<0.011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	mg/kg	7,000 {N}	92,000 {N}	- -	0.037 B	0.077 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	mg/kg	780 {N}	10,000 {N}	- -	0.0015 B	0.0013 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	mg/kg	85 {C}	380 {C}	- -	<0.012	<0.011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	mg/kg	630 {N}	8,200 {N}	- -	<0.012	0.00092 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See footnotes on last page.

Table 3-17
Historical Sediment Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Sample Depth (ft): / Date Collected:	Units	Adjusted Soil RBC (Residential)	Adjusted Soil RBC (Industrial)	Facility-Wide Background Point	WBGSD14 0 - 0.5 06/25/02	WBGSD15 0 - 0.5 06/27/02	WBGSD16 0 - 0.5 07/16/04	WBGSD17 0 - 0.5 07/22/04	WBGSD18 0 - 0.5 07/22/04	WBGSD19 0 - 0.5 07/22/04	WBGSD20 0 - 0.5 07/22/04	WBGSD21 0 - 0.5 07/22/04	WBGSD22 0 - 0.5 07/22/04	WBGSD23 0 - 0.5 09/14/04	WBGSD24 0 - 0.5 09/14/04	WBGSD25 0 - 0.5 09/14/04
Semivolatile Organics																
1,2,4-Trichlorobenzene	mg/kg	78 {N}	1,000 {N}	- -	0.023 J	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	mg/kg	27 {C}	120 {C}	- -	0.049 J	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	mg/kg	31 {N}	410 {N}	- -	0.065 J	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	mg/kg	39 {N}	510 {N}	- -	0.13 L	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	mg/kg	470 {N}	6,100 {N}	- -	0.052 J	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	mg/kg	2,300 {N}	31,000 {N}	- -	0.14 J	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	mg/kg	0.22 {C}	3.9 {C}	- -	**0.56**	0.025 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	0.022 {C}	0.39 {C}	- -	**0.44**	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	0.22 {C}	3.9 {C}	- -	**0.55**	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	mg/kg	- -	- -	- -	0.26 J	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	2.2 {C}	39 {C}	- -	0.15 J	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	46 {C}	200 {C}	- -	0.33 B	0.15 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	mg/kg	32 {C}	140 {C}	- -	0.14 J	<0.36 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	mg/kg	22 {C}	390 {C}	- -	0.56	0.023 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	0.022 {C}	0.39 {C}	- -	0.098 J	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	mg/kg	7.8 {N}	100 {N}	- -	0.039 J	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	mg/kg	310 {N}	4,100 {N}	- -	0.63	0.050 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	mg/kg	310 {N}	4,100 {N}	- -	0.071 J	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	0.22 {C}	3.9 {C}	- -	**0.25 J**	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	mg/kg	160 {N}	2,000 {N}	- -	0.058 J	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	mg/kg	230 {N}	3,100 {N}	- -	0.52	0.026 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	mg/kg	2,300 {N}	31,000 {N}	- -	0.086 B	<0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	230 {N}	3,100 {N}	- -	0.73	0.030 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics																
Aluminum	mg/kg	7,800 {N}	100,000 {N}	40,041	**14,300**	**22,000 J**	**19,300**	**30,900**	**23,800**	**25,400**	**20,100**	**18,800**	**14,400**	**28,500**	**20,000**	**19,300**
Antimony	mg/kg	3.13 {N}	40.88 {N}	- -	0.570 B	<1.07 L	<0.430	<0.470	<0.490 L	0.750 B	0.690 B	<0.460	0.610 B	0.510 B	<0.470	<0.430
Arsenic	mg/kg	0.43 {C}	1.91 {C}	15.8 {C}	**3.38 J**	**3.08 J**	**9.60**	**8.50**	**5.50**	**6.10**	**4.50**	**4.20**	**9.60**	**9.90**	**5.40**	**5.40**
Barium	mg/kg	1,564 {N}	20,440 {N}	209 {N}	113	70.8	63.3	108	105	112	119	113	60.7	60.6	109	95.3
Beryllium	mg/kg	15.6 {N}	204.4 {N}	1.02 {N}	0.890 B	0.950 J	1.10 J	1.70	1.10	1.20	0.900	0.840	0.920	1.90	1.10	1.10
Cadmium	mg/kg	3.9 {N}	51.1 {N}	0.69 {N}	0.150 B	<0.210	<0.0450	0.470 B	0.460 B	0.490 B	0.440 B	0.410 B	0.470 J	0.120 J	0.250 J	0.270 J
Calcium	mg/kg	- -	- -	- -	61,100 J	38,400	14,500	69,900	76,500	65,700	120,000	101,000	25,700	29,200	75,100	63,600
Chromium	mg/kg	23.5 {N}	306.6 {N}	65.3 {N}	21.1 J	**28.4**	**42.7**	**80.6**	**45.6**	**37.8**	**33.0**	**43.1**	**66.8**	**54.7**	**34.2**	**31.4**
Cobalt	mg/kg	- -	- -	72.3	7.60 J	9.30 J	17.2	13.8	7.80	8.10	6.40	6.50	8.10	17.4	7.90	7.30
Copper	mg/kg	312.9 {N}	4,088 {N}	53.5 {N}	11.1	17.2 J	19.3	24.5	19.1	19.2	15.6	15.1	12.0	21.6	17.9	17.9
Iron	mg/kg	5,500 {N}	72,000 {N}	50,962 {N}	**14,200**	**19,300**	**31,500**	**27,000**	**19,900**	**22,100**	**16,400**	**16,400**	**28,600**	**27,700**	**19,400**	**19,300**
Lead	mg/kg	400	750	26.8	18.7	29.0	45.5	**523**	207	95.0	134	276	112	152	79.8	37.6
Magnesium	mg/kg	- -	- -	- -	2,500	10,200	4,200 J	6,610	4,690	5,010	4,170	3,700	1,840	6,820	4,970	4,390
Manganese	mg/kg	156.4 {N}	2,044 {N}	2,543 {N}	**1,540**	**206**	**1,700**	**241**	156	**157**	**191**	**158**	**163**	91.1	143	129
Mercury	mg/kg	2.35	30.66	0.13	0.0900 J	0.0500 J	0.0410 J	0.0670	0.0520	0.0400	0.0330 J	0.0410 J	0.0360	0.0760	0.0550	0.0490 J
Nickel	mg/kg	156.4 {N}	2,044 {N}	62.8 {N}	10.7	17.8	17.0	22.7	16.4	16.5	13.2	12.2	10.9	24.0	14.6	14.2
Potassium	mg/kg	- -	- -	- -	786	1,270	1,140	1,860	1,210 K	1,250	1,060	975	698	2,120	1,290	973
Selenium	mg/kg	39.1 {N}	511 {N}	- -	<2.40 L	<2.14 L	<1.70	<0.910	<0.940	<0.960	<1.00	<0.890	1.20 J	<0.820	<0.910	<0.840
Silver	mg/kg	39.1 {N}	511 {N}	- -	<2.40	<2.14 L	<0.340	<0.190 L	<0.190 L	<0.200 L	<0.210 L	<0.180 L	<0.140 L	<0.170	<0.180	<0.170
Sodium	mg/kg	- -	- -	- -	126 J	176	123 B	237 B	233 B	251 B	243 B	235 B	144 B	182 B	232 B	197 B
Thallium	mg/kg	0.548 {N}	7.154 {N}	2.11 {N}	0.200 B	0.200 J	<1.00	<0.560	<0.570	<0.590	<0.620	<0.540	<0.430	<0.500	<0.550	<0.510
Vanadium	mg/kg	7.8 {N}	102.2 {N}	108 {N}	**22.4**	**41.0**	**52.8**	**55.5**	**41.5**	**43.3**	**35.5**	**33.8**	**57.4**	**56.2**	**38.1**	**37.2**
Zinc	mg/kg	2,346 {N}	30,660 {N}	202 {N}	52.5 J	65.5 J	63.1	165	118	96.3	93.7	121	59.3	59.9	82.2	71.3
Miscellaneous																
Percent Solids	%	- -	- -	- -	NA	NA	42	40	42	41	41	40	52	43	40	42
Total Organic Carbon	mg/kg	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

RBC	Risk Based Concentration.
{C}	Carcinogen.
{N}	Noncarcinogen.
B (Inorganics)	Constituent concentration quanitified as estimated.
B (Organics)	Constituent was detected in the associated method blank.
J	Constituent concentration quanitified as estimated.
K	Estimated concentration bias high.
L	Estimated concentration bias low.
NA	Not Analyzed.
24,400	Constituent concentration exceeds Adjusted Soil RBC (Residential).
10.6 J	Constituent concentration exceeds Adjusted Soil RBC (Industrial).
16	Inorganics constituent concentration exceeds Facility-Wide Background Point Estimate.

Note: Inorganics Facility-Wide Background Point Estimate taken from *Facility-Wide Background Study Report*, IT Corporation, 2001.

Table 3-18
Surface Water Sampling Results, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Name: / Date Collected:	Units	Aquatic Life Freshwater Chronic	Human Health All Other Surface Waters	SW-01 06/05/97	SW-02 06/04/97	WBGSW1 07/16/98	WBGSW2 07/16/98	WBGSW3 07/16/98	WBGSW4 05/27/99	WBGSW5 05/27/99	WBGSW6 05/27/99	WBGSW07 06/26/02	WBGSW08 06/25/02	WBGSW09 06/25/02	WBGSW10 06/26/02	WBGSW13 06/26/02	WBGSW14 06/25/02	WBGSW15 06/27/02
Dioxin/Furan																		
OCDD	pg/L	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	14.06 B	32.93 B	35.04 B	25.24 B	NA	NA	NA
Explosives																		
m-Nitrotoluene	ug/L	- -	- -	NA	NA	<0.5	<0.5 L	<0.5	NA	NA	NA	<0.52	0.36 J	0.38 J	<0.52	NA	NA	NA
Herbicides																		
2,4-D	ug/L	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.68	NA	<0.5	<0.5	3.56	<0.5
MCPP	ug/L	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	54.1 J	NA	<125	<125	<125	<125
Organochlorine Pesticides																		
Dieldrin	ug/L	**0.056**	0.0014	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00521 J	NA	<0.02	0.00358 J	0.00901 J	<0.02
PAHs																		
2-Methylnaphthalene	ug/L	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	0.03 J	<0.05	<0.05	0.03 J	NA	NA	NA
Acenaphthene	ug/L	- -	2,700	NA	NA	NA	NA	<0.1	NA	NA	NA	0.02 J	<0.05	<0.05	<0.05	NA	NA	NA
Anthracene	ug/L	- -	110,000	NA	NA	NA	NA	<0.05	NA	NA	NA	0.02 J	<0.05	<0.05	<0.05	NA	NA	NA
Fluorene	ug/L	- -	14,000	NA	NA	NA	NA	<0.1	NA	NA	NA	0.03 J	<0.05	<0.05	<0.05	NA	NA	NA
Naphthalene	ug/L	- -	- -	NA	NA	NA	NA	<0.1	NA	NA	NA	0.02 B	<0.05	<0.05	0.04 B	NA	NA	NA
Phenanthrene	ug/L	- -	- -	NA	NA	NA	NA	<0.05	NA	NA	NA	0.03 J	<0.05	<0.05	<0.05	NA	NA	NA
Perchlorate																		
Perchlorate	ug/L	- -	- -	NA	NA	NA	NA	NA	<3	<3	<3 [<3]	<1	<1	<1	<1	<1	1.71	<1
PCBs																		
None Detected	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	- -	- -	- -	- -	- -	- -	- -
Volatile Organics																		
2-Butanone	ug/L	- -	- -	NA	NA	<5.0	4.0 J	<5.0	NA	NA	NA	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Acetone	ug/L	- -	- -	NA	NA	<5.0	<5.0	<5.0	NA	NA	NA	2.8 J	<4.0 J	<4.0 J	<4.0 J	<4.0 J	<4.0 J	<4.0 J
Carbon Disulfide	ug/L	- -	- -	NA	NA	<5.0	<5.0	<5.0	NA	NA	NA	0.23 B	0.13 B	0.12 B	0.25 B	0.21 B	0.18 B	0.070 B
Chloroform	ug/L	- -	29,000	NA	NA	<1.0	3.0	<1.0	NA	NA	NA	0.13 J	0.60 J	0.47 J	1.1	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	- -	- -	NA	NA	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	0.12 J	<1.0
Tetrachloroethene	ug/L	- -	89	NA	NA	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	0.16 J	<1.0
Toluene	ug/L	- -	200,000	NA	NA	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	0.21 J	<1.0	<1.0	<1.0
Trichloroethene	ug/L	- -	810	NA	NA	<1.0	<1.0	<1.0	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0	0.11 J	<1.0
Semivolatile Organics																		
1,2-Dichlorobenzene	ug/L	- -	17,000	NA	NA	<10	<10	<10	<10	<10	<10 [<10]	<5.0	<5.0	<5.0	<5.0	0.21 J	<5.0	<5.0
1,3-Dichlorobenzene	ug/L	- -	2,600	NA	NA	NA	NA	NA	<10	<10	<10 [<10]	<5.0	<5.0	<5.0	<5.0	0.21 J	<5.0	<5.0
1,4-Dichlorobenzene	ug/L	- -	2,600	NA	NA	NA	NA	NA	<10	<10	<10 [<10]	<5.0	<5.0	<5.0	<5.0	0.28 J	<5.0	<5.0
Benzoic Acid	ug/L	- -	- -	NA	NA	<50	<50	<50	NA	NA	NA	<25	5.2 J	<25	5.2 J	<25	6.7 J	<25
bis(2-Ethylhexyl)phthalate	ug/L	- -	- -	NA	NA	<10	<10	<10	<10	<10	<10 [<10]	<5.0	<5.0	<5.0	<5.0	<5.0	2.6 J	<5.0
Butylbenzylphthalate	ug/L	- -	5,200	NA	NA	<10	<10	<10	<10	<10	<10 [<10]	<5.0	<5.0	<5.0	<5.0	<5.0	0.63 B	<5.0
Diethylphthalate	ug/L	- -	120,000	NA	NA	1.0 J	<10	<10	<10	<10	<10 [<10]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Di-n-Butylphthalate	ug/L	- -	12,000	NA	NA	<10	<10	<10	<10	0.13 B	<10 [<10]	<5.0	0.60 B	0.91 B	<5.0	<5.0	0.67 B	<5.0
Inorganics																		
Aluminum	ug/L	- -	- -	NA	NA	66.6 B	63.0 B	39.2 B	232 B	67.9 B	91.8 B [81.9 B]	284	200 J	150 J	304	811	120 J	428
Arsenic	ug/L	**150**	- -	NA	NA	<7.00	<7.00	<7.00	<6.00	8.60 B	10.4 K [10.3 K]	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00
Barium	ug/L	- -	- -	NA	NA	79.2 B	73.4 B	54.0 B	56.4 J	63.1 L	63.9 J [63.3 J]	70.7	80.3	80.8	84.9	148	101	110
Beryllium	ug/L	- -	- -	NA	NA	<1.00	<1.00	<1.00	1.10 B	<1.00	<1.00 [<1.00]	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
Calcium	ug/L	- -	- -	73,600	77,200	61,900 B	56,700 B	66,500 B	70,300	73,400	71,100 [71,100]	73,800	59,300	59,000	61,500	90,700	70,700	86,100
Copper	ug/L	**9 {H}**	- -	NA	NA	**19.6 B**	**15.0 B**	**23.5 B**	**20.2 K**	4.10 B	2.20 K [1.10 K]	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Iron	ug/L	- -	- -	ND	297	307 B	434 B	41.6 B	261 J	88.0 B	180 [157]	204	303	281	428	50,900	131	310
Lead	ug/L	**14 {H}**	- -	ND	2.00	<2.00	<2.00	<2.00	<2.00 L	4.00 B	<2.00 L [<2.00 L]	0.370 B	1.20 B	1.30 B	**28.9**	0.170 B	<2.00	0.210 B
Magnesium	ug/L	- -	- -	12,600	13,800	15,300 B	14,200 B	12,100 B	12,900	14,900	15,000 [15,000]	13,900	17,200	17,000	17,100	21,000	15,800	20,200
Manganese	ug/L	- -	- -	ND	26.0	10.2 B	18.5 B	2.00 B	24.0	14.1 K	11.4 J [10.5 J]	5.30 J	10.3	21.7	23.6	1,470	47.4	7.40 J
Nickel	ug/L	**20 {H}**	4,600	NA	NA	1.40 K	1.50 K	<1.00	<1.00	<1.00	<1.00 [<1.00]	<40.0	<40.0	<40.0	<40.0	<40.0	<40.0	<40.0
Potassium	ug/L	- -	- -	2,700	2,610	2,100 B	2,010 B	1,900 B	2,090 J	2,090	2,090 J [2,100 J]	3,710	3,790	3,540	3,820	4,080	2,500 J	3,300
Selenium	ug/L	**5**	11,000	NA	NA	<5.00	<5.00	<5.00	<4.00	<4.00 L	<4.00 [<4.00]	<5.00	<5.00	<5.00	<5.00	<5.00	0.440 B	<5.00
Silver	ug/L	- -	- -	NA	NA	<2.00 J	<2.00 J	<2.00 J	1.20 K	<1.00	1.00 K [<1.00]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Sodium	ug/L	- -	- -	6,540	22,400	29,700	27,800	21,100	25,700	35,000	37,100 [37,100]	22,200	36,600	36,200	35,900	37,600	29,000	63,900
Thallium	ug/L	- -	6.3	NA	NA	5.40 B	<2.00 L	2.30 B	<7.00 L	<7.00	<7.00 L [<7.00 L]	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
Vanadium	ug/L	- -	- -	79.0	75.0	<2.00	<2.00	<2.00	1.20 K	1.20 B	1.10 K [<1.00]	<50.0	<50.0	<50.0	<50.0	<50.0	16.0 J	<50.0
Zinc	ug/L	**120 {H}**	69,000	NA	NA	21.3 B	21.1 B	23.7 B	21.3 K	18.4 B	19.3 K [18.1 K]	18.0 J	<20.0	<20.0	20.6	<20.0	<20.0	<20.0
Miscellaneous																		
Hardness	mg/L	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	242	219	217	224	313	242	298

{H}	Value has not been adjusted for hardness.
B (Inorganics)	Constituent concentration quanitified as estimated.
B (Organics)	Constituent was detected in the associated method blank
J	Constituent concentration quanitified as estimated.
K	Estimated concentration bias high.
L	Estimated concentration bias low.
NA	Not Analyzed.
10.6 J	Constituent concentration exceeds Virginia Surface Water Human Health Standards (All Other Surface Waters)
10.6 J	Constituent concentration exceeds Virginia Surface Water Aquatic Life Freshwater Chronic Standard

Table 3-19
Construction Details
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Monitor Well	General Well Location	Northing* (ft)	Easting* (ft)	Total Depth (ft bls)	Well Bottom (ft msl)	TOC Elevation (ft msl)
BLAMW01	Downgradient and proximal to buildings with conductive flooring	3564530.07	10851995.99	223.5	1862.25	2090.92
BLAMW02	Downgradient of BLA	3564814.00	10851807.48	154.8	1915.53	2077.07
IAAMW01	Downgradient and proximal to buildings with conductive flooring	3568011.29	10850394.64	36.2	2077.23	2118.90
IAAMW02	Downgradient of IAA	3567399.30	10849464.83	162.6	1958.69	2126.63
IAAMW03	Downgradient of IAA	3566913.67	10850758.28	80.7	2008.36	2094.51
IAAMW04	Downgradient of IAA, near unnamed stream	3565504.32	10851159.66	90.5	1927.31	2023.64
NBGMW01	Near the center of former burning area, in area with highest lead concentrations in soil	3569777.80	10851810.48	98.0	2015.24	2118.34
NBGMW02	North of former burning area, near NRU installation boundary	3569872.47	10851804.11	103.4	2004.08	2112.67
WBGMW01	Center of former burning area	3565783.83	10849309.86	28.8	2026.52	2060.38
WBGMW02	Between former burning area and pond	3565612.88	10849437.23	52.0	2006.39	2063.35
WBGMW03	Between former burning area and pond	3565596.35	10849266.40	51.5	1997.04	2053.18

* Coordinates in NAD 1983, US State Plane (Virginia South).
ft Feet.
ft bls Feet below land surface.
ft msl Feet above mean sea level.

Table 3-20
Constituents Detected in Groundwater, June 2007, Sampling Event
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Monitor Well ID: / Date Sampled:	Units	Virginia MCL[1]	Region III RBC[2]	BLAMW01 6/20/2007	BLAMW02 6/21/2007	IAAMW01 6/21/2007	IAAMW02 6/20/2007	IAAMW03 6/20/2007	IAAMW04 6/21/2007	NBGMW01 6/19/2007	NBGMW02 6/19/2007	WBGMW01 6/18/2007	WBGMW02 6/18/2007	WBGMW03 6/19/2007
Dioxin/Furan														
2,3,7,8-TCDF	ng/L	- -	- -	<0.00576	**0.0121 J**	NA	**0.000743 J**	<0.00251	**0.00913 J**	**0.0038 J**	**0.00156 J**	<0.00296	<0.00356	<0.00245
2,3,7,8-TCDD	ng/L	0.03	0.00045	<0.00576	**0.00425 J**	NA	<0.00113	<0.00309	**0.00315 J**	**0.00318 J**	<0.00201	<0.00396	<0.00512	<0.00356
1,2,3,7,8-PECDD	ng/L	- -	- -	<0.00576	**0.00471 J**	NA	<0.00563	<0.00598	**0.00294 J**	**0.00777 J**	**0.00455 J**	<0.00846	<0.00539	<0.00546
1,2,3,4,7,8-HXCDD	ng/L	- -	0.011	<0.00576	<0.00577	NA	<0.00563	<0.00598	<0.00575	**0.00575 J**	**0.00284 J**	<0.00846	<0.00539	<0.00546
1,2,3,6,7,8-HXCDD	ng/L	- -	0.011	<0.00576	<0.00577	NA	<0.00563	<0.00598	<0.00575	**0.00513 J**	**0.00324 J**	<0.00846	<0.00539	<0.00546
1,2,3,7,8,9-HXCDD	ng/L	- -	0.011	<0.00576	<0.00577	NA	<0.00563	<0.00598	<0.00575	**0.00554 J**	**0.00333 J**	<0.00846	<0.00539	<0.00546
1,2,3,4,6,7,8-HPCDD	ng/L	- -	- -	<0.00576	**0.00312 J**	NA	<0.00563	<0.00598	<0.00575	**0.00367 J**	**0.00373 J**	**0.0479 J, B**	<0.00539	<0.00546
OCDD	ng/L	- -	- -	**0.00816 J**	**0.065 J**	NA	**0.00628 J**	**0.0144 J**	**0.0229 J**	**0.0102 J**	**0.0226 J**	**0.395 B**	**0.00688 J**	<0.0109
1,2,3,7,8-PECDF	ng/L	- -	- -	<0.00576	**0.019 J**	NA	**0.000901 J**	**0.00268 J**	**0.0122 J**	**0.00946 J**	**0.00513 J**	<0.00846	<0.00539	<0.00546
2,3,4,7,8-PECDF	ng/L	- -	- -	**0.000968 J**	**0.0158 J**	NA	**0.00115 J**	**0.00211 J**	**0.00975 J**	**0.00738 J**	**0.00431 J**	<0.00846	**0.00205 J**	<0.00546
1,2,3,4,7,8-HXCDF	ng/L	- -	- -	**0.00272 J**	**0.00367 J**	NA	**0.00173 J**	<0.00598	**0.00221 J**	**0.0071 J**	**0.00434 J**	**0.00802 J**	**0.00641 J**	<0.00546
1,2,3,6,7,8-HXCDF	ng/L	- -	- -	**0.00177 J**	**0.0024 J**	NA	**0.0011 J**	<0.00598	**0.00129 J**	**0.00625 J**	**0.00347 J**	**0.00369 J**	<0.00539	<0.00546
2,3,4,6,7,8-HXCDF	ng/L	- -	- -	<0.00576	**0.00199 J**	NA	<0.00563	<0.00598	**0.000989 J**	**0.00419 J**	**0.00261 J**	<0.00846	<0.00539	<0.00546
1,2,3,7,8,9-HXCDF	ng/L	- -	- -	<0.00576	<0.00577	NA	<0.00563	<0.00598	<0.00575	**0.00623 J**	**0.0034 J**	<0.00846	<0.00539	<0.00546
1,2,3,4,6,7,8-HPCDF	ng/L	- -	- -	**0.0121 J**	**0.00245 J**	NA	**0.00426 J**	<0.00598	**0.00138 J**	**0.00609 J**	**0.00457 J**	**0.0308 J, B**	**0.0128 J**	**0.0083 J**
1,2,3,4,7,8,9-HPCDF	ng/L	- -	- -	<0.00576	<0.00577	NA	<0.00563	<0.00598	<0.00575	**0.00412 J**	<0.00583	<0.00846	<0.00615	<0.00546
OCDF	ng/L	- -	- -	**0.0236 J**	<0.0115	NA	**0.00505 J**	<0.012	<0.0115	**0.00763 J**	**0.00758 J**	**0.0926 J, B**	**0.0395 J**	**0.0101 J**
TOTAL TCDD	ng/L	- -	- -	<0.00188	**0.00425 J**	NA	<0.00563	<0.00309	**0.00315 J**	**0.00318 J**	<0.00201	<0.00396	<0.00512	<0.00356
TOTAL PECDD	ng/L	- -	- -	<0.00576	**0.00471 J**	NA	<0.00563	<0.00598	**0.00294 J**	**0.00777 J**	**0.00455 J**	<0.00846	<0.00539	<0.00546
TOTAL HXCDD	ng/L	- -	0.011	<0.00576	<0.00577	NA	<0.00563	<0.00598	<0.00575	**0.0164 J**	**0.00942 J**	**0.0145 J**	<0.00539	<0.00546
TOTAL HPCDD	ng/L	- -	- -	<0.00576	**0.00686 J**	NA	<0.00563	<0.00598	<0.00575	**0.00367 J**	**0.00373 J**	**0.0847 J, B**	<0.00539	<0.00546
TOTAL TCDF	ng/L	- -	- -	<0.00156	**0.0121 J**	NA	**0.000743 J**	<0.00251	**0.00913 J**	**0.0038 J**	**0.00156 J**	<0.00296	<0.00356	<0.00245
TOTAL PECDF	ng/L	- -	- -	**0.00258 J**	**0.0348 J**	NA	**0.00264 J**	**0.00478 J**	**0.0227 J**	**0.0205 J**	**0.00944 J**	**0.00305 J**	**0.0103 J**	<0.00546
TOTAL HXCDF	ng/L	- -	- -	**0.00592 J**	**0.00806 J**	NA	**0.00399 J**	<0.00598	**0.00448 J**	**0.0238 J**	**0.0138 J**	**0.0175 J**	**0.0121 J**	<0.00546
TOTAL HPCDF	ng/L	- -	- -	**0.0147 J**	**0.00245 J**	NA	**0.00426 J**	<0.00598	**0.00138 J**	**0.0102 J**	**0.00457 J**	**0.0376 J, B**	**0.0128 J**	**0.0083 J**
Explosives														
None Detected	- -	- -	- -	- -	- -	NA	- -	- -	- -	- -	- -	- -	- -	- -
Herbicides														
None Detected	- -	- -	- -	- -	- -	NA	- -	- -	- -	- -	- -	NA	- -	- -
Organochloride Pesticides														
None Detected	- -	- -	- -	- -	- -	NA	- -	- -	- -	- -	- -	NA	- -	- -
PAHs														
None Detected	- -	- -	- -	- -	- -	NA	- -	- -	- -	- -	- -	- -	- -	- -
PCBs														
None Detected	- -	- -	- -	- -	- -	NA	- -	- -	- -	- -	- -	NA	- -	- -
Volatile Organics														
Acetone	µg/L	- -	550	<25	**5.4 J**	<25	<25	<25	<25	<25	<25	<25	**5.6 J**	<25
Chloroform	µg/L	80	0.15	<1	<1	<1	<1	<1	<1	<1	<1	**1.2**	<1	<1
Toluene	µg/L	1,000	75	**0.74 J**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Semivolatile Organics														
None Detected	- -	- -	- -	- -	- -	NA	- -	- -	- -	- -	- -	- -	- -	- -
Inorganics														
Aluminum	µg/L	50	3,700	**424**	**4,970**	**3,490**	<200	**875**	**2,850**	**448**	**1,790**	**17,800**	**91 J**	<200
Arsenic	µg/L	10	0.045	<10	<10	**20.9**	<10	<10	<10	**6.3 J**	<10	**8.2 J**	<10	<10
Barium	µg/L	2,000	730	**151 J**	**242**	**105 J**	**240**	**49.7 J**	**41.3 J**	**99.5 J**	**93.9 J**	**130 J**	**81.9 J**	**147 J**
Beryllium	µg/L	4	7.3	<4	<4	**17.7**	<4	**1.2 J**	<4	<4	**1.1 J**	**1.9 J**	<4	<4
Calcium	µg/L	- -	- -	**63,000**	**260,000**	**47,900**	**79,600**	**75,900**	**63,800**	**78,200**	**75,600**	**345,000**	**95,900**	**106,000**
Chromium	µg/L	100	11	**56.9**	**170**	**101**	**4 J**	**35.2**	**17.1**	**17.1**	**20.5**	**48**	**7 J**	**3.8 J**
Cobalt	µg/L	- -	- -	**4.7 J**	**10.5 J**	**30.2 J**	<50	**2.4 J**	**1.5 J**	**5.6 J**	**1.9 J**	**9.3 J**	<50	**2.4 J**
Copper	µg/L	1,300	150	**3.1 J**	**19.3 J**	**42**	<25	<25	**1.3 J**	<25	<25	**17.2 J**	<25	<25
Iron	µg/L	300	2,600	**683**	**7,280**	**83,300**	<300	**1,490**	**4,270**	**470**	**2,470**	**19,200**	<300	<300
Lead	µg/L	15	- -	**3.5 J**	**7.1 J**	**80.9**	**2.9 J**	**2.5 J**	**3.5 J**	**2.9 J**	**1.8 J**	**34.3**	**1.8 J**	**2.2 J**
Magnesium	µg/L	- -	- -	**17,200**	**61,100**	**13,900**	**18,700**	**9,670**	**30,100**	**11,600**	**16,400**	**104,000**	**36,800**	**32700**
Manganese	µg/L	50	73	**29.4**	**151**	**1,790**	**27.3**	**30.1**	**169**	**32.7**	**42.4**	**256**	**15.5**	**6.7 J**
Mercury	µg/L	2	1.1	<1	<1	<1	<1	<1	<1	<1	<1	**0.54 J**	<1	<1
Nickel	µg/L	- -	73	**35.8 J**	**115**	**92.8**	**3.6 J**	**11.8 J**	**11.8 J**	**11.8 J**	**14.2 J**	**22 J**	**5 J**	**5.8 J**
Potassium	µg/L	- -	- -	**4,000 J**	**9,330 J**	**7,790 J**	**3,370 J**	**3,450 J**	**3,820 J**	**4,350 J**	**4,460 J**	**12,000**	**4,440 J**	**4,050 J**
Selenium	µg/L	50	- -	<10	<10	**22.2**	<10	<10	<10	<10	<10	<10	<10	<10
Sodium	µg/L	- -	- -	**3,130 J**	**5,730 J**	**2,850 J**	**6,910 J**	**8,850 J**	**6,860 J**	**2,830 J**	**2,870 J**	**25,600**	**6,940 J**	**6,230 J**
Vanadium	µg/L	- -	3.7	**1.8 J**	**15.3 J**	**112**	<1.1	**3.1 J**	**8.6 J**	**1.5 J**	**5.6 J**	**40.3 J**	**1.1 J**	<50
Zinc	µg/L	5,000	1,100	**17.4 J**	**23.9**	**226**	**5.1 J**	**7.2 J**	**7.9 J**	**9 J**	**13.8 J**	**112**	**10.5 J**	**17.1 J**
Miscellaneous														
Perchlorate	µg/L	- -	2.6	<0.2	<0.2	**0.191 J**	**0.156 J**	<0.2	**0.195 J**	<0.2	**0.176 J**	<0.2	**0.0911 J**	**0.19 J**
Total Organic Carbon	µg/L	- -	- -	<1	**80.7**	NA	**1.1**	<1	<1	<1	<1	**2.2**	**2.3**	**1.4**
Total Organic Halides	µg/L	- -	- -	<50	<50	NA	<50	<50	<50	<50	<50	<50	<50	<50

[1] Virginia Maximum Contaminant Level (based upon Federal MCLs).
[2] USEPA Region III Risk Based Concentration (concentrations for non-carcinogens multiplied by 0.1 to account for potential additive toxic effects).
B This analyte was also detected in the associated method blank.
J Constituent concentration was qualified as estimated.
µg/L Micrograms per liter.
ng/L Nanograms per liter.
NA Not Analyzed.
424 Constituent concentration exceeds the Virginia MCL.
4,970 Constituent concentration exceeds the Region III RBC.

Table 4-1. 2008 Proposed Sampling and Analysis Plan, Building Debris Disposal Trench, New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Media	General Sample Location	Number of Locations	Sample Depths (ft bgs)	Analyses	Sampling Objective
Subsurface Sediment/Soil	Lower Extent of Trench	2	2-3 / 3-4 / 4-5	PAHs	Delineate vertical extent of impacts to trench sediments
Surface Sediment/Soil	Perimeter of Trench Delta	6	0-1	PAHs	Delineate horizontal extent of impacts to delta sediment/soil
Sediment	Unnamed Creek	4	0-0.5	PAHs	Monitor horizontal extent of impacts to creek sediments
Surface Water	Unnamed Creek	4	NA	PAHs	Monitor horizontal extent of impacts to creek water

Table 4-2. 2008 Proposed Sampling and Analysis Plan, Bag Loading Area, New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Media	General Sample Location	Number of Locations	Sample Depths (ft bgs)	Analyses	Sampling Objective
Soil	Perimeter of buildings with conductive flooring	200-400	0 - 0.5	XRF Lead Screening	Delineate horizontal extent of lead impacts to soils around buildings
Soil	Perimeter of buildings with conductive flooring	20-40	0 - 0.5	Metals and Asbestos	Delineate horizontal extent of metals and asbestos impacts to soils around buildings
Soil	Perimeter of buildings with conductive flooring	5	0 - 0.5	TCLP Metals	Define disposal characteristics of soil
Soil	Central portion of the BLA	4	0 - 0.5	PAHs	Delineate PAH detections in central portion of the BLA
Soil	Transformers with previous PCB detects	7	0 - 0.5	PCBs	Delineate horizontal extent of PCB impacts to soils around transformers
Sediment and Surface Water	Underground Utility Vaults	Field Identified Locations	NA	Metals, PAHs, and VOCs	Characterize potential impacts to utility vaults from historical operations at the site

Table 4-3. 2008 Proposed Sampling and Analysis Plan, Igniter Assembly Area, New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Media	General Sample Location	Number of Locations	Sample Depths (ft bgs)	Analyses	Sampling Objective
Soil	Perimeter of buildings with conductive flooring	200-400	0 - 0.5	XRF Lead Screening	Delineate horizontal extent of metals impacts to soils around buildings
Soil	Perimeter of buildings with conductive flooring	20-40	0 - 0.5	Metals and Asbestos	Delineate horizontal extent of metals and asbestos impacts to soils around buildings
Soil	Perimeter of buildings with conductive flooring	5	0 - 0.5	TCLP Metals	Define disposal characteristics of soil
Sediment	Drainage Ditches	4-10	0 - 0.5	XRF lead screening	Delineate horizontal extent of metals impacts within drainage ditches
Sediment	Drainage Ditches	4	0 - 0.5	Metals	Delineate horizontal extent of lead impacts within drainage ditches
Soil	Building 8101 area with previous PCB/PAH detects	3	0 - 0.5	PCBs/PAHs	Delineate horizontal extent of PCB/PAH impacts to surface soils
Sediment and Surface Water	Underground Utility Vaults	Field Identified Locations	NA	Metals, PAHs, and VOCs	Characterize potential impacts to utility vaults from historical operations at the site

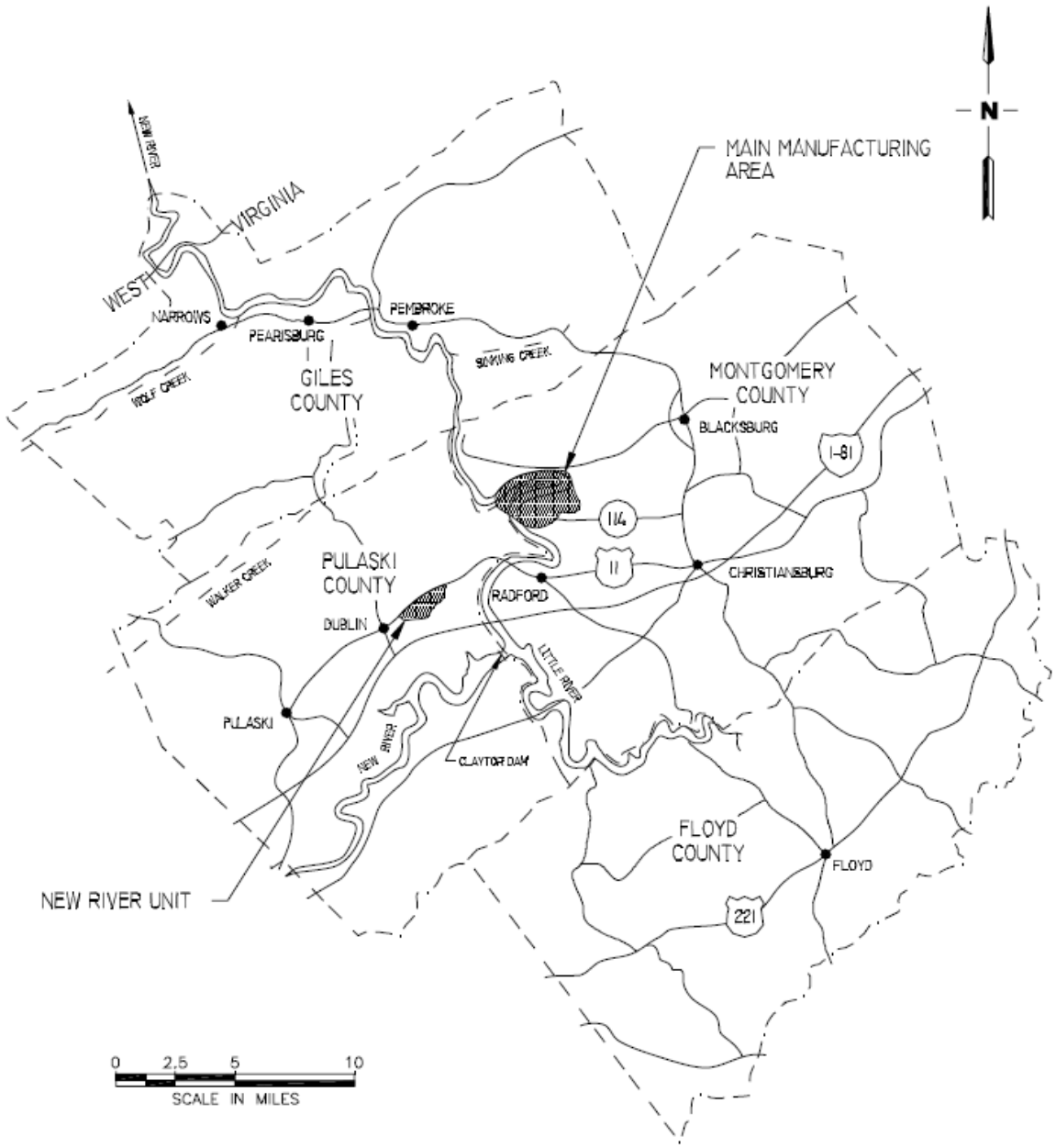
Table 4-4 2008 Proposed Sampling and Analysis Plan, Western Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

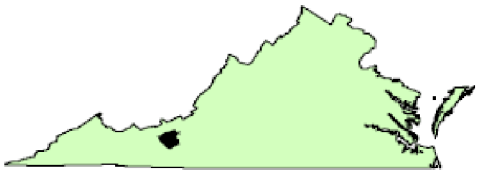
Media	General Sample Location	Number of Locations	Sample Depths (ft bgs)	Analyses	Sampling Objective
Sediment	Northern portion of unnamed pond	4	0-1 / 1-2 / 2-3 / 3-4 (terminating at soil below sediment)	Metals (XRF and Lab)	Delineate vertical extent of lead impacts to sediments/soils in pond
Surface Water	Unnamed pond	4	NA	Metals	Monitor lead impacts to surface water in the unnamed pond
Sediment	Unnamed creek downgradient of pond	2	0-1	PAHs	Monitor horizontal extent of PAH impacts to sediments in unnamed creek
Surface Water	Unnamed creek downgradient of pond	2	NA	PAHs/VOCs	Monitor horizontal extent of PAH impacts to surface water in unnamed creek

Table 4-5. 2008 Proposed Sampling and Analysis Plan, Groundwater
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sampling Point	Sampling Location	Analyses	Sampling Objective
BDDTMW01	East of trench delta, proximal to unnamed stream	TAL Metals, TCL VOCs, TCL SVOCs/PAHs, pesticides/PCBs, herbicides, explosives, dioxins/furans, perchlorate, TOC, and TOX	Determine possible impacts to groundwater
BLAMW01	Existing Monitor Well	TAL Metals	Confirm metal detections from previous sampling event
BLAMW02	Existing Monitor Well	TAL Metals	Confirm metal detections from previous sampling event
IAAMW01	Existing Monitor Well	TAL Metals	Confirm metal detections from previous sampling event
IAAMW02	Existing Monitor Well	TAL Metals	Confirm metal detections from previous sampling event
IAAMW03	Existing Monitor Well	TAL Metals	Confirm metal detections from previous sampling event
IAAMW04	Existing Monitor Well	TAL Metals	Confirm metal detections from previous sampling event
NBGMW01	Existing Monitor Well	TAL Metals	Confirm metal detections from previous sampling event
NBGMW02	Existing Monitor Well	TAL Metals	Confirm metal detections from previous sampling event
WBGMW01	Existing Monitor Well	TAL Metals	Confirm metal detections from previous sampling event
WBGMW02	Existing Monitor Well	TAL Metals	Confirm metal detections from previous sampling event
WBGMW03	Existing Monitor Well	TAL Metals	Confirm metal detections from previous sampling event
Natural Springs	Known spring at headwater of unnamed pond in WBG; any other natural springs found on NRU	TAL Metals, TCL VOCs, TCL SVOCs/PAHs, pesticides/PCBs, herbicides, explosives, dioxins/furans, perchlorate, TOC, and TOX	Determine background groundwater concentrations of all analytes

Figures





Source: Radford Army Ammunition Plant Master Work Plan, URS, 2003

ARCADIS
Infrastructure, environment, facilities

PRJT MANAGER: T. LLEWELLYN	CHECKED BY: C. KALINOWSKI
DRAWING: NRU-SITELOC	
PRJT NO: GP08RAAP.00PM	
DWG DATE: 14APR08	DRAFTER: J. TILLOTSON

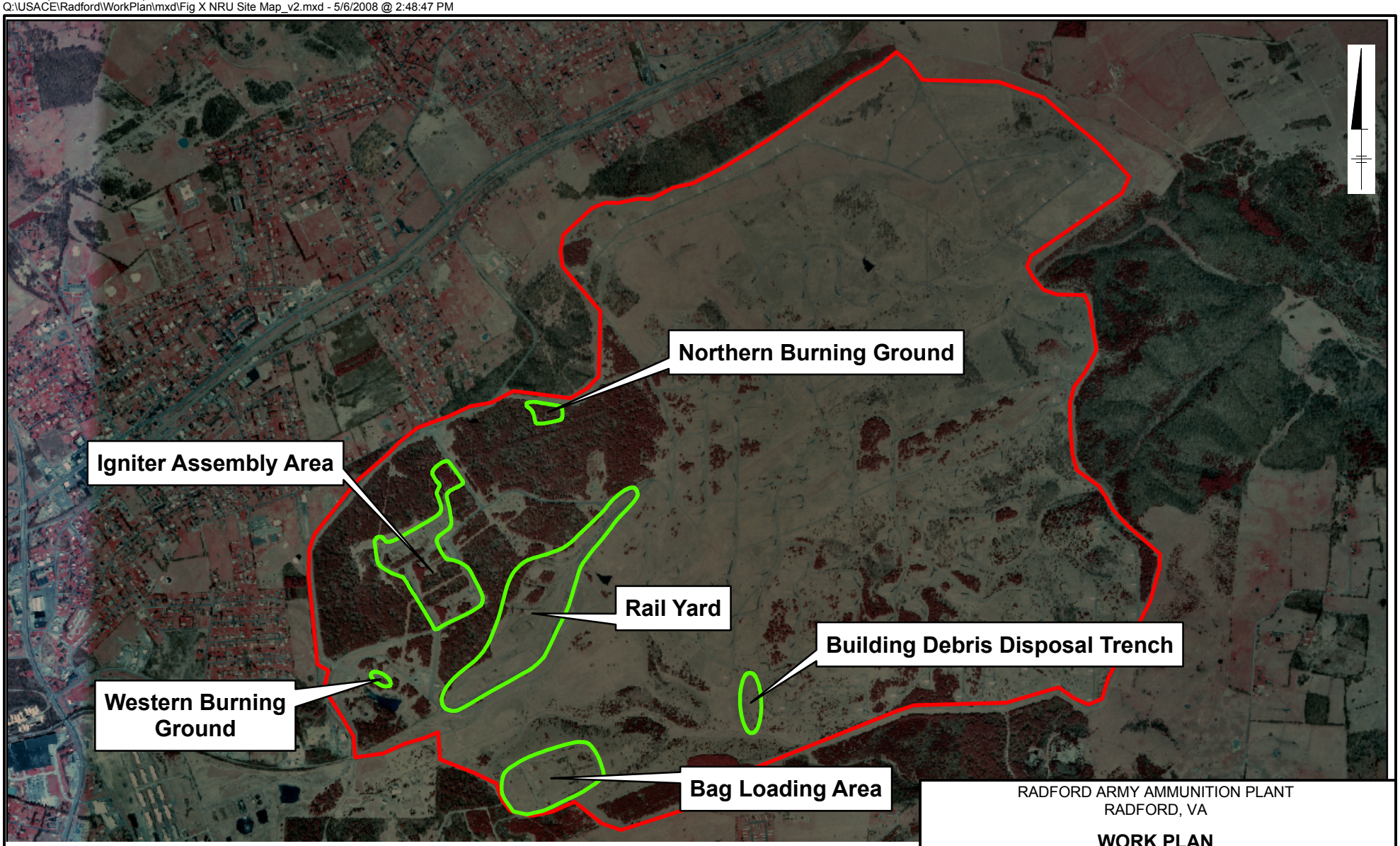
SITE LOCATION

RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

FIGURE NO.

1-1

NYC: SER 4/AIT: DB: TBR KEW LD: TBR PIC: TL
Radford (GP08RAAP.00PM)
Q:\USACE\Radford\WorkPlan\mxd\Fig X NRU Site Map_v2.mxd - 5/6/2008 @ 2:48:47 PM



LEGEND:

SITE BOUNDARY

NRU INSTALLATION BOUNDARY

0 2,000 4,000 Feet

GRAPHIC SCALE

NOTE:

1. GIS SPATIAL LAYERS OBTAINED FROM SHAW ENVIRONMENTAL, INC. AS REFERENCED IN THEIR REPORT TITLED NRU ADDITIONAL CHARACTERIZATION SAMPLING & GROUNDWATER INVESTIGATION DATA REPORT IN OCTOBER 2007.

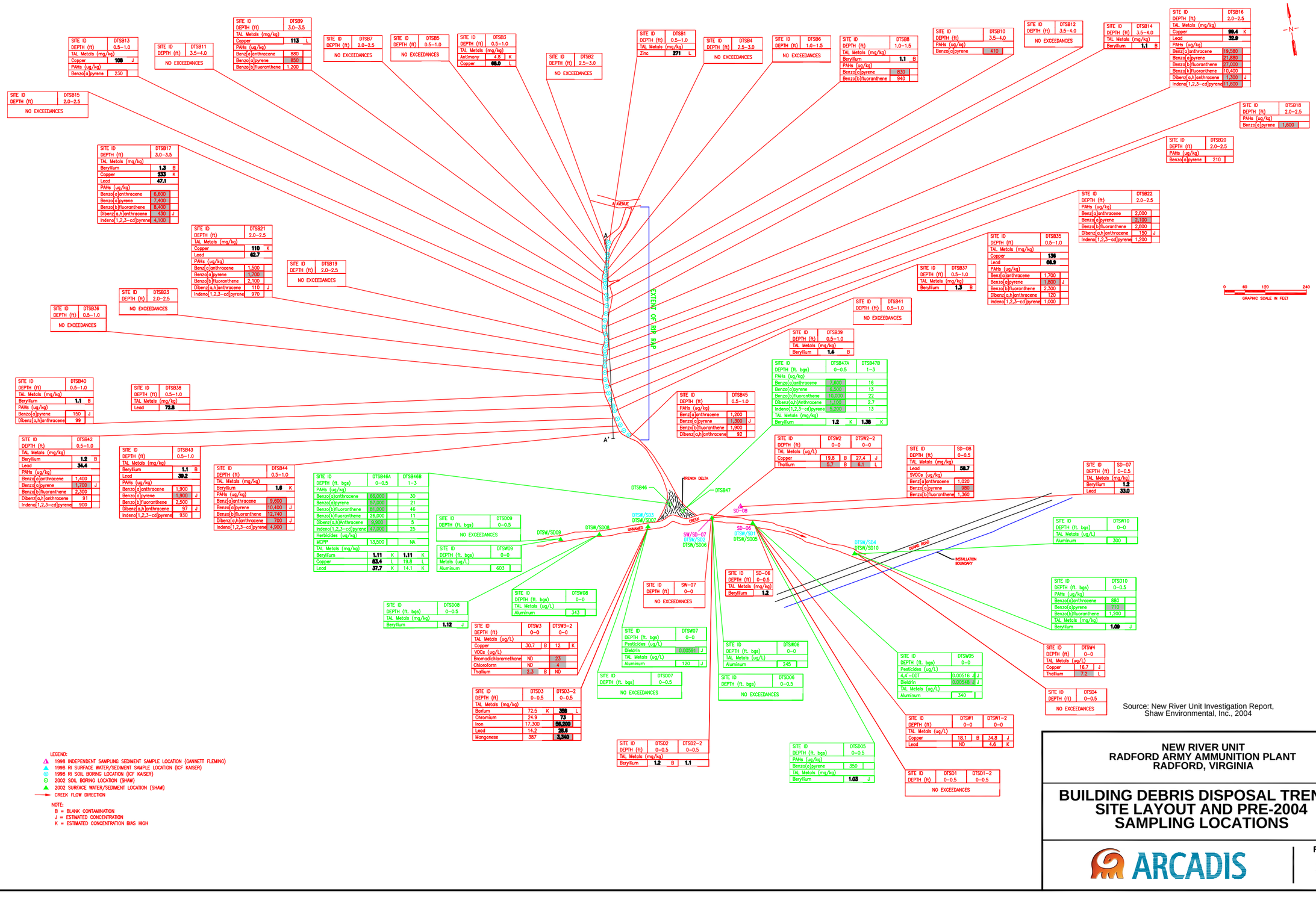
RADFORD ARMY AMMUNITION PLANT
RADFORD, VA

WORK PLAN

NEW RIVER UNIT AREAS OF CONCERN

ARCADIS

FIGURE 1-2



Source: New River Unit Investigation Report, Shaw Environmental, Inc., 2004

NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

BUILDING DEBRIS DISPOSAL TRENCH SITE LAYOUT AND PRE-2004 SAMPLING LOCATIONS

ARCADIS

FIGURE
3-1

2002 Benzo(a)pyrene Residential RBC Detect (Non-Exceedance)

2002 Benzo(a)pyrene Residential RBC Exceedance (> 22 ug/kg)

2004 Benzo(a)pyrene Residential RBC Detect (Non-Exceedance)

2004 Benzo(a)pyrene Residential RBC Exceedance (> 22 ug/kg)

Road

Building Debris Disposal Trench Boundary

NRU Installation Boundary

Note:
1) Aerial photo, dated 25 May 2000, was obtained from the Army Topographic Engineering Center.

N

Scale:

0 112.5 225 450

Feet

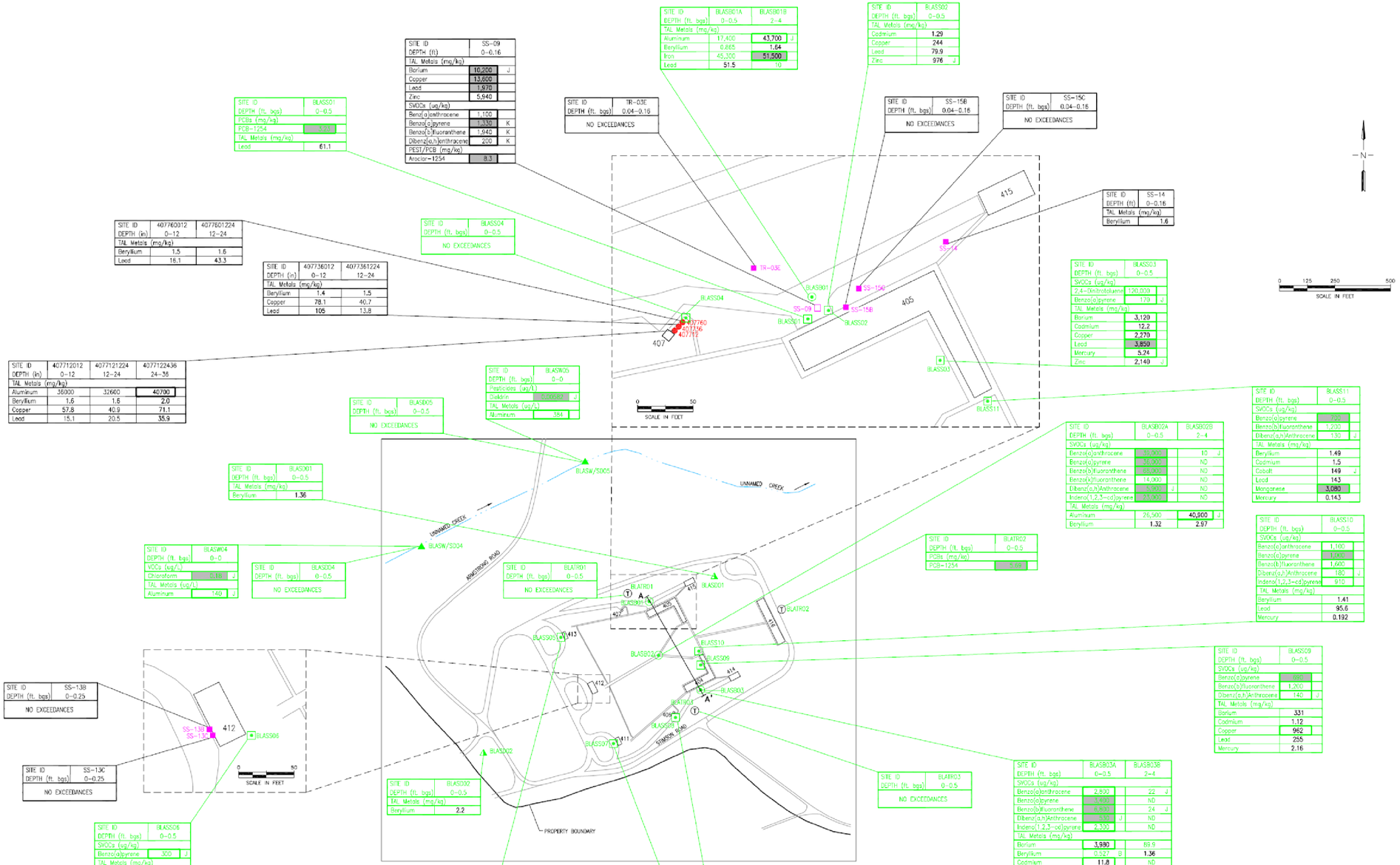
Source: New River Unit Additional Characterization Sampling & Groundwater Investigation Data Report, Shaw Environmental, Inc., 2007

NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

BUILDING DEBRIS DISPOSAL TRENCH 2002 AND 2004 BENZO(A)PYRENE DETECTIONS

ARCADIS

FIGURE
3-2



LEGEND:
- 1997 SOIL SAMPLING (DAMES & MOORE)
- 1997 INDEPENDENT SAMPLING SURFACE SOIL SAMPLE (GANNETT FLEMING)
- 1998 INDEPENDENT SAMPLING SURFACE SOIL SAMPLE (GANNETT FLEMING)
- 2002 SOIL BORING LOCATION (SHAW)
- 2002 SURFACE SOIL LOCATION (SHAW)
- 2002 SURFACE WATER/SEDIMENT LOCATION (SHAW)
- 2002 SEDIMENT LOCATION (SHAW)
- 2002 TRANSFORMER SAMPLE LOCATION (SHAW)

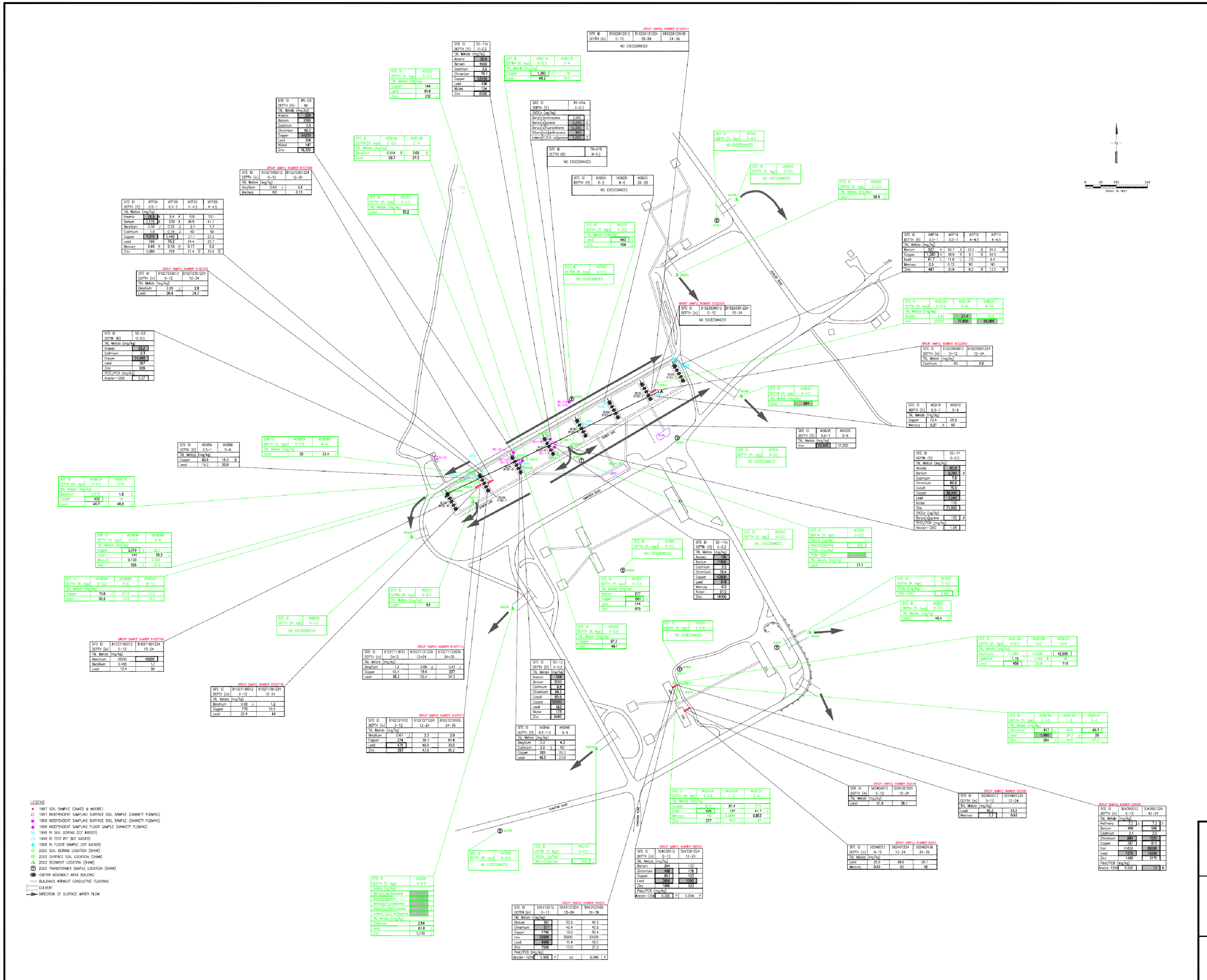
Source: New River Unit Investigation Report, Shaw Environmental, Inc., 2004

NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

BAG LOADING AREA SITE LAYOUT AND HISTORICAL SAMPLING LOCATIONS

ARCADIS

FIGURE
3-3



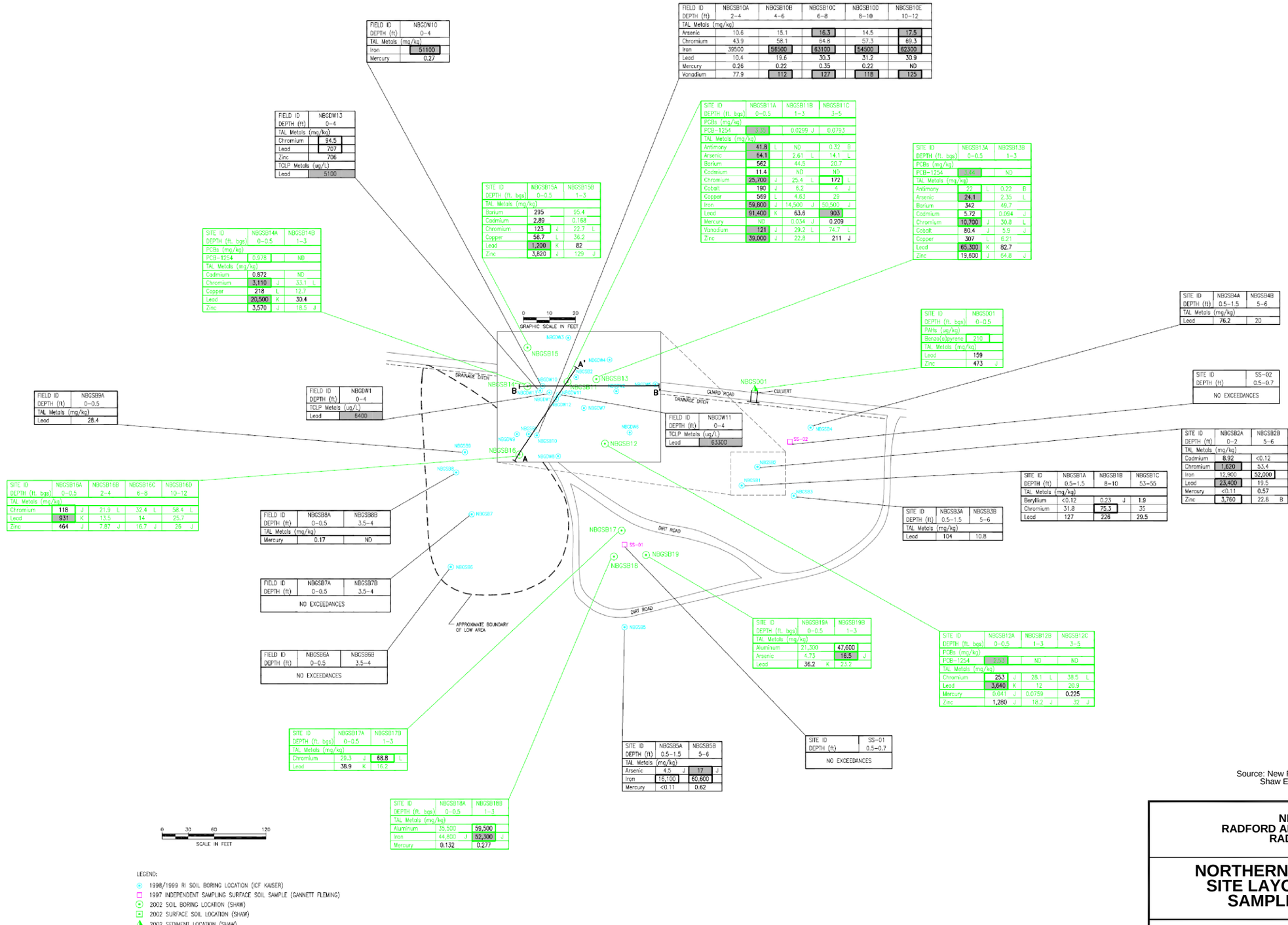
Source: New River Unit Investigation Report,
Shaw Environmental, Inc., 2004

NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

IGNITER ASSEMBLY AREA SITE LAYOUT AND HISTORICAL SAMPLING LOCATIONS

ARCADIS

FIGURE 3-4



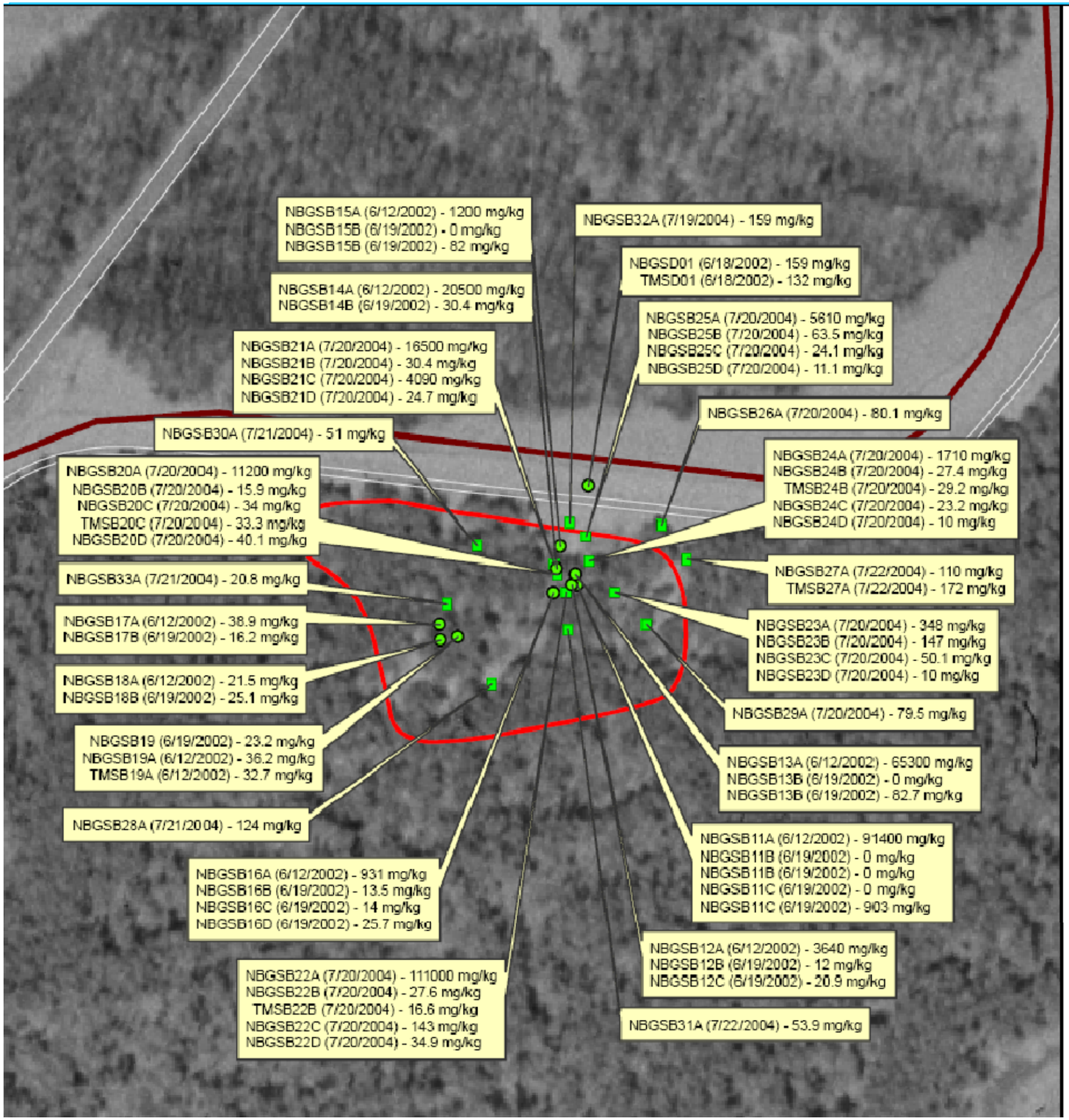
Source: New River Unit Investigation Report, Shaw Environmental, Inc., 2004

NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

NORTHERN BURNING GROUND SITE LAYOUT AND PRE-2004 SAMPLING LOCATIONS

ARCADIS

FIGURE
3-5



LEGEND

- 2004 Lead Detect Sample Location
- 2002 Lead Detect Sample Location
- Road
- Northern Burning Ground Boundary
- NRU Installation Boundary

Note:
1) Aerial photo, dated 25 May 2000, was obtained from the Army Topographic Engineering Center.

N

Scale:

0 100 200 400 Feet

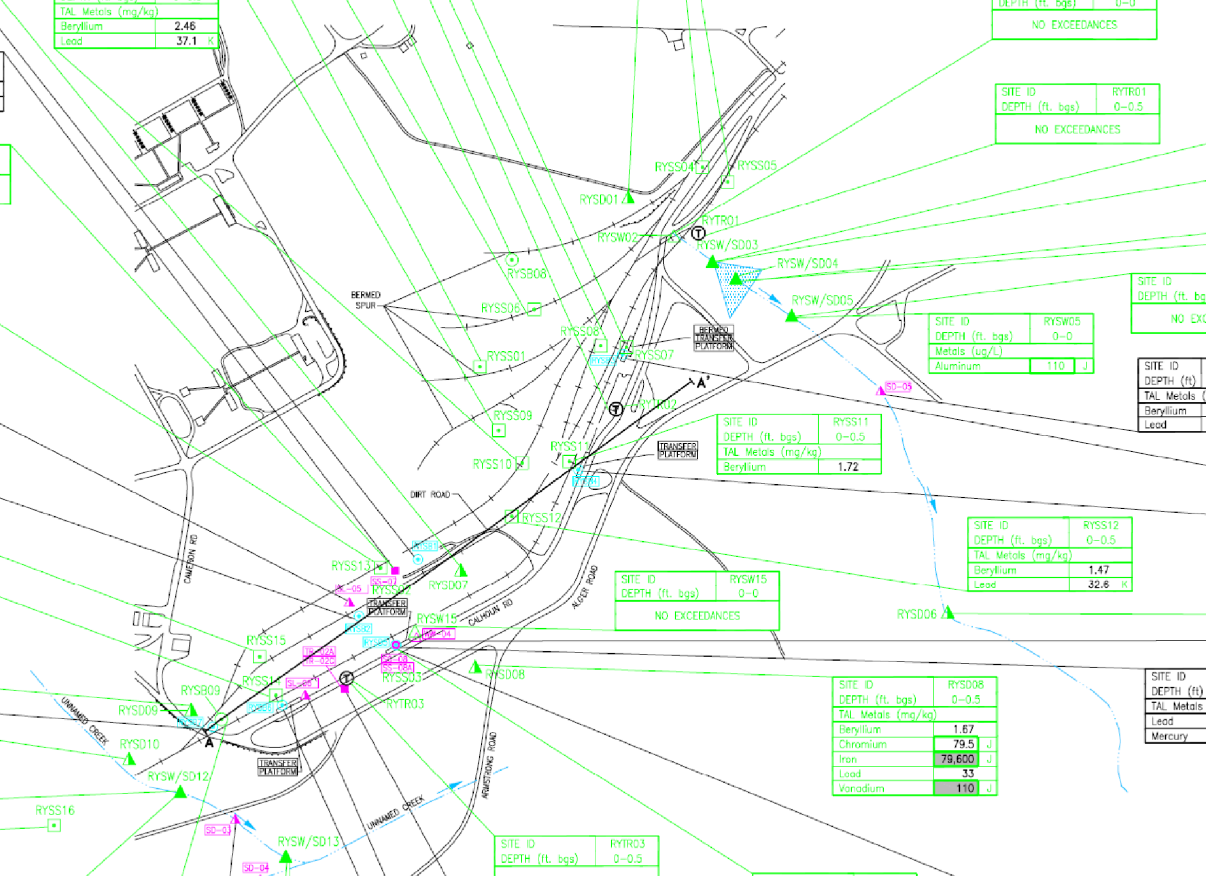
Source: NRU Additional Characterization Sampling & Groundwater Investigation Report, Shaw Environmental, Inc., 2007

NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

NORTHERN BURNING GROUND 2002 AND 2004 LEAD DETECTIONS

ARCADIS

FIGURE
3-6



SITE ID	RYSB08A	RYSB08B
DEPTH (ft. bgs)	0-0.5	4-6
TAL Metals (mg/kg)		
Beryllium	1.39	1.03
Lead	27	11.7

SITE ID	RYTR02
DEPTH (ft. bgs)	0-0.5
PCBs (mg/kg)	
PCB-1254	0.224

SITE ID	RYSD01
DEPTH (ft. bgs)	0-0.5
PAHs (ug/kg)	
Benzo(a)pyrene	110
TAL Metals (mg/kg)	
Beryllium	1.1
Lead	29.7

SITE ID	RYSS06
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Beryllium	1.46

SITE ID	RYSS08
DEPTH (ft. bgs)	0-0.5
NO EXCEEDANCES	

SITE ID	RYSS01
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Beryllium	2.23

SITE ID	RYSD07
DEPTH (ft. bgs)	0-0.5
NO EXCEEDANCES	

SITE ID	RYSS07
DEPTH (ft. bgs)	0-0.5
SVOCs (ug/kg)	
Benzo(a)pyrene	550
PCBs (mg/kg)	
PCB-1254	1.19
TAL Metals (mg/kg)	
Beryllium	1.56

SITE ID	RYSS04
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Beryllium	1.5
Mercury	0.197

SITE ID	RYSS09
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Beryllium	1.63

SITE ID	RYSB1A	RYSB1B	RYSB1C
DEPTH (ft)	0-2	4-8	19-23
TAL Metals (mg/kg)			
Beryllium	<0.1	0.25 J	4.3
Mercury	<0.11	0.46	<0.14

SITE ID	RYSS05
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Lead	26.9 K

SITE ID	RYSS10
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Beryllium	2.46
Lead	37.1 K

SITE ID	RYSW02
DEPTH (ft. bgs)	0-0
NO EXCEEDANCES	

SITE ID	SL-05
DEPTH (ft)	NA
TAL Metals (mg/kg)	
Arsenic	22.3
Beryllium	1.1
Chromium	103
Copper	373
Iron	120,000
Lead	161
Nickel	116

SITE ID	SS-07
DEPTH (ft)	0-0.5
TAL Metals (mg/kg)	
Barium	1,770 J

SITE ID	RYSS13
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Beryllium	1.42
Lead	29.3 K
Mercury	0.137

SITE ID	RYSS02
DEPTH (ft. bgs)	0-0.5
NO EXCEEDANCES	

SITE ID	RYSW03
DEPTH (ft. bgs)	0-0
SVOCs (ug/L)	
Bis(2-ethylhexyl)phthalate	4.8 B
Metals (ug/L)	
Aluminum	462
Manganese	67.8

SITE ID	RYTR01
DEPTH (ft. bgs)	0-0.5
NO EXCEEDANCES	

SITE ID	RYSD03
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Beryllium	1.22 J
Chromium	80.9

SITE ID	RYSD04
DEPTH (ft. bgs)	0-0.5
NO EXCEEDANCES	

SITE ID	RYSW04
DEPTH (ft. bgs)	0-0
SVOCs (ug/L)	
Bis(2-ethylhexyl)phthalate	5.8 B
Metals (ug/L)	
Aluminum	608
Manganese	81.7

SITE ID	RYSD05
DEPTH (ft. bgs)	0-0.5
NO EXCEEDANCES	

SITE ID	RYSW05
DEPTH (ft. bgs)	0-0
Metals (ug/L)	
Aluminum	110 J

SITE ID	RYSB2A	RYSB2B
DEPTH (ft)	0-2	4-6
TAL Metals (mg/kg)		
Mercury	0.14	0.15

SITE ID	SD-05
DEPTH (ft)	NA
TAL Metals (mg/kg)	
Beryllium	1.3
Lead	28.4

SITE ID	RYSB3A	RYSB3B
DEPTH (ft)	1-3	3-4.2
NO EXCEEDANCES		

SITE ID	RYSS15
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Aluminum	43,600
Beryllium	1.84
Mercury	0.165

SITE ID	RYSS11
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Beryllium	1.72

SITE ID	RYSB4A	RYSB4B
DEPTH (ft)	0-4	4-6
TAL Metals (mg/kg)		
Cobalt	74.9 K	74.5 K
Lead	33.7 L	42.1 L
Mercury	<0.14	0.15

SITE ID	RYSS14
DEPTH (ft. bgs)	0-0.5
NO EXCEEDANCES	

SITE ID	RYSS12
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Beryllium	1.47
Lead	32.6 K

SITE ID	RYSD06
DEPTH (ft. bgs)	0-0.5
PAHs (ug/kg)	
Benzo(a)pyrene	170 L

SITE ID	RYSW15
DEPTH (ft. bgs)	0-0
NO EXCEEDANCES	

SITE ID	RYSB7A	RYSB7B
DEPTH (ft)	0-4	4-6
TAL Metals (mg/kg)		
Beryllium	1.4	2.1
Lead	33.9 L	15.5 L
Mercury	0.41	<0.13

SITE ID	RYSD09
DEPTH (ft. bgs)	0-0.5
NO EXCEEDANCES	

SITE ID	WW-04
DEPTH (ft)	NA
TAL Metals (ug/L)	
Aluminum	258
Copper	38
Iron	4,470
Lead	31
Manganese	102
Zinc	274

SITE ID	RYSB5A	RYSB5B
DEPTH (ft)	0-4	4-6
TAL Metals (mg/kg)		
Lead	25.2 L	49.2
Mercury	<0.12	0.14

SITE ID	RYSD08
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Beryllium	1.67
Chromium	79.5 J
Iron	79,600 J
Lead	33
Vanadium	110 J

SITE ID	RYSD10
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Lead	30.3

SITE ID	RYSW12
DEPTH (ft. bgs)	0-0
VOCs (ug/L)	
Chloroform	0.36 J
Pesticides (ug/L)	
Dieldrin	0.00719 J
Herbicides (ug/L)	
MCPP	48.3 J
Metals (ug/L)	
Aluminum	130 J

SITE ID	RYSS16
DEPTH (ft. bgs)	0-0.5
TAL Metals (mg/kg)	
Beryllium	1.5

SITE ID	RYTR03
DEPTH (ft. bgs)	0-0.5
NO EXCEEDANCES	

SITE ID	RYSS03
DEPTH (ft. bgs)	0-0.5
PCBs (mg/kg)	
PCB-1254	0.377

SITE ID	SS-08	SS-08a
DEPTH (ft)	0-0.5	0.25-0.5
TAL Metals (mg/kg)		
Arsenic	20.8	8.9
Beryllium	1.3	1.4
Cadmium	1.8	0.8
Copper	60.2	31
Lead	149	52.6
Mercury	ND	0.2
Zinc	752	159
PEST/PCB (mg/kg)		
Aroclor-1254	1.7	1.0

SITE ID	RYSD12
DEPTH (ft. bgs)	0-0.5
NO EXCEEDANCES	

SITE ID	TR-02A	TR-02C
DEPTH (ft)	0-0.16	0-0.16
SVOCs (ug/kg)		
Benzo[a]pyrene	400 J	ND
Benzo[b]fluoranthene	1,010	ND
Pentachlorophenol	110 J	826,000 C
PEST/PCB (ug/kg)		
Dieldrin	ND	270

SITE ID	RYSB09A	RYSB09B	RYSB09C
DEPTH (ft)	0-0.5	4-6	8-10
NO EXCEEDANCES			

SITE ID	RYSD13
DEPTH (ft. bgs)	0-0.5
NO EXCEEDANCES	

SITE ID	SD-03
DEPTH (ft)	0-0.5
NO EXCEEDANCES	

SITE ID	RYSB6A	RYSB6B
DEPTH (ft)	0-4	4-6
TAL Metals (mg/kg)		
Beryllium	1.5	0.84

SITE ID	SL-08
DEPTH (ft)	0-0.5
TAL Metals (mg/kg)	
Beryllium	1.1
Cadmium	1.2
Lead	94.1
Zinc	675

SITE ID	RYSW13
DEPTH (ft. bgs)	0-0
VOCs (ug/L)	
Chloroform	0.36 J
Pesticides (ug/L)	
4,4'-DDT	0.0101 J
Dieldrin	0.0063 J
Metals (ug/L)	
Aluminum	150 J

SITE ID	SD-04
DEPTH (ft)	0-0.5
NO EXCEEDANCES	

0 200 400 800
SCALE IN FEET

LEGEND
- 1997/1998 INDEPENDENT SAMPLING SURFACE SOIL SAMPLE (GANNETT FLEMING)
- 1997/1998 INDEPENDENT SAMPLING SEDIMENT/SLUDGE SAMPLE (GANNETT FLEMING)
- 1998 INDEPENDENT SAMPLING SURFACE WATER SAMPLE (GANNETT FLEMING)
- 1998 RI SOIL BORING (ICF KAISER)
- 2002 SOIL BORING LOCATION (SHAW)
- 2002 SURFACE SOIL LOCATION (SHAW)
- 2002 SURFACE WATER LOCATION (SHAW)
- 2002 SURFACE WATER/SEDIMENT LOCATION (SHAW)
- 2002 SEDIMENT LOCATION (SHAW)
- 2002 TRANSFORMER SAMPLE LOCATION (SHAW)
- CREEK FLOW DIRECTION
- POND

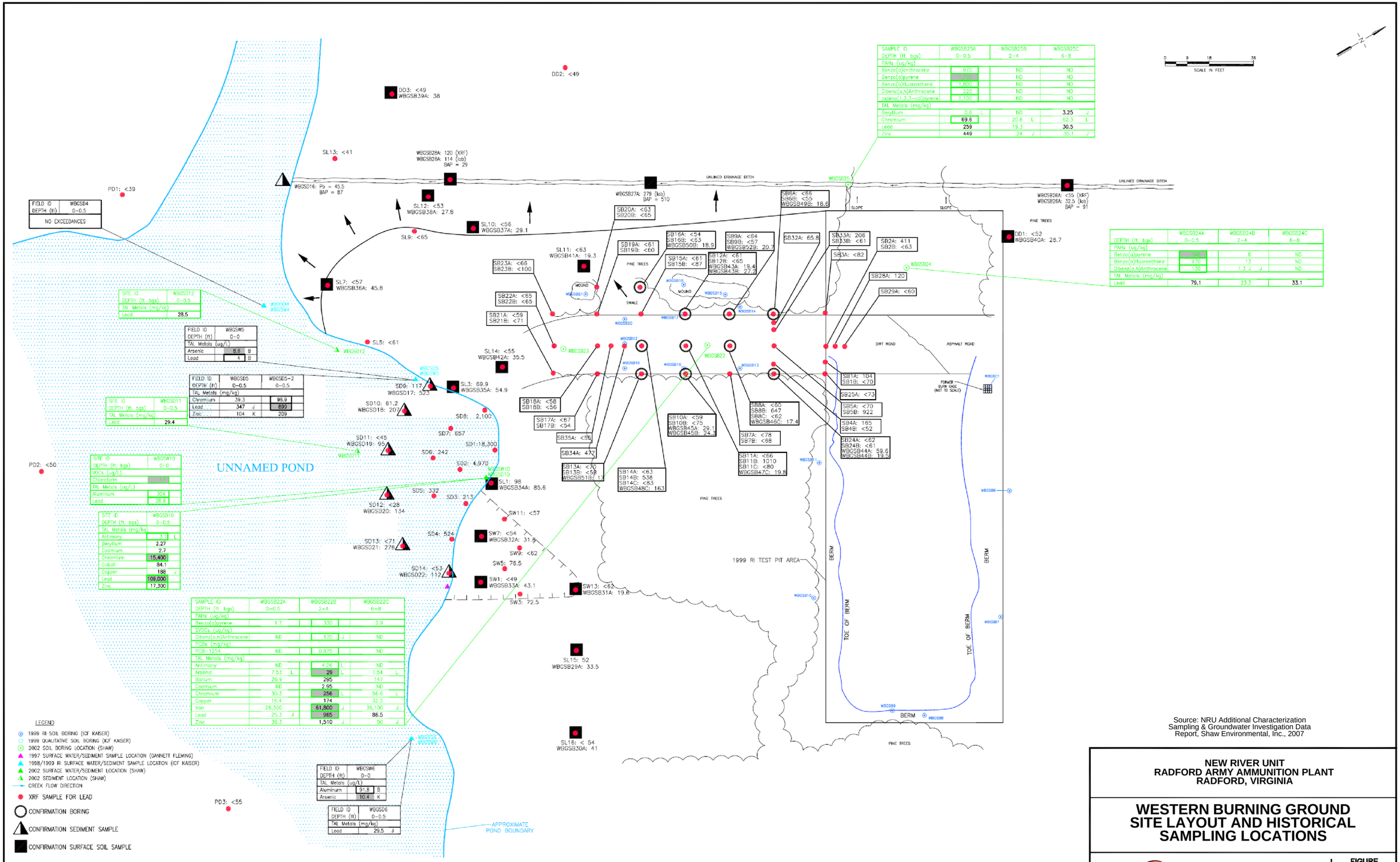
Source: New River Unit Investigation Report,
Shaw Environmental, Inc., 2004

NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

RAIL YARD SITE LAYOUT AND HISTORICAL SAMPLING LOCATIONS

ARCADIS

FIGURE
3-7



FIELD ID	WBGSD4
DEPTH (ft)	0–0.5
NO EXCEEDANCES	

SITE ID	WBGSD12
DEPTH (ft. bgs)	0–0.5
TAL Metals (mg/kg)	
Lead	28.5

FIELD ID	WBGSW5	
DEPTH (ft)	0–0	
TAL Metals (ug/L)		
Arsenic	8.6	B
Lead	4	B

FIELD ID	WBGSD5	WBGSD5-2
DEPTH (ft)	0–0.5	0–0.5
TAL Metals (mg/kg)		
Chromium	39.3	99.9
Lead	347 J	899
Zinc	104 K	209

SITE ID	WBGSD11
DEPTH (ft. bgs)	0–0.5
TAL Metals (mg/kg)	
Lead	29.4

SITE ID	WBGSW10
DEPTH (ft. bgs)	0–0
VOCs (ug/L)	
Chloroform	1.0
TAL Metals (ug/L)	
Aluminum	304
Lead	28.9

SITE ID	WBGSD10	
DEPTH (ft. bgs)	0–0.5	
TAL Metals (mg/kg)		
Antimony	1.1	L
Beryllium	2.27	
Cadmium	2.7	
Chromium	15,400	
Cobalt	84.1	
Copper	188	J
Lead	109,000	
Zinc	17,300	

SAMPLE ID	WBGSB22A		WBGSB22B		WBGSB22C	
DEPTH (ft. bgs)	0–0.5		2–4		6–8	
PAHs (ug/kg)						
Benzo(a)pyrene	1.7		330		2.9	
SVOCs (ug/kg)						
Dibenz(a,h)Anthracene	ND		170	J	ND	
PCBs (mg/kg)						
PCB-1254	ND		0.875		ND	
TAL Metals (mg/kg)						
Antimony	ND		4.26	L	ND	
Arsenic	7.53	L	29	L	7.54	L
Barium	26.9		295		147	
Cadmium	ND		2.95		ND	
Chromium	30.3		256	L	56.6	L
Copper	16.4		174		32.5	
Iron	26,300		61,800	J	35,100	J
Lead	25.3	J	985		86.5	J
Zinc	36.3		1,510	J	90	J

SAMPLE ID	WBGSB25A		WBGSB25B		WBGSB25C	
DEPTH (ft. bgs)	0–0.5		2–4		6–8	
PAHs (ug/kg)						
Benzo(a)anthracene	970		ND		ND	
Benzo(a)pyrene	1,130		ND		ND	
Benzo(b)fluoranthene	1,800		ND		ND	
Dibenz(a,h)Anthracene	220		ND		ND	
Indeno(1,2,3-cd)pyrene	1,100		ND		ND	
TAL Metals (mg/kg)						
Beryllium	0.6	L	ND		3.25	J
Chromium	69.6		20.8	L	62.3	L
Lead	259		19.3		30.5	
Zinc	449		24	J	35.1	J

DEPTH (ft. bgs)	WBGSB24A 0–0.5	WBGSB24B 2–4	WBGSB24C 6–8
PAHs (ug/kg)			
Benzo(a)pyrene	340	6	ND
Benzo(b)fluoranthene	970	13	ND
Dibenz(a,h)Anthracene	130	1.3 J	ND
TAL Metals (mg/kg)			
Lead	79.1	23.3	33.1

FIELD ID	WBGSW6	
DEPTH (ft)	0–0	
TAL Metals (ug/L)		
Aluminum	91.8	B
Arsenic	10.4	K

FIELD ID	WBGSD6
DEPTH (ft)	0–0.5
TAL Metals (mg/kg)	
Lead	29.5 J

LEGEND

- 1999 RI SOIL BORING (ICF KAISER)
- 1999 QUALITATIVE SOIL BORING (ICF KAISER)
- 2002 SOIL BORING LOCATION (SHAW)
- 1997 SURFACE WATER/SEDIMENT SAMPLE LOCATION (GANNETT FLEMING)
- 1998/1999 RI SURFACE WATER/SEDIMENT SAMPLE LOCATION (ICF KAISER)
- 2002 SURFACE WATER/SEDIMENT LOCATION (SHAW)
- 2002 SEDIMENT LOCATION (SHAW)
- CREEK FLOW DIRECTION
- XRF SAMPLE FOR LEAD
- CONFIRMATION BORING
- CONFIRMATION SEDIMENT SAMPLE
- CONFIRMATION SURFACE SOIL SAMPLE

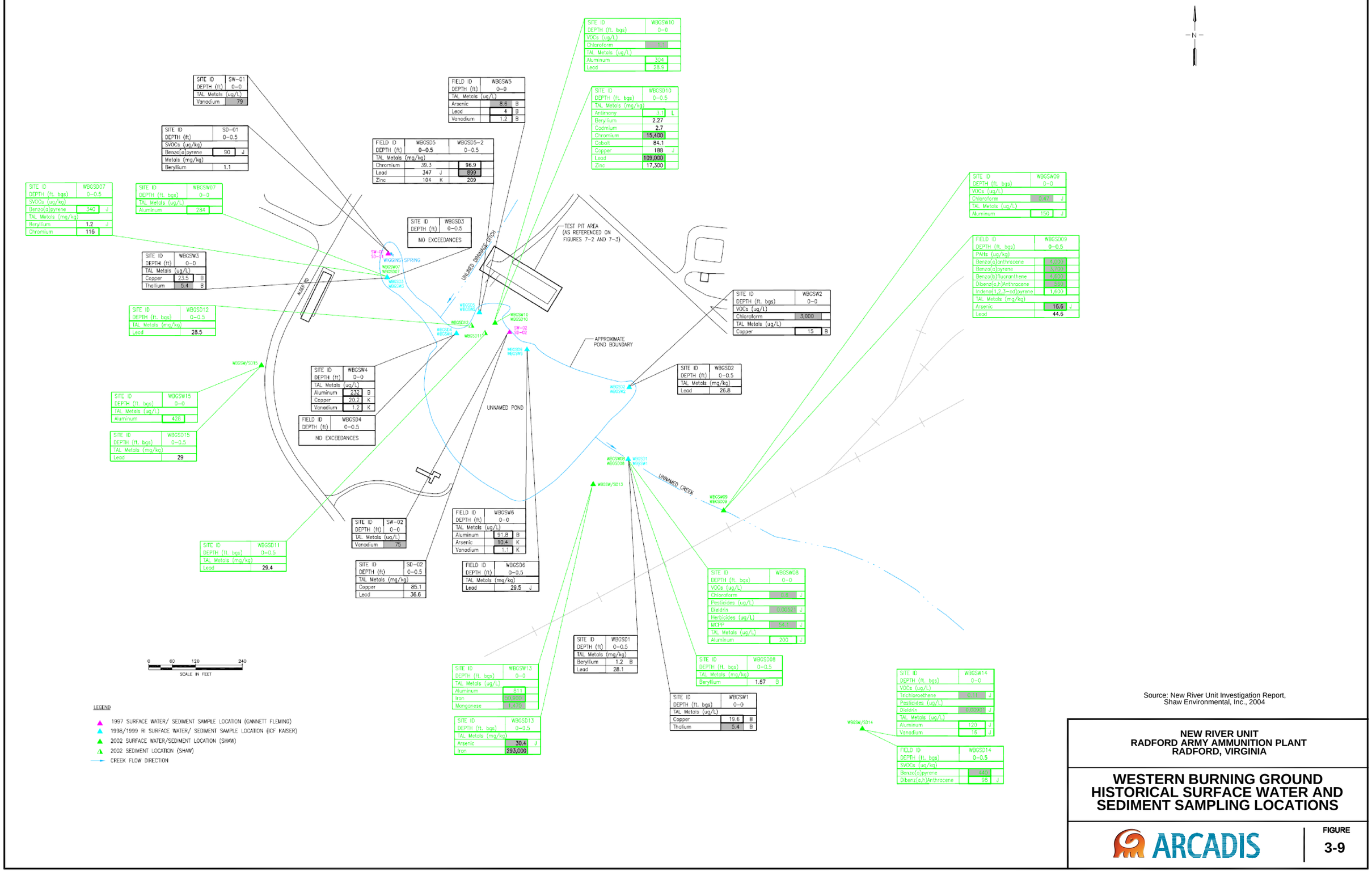
Source: NRU Additional Characterization Sampling & Groundwater Investigation Data Report, Shaw Environmental, Inc., 2007

NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

WESTERN BURNING GROUND SITE LAYOUT AND HISTORICAL SAMPLING LOCATIONS

ARCADIS

FIGURE 3-8



Source: New River Unit Investigation Report, Shaw Environmental, Inc., 2004

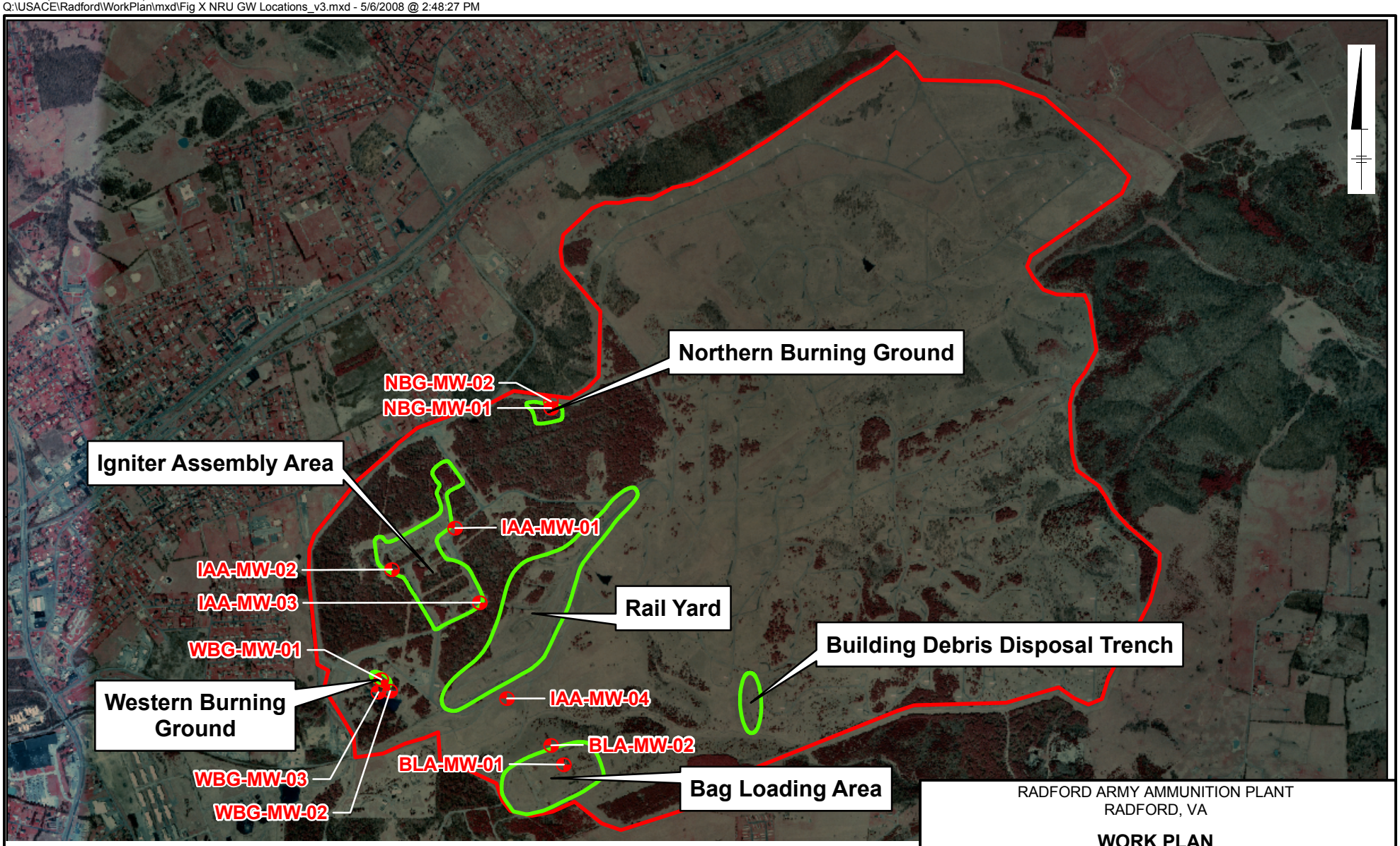
NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

WESTERN BURNING GROUND HISTORICAL SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS

ARCADIS

FIGURE
3-9

NYC: SER 4/AIT: DB: TBR KEW LD: TBR PIC: TL
Radford (GP08RAAP.00PM)
Q:\USACE\Radford\WorkPlan\mxd\Fig X NRU GW Locations_v3.mxd - 5/6/2008 @ 2:48:27 PM



LEGEND:

GROUNDWATER MONITOR WELL LOCATION

SITE BOUNDARY

NRU INSTALLATION BOUNDARY

0 2,000 4,000 Feet

GRAPHIC SCALE

NOTE:

1. GIS SPATIAL LAYERS OBTAINED FROM SHAW ENVIRONMENTAL, INC. AS REFERENCED IN THEIR REPORT TITLED NRU ADDITIONAL CHARACTERIZATION SAMPLING & GROUNDWATER INVESTIGATION DATA REPORT IN OCTOBER 2007.

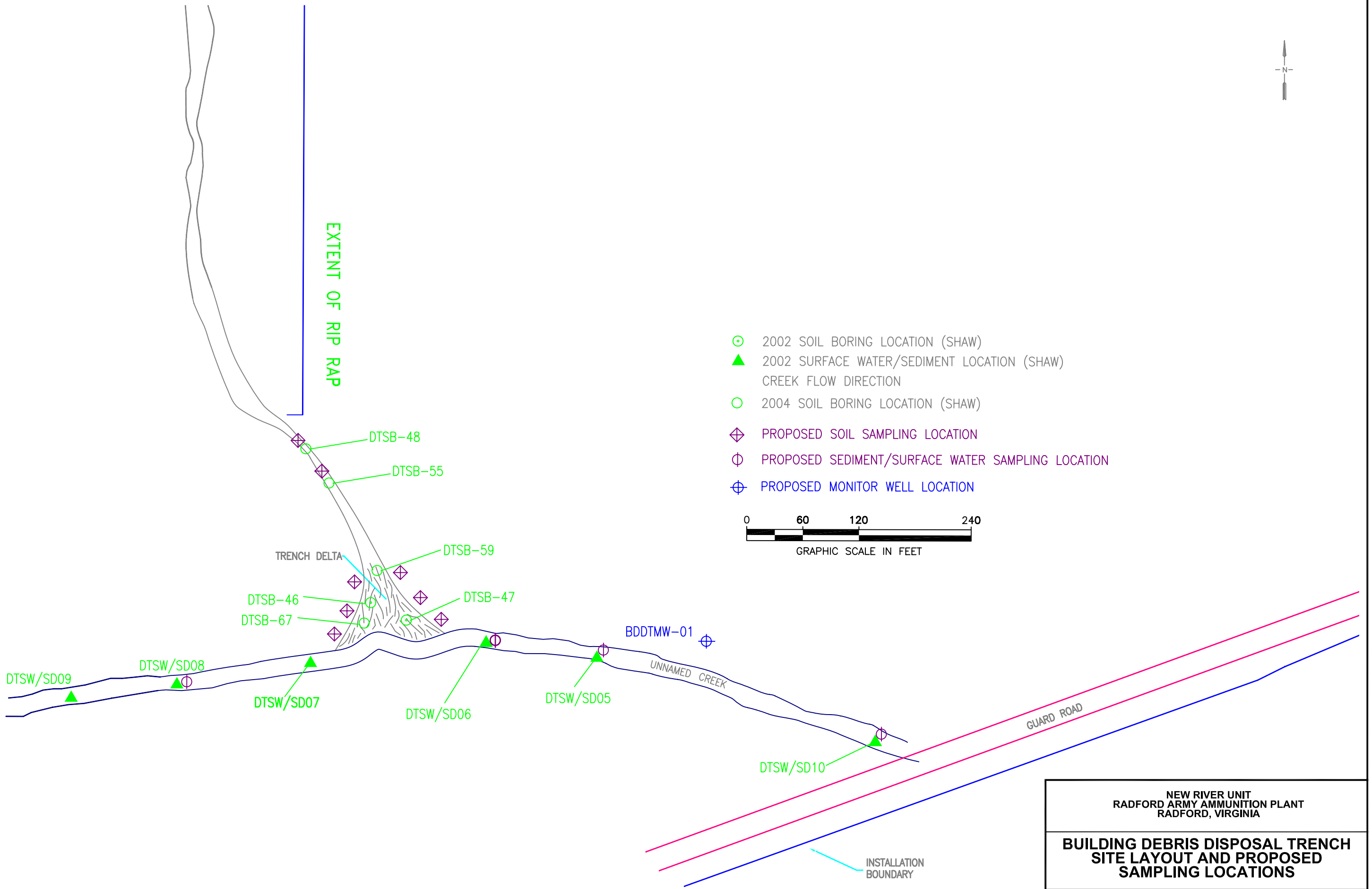
RADFORD ARMY AMMUNITION PLANT
RADFORD, VA

WORK PLAN

NEW RIVER UNIT GROUNDWATER MONITORING WELL LOCATIONS

ARCADIS

FIGURE 3-10

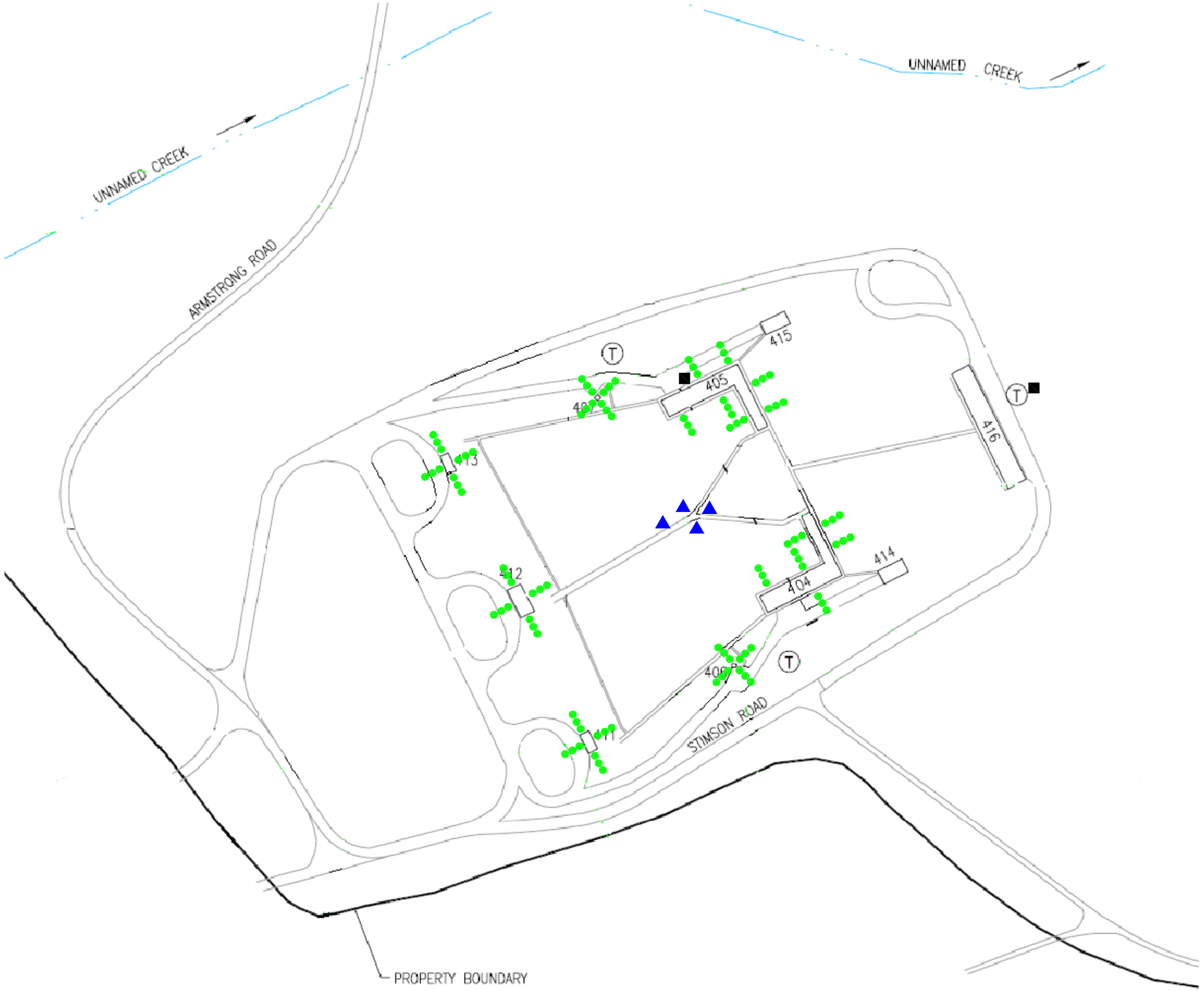


NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

BUILDING DEBRIS DISPOSAL TRENCH SITE LAYOUT AND PROPOSED SAMPLING LOCATIONS

ARCADIS

FIGURE
4-1



LEGEND

- PROPOSED XRF SCREENING LOCATION
- PROPOSED PCB CONFIRMATION SAMPLING LOCATION
- PROPOSED PAH CONFIRMATION SAMPLING LOCATION

NOTE: SAMPLING LOCATIONS NOT DRAWN TO SCALE

NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

BAG LOADING AREA
PROPOSED SAMPLING LOCATIONS

ARCADIS

FIGURE
4-2

LEGEND

- PROPOSED XRF SOIL SCREENING LOCATION
- ▲ PROPOSED SOIL BORING LOCATIONS FOR PAH AND PCB ANALYSIS
- ■ PROPOSED XRF SEDIMENT SCREENING LOCATION

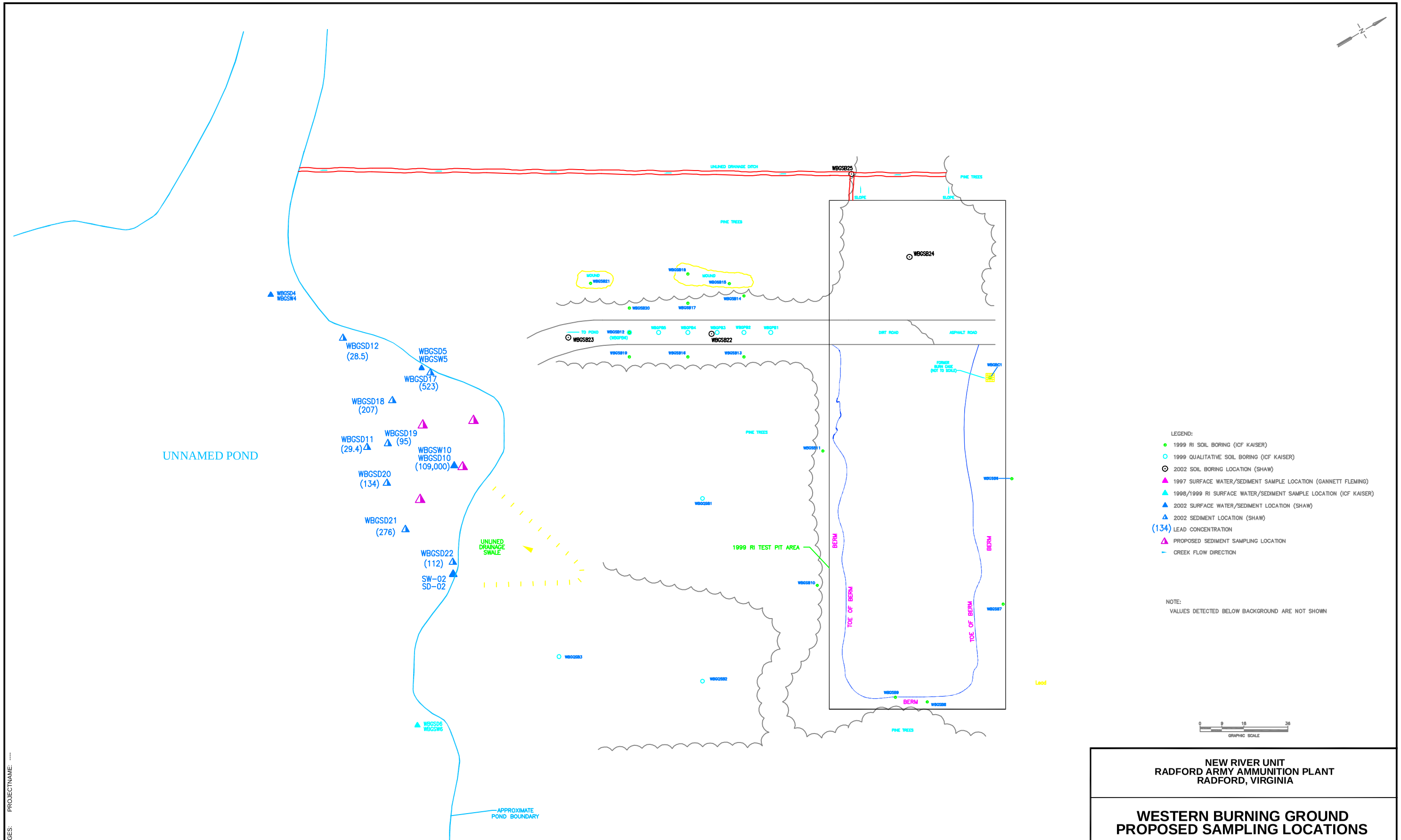
NOTE: SAMPLING LOCATIONS NOT DRAWN TO SCALE

NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

IGNITER ASSEMBLY AREA PROPOSED SAMPLING LOCATIONS

ARCADIS

FIGURE
4-3



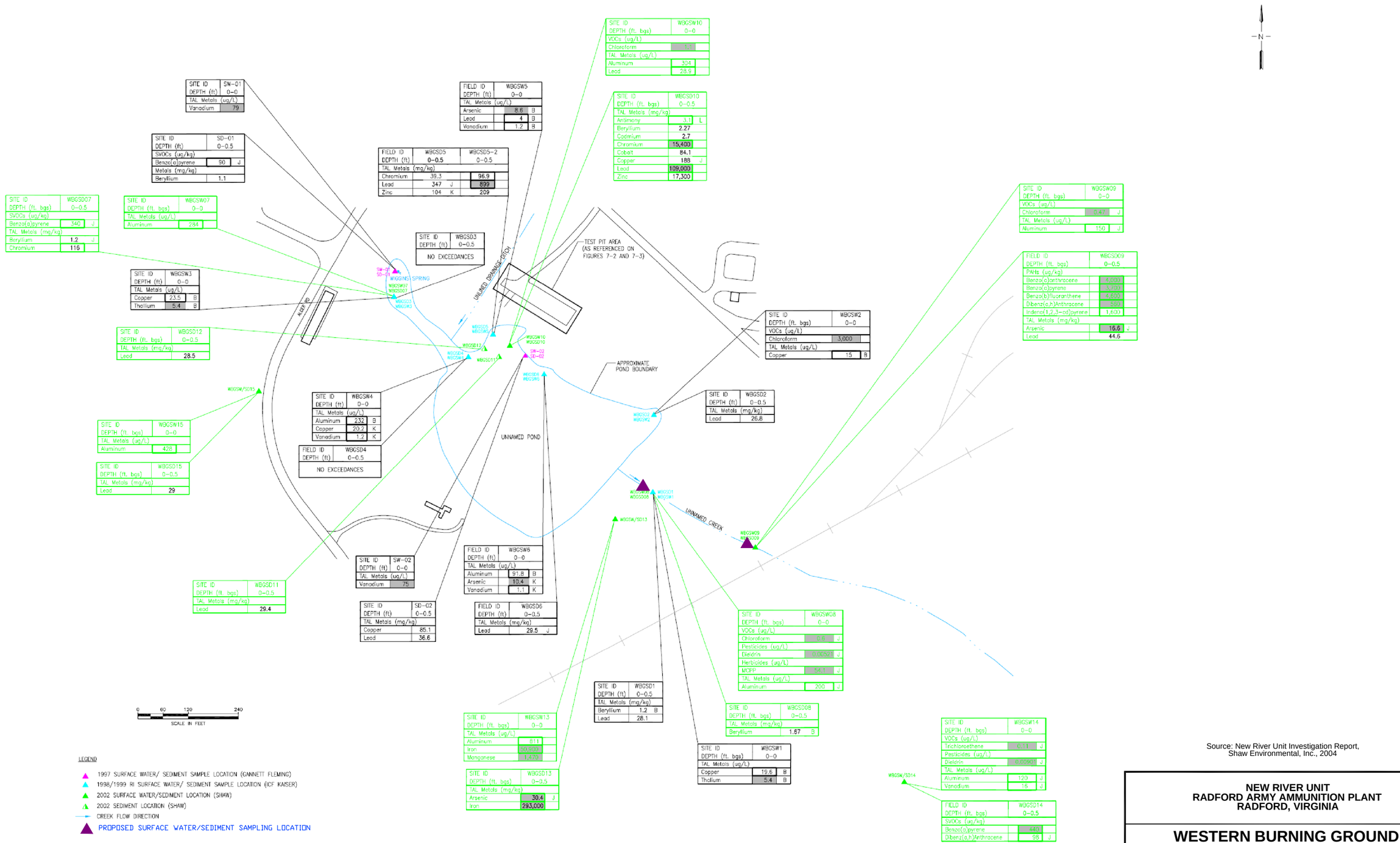
NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

WESTERN BURNING GROUND PROPOSED SAMPLING LOCATIONS

ARCADIS

FIGURE
4-4

CITY:(SYR) DIV/GROUP:(95) DB:(TJR) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*OFF=*REF*
G:\SYR\Radford Army Ammunition Plant\New River Unit\Work Plan\Figures\CAD Files\WBG\Proposed Locations\WBG Site Layout WP.dwg LAYOUT: XX SAVED: 5/7/2008 2:55 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 5/21/2008 10:17 AM BY: KALINOWSKI, CHRIS
XREFS: IMAGES: PROJECTNAME: ----
GP08RX00



Source: New River Unit Investigation Report, Shaw Environmental, Inc., 2004

NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

WESTERN BURNING GROUND PROPOSED DOWNSTREAM SAMPLING LOCATIONS

ARCADIS

FIGURE
4-5